NATIONAL CLINICAL EFFECTIVENESS COMMITTEE

Tús Áite do Shábháilteacht Othar
Patient Safety First

Communication (Clinical Handover) in Acute and Children's Hospital Services

National Clinical Guideline No. 11

An Roinn Sláinte
DEPARTMENT OF HEALTH

November 2015

Guideline Development Group
The National Communication (Clinical Handover) Guideline Development Group (GDG) was a work stream of the National Implementation Group – HSE/HIQA Maternity Services Investigations (HSE) under the governance of the Acute Hospitals Division, HSE. This group will be referred to as the GDG throughout this document. The GDG was supported by the Clinical Strategy and Programmes Division HSE; the Office of the Nursing and Midwifery Services Director, HSE; the Quality and Patient Safety Division, HSE; Patient Representative Groups; the National Ambulance Service; the Clinical Indemnity Scheme, (State Claims Agency); the Irish Association of Directors of Nursing and Midwifery (IADNAM); Health and Social Care Professionals; the College of Anaesthetists; Royal College Physicians of Ireland; Royal College of Surgeons in Ireland; the Nursing and Midwifery Board of Ireland (NMBI); the Health Information and Quality Authority (HIQA) and University College Dublin (UCD).

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Using this National Clinical Guideline
This guideline is intended to be relevant to all healthcare staff involved in the communication (clinical handover) of patient care in acute and children's hospital services. It outlines the general and specific measures for clear and focused communication of information relating to the patient's condition, both urgent and routine, for in-patients and patients attending acute and children's hospital services in Ireland.

A summary version of the National Clinical Guideline, is available on the website:
www.health.gov.ie/patient-safety/ncec

Reference of National Clinical Guideline
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Disclaimer
The Communication (Clinical Handover) Guideline Development Group expects that healthcare professionals will use clinical judgement and knowledge/skills in applying the general principles and recommendations contained in this document. The National Clinical Guideline recommendations do not replace or remove clinical judgement or the professional care and duty necessary for each specific patient case. Recommendations may not be appropriate in all circumstances and decisions to adopt specific recommendations should be made by the practitioner taking into account the circumstances presented by individual patients and available resources.

National Clinical Effectiveness Committee (NCEC)

The National Clinical Effectiveness Committee (NCEC) was established as part of the Patient Safety First Initiative. The NCEC is a partnership between key stakeholders in patient safety. NCEC's mission is to provide a framework for national endorsement of clinical guidelines and audit to optimise patient and service user care. The NCEC has a remit to establish and implement processes for the prioritisation and quality assurance of clinical guidelines and clinical audit so as to recommend them to the Minister for Health to become part of a suite of National Clinical Guidelines and National Clinical Audit.

The aim of the suite of National Clinical Guidelines is to provide guidance and standards for improving the quality, safety and cost-effectiveness of healthcare in Ireland. The implementation of these National Clinical Guidelines will support the provision of evidence-based and consistent care across Irish healthcare services.

NCEC Terms of Reference

1. Provide strategic leadership for the national clinical effectiveness agenda.
2. Contribute to national patient safety and quality improvement agendas.
3. Publish standards for clinical practice guidance.
4. Publish guidance for National Clinical Guidelines and National Clinical Audit.
5. Prioritise and quality assure National Clinical Guidelines and National Clinical Audit.
6. Commission National Clinical Guidelines and National Clinical Audit.
7. Align National Clinical Guidelines and National Clinical Audit with implementation levers.
8. Report periodically on the implementation and impact of National Clinical Guidelines and the performance of National Clinical Audit.
9. Establish sub-committees for NCEC workstreams.
10. Publish an Annual Report.

In response to the HIQA Patient Safety Investigation Report into Services at University Hospital Galway (2013), the NCEC was requested by the Minister for Health to commission and quality assure a number of National Clinical Guidelines. The National Clinical Guideline for Communication (Clinical Handover) in Acute and Children's Hospital Services is one of these guidelines.

The National Clinical Guideline for Communication (Clinical Handover) in Acute and Children's Hospital Services has been quality assured by NCEC and endorsed by the Minister for Health for implementation in the Irish health system.

Information on the NCEC and endorsed National Clinical Guidelines is available at www.health.gov.ie/patient-safety/ncec.

Foreword

Clinical handover refers to the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis.

Clinical handover is recognised as an important source of error but also as a unique opportunity for a range of healthcare professionals to work together to optimise patient safety.

The increase in patient co-morbidity and complexity of care in addition to changes to non consultant hospital doctor's (NCHDs) working patterns have created the urgent need for a paradigm shift in the way clinical handover is conducted in acute hospitals. Now more than ever a reliable, inter-disciplinary consistent approach is needed.

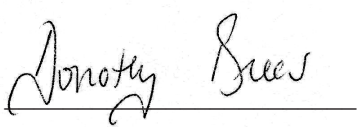
The guideline is timely, provides a standardised approach nationally and allows for flexibility to the local context. It was identified as a priority project by the Health Service Executive, the Department of Health and the Health Information and Quality Authority.

The guideline combines research, national and international consultation and consensus opinion.

We are particularly grateful for the input from patient groups and the sound and practical feedback advice from healthcare staff nationally and internationally.

'Without effective communication, competent individuals form an incompetent team' (Lingard 2012)

Dr. Dorothy Breen



and

Eilish Croke, co-chairs of the Guideline Development Group

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Glossary of terms

Definitions within the context of this document

Clinical handover (sometimes called clinical handoff) refers to the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis. Clinical responsibility can only be transferred when responsibility is accepted by the designated individual clinician or clinical team as outlined in the policy of the healthcare organisation. The point at which responsibility is transferred and accepted needs to be agreed between both departments/parties, be explicit and be formally documented. Clinicians, accepting responsibility for patients, should conduct their own clinical assessment, as dictated by the clinical situation and as appropriate to their roles and responsibilities.

Coroner's Report (April 2013) The Report by Dr. Ciaran McLoughlin, Coroner, following the inquest into a maternal death in University Hospital Galway (UHG).

Early Warning Score: A guide used to determine the degree of clinical acuity of a patient and involves a scoring system allocated on pre-determined clinical parameters.

Electronic patient record: An electronic patient record is a digital record of information about a patient, which provides patient information in real-time and securely to authorised users. It is analogous to the traditional patient's paper chart.

Emergency: An unexpected, serious event, which may be harmful for patients and requires an immediate response.

Escalation protocol: A protocol for guiding practitioners in responding to a sudden clinical deterioration in a patient's clinical condition.

Flexible standardisation: The idea that effective clinical handover involves local interpretation of a standard in order to accommodate contextual factors (Australian Healthcare and Hospitals Association 2009; Australian Commission on Safety and Quality in Health Care 2013).

Guideline Development Group (GDG) is the Communication (Clinical Handover) Guideline Development Group, one of the sub-groups established by the National Implementation Group – HSE/HIQA Maternity Services Investigations.

Higher Education Institutions (HEIs) are all institutions that provide undergraduate and post-graduate education and training for healthcare professionals including continuous professional development education. For example: Universities, Institutes of Technology, Royal College of Physicians of Ireland (RCPI), Royal College of Surgeons of Ireland (RCSI). For the purposes of this guideline, Centres for Nurse and Midwifery Education are included in this definition.

HIQA Report (October 2013) The Patient Safety Investigation Report on services at University Hospital Galway (UHG).

HSE Report (June 2013) The Report on the HSE Investigation of Incident 50278.

Inter-departmental: This relates to the transfer of patients between departments within a hospital or between two hospitals e.g. ward to ICU within the same hospital or to a different hospital.

Inter-disciplinary: Integrates separate discipline approaches to work toward the best outcome for the patient.

Models of hospitals: These describe four types of acute hospitals in Ireland, as proposed by the National Acute Medicine Programme, Clinical Strategy and Programmes Division, HSE. The models are: model 4 - tertiary hospital; model 3 - general hospital; model 2 - local with selected (GP-referred) patients; and model 1 - community/district hospitals.

National Implementation Group – HSE/HIQA Maternity Services Investigations was established to advise on and oversee the implementation of the HSE Report (June 2013).

Protected time: Designated time within the shift in a location free from interruptions and distractions and where no other task interferes with the delivery of the clinical handover information.

Read-back: Verbally repeating back important clinical information from one healthcare professional to another.

Safety pause: A brief discussion, between and with healthcare professionals, relating to important patient safety issues within a department.

The list of abbreviations is available in Appendix 1.

1 Background

1.1 Need for National Clinical Guideline

1.1.1 Burden of topic

Clinical handover refers to the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis (British Medical Association 2012).

Clinical handover has been identified, both nationally and internationally, as a high risk step in a patient's hospital journey (NCEPOD 2007). 'Handover of care is one of the most perilous procedures in medicine, and when carried out improperly can be a major contributory factor to subsequent error and harm to patients', identified by Professor Sir John Lilleyman, Medical Director, National Patient Safety Agency (NHS 2004).

Highly variable practices in clinical handover were identified in a previous national survey of maternity services in Ireland (DoH 2014), with human factors such as culture, perceptions, beliefs and poor communication contributing to these variations in practice.

Patient factors also contribute to the need for good clinical handover by all healthcare professionals as the complexity of care and disease profiles increases as the result of new treatments and longer life expectancy with a greater burden of illness.

Internationally there is an increasing emphasis on improving the quality of clinical handover as a vital element of patient safety and as a result guidelines for clinical handover are now published in Australia, the UK and Ireland.

Numerous barriers to effective clinical handover have been identified such as informal structure, unnecessary content, lengthy duration, disturbances and lack of confidence, as areas of concern (Browne & Sims 2014).

The implementation of the European Working Time Directive (EWTD) means that non-consultant hospital doctors (NCHDs) duty hours are restricted with a move towards shift patterns of working. This has resulted in an increase in the number and importance of clinical handovers that patients encounter during a single period of care (Arora *et al.* 2005, Johnson *et al.* 2011, Sharit *et al.* 2008). Whereas clinical handover has been an explicit and scheduled part of nursing practice, this has not been the case in respect of other healthcare professionals, including doctors. Changing patterns of working must not detract from the ultimate responsibility of healthcare professionals to ensure that safe, effective and efficient care is provided for patients.

The GDG acknowledges and highlights the need for a 'culture change' with regard to clinical handover and emphasise that clinicians at all levels (i.e. including senior clinicians) will need to embrace the process. Significant organisational change will be needed with adequate 'protected time' allocated for clinical handover. Although local training is important, the HSE will need to adopt a national approach to implementation and, along with the colleges, a standardised approach to education and training. In addition there will need to be a national approach to providing appropriate technology to support good quality clinical handover.

While there is a limited evidence base to guide clinical handover, there is an urgency to improve and standardise the practice to optimise the process, contributing to seamless and reliable information transfer, minimising variability, and reducing risks for patients.

This is the second National Clinical Guideline on Communication (Clinical Handover) which was commissioned by the NCEC following the HIQA/Galway Report (October 2013). Details of the wider context of these guidelines can be found in the Communication (Clinical Handover) in Maternity Services, National Clinical Guideline No. 5, page 9, available at the following link:
http://health.gov.ie/wp-content/uploads/2015/01/National-Clinical-Guideline-No.-5-Clinical-Handover-Nov2014.pdf

Phase 1 was tasked with developing a national clinical guideline on communication (clinical handover) for in-patient maternity hospital services, this was completed and published in November 2014.

Phase 2 was tasked with developing a national clinical guideline on communication (clinical handover) within acute and children's hospital services and submit this to the NCEC for quality assurance endorsement and publication.

To address this the agreed HSE process was that the Guideline Development Group (GDG) would make recommendations to the National Implementation Group – HSE addressing the recommendations relating to communication (clinical handover) in the HSE Report (June 2013), the Coroner's Report (April 2013) and the Health Information & Quality Authority (HIQA) Report (October 2013).

Effective clinical handover can be enabled by having clear procedures, supportive work environments and educating staff on the potential impact of handover on patient safety.

Factors that may affect timeframes for communication and clinical handover will also be considered such as:
- Staff shortages due to retirement, leave and emigration;
- The fiscal environment;
- The lack of designated time and space;
- Lack of training.

This is not an exhaustive list and other factors may be included for discussion/consideration. This body of work will also inform the work of other National Clinical Guidelines.

Without effective communication, competent individuals form an incompetent team (Lingard 2012).

1.1.2 Risks associated with clinical handover

Risks associated with clinical handover whether as part of shift or inter-departmental clinical handover or communication of information in relation to the deterioration in a patient's condition, are similar and include:
- Inappropriate or delayed treatment being provided for patients including the delay in critical referrals which threaten the life, health or well being of patients in the acute hospital setting
- Loss of trust and confidence amongst staff and patients in the performance of the healthcare system as result of inaccurate and/or incomplete information
- Inefficient use of time and resources leading to a breakdown in the continuity of care
- Risks associated with poor clinical handover practices may be further compounded by:
  - Hierarchical structures in the health service
  - Interdisciplinary boundaries
  - Resistance to change
  - Lack of standardisation of clinical handover practices

- Lack of effective implementation of the National Clinical Guideline on clinical handover
- Lack of training.

1.2 Clinical and financial impact of topic

Published evidence on the economic benefits of interventions aimed at improving communication and clinical handover practices indicates effectiveness in a number of economic indicators. Yao *et al*. (2012) found that a staff education programme for improving clinical handoff was 'highly cost-effective' in reducing the number of adverse events for all discharges, and Hess *et al.* (2010) reported 'a significant reduction in cost' when combining a written discharge report with a verbal telephone report. Others have reported cost benefits of improved communication systems and processes that support clinical handover. These include: 'significantly lower costs' per patient and length of stay following the introduction of a Patient Care Partnership Project (PCPP) to improve communication between physicians (Palmer *et al*. 2002); reduced costs associated with avoidance of unnecessary radiologic studies and admissions using a regional health information exchange system (Carr *et al*. 2012); and reduced costs of investigations and pharmacy per patient following the introduction of daily consultant ward rounds (Ahmad *et al*. 2015). The cost benefits of using information technology systems to augment communication, including a computer-based patient record (CBPR), (Flanagan et *al*. 1995) and an electronic document management system (EDMS) (Schmidt *et al*. 2006), have also been demonstrated.

While studies point to some economic benefits of improved communication practices, including clinical handover improvement initiatives (Hess *et al.* 2010; Yao *et al*. 2012), the overall evidence regarding cost benefits must be treated with caution. This caution is warranted since the evidence is based on the limited availability of published studies particular to clinical handover, the use of diverse models and methods for calculating costs across studies and the fact that studies were conducted at single sites and often involved specific patient sub-groups. For example, the study by Hess *et al*. (2010) was conducted with reference to patients with respiratory disease, a patient sub-group with a high risk of hospital readmission. Similarly, the study by Carr *et al*. (2002) was a pilot study conducted at the ED at an urban, academic medical center. Hence the application of the findings from the economic evaluation literature may not be generalisable to the entire acute care sector or to the Irish acute care sector. Nevertheless, on the basis of demonstrable evidence from individual studies, the economic grounds for improving clinical handover practices may be justified.

A budget impact analysis (BIA) was conducted as part of the development of this clinical guideline and included an estimation of the cost of current practice and the cost of introducing a new standardised clinical handover protocol for all clinical staff, including the cost of staff training (Appendix 18). The analysis of the cost of *current* practice was based on observations of five different clinical handover event types conducted in a judgemental sample of large and smaller acute hospitals in Ireland and was calculated using an arbitrary number of clinical handover event types in 44 acute hospitals in Ireland.

Based on five different clinical handover scenarios observed and reflecting variables like duration of handover event and staff grade involved, the estimated cost of current handover practice is €162,210 per day across the entire acute hospitals sector in Ireland. This amounts to an estimated overall cost of clinical handovers involving five different handover types at approximately €59m per annum. This estimated cost represents a typical day in an acute hospital with 15 clinical departments in which the following occurs: two nursing duty shift handovers, two medical on-call handovers, two nursing service manager handovers, thirty intra-departmental nursing handovers (patient transfers, morning updates, afternoon shifts) and thirty inter-departmental nursing handovers (patient transfers such as ED to wards, wards to theatre,

ward to ward, ICU to ward). The GDG would like to acknowledge the support of Michelle O'Neill, Health Economist, HIQA, in completing the BIA.

1.3 Aim of National Clinical Guideline

The aim of this National Clinical Guideline is to optimise the process of clinical handover and improve patient safety by describing the elements that are essential for timely, accurate, complete, unambiguous and focused clinical handover in acute and children's hospital services in Ireland, relating to the patient's condition, both urgent and routine, to include the following:

- Professional consultations such as:
  - Team to team;
  - One profession to another;
  - Laboratory to team;
  - Radiology to team;
- Deterioration in a patient's condition;
- Transitions of care such as:
  - Clinical Handover of care at a change of shift;
  - Clinical Handover to and from a different level of care in the same hospital for example between a ward and ICU/CCU;
  - Clinical Handover to and from a different level of care between acute hospitals for example transfer of a patient for specialist care;
  - Inter-departmental clinical handover e.g. operating theatre/emergency department to ward;
  - Communication with patients and/or their relatives including parents/guardians of children as part of clinical handover, to ensure that a treatment plan is readily explained and understood.

Note:

- Dealing with emergency/crisis situations will always take precedence. The facility to undertake shift clinical handover should be provided for staff involved in the emergency/crisis situation when the emergency/crisis situation has been dealt with.

1.3.1 Expected outcomes

All clinical handover between healthcare staff in acute and children's hospital services will be conducted using a structured communication tool, promoting standardisation of practice and minimisation of variability, thus reducing risk for patients.

1.4 Scope of National Clinical Guideline, target population and target audience

The National Clinical Guideline for in-patients and patients attending acute and children's hospital services in Ireland is relevant and has been developed for all healthcare staff, doctors, nurses, health and social care professionals, healthcare assistants and other staff involved in the clinical care of patients in acute and children's hospital services; and managers responsible for the development, implementation, review and audit of communication/clinical handover practice in individual hospitals or group of hospitals. The National Clinical Guideline also applies to education and training support staff involved in the organisation and delivery of the relevant education programme.

The public and patients will also find this guideline of interest as it outlines the general and specific measures for clear and focused communication of information relating to the patient's condition, both urgent and routine and how these can and should be incorporated into quality measures to safeguard the quality of patient care.

1.4.1 What the guideline covers

This guideline makes recommendations on the process of clinical handover and the content of clinical handover of patient care between healthcare staff; and communication between healthcare staff and patients/relatives including parents/guardians of children as part of clinical handover for in-patients and patients attending acute and children's hospital services in Ireland.

1.4.2 What the guideline does not cover

This guideline does not cover:

- Routine recording of patient care in the patient's medical chart used in acute and children's hospital services.
- The nature of individual patient management or treatment.
- The response following communication of information e.g. where a patient is deteriorating or critically ill.
- Clinical handover in any other setting including the pre-hospital setting e.g. primary care and National Ambulance Service.

1.4.3 The service users to whom the guideline applies

All service users who access acute and children's hospital services in Ireland.

1.4.4 The health service areas where the guideline applies

All acute and children's hospital services in Ireland.

1.5 Guideline Development Group (GDG)

A GDG comprising key stakeholders and representation from professional and other groups was established. Additional representation was sought following recommendations made at the inaugural meeting of the GDG.

- The GDG met on 12 occasions between January and October 2015 (the schedule of meetings is available in Appendix 2).
- The list of membership of GDG is available in Appendix 3.
- No conflicts of interests were declared by the members of the GDG or the UCD research team therefore no management of same was necessary. Conflict of interest forms were provided to the NCEC for their records.
- The role of the GDG members was to develop the guideline, formulate the recommendations and provide feedback from the groups they represented.

1.6 Methodology and literature review

The GDG agreed its terms of reference (Appendix 3) at the outset and conducted a strengths, weaknesses, opportunities and threats (SWOT) analysis related to its role and function, in order to identify the barriers and facilitators that would affect its work (Appendix 4). The GDG was a interdisciplinary group and was supported in its work by a small research team from University College Dublin (UCD), which was responsible for gathering and synthesising the evidence on which the guideline was developed. The UCD research team comprised four academics from the disciplines of nursing, medicine and health economics, a research assistant and a research nurse, and the work of the UCD team was overseen by the members of the Guideline Development Group.

The National Clinical Guideline was developed through a process of evidence gathering, stakeholder consultation and expert and user opinion. The main element of evidence gathering involved a systematic review of literature (Appendix 5), which included a critical appraisal of

the strength of the published evidence. This was complemented by an extensive analysis of existing practices in acute care services in Ireland, to identify evidence of good practices and issues and challenges in conducting clinical handover, including the barriers and facilitators in achieving an effective clinical handover. This analysis involved: a national survey of the acute care hospitals in Ireland; non-participant observation of clinical handover events; and focus group discussions and interviews with a purposive sample of health professionals and other key informants, including representatives of service users. In addition, a national survey was administered to the deans and heads of all training schools for health professions in Ireland, with the aim of eliciting the extent and quality of education and training in clinical handover and related topics, like clinical risk management. The full report of this analysis is presented in Appendix 6.

All available evidence was reviewed following the systematic review of literature and analysis of current clinical handover practices nationally. As outlined in Section 1.9 below, evidence was graded according to the Scottish Intercollegiate Guidelines Network (SIGN) methodology checklists for quality of evidence (Scottish Intercollegiate Guidelines Network (SIGN) 2011).

We used the pre-requisite quality assurance criteria for the Irish context (Appendix 7) contained in the *National Quality Assurance Criteria for National Clinical Guidelines* (HIQA and NCEC 2015), to ensure that the expected benefit of the guideline was clearly established for the Irish healthcare setting. Once the guideline was developed, we also applied the *National Quality Assurance Criteria* (HIQA and NCEC 2015) to appraise the guideline for research and evaluation. The appraisal was based on the AGREE II grading tool (Appendix 8) to support the GDG in its decisions and also to support the National Clinical Effectiveness Committee's assessments and decision-making, regarding the recommendation contained in the guideline (HIQA and NCEC 2015).

The GDG discussed each recommendation in detail and each recommendation was included by unanimous or consensus agreement among the Group. The GDG consulted with a large number of stakeholders including the National Clinical Effectiveness Committee (NCEC). Following receipt of feedback the guideline was revised with agreement of the GDG, as appropriate.

The guideline was developed specifically for use in acute care services in the Irish context, but may also be of relevance to other services that do not currently have a policy or clinical guidelines on clinical handover.

The literature review was registered on the PROSPERO international database, a database of prospectively registered systematic reviews in health and social care. Key features from the review protocol are recorded and maintained as a permanent record. Registration allows those commissioning or planning reviews to identify whether there are any reviews already underway that address their topic of interest. This enables comparison of reported review methods with what is planned in the current review and helps avoid unintended and economically wasteful duplication of effort.

1.7 Grading of recommendations

All decisions regarding the quality of evidence and the strength of recommendations were based on summaries of evidence from the literature review and the evidence was weighted according to the SIGN (2011) grading criteria. The basis for level of evidence and grade of recommendation are summarised in tables 1.8.1 and 1.8.2.

Where existing guidance was the only source used to guide a guideline statement/ recommendation, this is specified. Where each guideline statement/recommendation is

presented, we provide a rationale based on the published best evidence and also practical guidance to support the delivery of the guideline statement/recommendations. For most of the guideline statements, we provide supporting evidence at levels 1 and 2. For some of the guideline statements/recommendations, we relied on the best attainable evidence to hand, such as evidence from audits (level 3) or expert opinion (level 4), which included evidence from interviews and discussions with practitioners and other stakeholders.

Table 1.8.1 SIGN (2011) Grading criteria

Grade	Grade descriptor
1++	High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias (RCTs rated as high quality (++) using the SIGN checklist for RCTs)
1+	Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias (RCTs rated as acceptable (+) using the SIGN checklist for RCTs)
1-	Meta-analyses, systematic reviews, or RCTs with a high risk of bias (RCTs rated as unacceptable (-) using the SIGN checklist for RCTs)
2++	High quality systematic reviews of case control, cohort studies, RCTs or before-and-after intervention studies (Rated as high quality (++) using the SIGN checklist for reviews)
2++	High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2+	Systematic reviews of case control, cohort studies, RCTs or before-and-after intervention studies with a possible risk of bias (Rated as acceptable (+) using the SIGN checklist for reviews)
2+	Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2-	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal. Before-and-after intervention studies with a risk that the relationship is not causal.
3	Non-analytic studies, e.g. case reports, case series, post-implementation audit/review
4	Expert opinion

We also assigned a grade to each recommendation based on the A, B, C, D grading criteria contained in the SIGN guideline developer's handbook (SIGN 2011). These grades indicate the relative strength of each statement/recommendation, providing a general indication of the comprehensiveness of published guidelines (Table 1.8.2). The A, B, C, D grading for each guideline statement was agreed by consensus among the members of the GDG.

Table 1.8.2: ABCD Criteria/Consensus Grade (SIGN 2011)

Grade	Grade descriptor
A	At least one meta-analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population or; a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1++ or 1+
C	A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 2++
D	Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2+

Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation (SIGN 2011).

1.8 External review

On September 3rd 2015, the draft guideline was circulated for consultation to a wide variety of national stakeholders including: GDG members who distributed it to their representative groups, the National Clinical Programmes via programme managers and clinical leads, the Office of the Nursing and Midwifery Director (ONMSD), HSE, Hospital Group CEOs, Hospital Group Directors of Nursing, Clinical Directors, Director's of Nursing and Hospital CEOs in all acute hospitals, the Irish Medical Council, NEWS contacts in all acute hospitals and others.

Additionally the draft guideline was submitted to two international experts in the field of clinical handover for peer review. These two leading experts were chosen by the GDG based on their many years of research and publications on the topic of clinical handover for both adult and children's services.

The international peer reviewers were:

Dr Vineet M Arora, MD MAPP, Associate Professor and Assistant Dean for Scholarship and Discovery, Director, GME Clinical Learning Environment Innovation, Pritzker School of Medicine, University of Chicago, IL, USA.

Dr. Amy Starmer, MD, MPH, Director of Primary Care Quality Improvement and Assistant Professor of Pediatrics at Boston Children's Hospital and Harvard Medical School, USA.

Internatonal expert review feedback is included in Appendix 9.

National feedback is included in Appendix 10.

1.9 Procedure for update of National Clinical Guideline

This National Clinical Guideline is due for review in November 2018 or sooner, should compelling evidence arise. At that time a systematic search of the literature for new evidence will be conducted. External colleagues and international experts in this area will be circulated with the current National Clinical Guideline and their views sought for updates. This process will be overseen by a group under the governance of the Acute Hospitals Division, HSE. Following this it will be submitted to the National Clinical Effectiveness Committee for review and endorsement.

1.10 Implementation of National Clinical Guideline

The HSE and all healthcare organisations are responsible for dissemination and implementation of the guideline including the provision of education in using the recommended communication tools.

1.11 Roles and responsibilities

Each healthcare professional has a role to play in minimising the risk of communication failures through adherence to best practice as recommended in this National Clinical Guideline, e.g. providing clear and focused communication of information relating to the patient's condition, both urgent and routine.

1.11.1 Organisational responsibilities

Within each organisation/Hospital Group the CEO/General Manager/Hospital Manager has overall corporate responsibility for the implementation of the guideline, to ensure that there is a system in place for the safe and effective communication (clinical handover) of patient

care. Where additional resources are required to support implementation of the guideline these should be sought through the HSE National Service Plan.

It is recommended that:

1.11.2 HSE senior managers

- Assign personnel with responsibility, accountability and autonomy to implement the guideline, education programme and structured audit.
- Provide managers with support to implement the guideline.
- Ensure local policies, procedures, protocols and guidelines (PPPGs) are in place in each acute hospital to support implementation.
- Monitor the implementation of the guideline to support ongoing evaluation and remedial action.
- Link the implementation group/committee with corporate responsibility.
- Ensure adequate resources are available to implement the guideline.

1.11.3 Hospital senior managers

- Provide a local governance structure to support the implementation and ongoing evaluation of the guideline.
- Ensure clinical and educational staff are supported to implement the guideline.
- Ensure development of local policies, guidance to support implementation and associated audit and evaluation.

1.11.4 Heads of department

- Ensure all relevant staff members are aware of this National Clinical Guideline.
- Monitor local implementation of the guideline and its outcomes.
- Ensure staff are supported to undertake the associated education programme as appropriate.

1.11.5 All healthcare staff

All healthcare staff are responsible and accountable, within their professional scope of practice, for adhering to this National Clinical Guideline and for maintaining competence in communication (clinical handover) of patient care. All healthcare staff must be aware of the role of appropriate delegation in using this guideline.

1.11.6 Education providers

Education providers with responsibility to provide preparatory professional education, continuing education and professional development for all healthcare professionals are responsible for incorporating communication (clinical handover) practice within curricula.

1.12 Audit criteria

To ensure that this guideline positively impacts on patient care, it is important that implementation is audited. Audit is recommended to support continuous quality improvement in relation to the implementation of the National Clinical Guideline.

Audit tool templates have been developed to assist the audit of communication (clinical handover) practice (Appendix 11). Audit tools can be customised to locally adapted $ISBAR_3$ clinical handover tools with support from local audit personnel.

1.13 Funding

The literature search and review and national fieldwork survey were commissioned by the NCEC and conducted by University College Dublin. Although the National Clinical Effectiveness Committee (DoH) provided funding for this work the GDG maintained editorial independence throughout.

GDG members received no additional payments for undertaking this work.

2 National Clinical Guideline recommendations

2.1 National recommendations.

All recommendations are of equal importance and should be implemented without preference or bias.

Where existing guidance is used to support a recommendation, the National Quality Assurance Criteria Score (NCEC 2013; HIQA 2011) is reported in square parentheses, thus '[]'. If a score was not applied this is reported as [N/A]. Where the empirical literature used to inform a recommendation is not reported in the text preceding the recommendation, it is directly referenced. Where existing guidance is the only source used to guide a recommendation, this is specified. The basis for level of evidence and grade of recommendation are presented in tables 1.8.1 and 1.8.2. A rationale for the recommendations is outlined and practical guidance to support the delivery of the recommendations is provided.

The recommendations are numbered 1 to 28 and are linked to the best available evidence and/or expert opinion. They are divided under the following topics:

1. **Shift and inter-departmental clinical handover recommendations (1-7)**
2. **Organisational recommendations (8-21)**
3. **Deteriorating patient recommendation (22)**
4. **Radiology recommendation (23)**
5. **Laboratory recommendation (24)**
6. **Additional recommendations (25–28)**

Acute hospitals should have systems in place to address all elements in this National Clinical Guideline. Clinical handover should be recognised as an inter-disciplinary team activity. Due consideration of the application and implementation of the recommendations for individual hospitals/units specific circumstances is required.

2.2 Shift and inter-departmental clinical handover recommendations

2.2.1 Clear transfer of responsibility for the patient

The following are responsible for implementation of recommendation 1:

CEO, General Manager, Hospital Manager, Clinical Director and Director of Nursing of the healthcare organisation.

Recommendation 1: Healthcare organisation's policy on communication (clinical handover) is explicit about when and to whom the transfer of responsibility occurs, during and following **inter-departmental and shift clinical handover**. Clinical responsibility can only be transferred when responsibility is accepted by the designated individual clinician or clinical team as outlined in the policy of the healthcare organisation.
Level of Evidence: 3
Grade of recommendation: D
References: Department of Health (Western Australia) 2013 [3]; NSW Department of Health 2009 [N/A]

Practical guidance
Clinical handover is defined as 'the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis' (BMA 2004).

The point at which responsibility is transferred and accepted needs to be agreed between both departments/parties, be explicit and be formally documented identifying those relinquishing responsibility (outgoing team/individual) and those now responsible (incoming team/individual) for the patients care. Clinicians, accepting responsibility for patients, should conduct their own clinical assessment, as dictated by the clinical situation and as appropriate to their roles and responsibilities. The GDG acknowledge that there are situations when responsibility and accountability for patient care is not clearly defined. Local policy should identify who is responsible and accountable for the patient throughout their episode of care in the acute hospital.

Rationale
Staff report that the transfer of responsibility for the patient during clinical handover is often ambiguous (Bomba and Prakash 2005; Williams *et al.* 2007; Philibert *et al*. 2009; Bost *et al.* 2012; Chin *et al.* 2012; Wayne *et al.* 2008) and this may lead to issues in relation to the follow up of test results (Horwitz *et al.* 2009a) or instances where patients are handed over to a new unit without a clinician being assigned responsibility (Li *et al.* 2011). A lack of formal documentation to confirm that inter-departmental clinical handover (Smith *et al.* 2008) or shift clinical handover has occurred (Wayne *et al.* 2008) may be one reason why the transfer of information does not always imply responsibility transfer for staff. Clarity on locus of responsibility for patients is viewed as essential in assuring an effective clinical handover process. Siemsen *et al*. 2012 suggest that the transfer of responsibility during communication needs to be made explicit and clear, to the extent that all clinicians are aware of who is responsible for patients during and following a clinical handover report. Staff involved in the clinical handover process may need to agree the point of responsibility transfer based on what is most appropriate locally. Existing guidance recommends that the clinician receiving clinical handover fully comprehends, acknowledges and accepts responsibility for the patient (Department of Health (South Australia) 2013a) and that staff need to be made fully aware that responsibility is transferred along with information (Department of Health (Western Australia) 2013). New South Wales Health (NSW Health 2009) indicates that signing over of clinical handover sheets may be a strategy to achieve clarity around responsibility. The Emergency Medicine Programme Handover Protocol (HSE 2013) clarifies the point at which responsibility for patient care has passed to the receiving ED staff, stipulating that this has occurred only when both the clinical information *and* the patient have moved into the ED facility. The protocol also stipulates that staff provide verbal acknowledgment that clinical handover is finished. Transfer of responsibility is also reported to be ambiguous in the context of shift change (Chin *et al.* 2012; Philibert *et al.* 2009; Wayne *et al.* 2008).

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified that healthcare staff perceived that there was little formal policy regarding the way that clinical handover should be conducted. Medical staff associated clinical handover with the transfer of responsibility to or from an on-call team. It was also identified that interns and SHOs generally received a report from outgoing medical/surgical teams and only when consultant-led ward rounds were taking place were all team members present. Nurses also identified the importance of transferring responsibility for patient care, for example, local operating theatre protocols include a section where the person conducting the clinical handover and the person receiving the clinical handover sign that the clinical handover has taken place. It was found that nurses frequently documented that clinical handover was conducted for both change of shift and inter-departmental clinical handover but medical professionals rarely document this.

2.2.2 Patient, Parent/Guardian and/or Carer involvement.

The following are responsible for implementation of recommendation 2:

CEO, General Manager, Hospital Manager, Director of Nursing and Clinical Director of the healthcare organisation.

Recommendation 2: Healthcare organisations should aim to involve the patient, parents/guardians of children and/or carer(s) in the clinical handover process where appropriate. They should ensure that the patient, parents/guardians of children and/or carer(s) are provided with relevant, accurate and up-to-date information in relation to the patient's condition, care and treatment. Patients or parents/guardians of children preferences should be considered whilst also meeting the requirements of confidentiality. The healthcare organisation should determine how this may be best accommodated at department/unit/ward level.
Level of Evidence: 3
Grade of recommendation: D
References: Barker 2013 [5]; Department of Health (South Australia) 2013a [3]; Department of Health (Western Australia) 2013 [3]

Rationale

Physicians have proposed that when clinical handover occurs at the bedside, important visual cues and context can improve the quality of the exchange (Sharit *et al.* 2008). Existing guidance from Australia recommends that patient and carer involvement in clinical handover should be promoted by conducting face-to-face clinical handover at bedside, if appropriate, as this can allow information to be further verified or questioned by the patient (Department of Health (South Australia) 2013a; Department of Health (Western Australia) 2013). The practice of bedside clinical handover has been primarily supported with reference to nursing shift clinical handover (Barker 2013; Queensland Health 2013; Agency for Healthcare Research and Quality 2013; Australian Commission on Safety and Quality in Health Care 2010; Sherman *et al.* 2013). The advantages of bedside nursing clinical handover, as reported in a review by Sherman *et al.* (2013), include increased patient satisfaction, improvements in the nurse/patient relationship, improved report efficiency and reporting accuracy, and better prioritisation at the start of shift. However bedside shift clinical handover may take longer, patients may have difficulty with medical jargon, experience anxiety from too much or incorrect information, or due to hearing about their illness, or express concern about privacy (Sherman *et al.* 2013). As such, professional judgement is needed with regard to the information appropriate to hand over at the bedside, giving due regard to patient privacy and confidentiality (NSW Department of Health 2009). Recommended strategies to achieve bedside clinical handover include handing over sensitive information like test results, psychiatric issues, communicable diseases, NFR orders, social and family issues, by first meeting in a designated work area and not at the patient's bedside (Queensland Health 2013).

In the national fieldwork commissioned by the GDG (Appendix 6) service users described their experience of bedside clinical handover as confusing, 'fast' and often not knowing who the people were or, when they sought answers, of being referred to someone else. Inappropriate information may be provided which may cause undue upset for patients. One service user described witnessing an efficient bedside clinical handover in which the method used by doctors was effective, test results were explained and they understood what was happening. Service users discussed the importance of listening to relatives as they 'know the patient best'.

2.2.3 Clinical handover - Structured format

The following are responsible for implementation of recommendation 3:

CEO, General Manager, Hospital Manager, Director of Nursing and Clinical Director of the healthcare organisation.

Recommendation 3: Inter-departmental and shift clinical handover should be conducted using the ISBAR$_3$ communication tool (Identify, Situation, Background, Assessment, Recommendation, Read-back, Risk) as a structured framework which outlines the information to be transferred. The tool may be available in written format, but preferably electronically.
Level of Evidence: 2- and 4
Grade of recommendation: D
References: South Australia Department of Health (2010) *Clinical Handover Guidelines:* Government of South Australia: Adelaide SA.

Practical guidance

Inter-departmental and shift clinical handover are somewhat different and therefore should be approached differently. Shift clinical handover usually relates to more than one patient where as inter-departmental clinical handover usually relates to one patient being transferred from one department to another. The ISBAR$_3$ clinical handover tool is the nationally recommended standardised tool for conducting clinical handover for both situations. It provides a standardised framework, at the same time permitting clinical handover to be tailored to the needs of each department, unit or ward, for example, in the emergency department patient admission status and bed availability may be included, in the inpatient wards they may want to include infection status, frailty score, Waterlow Score, social circumstances, and in the ICU they may want to include ventilation settings. This concept is known as 'flexible standardisation'.

One international reviewer of this national clinical guideline, Dr. Vineet Arora, highlighted the importance of customising the template for use by the end-user "for folks to buy-in to using the template". She also identified that every specialty is different so there may be specific fields that need to be customised.

Note: Flexible standardisation recognises the importance of ensuring that policies and procedures are relevant and appropriate for use in particular contexts of clinical handover. Effective clinical handover involves local interpretation of a standard in order to accommodate contextual factors (Australian Healthcare and Hospitals Association 2009; Australian Commission on Safety and Quality in Health Care 2013). Flexible standardisation allows clinical handover to be tailored to a local context recognising that health services will have differing functions, size and organisation with respect to service delivery mode, location and workforce.

Clinical handover should include key data items to be transferred and therefore agreement on what this critical data ought to be should be negotiated.

ISBAR$_3$ communication (clinical handover) tool sample for Inter-departmental and shift clinical handover are given below. (Also available in Appendix 12). These templates should be included in education and training programmes.

Patients should not be transferred from department to department unnecessarily, except where there is a clinical need, reducing the need for clinical handover and enhancing patient safety and experience. Additional information on the Safety Pause is provided on the Safety Pause Information Sheet (2013), along with examples of safety issues that may arise, see below and in Appendix 10.

ISBAR$_3$ Communication (Clinical Handover) Tool SAMPLE Inter-departmental Handover	
I Identify	**Identify:** You Recipient of handover information Patient
S Situation	**Situation:** Location of patient as appropriate Brief summary of patient's current status Is there a problem?
B Background	**Background:** Concise summary of reason for interdepartmental handover Summary of treatment to date Baseline observations (current admission) Vital Signs: BP, Pulse, Resps, S_PO_2, Temp, AVPU. NEWS/PEWS/IMEWS (include previous NEWS/PEWS/IMEWS if appropriate)
A Assessment	**Assessment:** What is your clinical assessment of the patient at present?
R$_3$ Recommendation Read-Back Risk	**Recommendation:** Specify your recommendations Read-Back: Recipient(s) to confirm clinical handover information Risk: Include the safety pause to identify possible risks

Adapted by GDG with permission from Dr S. Marshall, Monash University, Australia.

ISBAR$_3$ Communication (Clinical Handover) Tool SAMPLE Shift Clinical Handover	
I Identify	**Identify:** Lead clinical handover person Individuals/Team receiving clinical handover Patient(s)
S Situation	**Situation:** Location of patient(s) Brief summary of current status Is there a problem?
B Background	**Background:** Concise summary of reason for admission Summary of treatment to date Baseline observations (current admission) Vital Signs: BP, Pulse, Resps, SpO_2, Temp, AVPU. NEWS/PEWS/IMEWS (include previous NEWS/PEWS/IMEWS if appropriate)
A Assessment	**Assessment:** What is your clinical assessment of the patient at present?
R$_3$ Recommendation Read-Back Risk	**Recommendation:** Specify your recommendations Read-Back: Recipients to confirm clinical handover information Risk: Include the safety pause to identify possible risks

Adapted by GDG with permission from Dr S. Marshall, Monash University, Australia.

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Quality and Patient Safety Directorate

We are all responsible…and together
we are creating a safer healthcare system

An Roinn Sláinte
DEPARTMENT OF HEALTH

THE SAFETY PAUSE: INFORMATION SHEET

Helping teams provide safe quality care

Why	Safety awareness helps all teams to be more proactive about the challenges faced in providing safe, high quality care for patients.
Who	Team lead and available multidisciplinary team members.
When	Any time (aim for a maximum of five minutes).
How	Focus on things everyone needs to know to maintain safety. Based on one question *'what patient safety issues do we need to be aware of today'* - resulting in immediate actions. The four P's below provide examples to prompt the discussion (any prolonged discussion on specific issues can be deferred until after the safety pause).

THE SAFETY PAUSE

QUESTION:

WHAT PATIENT SAFETY ISSUES DO WE NEED TO BE AWARE OF TODAY?

Examples

- **Patients:** are there two patients with similar names; patients with challenging behaviour; wandering patients; falls risk; self harm risk; or deteriorating patients?
- **Professionals:** are there agency, locum or new staff who may not be familiar with environment/procedures?
- **Processes:** do we have: new equipment or new medicinal products (are all staff familiar with these?); missing charts; isolation procedures required; or care bundles for the prevention and control of medical device related infections?
- **Patterns:** are we aware of any recent near misses or recently identified safety issues that affected patients or staff?

Heads-up for today

- Challenges e.g. illness related leave, staffing levels, skill mix, demand surges.
- Meetings/training sessions staff need to attend e.g. mandatory training.
- New initiatives/information e.g. new protocols; feedback from external groups.
- Any other safety issues or information of interest to the team – has this been communicated to the team e.g. notice board/communication book/ patient status at a glance (PSAG) board/ other communication system etc.

Patient Feedback

- Update on actions from recent patient feedback on their experience (complaints, concerns or compliments) that we need to be aware of today?

Follow-ups	Issues raised previously (confirm included on existing risk register if appropriate), solutions introduced or being developed. For those involved in the 'productive ward' initiative this is an opportunity to review the 'safety cross' data and any improvements.
Team morale	Recent achievements, compliments from patients and what works well.

Acknowledgements:
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An initiative of the Quality and Patient Safety Directorate, May 2013

For further informaton see www.hse.ie/go/clinicalgovernance

Tús Áite do Shábháilteacht Othar
Patient Safety First

Rationale

Health professionals, particularly junior staff (Apker et al. 2007; McFetridge *et al.* 2007), may find it difficult to discern the relevant information to hand over in a given scenario (McFetridge *et al.* 2007; Philibert *et al*. 2009). The literature suggests that clinicians may rely on professional judgement concerning the information items to pass on (Wilson *et al.* 2005), that more experienced staff may be better able to prioritise information (McFetridge *et al.* 2007) and may deliver a more effective clinical handover as a result (Poot *et al.* 2013).

The information transferred at clinical handover can often be highly variable (Thakore and Morrison 2001; Carter *et al.* 2009; Evans *et al.* 2010; Bump *et al.* 2011; Maughan *et al.* 2011; Health Foundation 2011; Ilan *et al.* 2012; Poot *et al.* 2013) or irrelevant for patient care (Jenkin *et al.* 2007). As such, professionals may benefit from guidance in relation to the key information to be transferred at clinical handover, either captured by a checklist or structured form, or prompted through the use of a mnemonic. Defining the content to be handed over may also mitigate the risk of 'diagnosis momentum', whereby the clinician overestimates the information and knowledge already possessed by the receiving professional (Riesenberg 2012; Beach *et al*. 2012), by creating shared expectations and predictability around the information to be communicated (Leonard *et al.* 2004).

Clinical handover content needs to be relevant to the clinical context and handover scenario in which it is occurring and essential data items should be agreed by the clinical leaders (SA Department of Health (2013a)). Key data items to hand over in various clinical handover scenarios have been suggested, including: during shift clinical handover (BMA 2004; Royal College of Paediatrics and Child Health 2005; RCSE 2007; Solet *et al*. 2006; Bump *et al*. 2011); ED to ICU (McFetridge *et al*. 2007), within the ED (Klim *et al*. 2013), and during transfer from critical care to hospital ward (NICE 2007). Several studies have reported errors of omission of clinical handover content (Anumakonda *et al*. 2011; Tanaka *et al*. 2012; Venkatesh *et al*. 2015).

The evidence indicates that, when conducted according to a standardised protocol, improved clinical handover quality can result, as indicated by the following outcomes: improved communication (Breuer *et al*. 2015) and information sharing (Senger *et al*. 2015) improved data transfer (Ferran *et al*. 2008; Lyons *et al*. 2010), increased amount of relevant clinical information transferred (Berkenstadt *et al*. 2008; Weiss *et al*. 2013), improved completeness of data recording (Lee *et al*. 1996) and improved follow-up of tasks handed over at shift change (Stahl *et al*. 2009); and more tests followed up appropriately (Pincavage *et al*. 2015).

Using a checklist or structured template during inter-departmental clinical handover has been associated with improvements in the completeness of data transfer (Karakaya *et al.* 2013; Zavalkoff *et al.* 2011; Salzwedel *et al.* 2013) and reductions in omissions and technical errors (Joy *et al.* 2011; Craig *et al.* 2012a; Coutsouvelis *et al.* 2010). ISBAR has been associated with improved transfer of information and overall clarity and organisation of communication (Marshall *et al*. 2009).

The WHO Collaborating Centre for Patient Safety Solutions (2007) *Statement of Communication during Handover* recommends that health-care organisations should 'implement a standardised approach to hand-over communication between staff, change of shift and between different patient care units in the course of a patient transfer', including the use of the ISBAR tool.

Marshall *et al.* (2009) reported a higher mean total item score for pre-defined items of communication quality and significantly higher clarity when the ISBAR protocol was used for simulated telephone referrals among medical trainees and showed that the ISBAR training intervention was effective over the longer term (Marshall *et al*. 2012). Thompson *et al*. (2011) demonstrated improved participant perceptions of clinical handover, with reference to clinical handover consistency, clinical handover structure, reduced omissions of information, as well as an observed increase in the number of clinical information items transferred. Mardegan *et*

al. (2013) reported a positive staff response to the introduction of the ISBAR for use in clinical handover between ward staff and the arriving medical emergency team.

One author (Pillow 2007) recommended that while SBAR may be appropriate for rapid-response communications, it may be less suitable for shift clinical handover, in that it may not accommodate additional information elements needed during this type of clinical handover. Others (Cohen and Hilligoss 2010; Eggins and Slade 2012) suggest that mnemonics like SBAR and ISBAR may be more appropriate for one-way communication.

Several authors do recommend ISBAR for non escalation situations. For example both Thompson *et al.* (2013) and Marshall *et al.* (2009), who conducted trials, report that the ISBAR improves the content and the overall clarity and quality of communication, including during telephone referrals (Marshal *et al.* 2009).

One international reviewer of this national clinical guideline, Dr. Amy Starmer, acknowledged that we do not yet have evidence in the field to suggest that one tool might lead to fewer reductions in patient harm than another. She also identified that the field of clinical handover research is in great need of comparative effectiveness studies, to compare different organising frameworks and mnemonics.

The Joint Commission and the WHO both recommend the use of **'read back'** to ensure a common understanding of expectations (Brown 2004; Joint Commission 2006; World Health Organisation 2009). Read-back has also been identified by Spooner *et al.* (2013) and Perry *et al.* (2008) as good practice. Workforce diversity is important to respect in the adoption of effective clinical handover models and processes, that is, acknowledging that English may not be the first language of some staff members (Australian Healthcare and Hospitals Association 2009). Verbalising can potentially resolve disparities in expectations and ensure a common understanding (Siassakos *et al*. 2013) and it also can ensure that team members are aware of and recognise each other's competencies (Siemsen *et al*. 2012). Read back is also a way of improving communications (Williams *et al*. 2007; Hinami *et al*. 2009; Siemsen *et al*. 2012; Siassakos *et al*. 2013).

The Safety Pause is a very important feature of clinical handover as it provides an opportunity for staff to pause and highlight safety issues which may assist them in being proactive about the challenges they face in providing safe high quality care for patients. Emphasis on the Safety Pause as part of clinical handover has the potential to have a profound effect on patient safety in acute hospital services by focussing staff's attention on priority issues that everyone needs to know to maintain patient safety. It is based on one question '*what patient safety issues do we need to be aware of today*' – resulting in immediate actions.

Phase 1, Communication (Clinical Handover) in Maternity Services (DoH 2014), modified the ISBAR communication tool to make it more suitable for shift and inter-departmental clinical handover, promoting a two-way process with the addition of read back and the inclusion of the safety pause to identify possible risks. This modification makes the modified tool, namely $ISBAR_3$, more suitable for shift and inter-departmental clinical handover.

Pre-requisite quality assurance criteria for the Irish context from HIQA and the NCEC recommend that relevant existing National Clinical Guidelines should be specifically cross-referenced with key recommendations of all National Clinical Guidelines endorsed by NCEC. The NCEC (DoH) recommends both verbal clinical handover and the use of the ISBAR tool as a means of promoting effective communication in the following National Clinical Guidelines:

- National Early Warning Score, National Clinical Guideline No. 1 (DoH 2013),
- Irish Maternity Early Warning System, National Clinical Guideline No. 3 (DoH 2014),
- Sepsis Management, National Clinical Guideline No. 6 (DoH 2014),
- Irish Paediatric Early Warning System (PEWS), National Clinical Guideline No. 12 (DoH 2015),

$ISBAR_3$ is recommended for use in shift and inter-departmental in the Communication (Clinical Handover) in Maternity Services, National Clinical Guideline No. 5 (DoH 2014). These guidelines are supported by the best available evidence.

Fieldwork report:
It is the consensus of the GDG to recommend the $ISBAR_3$ communication tool for inter-departmental and shift clinical handover. R_3 includes Read-back and Risk in addition to Recommendations.

The national fieldwork commissioned by the GDG (Appendix 6) identified that medical staff never or rarely conducted clinical handover using a standardised tool. A small number of doctors described using a communication proforma with the ISBAR communication tool being the most frequently cited tool, particularly for telephone clinical handover.

Fifty percent of Directors of Nursing reported that nurses routinely use a standardised clinical handover tool, again the ISBAR communication tool was the tool most cited.

Health and Social Care Professionals identified that they do not routinely use a standardised clinical handover tool however, diagnostic professionals identified that they are required to use a standardised protocol when reporting urgent and non-urgent diagnostic test results.

In all observed clinical handovers, oncoming staff asked questions and/or sought clarifications however, there was no evidence that outgoing healthcare staff sought read-back verification. Some service users feared communication of key information regarding their care might not have been handed over when they were being transferred from one department to another e.g. drug treatments and allergies. They also described a fear of 'human error' when information was being passed from one healthcare professional to another.

2.2.4 Electronic clinical handover applications/templates

The following are responsible for implementation of recommendation 4:
CEO, General Manager, Hospital Manager and ICT managers of the healthcare organisation

Recommendation 4: Organisations should provide the necessary infrastructure to support effective clinical handover, including the availability of readily accessible patient information in electronic format. Where electronic clinical handover applications and templates are in use or being developed to support face-to-face clinical handover, they should incorporate the following communication tools:
- $ISBAR_3$ for both shift and interdepartmental clinical handover and
- ISBAR for urgent escalation of care.

Level of Evidence: 2-
Grade of recommendation: D

Practical guidance
Electronic applications and templates should be developed in consultation with healthcare staff.

HIQA (2015) recommends that all electronic early warning and clinical handover systems should be developed in line with National Clinical Effectiveness Committee (NCEC) quality assured National Clinical Guidelines. Computer learning algorithms and software driving the system should be developed with due consideration to the clinical parameters that have proven effectiveness. National Clinical Guidelines quality assured by NCEC and published by the Department of Health have been developed for use in healthcare organisations in Ireland only, taking into account specific requirements for the Irish healthcare setting (HIQA 2015).

Electronic tools should incorporate an anticipatory guidance element for the oncoming clinician or team for example highlighting deteriorating patients by providing the latest Early Warning Score/System (NEWS/PEWS).

Organisations should state in their policy, the approved electronic media that can be used to support clinical handover. Local solutions (systems, structures and personnel) should be facilitated by local ICT systems.

Rationale
A failure of healthcare organisations to provide readily available and up-to-date information is reported as a barrier to effective clinical handover (Grobman *et al*. 2011; Siemsen *et al*. 2012). When compared to paper-based systems, electronic clinical handover achieved a significantly higher number of completed fields and provided better continuity of care (Raptis *et al*. 2009). For electronic tools to work successfully, well described workflows with standardised procedures and protocols need to be in place, along with an effective IT system, including the possibility of mobile stations, which can be transported to the bedside to increase access (Hertzum and Simonsen 2008). Furthermore, these tools need to be developed through a participatory process with users and aim to support, not replace, good clinical handover practice, including face-to-face communications and discussion between professionals (Thomas *et al.* 2009).

Reported issues with using electronic tools to support clinical handover include access permissions (Govier *et al*. 2012), limited portability options (Staggers *et al.* 2011), failure to populate with up-to-date information (Rabinovitch *et al.* 2009; Staggers *et al.* 2011; Wilson *et al.* 2005; Govier *et al.* 2012), limited flexibility around sorting and arranging the information (Rabinovitch *et al.* 2009) and limited flexibility around adding notes (Staggers *et al.* 2011). If staff believe their original process to be adequate they may not adopt these tools (Little *et al*. 2009).

Electronic clinical handover systems have been shown to result in significant improvements in surrogate markers of patient care quality (Gibbons *et al*. 2015) and in guiding clinicians to anticipate future events (Gopalakrishnan *et al*. 2015). Studies have reported the effectiveness of electronic clinical handover systems including assisting staff to identify unstable patients and clinical concerns and providing anticipatory guidance (Gopalakrishnan *et al*. 2015).

Evidence suggests that in addition to potential gains in patient safety, electronic clinical handover systems can also result in a substantial efficiency gain in terms of the utilisation of acute hospital beds (HIQA 2015).

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified that the majority of organisations have an electronically accessible patient information system, enabling the collection, storage and retrieval of information on each patient. However, not all systems were shared between clinical departments and all were subject to an access control policy. Medical staff were reported to routinely use the electronic patient information system to support clinical handover and while nurses were reported to routinely access the system this was not to support

clinical handover. Health and social care professionals reported routine use of the electronic patient information system to support clinical handover. In addition, diagnostic professionals identified that they communicate test results requiring urgent attention using a special alert system.

Service users felt strongly that clinical handover should be computerised.

2.2.5 Safety and risk

The following are responsible for implementation of recommendation 5:
CEO, General Manager, Hospital Manager, Clinical Director and Director of Nursing of the healthcare organisation.

Recommendation 5: Shift and inter-departmental clinical handover should promote a structure which allows for data verification, discussion, shared clinical decision-making and identification of operational issues and other factors that may impact on clinical care.
Level of Evidence: 3
Grade of recommendation: D

Practical guidance
Concerns in relation to operational issues should be escalated to senior hospital management in line with the agreed organisational processes. Refer to recommendation 23 for further detail on the safety pause which can be utilised for risk assessment as appropriate. An example of operational issues could be bed availability, increased risk of cross-infection, staffing, etc.

Rationale
The literature suggests that shift clinical handover is an opportunity to verify information and identify errors in information content (Perry *et al*. 2008; Edozien 2011; Randell *et al*. 2011), and discuss operational matters (Farhan *et al*. 2010; Edozien 2011; Randell *et al*. 2011) and train junior members of staff (RCP and RCN 2012). Even when standardised tools such as ISBAR or checklists are used to structure clinical handover they should not detract from this need to verify and clarify during clinical handover (Cohen and Hilligoss 2010; Cheung *et al*. 2010).

Clinical handover at shift change can provide an opportunity to spot and mitigate errors (Randell *et al*. 2012) and is also an education and training opportunity (Royal College of Physicians and Royal College of Nursing 2012). A cross-sectional survey of Irish hospitals (Murphy *et al.* 2011) indicated that clinical problems and new admissions were discussed most frequently during clinical handover rounds, while bed management and risk management were discussed less frequently. However, shift clinical handover can provide a valuable platform for communication about operational issues (Farhan *et al.* 2010; Randell *et al.* 2012) and effective communication of operational issues may improve the quality of care delivered in the subsequent shift (Farhan *et al.* 2010).

Clinical handover content needs to be relevant to the clinical context and clinical handover scenario in which it is occurring and essential data items should be agreed by the clinical leaders (SA Department of Health 2013a). Key data items to hand over in various clinical handover scenarios have been suggested, including: during shift clinical handover (BMA 2004; Royal College of Paediatrics and Child Health 2005; RCSE 2007; Solet *et al*. 2006; Bump *et al*. 2011); ED to ICU (McFetridge *et al*. 2007), within the ED (Klim *et al*. 2013), and during transfer from critical care to hospital ward (NICE 2007). Several studies have reported errors of omission of clinical handover content (Anumakonda *et al*. 2011; Tanaka *et al*. 2012; Venkatesh *et al*. 2015).

Literature review and fieldwork report:
The findings from the literature review (Appendix 5) and national fieldwork commissioned by the GDG (Appendix 6) identified clinical handover as a **risk**, (Sharit *et al* 2008), and the GDG recommended the inclusion of **The Safety Pause** (HSE 2013, Appendix 13) as part of addressing risks in the communication (clinical handover) tool for shift and inter-departmental clinical handover. In all observed shift clinical handovers oncoming staff asked questions and/or sought clarifications however, there was no evidence that outgoing healthcare staff sought read-back verification.

Some service users expressed unease at the way their clinical details had been communicated from experiences they had, particularly at points of admission and transfer of care from one department to another e.g. drug treatments and drug allergies.

2.2.6 Interdisciplinary shift clinical handover

The following are responsible for implementation of recommendation 6:
CEO, General Manager, Hospital Manager, Clinical Director and Director of Nursing of the healthcare organisation.

Recommendation 6: Healthcare organisations should implement interdisciplinary shift clinical handover where possible, to include junior and senior staff at every clinical handover during the 24 hour cycle.
Level of Evidence: 3
Grade of recommendation: D
References: British Medical Association 2004 [3]; Department of Health (Western Australia) 2013 [3]

Practical guidance
Co-ordination of rostering for interdisciplinary team members, within organisations, may provide an opportunity to achieve interdisciplinary team shift clinical handover.

Rationale
Including different professions and disciplines at clinical handover may expand the range of expertise and knowledge present, enhancing these additional purposes of clinical handover. Irish physicians have suggested that expanded interdisciplinary handover, including post-call staff at a senior-led clinical handover round, may be a way to improve the process (Murphy *et al.* 2011). Existing guidance recommends that shift clinical handover be interdisciplinary and interprofessional, where feasible (Department of Health (Western Australia) 2013) and include different staff grades, where possible (Royal College of Physicians 2004; Royal College of Physicians & Royal College of Nursing 2012). The British Medical Association (2004) suggests that day to night shift clinical handover should be interdisciplinary.

2.2.7 Handover all patients in the department/unit/ward at shift clinical handover

The following are responsible for implementation of recommendation 7:
All healthcare staff in the healthcare organisation.

Recommendation 7: All patients in the department/unit/ward must be handed over at shift clinical handover.
Level of Evidence: 4
Grade of recommendation: D

Practical guidance
Shift clinical handover transfers responsibility and accountability for all relevant patients.

Patients requiring immediate review by the incoming team should be identified as part of this process. It should be identified in local policy how this can be achieved in individual hospitals, departments, units and wards.

Rationale
Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified gaps in this practice.

2.3 Organisational recommendations

2.3.1 Recognition of clinical handover as a clinical risk activity

The following are responsible for implementation of recommendation 8:
Hospital Group Leads, CEO, General Manager and Hospital Manager of the healthcare organisation.

Recommendation 8: Healthcare organisations should recognise clinical handover as a clinical risk activity, and incorporate clinical handover into their corporate and local risk registers.
Level of Evidence: 3
Grade of Recommendation: D

The following are responsible for implementation of recommendation 9:
All healthcare staff.

Recommendation 9: Healthcare organisations and frontline clinical staff should ensure that participation at clinical handover takes priority over all other work except in emergencies.
Level of Evidence: 3
Grade of Recommendation: D

Practical guidance
The GDG recognise that patient safety and the provision of ongoing care must be ensured during the period of clinical handover.

Rationale
Ineffective communication between healthcare staff has been increasingly recognised as a factor which can contribute to patient safety incidents (White *et al.* 2005; Greenberg *et al.* 2007; Kachalia *et al.* 2007; Singh *et al.* 2007; Bongaerts *et al.* 2012, Pezzolesi *et al.* 2010; Rabol *et al.* 2011; Jones *et al.* 2011). Mistakes made during shift clinical handover may lead to negative effects in the subsequent shift (Horwitz *et al.* 2008). While health professionals are often aware of how a poor quality clinical handover can negatively impact on patient care (Sharit *et al.* 2008; McCann *et al.* 2007; Sutcliffe *et al*. 2004; Horwitz *et al.* 2009), they may also believe that errors at clinical handover are 'caught' by other professionals in the care process, and therefore believe that no detrimental harm results for the patient (Philibert *et al.* 2009). Health professionals have been observed to rate the same clinical handover event differently depending on: their speciality (McCrory *et al*. 2011), experience or relative position in the hierarchy (Reader *et al.* 2007), role as sender or receiver (Carroll *et al.* 2012; Reader *et al.* 2007), or the existing relationship between the two parties, including the level of mutual trust (Bost *et al.* 2012; Philibert *et al.* 2009; Carroll *et al.* 2012). They have also been observed to overestimate the quality of

their own clinical handovers, rating them highly in spite of the absence of data elements and the prevalence of interruptions (Woloshynowych *et al.* 2007; Bost *et al.* 2012; Carroll *et al.* 2012; Chang *et al.* 2010). They may not be aware of clinical handover as a high-risk process if their organisation does not present it as such (Siemsen *et al.* 2012). In *Good Practice in Handover*, the Royal College of Paediatrics and Child Health (2005) states that each healthcare organisation should identify which staff are relevant to attend shift clinical handover, including grades and specialties, and that attendance at clinical handover should take priority over all other work except emergencies. Physicians have indicated that clinical handover could be improved by educating staff on the importance of information transfer and highlighting its potential impact on patient safety (Sharit *et al.* 2008).

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified that all responding acute hospitals had a clinical risk management committee but that clinical handover was not a standing item on the agenda. In addition a minority of acute hospitals had a policy specific to clinical handover.

2.3.2 Guidance

The following are responsible for implementation of recommendations 10-12:
CEO, General Manager, Hospital Manager of the healthcare organisation, Clinical Director and Director of Nursing.

Recommendation 10: Healthcare organisations should review existing organisational clinical handover guidance (policies, procedures, protocols and guidelines) in collaboration with appropriate stakeholders, including healthcare staff, patients, parents/guardians of children, and carers. The local policy should clearly identify how clinical handover records are to be managed, stored and accessed.
Level of Evidence: Existing guidance
Grade of recommendation: D
References: NSW Department of Health 2009 [N/A]; Australian Commission on Safety and Quality in Health Care 2012 [N/A]

Practical guidance
Review of existing organisational clinical handover guidance is an essential step to provide the opportunity to reflect on current processes and to effectively implement recommendations.

Recommendation 11: Healthcare organisations should implement Clinical Handover procedures in compliance with this National Clinical Guideline, in consultation with relevant stakeholders. While national communication tools (templates) are included in the National Clinical Guideline, these tools (templates) may be customised locally to accommodate features of the healthcare organisation, individual departments, units or wards.
Level of Evidence: 3 and existing guidance
Grade of Recommendation: D
Reference: Department of Health (South Australia) 2013a, 2013b) [3]; Australian Commission on Safety and Quality in Health Care 2012 [N/A]; Australian Commission on Safety and Quality in Health Care (2010) [N/A]; Australia Healthcare and Hospitals Association (2009); [N/A]

Practical guidance
Where organisation policy deviates from the tools within the National Clinical Guideline the rationale for this deviation must be made explicit within the local policy.

The $ISBAR_3$ clinical handover template is the nationally recommended standardised template for conducting clinical handover for both inter-departmental and shift clinical handover. The ISBAR communication template is the nationally recommended standardised template that should be used when communicating information in relation to patients who are critically ill and/or deteriorating (see Recommendation 22).

The templates provide a standardised framework while at the same time permitting clinical handover to be tailored to the needs of each department, unit or ward. For example in the context of shift and/or inter-departmental clinical handover, the emergency department may want to include patient handover, the emergency department may want to include patient admission status and bed availability. The intensive care unit may want to include ventilation settings. Inpatient wards may want to include factors such as infection status, frailty score, Waterlow Score, social circumstances etc. This concept is known as 'flexible standardisation' and can be accommodated within the $ISBAR_3$ and ISBAR templates as required.

One international reviewer of this national clinical guideline, Dr. Vineet Arora, highlighted the importance of customising the templates for use by the end-user "for folks to buy-in to using the templates". She also identified that every specialty is different so there may be specific fields that need to be tailored accordingly.

Note: Flexible standardisation recognises the importance of ensuring that policies and procedures are relevant and appropriate for use in particular contexts of clinical handover. The standardisation which is chosen must fit the needs of the patients and clinical workforce staff involved in handover. These needs will vary widely as health services will have differing functions, size and organisation with respect to service delivery mode, location and workforce. Flexible standardised processes for clinical handover may be tailored to a local context. Effective clinical handover involves local interpretation of a standard in order to accommodate contextual factors (Australian Healthcare and Hospitals Association 2009; Australian Commission on Safety and Quality in Health Care 2013). This principle is particularly relevant to inter-departmental clinical handovers. The literature suggests that clinical handovers occurring between units should be approached somewhat differently to intra-departmental clinical handovers, including shift change, since they require a greater degree of negotiation and collaboration between specialities and professions, whose priorities and information requirements can differ greatly (Beach *et al.* 2012; Hilligoss and Cohen 2013).

Templates for the $ISBAR_3$ communication tools for inter-departmental and shift clinical handover (Appendix 12) and the ISBAR communication tool for the escalation of care relating to a deteriorating patient (Appendix 14) can be amended as appropriate.

Rationale
Several studies have indicated that there is often no clear mechanism or protocol to guide staff during clinical handover (Thakore and Morrison 2001; Bomba and Prakash 2005; McFetridge *et al.* 2007; Ye *et al.* 2007; Lawrence *et al.* 2008; Chen *et al.* 2011; Wright *et al.* 2011; Keenan *et al.* 2013; Roughton *et al.* 1996). Multi-disciplinary staff have identified the absence of formal clinical handover policy as a barrier to an effective clinical handover process (Siemsen *et al.* 2012).

The ACQSHC (2013) recommends that while healthcare organisations need an overarching policy concerning the conduct of clinical handover, 'flexible standardisation' is the key in ensuring that policies are relevant and appropriate for use in particular clinical handover contexts. Randell *et al*. (2011) suggest that electronic tools to support shift clinical handover should be designed to facilitate the practical aspects of the clinical handover process, including facilitating two-way clinical handover communications in order to permit errors to be corrected and information to be validated, and be sufficiently flexible to permit some professional discretion as to which information should be retrieved and communicated.

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) indicated that healthcare staff perceived that there was little formal policy regarding the way that clinical handover should be conducted.

Recommendation 12: Clinical handover practice is monitored and audited regularly by the relevant quality and patient safety committee of the healthcare organisation. It is the responsibility of the chair of this committee to assure the CEO/GM that the audit is undertaken and any necessary continuous quality improvements are put in place.
Level of Evidence: Existing guidance only
Grade of recommendation: D
Reference: Department of Health (South Australia) 2013a [3]; Commission on Safety and Quality in Health Care 2013 [N/A]

Practical guidance
Audit tools templates for ISBAR$_{3,}$ ISBAR and organisation compliance with the national clinical guideline are available in Appendix 11 and can be amended as appropriate. Clinical leaders should be identified from within each organisation to champion clinical handover improvement initiatives.

Rationale
Guidance from the UK (Royal College of Obstetricians and Gynaecologists 2010) and Australia (Australian Commission on Safety and Quality in Health Care 2012; Department of Health (Western Australia) 2013; Department of Health (South Australia) 2013a, 2013b) had outlined the need for clear clinical handover protocols to be developed and reviewed, at the level of the healthcare organisation.

2.3.3 Education and training

The following are responsible for implementation of recommendation 13:
CEO, General Manager and Hospital Manager of the healthcare organisation.

Recommendation 13: Healthcare organisations should provide staff with validated education and training, using a variety of techniques including workshops and simulation, to support the implementation and practice for clinical handover. This should be mandatory and form part of staff orientation/induction and ongoing in-service education.
Level of Evidence: 2++
Grade of recommendation: B
References: Department of Health (South Australia) 2013a [3]; Department of Health (Western Australia) 2013 [3]

Practical guidance
Healthcare organisations should provide protected time for healthcare professionals to attend education and training on communication (clinical handover), interdisciplinary where possible.

Quality improvement plans can be formulated following any audits undertaken by the healthcare organisation. This might include, for example, a requirement for additional education.

Rationale
Despite the frequency with which clinical handover occurs in the hospital setting, physicians in the UK (Health Foundation 2011) and US (Horwitz *et al*. 2006) have identified a lack of training and education as a barrier to an effective process. The Western Australia Department of Health (2013) clinical handover policy requires staff to be educated and trained in site policies

in relation to clinical handover, and staff training in clinical handover, communication and teamwork is stipulated in the South Australia Department of Health clinical handover guideline (2010). Guidance suggests that training should be included as part of orientation (Department of Health (South Australia) 2013a) and that junior staff should be trained in how to conduct shift clinical handovers before they lead or initiate them (Department of Health (Western Australia) 2013). This is equally important in undergraduate training (Gordon 2013). Implementation of a simulation based handover training programme has been associated with a significant reduction in medical errors and preventable adverse outcomes (Starmer *et al.* 2014).

This study employed a 'before and after' intervention methodology. The intervention included standardised written and oral clinical handovers, clinical handover and communication training and a faculty development and sustainability campaign. In 10,740 patient admissions, the medical error rate decreased by 23% from the pre-intervention period to the post-intervention period and the rate of preventable adverse events decreased by 30%. Conversely, the rate of non-preventable adverse events did not change significantly.

Across sites significant increases were observed in the inclusion of all pre-specified key elements in written documents and oral communication during clinical handover. There were no significant changes in the duration of clinical handovers.

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified that the majority of healthcare professionals including doctors, nurses and health and social care professionals receive education on clinical handover at induction but that the education did not provide a standardised process for conducting clinical handover.

2.3.4 Information giving and seeking

The following are responsible for implementation of recommendation 14:
CEO, General Manager and Hospital Manager of the healthcare organisation.

Recommendation 14: Healthcare organisations should incorporate human factors training into all clinical handover education that promotes a culture of openness and mutual respect between healthcare professionals and between healthcare professionals and patients.
Level of Evidence: 3
Grade of recommendation: D
Reference: HSE Code of standards and behaviour (2009)

Practical guidance
Education and training programmes should include formal training on the use of a structured approach for clinical handover that supports a two-way process. Human factors refers to environmental, organisational and job factors and human and individual characteristics which influence behaviour at work in a way which can affect health and safety (WHO 2009). Human factors training will foster an environment of questioning and promote confidence of staff. This should include training in effective communication methodologies in order to promote a culture of openness in the interest of patient safety and quality.

Rationale
Communication between professionals may tend towards information-giving rather than information-seeking, with limited opportunities for questions (Greenstein *et al*. 2011; Apker *et al.* 2007; Welsh *et al.* 2010) and the willingness to engage in clinical handover communication as a two-way process may differ between professional groups (Randell *et al*. 2012), depend on their role as sender or receiver (Reader *et al.* 2007), or their level of experience and relative position

within professional hierarchies (Sharit *et al.* 2008; Carroll *et al.* 2012; Reader *et al.* 2007). Existing hierarchies (Carroll *et al.* 2012) and staff relationships coupled with limited opportunity or time (Welsh *et al.* 2010) may affect the degree to which staff ask questions during clinical handover. Encouraging staff assertiveness is a recommended strategy for improving communication effectiveness within high reliability organisations (Leonard *et al.* 2004; Brindley and Reynolds 2011). Staff have indicated the need to foster respect between professionals so that hierarchies and professional relationships do not impede the successful adoption of a new clinical handover process (Siemsen *et al.* 2012). A protocol which requires staff to state their role, share opinions with and elicit feedback from other team members, may not succeed due to long-standing hierarchical structures (Rice *et al.* 2010).

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified little evidence that clinical handover education was interdisciplinary in nature. Some service users described their experience of clinical handover between healthcare professionals as 'routine' and observed it to be that 'the same things were being said'; another identified not understanding the 'jargon' used.

2.3.5 Accessing information

The following are responsible for implementation of recommendation 15:
CEO, General Manager, Hospital Manager and ICT Managers of the healthcare organisation.

Recommendation 15: Healthcare organisations ensure that all staff have access to relevant, accurate and up to date sources of information during clinical handover. Electronic patient records, including diagnostic data, should be considered as a solution for providing relevant, accurate and up to date information for, and during, clinical handover.
Level of Evidence: 3
Grade of recommendation: D
References: British Medical Association 2004 [3]; Department of Health (Western Australia) 2013 [3]; Department of Health (South Australia) 2013a [3]

Practical guidance
In terms of electronic patient records a collaborative national approach should be taken. Local solutions should be facilitated by local ICT systems.

Rationale
Health professionals working in the hospital setting often report problems with accessing information (Wilson *et al.* 2005; Astrom *et al.* 2007; Grobman *et al.* 2011; Health Foundation 2011; Siemsen *et al.* 2012), identifying this as a barrier to an effective clinical handover process (Siemsen *et al.* 2012; Grobman *et al.* 2011). Ensuring the IT infrastructure is capable of supporting staff communication and providing updated information is recommended in existing guidance (British Medical Association 2004, Royal College of Physicians 2004, Department of Health (Western Australia) 2013). This guidance recommends that professionals conduct shift clinical handover where there is easy access to information (British Medical Association 2004; Department of Health (Western Australia) 2013). Where appropriate, this information should include patient lists and laboratory and radiology data (Department of Health (South Australia) 2013a).

Using an electronically-generated template (Ahmed *et al.* 2012; Dubosh *et al.* 2012; Payne *et al.* 2012; Pickering *et al*. 2009) or template integrated and populated with data from the Electronic Medical Record (EMR) (Anderson *et al*. 2010; Graham *et al.* 2013) has been associated with improvements in data recording (Anderson *et al*. 2010; Ahmed *et al*. 2012), fewer omissions

(Graham *et al.* 2013), and improved accuracy of patient information recall (Pickering *et al*. 2009) at shift clinical handover. Auto-populated templates have been associated with reduced time spent preparing for clinical handover (Kochendorfer *et al.* 2010; Anderson *et al.* 2010; Van Eaton *et al.* 2005).

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified that approximately 50% of doctors and nurses utilise an electronically accessible patient information system to support clinical handover and that health and social care professionals routinely used an electronically accessible patient information system to support clinical handover.

2.3.6 Protected area

The following are responsible for implementation of recommendation 16:
CEO, General Manager, Hospital Manager, Clinical Director of the healthcare organisation and Director of Nursing.

Recommendation 16: Clinical handover should be conducted in an area with minimal distractions and interruptions and the organisation should determine how this may be best accommodated at the department/unit/ward level. The location should take account of patient confidentiality.
Level of Evidence: 3
Grade of recommendation: D
References: British Medical Association 2004 [3]; Department of Health (Western Australia) 2013 [3]; NSW Department of Health 2009 [N/A]

Practical guidance
Healthcare organisations should consider identifying the most appropriate venue for different types of clinical handover to achieve this where appropriate. For example, bedside and/or non-bedside clinical handover appropriate to the clinical situation.

Visual cues can be used to minimise interruptions/distractions such as a sign on the door 'DO NOT DISTURB - Clinical Handover in progress'.

Rationale
There is evidence that distractions during clinical handovers are common and that they are associated with longer duration clinical handovers (Kowitlawakul *et al*. 2015). Among the most common distractions are pagers, telephone calls, interruptions from residents/medical students, talking and noise (Anderson *et al*. 2015). Greenstein *et al.* (2011) showed that staff conversations were the most common interruption followed by clinicians arriving late. Communication processes in the hospital setting are frequently interrupted (Coiera and Tombs 1998; Lawrence *et al.* 2008; Sharit *et al.* 2008; Welsh *et al.* 2010; Aase *et al.* 2011, McSweeney *et al.* 2011; Bost *et al.* 2012; Poot *et al.* 2013). Minimising interruptions (Klim *et al.* 2013; Sharit *et al.* 2008; Poot *et al.* 2013) and conducting shift clinical handover in a designated location (McCann *et al.* 2007) has been associated with improved staff perceptions of clinical handover quality. Existing guidance recommends that healthcare organisations designate a suitable environment for clinical handover, one that is free from distractions (British Medical Association 2004, Department of Health (Western Australia) 2013; NSW Department of Health 2009). Guidance from the SA Department of Health on handover (2013a) recommends that interruptions to clinical handover should be minimised and organisational strategies developed to achieve this.

Shift clinical handover protocols that have relocated clinical handover to a designated non-clinical environment and have managed interruptions have resulted in reduced medical error rates and completeness of information handed over (Starmer *et al.* 2013; Okafor *et al.* 2013;

Sadri *et al.* 2014). However, specifying the use of a distraction-free area does not necessarily ensure that non-essential interruptions will not occur (Chen *et al.* 2011). A cross-sectional survey of Irish doctors (Murphy *et al.* 2011) indicated that the bedside was the preferred location for clinical handover rounds, with a meeting room being the next most preferable location. Clinical handover at the bedside may provide an opportunity for patient interaction.

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) noted that all observed clinical handover events were subjected to external interruptions. In total 51 external interruptions occurred in 16 observed clinical handovers. Furthermore all professionals identified 'interruptions' as a barrier to effective clinical handover with some healthcare professionals suggesting that 'clinical handover needs to be protected without interruptions as this may lead to mistakes'.

Many service users indicated that they believed that clinical handover was something that was 'done at the nurses' station'. One participant commented that clinical handover in a public place like the nurses' station was a threat to patient confidentiality: 'people are standing in the corridor, they can hear, names are mentioned [and] … so anybody could hear anything about any of the patients'.

2.3.7 Protected time for inter-departmental clinical handover

The following are responsible for implementation of recommendation 17:
CEO, General Manager, Hospital Manager, Clinical Director and Director of Nursing of the healthcare organisation.

Recommendation 17: Protected time should be designated for inter-departmental clinical handovers.
Level of Evidence: 3
Grade of recommendation: D

Practical guidance
Inter-departmental: relates to patient transfer between departments within a hospital or between two hospitals, e.g. ward to ICU within the same hospital or from one hospital to another hospital.

Protected time: Designated time within the shift in a location free from interruptions and distractions and where no other task interferes with the delivery of the clinical handover information.

Rationale
Staff report that insufficient time during clinical handover is a barrier to an effective clinical handover process (Siemsen *et al.* 2012) and this can lead to truncated or omitted information being handed over (Horwitz *et al.* 2009a). When staff need to multitask they cannot fully focus on clinical handover, which may cause delays, particularly during inter-departmental clinical handovers (Smith *et al.* 2008; Jenkin *et al.* 2007; Owen *et al.* 2009). Existing time pressure during interactions may preclude staff from engaging in questions, offering opinions and eliciting feedback even if this is stipulated in a protocol (Rice *et al.* 2010). Catchpole *et al.* (2007) found that the introduction of the new clinical handover protocol led to improvements in all aspects of the clinical handover including duration of clinical handover which was reduced from 10.8 min (95% CI +/-1.6) to 9.4 min (95% CI +/-1.29).

2.3.8 Mandatory protected time for shift clinical handover

The following are responsible for implementation of recommendation 18:

CEO, General Manager, Hospital Manager, Clinical Director and Director of Nursing of the healthcare organisation.

Recommendation 18: Healthcare organisations should ensure that there is mandatory protected time for shift clinical handover.
Level of Evidence: 3
Grade of recommendation: D
References: Australian Resource Centre for Healthcare Innovations 2013 [N/A]; British Medical Association 2004 [3]; Department of Health (Western Australia) 2013 [3].

Practical guidance
Healthcare organisations should give consideration to the most appropriate way to achieve this recommendation within their own organisation. Specific consideration should be given to clinical handover practice for NCHDs, due to the changing work patterns for this group. This could be facilitated by scheduling overlapping shifts, and mandating staff attendance.

Protected time: Designated time within the shift in a location free from interruptions and distractions and where no other task interferes with the delivery of the clinical handover information.

The GDG recognise that patient safety and the provision of ongoing care must be ensured during the period of clinical handover.

Rationale
Guidance from professional bodies has recommended that a specific time should be designated for shift clinical handover (Australian Resource Centre for Healthcare Innovations 2013; British Medical Association 2004; Royal College of Physicians 2004; Royal College of Paediatrics and Child Health 2005; Royal College of Surgeons of England 2007; Australian Commission on Safety and Quality in Health Care 2012). This should be facilitated by overlapping shifts (British Medical Association 2004; NSW Department of Health 2010; Department of Health (Western Australia) 2013); physicians have identified that a failure to provide protected time acts as a barrier to effective shift clinical handover (Health Foundation 2011). Guidance also recommends that organisational policies should stipulate that clinical handover attendance take precedence over all other work, except emergencies (Royal College of Paediatrics and Child Health 2005; Department of Health (Western Australia) 2013).

A recent report by Dr. Ciaran McLoughlin, Coroner, recommended that 'proper and effective communication should occur between staff on-call and a team coming on duty and a dedicated clinical handover time is set aside for such communications'. (Coroner Service 2013)

Fieldwork report:
The findings from the fieldwork commissioned by the GDG (Appendix 6) identified that organisations ensure protected time for clinical handover in all responding acute hospitals. However, the majority of diagnostic professionals identified that clinical handover is not a scheduled activity for them. Doctors and nurses identified that while it is a scheduled activity clinical handover is largely conducted in an unstructured way.

2.3.9 Designation of a lead healthcare professional to manage clinical handover

The following are responsible for implementation of recommendations 19:
The Clinical Director and Director of Nursing for the healthcare organisation.

Recommendation 19: Clinical handover policies should designate a lead healthcare professional to manage the **inter-departmental** and **shift** clinical handover process.
Level of Evidence: 2-
Grade of recommendation: D
References: Department of Health (Western Australia) 2013 [3]; British Medical Association 2004 [3]; NSW Department of Health 2009; Department of Health (South Australia) 2013a [3]

Rationale
Defining leadership responsibility during inter-departmental clinical handover has been shown to be successful in improving the process of clinical handover from Operating Room (OR) to Paediatric Intensive Care Unit (PICU) (Catchpole *et al*. 2013; Vergales *et al.* 2014). Specifying supervision by senior clinicians during shift clinical handover has formed a component of clinical handover protocols, which have been associated with a reduction in medical error rates and omissions (Starmer *et al*. 2013) and an increase in the completeness of information handed over (Sadri *et al.* 2014). Australian standards outline clear leadership as one of its key clinical handover principles (NSW Department of Health 2009) and guidance recommends that a leader be nominated to manage discussions during clinical handover (NSW Department of Health 2009; British Medical Association 2004), ideally the most senior clinician (Department of Health (Western Australia) 2013). This individual should have a clear and full understanding of the clinical handover process and be responsible for ensuring all participants are present and that conversations are managed (NSW Department of Health 2009).

Fieldwork report:
The findings from the national survey commissioned by the GDG (Appendix 6) show that a majority of organisations do not designate a lead healthcare professional to manage the clinical handover process. However one participant spoke about how the hierarchical structure within each consultant-led team determined who handed over to whom and what information was handed over.

2.3.10 Clarification of staff roles and responsibilities for clinical handover

The following are responsible for implementation of recommendation 20:
CEO, General Manager and Hospital Manager of the healthcare organisation.

Recommendation 20: Clinical handover policies should specify staff attendance, roles and responsibilities at clinical handover.
Level of Evidence: 3
Grade of recommendation: D
References: Department of Health (Western Australia) 2013 [3]; British Medical Association 2004 [3]

Practical guidance
This should be decided in consultation with relevant healthcare staff.

Rationale
Communication failures have been observed to arise when a key individual is missing from the conversation (Hu *et al.* 2012), i.e. staff may be not aware of the importance of their presence during a particular communication event. Existing guidance suggests that staff roles

and responsibilities during clinical handover should be clarified (British Medical Association 2004; Department of Health (Western Australia) 2013). Defining task responsibility during inter-departmental clinical handover has formed part of successful clinical handover protocol from OR to PICU/ICU (Catchpole *et al*. 2013; Vergales *et al.* 2014; Olm-Shipman *et al.* 2011), although the extent to which a protocol such as this can be successfully adopted may depend on existing 'habits' of professional interactions, along with time constraints (Aase *et al*. 2011).

The Joint Commission (USA) (2007) identified that timely, accurate, complete and unambiguous information that is understood by the recipient, reduces errors and results in improved patient safety.

Existing guidance recommends that the clinician receiving clinical handover fully comprehends, acknowledges and accepts responsibility for the patient (Department of Health (South Australia) 2013a) and that staff need to be made fully aware that responsibility is transferred along with information (Department of Health (Western Australia) 2013).

Guidance suggests that clinical handover should be a two-way, reciprocal process (Department of Health (South Australia) 2013a; British Medical Association 2004). Face-to-face communication facilitates this, allowing information to be questioned and clarified. When opportunities for questions and verification are present during shift clinical handover, health professionals have been observed to correct error and contribute to the exchange of information (Randell *et al*. 2012).

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified that not all acute hospitals have a policy specific to clinical handover.

2.3.11 Clinical handover process

The following are responsible for implementation of recommendation 21:
All healthcare staff in the healthcare organisation.

Recommendation 21: Clinical handover should:
1) be conducted face to face where possible, (**L of E**, 3, **G of R**, D).
2) be conducted verbally, (**L of E**, 2++, **G of R**, C).
3) be supported with relevant, accurate and up-to-date documentation (**L of E**, 2++, **G of R**, C).
4) facilitate two-way communication processes (**L of E**, 2++, **G of R**, C).

a) Pre-recorded clinical handover **MUST NOT** be used for shift or inter-departmental clinical handover in any circumstances (**L of E**, Existing guidance only, **G of R**, D).
b) Organisations should state in their policy, the approved electronic media that can be used to support clinical handover.

Level of Evidence: see **L of E** above
Grade of recommendation: see **G of R** above
References: British Medical Association 2004 [3]; Royal College of Surgeons of England 2007; Department of Health, South Australia 2013a [3]; New South Wales Department of Health 2009.

Practical guidance
It is recognised that there are occasions where 'face to face' clinical handover is not feasible. Clinicians should recognise that there is increased risk with this method and utilise all available tools to reduce this risk and enhance the quality of the clinical handover.

Pre-recorded clinical handover **MUST NOT** be used for shift or inter-departmental clinical handover in any circumstances. However, video recorded handover can be used as an education tool to promote reflective learning.

Rationale

Several guidelines recommend that clinical handover should comprise a written proforma, complemented by face-to-face verbal clinical handover (e.g. BMA 2004; Department of Health (South Australia) 2013). Handovers are vulnerable to failure when face-to-face communication does not occur (Arora *et al*. 2005; Philibert *et al*. 2009), and such 'failure-prone' handovers can result in uncertain decision making on patient care (Arora *et al*. 2005). The evidence indicates that the most effective elements of organisational policy on clinical handover include the requirement for all staff to be present at clinical handover and for clinical handover to happen face-to-face (Quin *et al*. 2009). Based on the evidence from a systematic review of literature of nursing clinical handovers, Smeulers *et al*. (2014) recommend the clinical handover process should incorporate face-to-face communication, structured documentation, patient involvement and use of IT technology to support the process.

Studies indicate that health professionals believe that conducting communication and clinical handover face-to-face is more reliable (Philibert *et al*. 2009; Arora *et al.* 2005; Siemsen *et al.* 2012). Guidance suggests that clinical handover should be a two-way, reciprocal process (Department of Health (South Australia) 2013a; British Medical Association 2004). Face-to-face communication facilitates this, allowing information to be questioned and clarified. When opportunities for questions and verification are present during shift clinical handover, health professionals have been observed to correct error and contribute to the exchange of information (Randell *et al*. 2012). If multiple staff members are present during face-to-face clinical handover, guidance recommends that just one individual should speak at a time, avoiding concurrent conversations (British Medical Association 2004; Royal College of Surgeons of England 2007). This recommendation is also stipulated in the Emergency Medicine Programme clinical handover protocol (HSE 2013).

Including a requirement for direct communication between laboratory and clinical staff when reporting test results, instead of merely reporting through the Electronic Medical Record, has been used to improve the process (Johnson *et al.* 2011). However, verbal communication in isolation has been identified as a mode which is vulnerable to error (Ong and Coiera 2010; Pothier *et al.* 2005; Bhabra *et al.* 2007; Craig *et al.* 2012b), as it places too much burden on memory (Astrom *et al.* 2007). Omissions have been observed to occur less frequently among physicians who also use the Electronic Medical Record or make notes during clinical handover, rather than relying solely on verbal processes (Maughan *et al.* 2011), and recall of clinical handover information has been observed to improve when aided by a printed template (Pickering *et al.* 2009). Existing guidance recommends that clinical handover be conducted verbally and supported by written documentation (South Australia Department of 2010; Department of Health (Western Australia) 2013; NSW Department of Health 2009; British Medical Association 2004) and that staff be made aware of the documentation they need to hand over in specific scenarios (Australian Commission on Safety and Quality in Healthcare 2010). According to guidance from South Australia Department of Health (2010), and the NSW Department of Health (2009), taped clinical handover is not considered an appropriate mode for any scenario.

There is evidence that communication between professionals tends towards information-giving rather than information-seeking, with limited opportunities for questions (Greenstein *et al*. 2011; Apker *et al*. 2007; Welsh *et al*. 2010). There is also evidence that different professional groups differ in their willingness to engage in clinical handover communication as a two way process (Randell *et al*. 2012) and their engagement depends on their role as sender or receiver (Reader *et al*. 2007), or their level of experience and relative position within professional hierarchies (Reader *et al*. 2007; Sharit *et al*. 2008; Carroll *et al*. 2012).

Fieldwork report:

The national fieldwork commissioned by the GDG (Appendix 6) identified that all observed clinical handover events (n=19) were conducted verbally. The majority were conducted face-

to-face (n=15) and the remaining via telephone (n=4). All clinical handovers were observed to be interactive, with an evident atmosphere that facilitated questioning. The use of read-back was observed in some cases which facilitated identification of omissions such as 'supplementary documents' and 'information about a proposed surgical intervention'.

Pre-recorded clinical handover was not observed. However, the national survey identified that pre-recorded clinical handover was used in a small number of hospitals.

2.4 Deteriorating patient recommendation

2.4.1 Communication of patient deterioration

The following are responsible for implementation of recommendation 22:

CEO, General Manager, Hospital Manager, Clinical Director and Director of Nursing of the healthcare organisation

Recommendation 22: The ISBAR communication tool should be used when communicating information in relation to patients who are critically ill and/or deteriorating.
Where a patient's condition and/or a situation is deemed to be critical, this must be clearly stated at the outset of the conversation.
Level of Evidence: 1+ (Marshall *et al*. 2009), 2- (Remaining studies)
Grade of recommendation: B
References: South Australia Department of Health 2013a
The National Early Warning Score, National Clinical Guideline No. 1 (DoH 2013)
Levels of Critical Care, *National Standards for Adult Critical Care Services,* Joint Faculty of Intensive Care Medicine of Ireland *(2011)*
Irish Maternity Early Warning System (IMEWS), National Clinical Guideline No. 4 (DoH 2014),
Irish Paediatric Early Warning System, National Clinical Guideline No. 12 (DoH 2015)
Sepsis Management, National Clinical Guideline No. 6 (DoH 2014)

Practical guidance
The GDG recognise the time critical element of communication in relation to patient deterioration. However, using the ISBAR communication tool does not prohibit parties from seeking clarification to enhance understanding of the critical nature of patient deterioration, and may be sought at any point during the communication process if required. NEWS/IMEWS/PEWS should be included as part of the communication. Communication in relation to the deteriorating patient using the ISBAR communication tool **does not** include clinical handover of responsibility.

The GDG recognise the importance of a response to communication on deteriorating and/or critically ill patients. However, the scope of this guideline does not include the response or care intervention e.g. resuscitation and care escalation such as transfer to ICU. It is important to recognise that the deteriorating patient may be critically ill requiring Level 2 Care or Level 3 Care, identified in the Levels of Critical Care, *National Standards for Adult Critical Care Services 2011*, Joint Faculty of Intensive Care Medicine of Ireland, see Appendix 15.

ISBAR Communication Tool SAMPLE Patient Deterioration	
I Identify	**Identify:** You Recipient of clinical handover information Patient
S Situation	**Situation:** Why are you calling? (Identify your concerns)
B Background	**Background:** What is the relevant background?
A Assessment	**Assessment:** What do you think is the problem?
R Recommendation	**Recommendation:** What do you want them to do?

Adapted by GDG with permission from Dr S. Marshall, Monash University, Australia.

Rationale

The SA Department of Health (2013a) recommends that a structured communication tool, ISBAR, should be used for clinical handover and customised, as appropriate, to the specialty or situation. When used by nursing staff to communicate about deteriorating patients, SBAR has been associated with a decrease in unexpected deaths and increased transfers to ICU (De Meester *et al.* 2013). When interns were trained in ABC-SBAR to hand over de-compensating paediatric patients they took less time to communicate essential content (McCrory *et al.* 2012). When used for telephone referrals where advice was sought during a simulated scenario involving the management of an unstable patient, ISBAR has been associated with improved transfer of information and overall clarity and organisation of communication (Marshall *et al*. 2009).

This guideline should be read in conjunction with:

- The Irish Maternity Early Warning System, National Clinical Guideline No. 4
- Communication (Clinical Handover) in Maternity Services, National Clinical Guideline No. 5
- Sepsis Management, National Clinical Guideline No. 6
- The Irish Paediatric Early Warning System (PEWS), National Clinical Guideline No. 12.

2.5 Radiology recommendation

2.5.1 Radiology

The following are responsible for implementation of recommendation 23:
CEO, General Manager and Hospital Manager of the healthcare facility.

Recommendation 23:
The Faculty of Radiology's QI Guidelines for the management of Critical, Urgent and Clinically Significant and Unexpected radiological findings should be implemented in all locations. Consideration should be given to the utilisation of electronic solutions for:
a) Critical and Urgent results (as an adjunct to, and documentation of, direct voice to voice or face to face communication), and
b) Clinically Significant and Unexpected findings (where direct communication is not the standard) requiring follow-up.
Level of Evidence: 4
Grade of recommendation: D
Reference: Royal College of Surgeons in Ireland (RCSI) 2015. Guidelines for the Implementation of a National Radiology Quality Improvement Programme. Version 3.0.

Practical guidance
PeerVue software is part of the NIMIS system and was recently purchased by the HSE. This software is currently being installed in public hospitals. The system permits radiologists to issue "Alerts" to clinicians with varying levels of urgency. The system does not replace the conventional report as issued for all radiological investigations. Additional information on PeerVue is available in Appendix 16.

Identification of implementation requirements around the PeerVue system is the responsibility of the Radiology National QI Programme Steering Committee, RCPI.

Where these systems are not in use, this should be incorporated in the healthcare organisation's corporate and local risk registers.

Rationale
Feedback from radiologists identified that this system has been developed for use in the Irish context.

It was the consensus of the GDG to recommend full implementation of this system nationally.

2.6 Laboratory recommendation

2.6.1 Laboratory

The following are responsible for implementation of recommendation 24:
Acute Hospital Services HSE, CEO, General Manager and Hospital Manager of the healthcare facility.

Recommendation 24:
Laboratories should have policies and assurance processes in place for clinical handover of critical results. A National Medical Laboratory Information System solution would greatly facilitate the reporting of critical laboratory results and should be implemented nationally.
Level of Evidence: 4
Grade of recommendation: D

Practical guidance
Governance and implementation requirements around the MedLIS system are the responsibility of The National Medical Laboratory (MedLis) Project Board.

Where the MedLIS system is not in use, this should be incorporated in the healthcare organisation's corporate and local risk registers.

Refer to Appendix 17 for overview of MedLIS. Education and training are key vehicles in the clinical handover pathway. It is recognised that there is often a knowledge gap regarding laboratory results where staff receiving results are not always aware of the importance of the results. Involving laboratory staff in multi-disciplinary team 'huddles' etc. may provide this education.

Rationale
It was the consensus of the GDG to recommend full implementation of this system nationally.

2.7 Additional recommendations

2.7.1 Education and training

The following are responsible for implementation of recommendation 25-27:
Higher Education Institutions (HEIs) and Professional Regulatory Bodies

Recommendation 25: Higher education institutions (HEIs) with responsibility to provide preparatory professional education, continuing education and professional development for all healthcare professionals should incorporate education and training on clinical handover practices for the deteriorating patient, inter-departmental and shift clinical handover within curricula in line with this National Clinical Guideline.
Level of Evidence: Existing guidance only.
Grade of recommendation: D
References: Department of Health (South Australia) 2013a [3].

Practical guidance
Education and training programmes should include formal training on a structured approach that supports clinical handover as a two-way process and promote assertiveness by asking questions and seeking clarification as outlined in recommendations 13 and 14.

Rationale
There is evidence that formal training in clinical handover is not being provided to health care professionals (Goldberg *et al*. 2011; Shafiq ur *et al*. 2012; Kessler *et al*. 2013). Several studies have reported the benefits of staff training in clinical handover, including education in the use of standardised tools, in terms of reduced number of missed information items (Randmaa *et al*. 2014), reduced number of defects per handoff (Petrovic *et al*. 2015); enhanced quality of referral communication (Marshall *et al*. 2009) and reduced duration of clinical handover (Sohi *et al*. 2011; Cunningham *et al*. 2012; Registered Nurses' Association of Ontario 2012). Training also improves staff attitudes to clinical handover and knowledge about clinical handover (Smith *et al*. 2015) and improves confidence in performing handoffs (Fisher *et al*. 2014; Smith *et al*. 2015). Hospitals might consider mandatory handoff training and certification to enhance awareness of the importance of clinical handover communication (Gupta 2013).

Training in clinical handover should extend to developing staff assertiveness (Leonard *et al*. 2004; Brindley and Reynolds 2011) and fostering mutual respect between professionals (Siemsen *et al*. 2012), so that professional hierarchies and inter-professional relationships do not impede the successful adoption of a new clinical handover process. There is evidence that professionals

may lack clarity about each other's role (Siemsen *et al*. 2012; McFetridge *et al*. 2007) and trust and familiarity between professionals may influence their perception of the reliability of the clinical handover data transmitted (Carroll *et al*. 2012; Bost *et al*. 2012). This suggests that inclusion of the 'identify' element of ISBAR may encourage staff to identify themselves and their professional roles at the beginning of clinical handover communication.

Fieldwork report:
The national fieldwork commissioned by the GDG (Appendix 6) identified that only 50% of training schools included specific learning activities leading to achievement of competence in clinical handover. A number of programmes included simulation training, some included learning activities as part of internship and assessment of competence during clinical practice. The ISBAR communication tool was used in approximately one third of programmes with a further one third planning to include the ISBAR tool in future programmes. Planned shared learning among disciplines was evident in only two programmes and the training schools believed that the responsibility for training in clinical handover should mainly lie with the training hospitals.

2.7.2 Guideline Implementation

The following are responsible for implementation of recommendation 26:
Health Service Executive

Recommendation 26: A communication (clinical handover) group should be established at national level to support national implementation of this guideline. This group should engage in staff consultation and apply quality improvement methodologies to ensure successful implementation and determine how communication tools such as the $ISBAR_3$ and ISBAR can best fit with existing workflows and professional relationships.
Level of Evidence: 4
Grade of recommendation: D

Practical guidance
The GDG encourage:
- Sharing of ideas and locally developed resources to avoid unnecessary duplication of work amongst healthcare organisations.
- Monitoring behaviour as part of measuring the effectiveness of implementing this guideline.

The national implementation group could decide how this could be facilitated.

2.7.3 Additional safety practices

The following are responsible for implementation of recommendation 27:
Acute Hospital Services HSE, CEO, General Manager and Hospital Manager of the healthcare facility.

Recommendation 27: Healthcare organisations should support additional safety practices that enhance clinical handover in acute and children's hospital services leading to greater situation awareness among clinicians and inter-disciplinary teams, such as implementation of:
- The National Early Warning Score, National Clinical Guideline No. 1
- The Irish Maternity Early Warning System, National Clinical Guideline No. 4
- Communication (Clinical Handover) in Maternity Services, National Clinical Guideline No. 5
- Sepsis Management, National Clinical Guideline No. 6
- The Irish Paediatric Early Warning System, National Clinical Guideline No. 12.

and incorporating briefings, safety pauses and huddles into practice.
Level of Evidence: 4
Grade of recommendation: D

Practical guidance
Quality improvement capability will be required for successful implementation and sustainability of this guideline. Therefore the national group should apply quality improvement methodologies, such as engagement strategies, testing, and measurement. This group should develop electronic resources to support implementation of the guideline.

HIQA (2015) recommends the implementation of ICT to support electronic early warning and clinical handover systems. This should be considered in the context of a standards based approach, the wider ICT agenda and the e-Health Strategy (DoH 2013), for example, timing of implementation may be part of a larger move towards electronic health record systems.

Rationale

The literature suggests that approaches to improving clinical handover must extend to system-wide changes, including cultivating a working environment where staff feel they can offer their opinions and question information (Reader *et al*. 2007; Health Foundation study 2011). There is evidence that success in introducing a new clinical handover tool or protocol is influenced by several factors, including long-standing professional relationships and staff 'habits' (Aase *et al*. 2011) as well as staff reluctance to make recommendations at clinical handover (Burton *et al*. 2010; Andreoli *et al*. 2010). Selective or partial adaptation of a tool can also impact on its successful introduction; for example, nurses may use the assessment and recommendation elements of SBAR less frequently than medical residents (Goff *et al*. 2014). Staff may report background (Ilan *et al*. 2012, Poot *et al*. 2013) and subjective elements only at clinical handover (Ilan *et al*. 2012), rather than recommendations (Ilan *et al*. 2012, Poot *et al*. 2013) or plan (Ilan *et al*. 2012) elements, out of deference to the oncoming physician (Ilan *et al*. 2012, Poot *et al*. 2013).

While the main purpose of clinical handover is to exchange patient information, it also has social, educational, organisational and planning functions (Kerr 2002, McFetridge *et al*. 2007). Several guidelines incorporate the principle that clinical handover practice should be based on good governance and leadership (e.g. SA Health 2013). Clinical leaders need to be identified who will champion good clinical handover practice (Luther *et al*. 2014).

It was the consensus of the GDG that this guideline will be of little benefit unless implementation is appropriately resourced and supported.

2.7.4 Future research

The following are responsible for implementation of recommendation 28:
Health Service Executive

Recommendation 28: Future research into clinical handover should focus on strengthening the evidence of clinical handover effectiveness by using well designed, rigorous methods.
Level of Evidence: 4
Grade of recommendation: D

Practical guidance
The GDG support the recommendation from one international reviewer that comparative effectiveness studies on the use of different organising frameworks and mnemonics should be undertaken.

Rationale
This systematic review of the literature commissioned by the GDG (Appendix 5) and other reviews have pointed to limitations in the designs and methods used to study the effectiveness of interventions aimed at improving the quality of clinical handover. One international reviewer noted that the field of clinical handover research is still in its infancy and suggested that there is a dire need for more rigorously designed studies that link clinical handover improvement programmes with important patient outcomes.

3 Appendices and References

Appendix 1: List of abbreviations

ACSQHC	Australian Commission for Safety and Quality in Healthcare
ADON	Assistant Director of Nursing
AE	Adverse Events
AHHA	Australian Healthcare and Hospitals Association
AHRQ	Agency for Healthcare Research and Quality
AIR	Australian Institute of Radiography
AMA	Australian Medical Association
AMB	Australian Medical Board
AMAU	Acute Medical Assessment Unit
AND	Assistant National Director
AORN	Association of Perioperative Nurses
APP	Application – referring to computer application
ARCHI	Australian Resource Centre for Healthcare Innovations
BIA	Budget Impact Analysis
BMA	British Medical Association
CBPR	Computer-based Patient Record
CCHMC	Cincinnati Children's Hospital Medical Center
CCU	Coronary Care Unit
CEC	Clinical Excellence Commission
CEO	Chief Executive Officer
CPICU	Cardiac Paediatric Intensive Care Unit
CPSQA	Commission on Patient Safety and Quality Assurance
DG	Director General
DoH	Department of Health
DON	Director of Nursing
ED	Emergency Department
EDMS	Electronic Document Management System
EHR	Electronic Health Record
EM	Emergency Medicine
EMP	Emergency Medicine Programme
EMR	Electronic Medical Record
EPR	Electronic Patient Records

EWTD	European Working Time Directive
FMEA	Failure Mode Effects Analysis
G of R	Grade of Recommendation
GDG	Guideline Development Group
GM	General Manager
GMC	General Medical Council
GP	General Practitioner
HCA	Healthcare Assistant
HDU	High Dependency Unit
HEAR	Handoff Evaluation Assessing Receivers
HEI	Higher Education Institute
HELiCS	Handover: Enabling Learning in Communication (for) Safety
HIQA	Health information and Quality Authority
HRE	High-Risk Events
HSCPC	Health and Social Care Professionals Council
HSE	Health Service Executive
HTA	Health Technology Assessment
ICU	Intensive Care Unit
IADNAM	Irish Association of Directors of Nursing and Midwifery
IM	Internal Medicine
IMEWS	Irish Maternity Early Warning Score
ISBAR	Communication Tool: Identify, Situation, Background, Assessment, Recommendation
$ISBAR_3$	Communication tool (Identify, Situation, Background, Assessment, $Recommendation_1$, $Read\text{-}back_2$, $Risk_3$)
ISD	Integrated Services Directorate
IT	Information Technology
KPIs	Key Performance Indicators
L of E	Level of Evidence
LOS	Length of stay
MET	Medical Emergency Team
MICU	Medical Intensive Care Unit
NAMP	National Acute Medicine Programme
NCEC	National Clinical Effectiveness Committee
NCHD	Non Consultant Hospital Doctor
NCL	National Clinical Lead
NEWS	National Early Warning Score

NFR	Not for Resuscitation
NHMRC	National Health and Medical Research Council
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NIMIS	National Integrated Medical Imaging System
NIMT	National Incident Management Team
NMBI	Nursing and Midwifery Board of Ireland
NMPDU	Nursing and Midwifery Practice Development Unit
NPSA	National Patient Safety Agency
NSW Health	New South Wales Department of Health
ONMSD	Office of Nursing and Midwifery Services Director
OR	Operating Room
PACU	Post Anaesthesia Care Unit
PCPP	Patient Care Partnership Project
PEWS	Paediatric Early Warning Score
PICU	Paediatric Intensive Care Unit
PPPGs	Policies, Procedures, Protocols, Guidelines
QAVD	Quality Assurance and Verification Division, HSE
QALY	Quality Adjusted Life Year
QI	Quality Improvement
QID	Quality Improvement Division, HSE
RCN	Royal College of Nursing
RcoA	Royal College of Anaesthetists
RCP	Royal College of Physicians (UK)
RCPI	Royal College of Physicians of Ireland
RCSE	Royal Colleges of Surgeons of England
RCSI	Royal College of Surgeons in Ireland
RCT	Randomised Controlled Trial
RDPI	Regional Director of Performance and Integration
RN	Registered Nurse
SA Health	Department of Health (South Australia)
SAQ	Safety Attitudes Questionnaire
SHO	Senior House Officer
SIDR	Structured Inter-disciplinary Rounds
SIGN	Scottish Intercollegiate Guidelines Network
SMITH	Structured Multidisciplinary Intershift Handover

SpR	Specialist Registrar
SWOT	Strengths, Weaknesses, Opportunities, Threats
TCAB	Transforming Care at Bedside
UCD	University College Dublin
UHG	University Hospital Galway
UK	United Kingdom
USA	United States of America
VQC	Victorian Quality Council
WA Health	Department of Health (Western Australia)
WHO	World Health Organisation
WTE	Wholetime Equivalent

Appendix 2: Schedule of Guideline Development Group meetings

Communication (Clinical Handover) Guideline Development Group
Schedule of Meetings 2015

GDG meeting will be Wednesday afternoons on the third floor of King's Inns House. Dates and times as follows:

Date	Time
21/01/2015	14.00-15.00
04/03/2015	14.00-15.00
01/04/2015	14.00-15.00 postponed
06/05/2015	14.00-15.00
03/06/2015	14.00-15.00
01/07/2015	14.00-15.00
05/08/2015	14.00-15.00
12/08/2015	11.00-16.00
19/08/2015	11.00-16.00
26/08/2015	11.00-16.00
02/09/2015	14.00-15.00
23/09/2015	14.00-15.00 cancelled
28/09/2015	14.00-15.00 extra meeting prior to HSE sign off 30th Sept.
07/10/2015	14.00-15.00 cancelled
21/10/2015	14.00-15.00

Appendix 3: Guideline Development Group; Terms of reference

1.1 Context

In healthcare, effective communication involves arriving at a shared understanding of a situation and in some instances a shared course of action. This requires a wide range of generic communication skills, from negotiation and listening, to goal setting and assertiveness, and being able to apply these generic skills in a variety of contexts and situations (Victorian Government DOH 2010; Murphy *et al*. 1997).

'Clinical handover is not just a potential point of error but an opportunity that could be optimised to enhance patient safety, actually providing an informal multi-disciplinary team point within the patient's journey' (Department of Health 2014).

This guideline expands on the Communication (Clinical Handover) in Maternity Services - National Clinical Guideline No. 5 (phase 1).

Phase 1 was tasked with developing a national clinical guideline on communication (clinical handover) for in-patient maternity hospital services, this was completed and published in November 2014.

Phase 2 is tasked with developing a national clinical guideline on communication (clinical handover) within acute and children's hospital services and submit this to the NCEC for quality assurance endorsement and publication.

This is the second National Clinical Guideline on Communication (Clinical Handover) which was commissioned by the NCEC following the HIQA/Galway Report (October 2013). Details of the wider context of these guidelines can be found in the Communication (Clinical Handover) in Maternity Services, National Clinical Guideline No. 5, page 9, available at the following link: http://health.gov.ie/wp-content/uploads/2015/01/National-Clinical-Guideline-No.-5-Clinical-Handover-Nov2014.pdf

Factors that may affect timeframes for communication and clinical handover will also be considered such as:

- The European Working Time Directive (EWTD);
- Staff shortages due to retirement, leave and emigration;
- The fiscal environment.

This is not an exhaustive list and other factors may be included for discussion/consideration.

This body of work will also inform the work of other National Clinical Guidelines.

Without effective communication, competent individuals form an incompetent team (Lingard 2012).

1.2 Vision: Improved patient outcomes

The development of patient centred, evidence based communication tools and a National Clinical Guideline, for acute and children's hospital services that when implemented and utilised nationally, will optimise the process of clinical handover and improve patient safety by describing the elements that are essential for timely, accurate, complete, unambiguous and focused clinical handover of information in acute and children's hospital services in Ireland, relating to the patient's condition, both urgent and routine, to include the following:

- Professional consultations such as:
  - Team to team;
  - One profession to another;
  - Laboratory to team;
  - Radiology to team;
- Deterioration in a patient's condition;
- Transitions of care such as:
  - Clinical handover of patient care at a change of shift;
  - Clinical Handover to and from a different level of care in the same hospital for example between a ward and ICU/CCU;
  - Clinical Handover to and from a different level of care between acute hospitals for example transfer of a patient for specialist care;
  - Inter-departmental clinical handover e.g. operating theatre/emergency department to ward;
  - Communication with patients and/or their relatives, including parents/guardians of children as part of clinical handover, to ensure that a treatment plan is readily explained and understood.

The National Clinical Guideline will exclude:
- Maternity services as this is already addressed in the Communication (Clinical Handover) in Maternity Services, National Clinical Guideline No. 5;
- Discharges/transfers from acute hospitals other than transfers between acute hospitals;
- The recording of routine clinical information in a patient's clinical notes.

2.1 Role of the Guideline Development Group (GDG)

The role of the GDG is to address the communication and clinical handover recommendations of the HSE, Coroner's and HIQA Reports and make recommendations to the National Group by end 2015.

Phase 2 - The GDG will:
1. Develop a project plan with defined timelines.

2. Define the scope of the project.

3. Explore the use of electronic systems in healthcare communication and make recommendations to the National Group re: IT and alert solutions, identifying interim solutions.

4. Make recommendations on the implementation of evidence based communication tool(s) and a National Clinical Guideline for Communication (Clinical Handover) in acute and children's hospital services that when implemented and utilised nationally, will assist clear and focused communication of information relating to the patient's condition, both urgent and routine to include the following:
   - Professional consultations such as:
     - Team to team;
     - One profession to another;
     - Laboratory to team;
     - Radiology to team.
   - Deterioration in a patient's condition.
   - Transitions of care such as:
     - Clinical handover of patient care at a change of shift;
     - Clinical handover of patient care including to and from a different level of care (e.g. Model 2/3 hospital to Model 4 hospital, Ward to ICU/CCU);

- Inter-departmental clinical handover e.g. operating theatre, emergency department to ward;
- Communication with patients and/or their relatives, including parents/guardians of children to ensure that a treatment plan is readily explained and understood;

5. Develop a National Clinical Guideline to assist healthcare professionals' and service users' decision making about the process of communication and clinical handover between healthcare professionals and patients/relatives including parents/guardians of children.

6. Liaise with clinical staff representing different grades of seniority and settings to include doctors, nurses, midwives and health and social care professionals at different stages of the project as appropriate from:
   - Acute adult hospitals;
   - Children's hospital services.

7. Provide regular progress reports to the National Implementation Group – HSE/HIQA Maternity Services Investigations and provide a final report to include the GDG's recommendations by end 2015.

8. Develop, agree and recommend audit tools for healthcare professionals.

2.2 Project plan & timelines

A detailed project plan will be prepared by the GDG and approved by the National Implementation Group – HSE/HIQA Maternity Services Investigations. The GDG will provide a guideline by the end of 2015.

2.3. National and international review

The GDG will consult with national and international experts to review the proposed recommendations and materials.

2.4. Patient & public involvement

The advice of patients and members of the public will be sought throughout the project. There is patient representation on the group.

2.5. Governance

The GDG will report to the Chair of the National Implementation Group – HSE/HIQA Maternity Services Investigations.

The GDG is responsible for making recommendations to the National Implementation Group – HSE/HIQA Maternity Services Investigations, addressing the communication and clinical handover recommendations of the HSE, Coroner and HIQA Reports.

3.1 Membership of the GDG

Membership nominations were sought from a wide variety of sources so as to be as representative of all key stakeholders within the health care arena. The GDG may, from time to time, co-op expertise from relevant sources as required.

Name	
Dr. Dorothy Breen	Co-Chair
Ms. Eilish Croke	Co-Chair
Ms. Celine Conroy	Project Manager
Ms. Emma Benton	Therapy Professions Advisor & Portfolio Manager (Diagnostic/Support Services), Clinical Strategy & Programmes
Dr. Katherine Browne	Forum of Irish Postgraduate Medical Training Bodies - trainee nominee (surgical SpR)
Ms. Claire Browne	National Clinical Programme for Paediatrics and Neonatology
Prof. Garry Courtney	NCL, National Acute Medicine Programme
Dr. Eva Doherty	Director of Human Factors in Patient Safety RCSI
Prof. Gerard Fealy	Associate Dean for Research and Innovation UCD
Dr. John Fitzsimons	Clinical Director for Quality Improvement, HSE Quality Improvement Division
Ms. Maureen Flynn	Director of Nursing and Midwifery Quality Improvement Division, Lead Governance for Quality and Safety
Ms. Noelle Gallery	Front line clinical nurse representing children's hospitals services
Ms. Mary Godfrey	Clinical Risk Adviser, State Claims Agency
Dr. Miriam Griffin	Faculty of Pathology, RCPI
Dr. Colm Henry	National Clinical Advisor, Group Lead Acute Hospitals, HSE (GDG Sponsor)
Mr. Macartan Hughes	Head of Education & Competency Assurance. National Ambulance Service
Ms. Catherine Killilea	Area Director, NMPDU, HSE South
Mrs. Tanya King	IADNAM Representative, Director of Nursing (Mater Misericordiae University Hospital)
Mr. Louis Lavelle	NAMP Programme Co-ordinator
Dr. Gerry McCarthy	Emergency Medicine Programme, Consultant in paediatric emergency medicine
Prof. Eilis McGovern	Director, National Doctors Training and Planning, Health Service Executive
Ms. Colette Murray	Front line clinical nurse representing acute hospitals
Dr. Alan Moore	Consultant in Geriatric Medicine in Beaumont Hospital, Forum of Irish Postgraduate Medical Training Bodies -consultant nominee
Ms. Bridie O'Sullivan	Chief Director of Nursing and Midwifery – representing Group CEOs
Dr. Michael Power	NCL, Critical Care Programme
Ms. Melissa Redmond	Patient/Service user Representative
Dr. Anthony Ryan	Chair of the Quality and PCS committee of the Faculty of Radiologists, RCSI.
Ms. Mary Tierney	Patient representative, member of Patients for Patient's Safety group.
Prof. Oscar Traynor	National Surgical Training Centre, RCSI – Representing the National Clinical Programme for Surgery
Ms. Angela Tysall	Open Disclosure, Project Manager National Advocacy Unit, Quality Improvement Division, HSE
Ms. Kathleen Walsh	Professional Officer, Standards of Practice and Guidance, NMBI.
Dr. Margo Wrigley	National Clinical Programme for Mental Health

4.1 GDG process for meetings

This section outlines how the GDG will conduct or undertake the work involved and make decisions.

4.1.1 Attendance

The project manager will maintain a record of attendance, apologies and non responders. Teleconference facilities will be provided for each meeting.

4.1.2 Apologies

Apologies should be sent to the project manager in advance of the meeting. If a GDG member fails to send apologies or does not attend more than three consecutive meetings, either in person or by teleconference, the GDG chair will contact him/her to establish if they are still interested in being part of the group, or if they would like to suggest a replacement.

4.1.3 Frequency of meetings

A schedule of meetings will be agreed by the GDG. The GDG will meet monthly initially.

4.1.4 Venue

The venue for each meeting, in as far as possible, will be 200 Parnell Street, Dublin (room will be arranged by the NAMP co-ordinator) or if unavailable, an alternative suitable venue will be sourced and advised to the members accordingly.

4.1.5 Meeting documentation

The project manager will forward relevant documentation to the GDG at least three working days in advance of the meeting, including:

- Meeting notes of previous meeting
- Agenda
- Other relevant supporting documentation

4.1.6 Decision making

The agenda will identify items that require decisions to be made at the meeting. Where GDG members are unable to attend, in person or by teleconference, they may submit comments to the project manager, by email, by 5pm on the day prior to the meeting. The project manager/chairperson will bring forward all comments received for consideration by the GDG in attendance. Decisions will be made by GDG members attending the meeting and brought to the subsequent National Implementation Group – HSE/HIQA Maternity Services Investigations for sign off. The meeting notes will detail such decisions to GDG members who were not in attendance.

4.1.7 Administrative support

The project manager will coordinate meetings and note taking etc. Materials will be prepared by the project manager and sent to group members three working days in advance of the meetings.

4.1.8 Conflict of interest

Each participant on the group will be asked to sign of form declaring any conflict of interest.

Appendix 4: Barriers and facilitators and SWOT analysis

National Clinical Guideline for Communication (Clinical Handover) in Acute and Children's Hospital Services	
SWOT, Barriers & Enablers	
Strengths	• Standardisation & minimisation of variables reduces risk for patients • Standardised communication practice for all healthcare staff will ensure: - Effective transfer of patients from one care facility to another and to and from a different level of care - Minimal training requirements for staff transferring from one healthcare setting to another resulting in ease of movement of staff throughout the system • Empowering for staff
Weaknesses	• Existing practices – local preferences • Resistance to change • Lack of interdisciplinary handover practice – silo culture • Lack of sign off for handover by an appropriate clinician • No national policy • Challenge to implementing policy and monitoring adherence
Opportunities	• Develop national policy • Implement across all healthcare settings • Develop system for audit of clinical handover • Address national agenda – HSE, DoH, HIQA • eLearning programme • Interdisciplinary learning • Include education in undergraduate/post graduate education programmes • Build on existing undergraduate/post graduate / continuing professional development programmes • Patient participation • Make communication a priority in patient safety • Inform the design of an electronic tool • HIQA Reviews
Threats	• Needs full support from high level HSE • Existing tools • Resistance to change from staff • Lack of compliance • Lack of clarity re: responsibility for implementation, monitoring and sustainability • lack of audit and quality improvement initiatives
Barriers	• Resistance to change • Lack of effective leadership • Lack of corporate and clinical governance arrangements • Lack of clearly identified roles and responsibilities • Lack of resources - location where the handover takes place - rostered handover time • Lack of education and training • Lack of IT support for evaluation and audit • Lack of standardised IT systems in general • Breadth of remit across all acute hospitals both clinical and diagnostic
Enablers	• Committed staff at senior level and in the clinical areas • Effective leadership • Effective governance arrangements to include clear accountability and authority • Clearly identified roles and responsibilities • Multi-disciplinary team working • IT support • Dissemination of information • Robust patient safety culture • Build on existing education and training for staff • HIQA as a regulator

Appendix 5: Systematic literature review

Clinical handover in acute care services: A systematic review

A systematic review of literature conducted on behalf of the National Communication (clinical handover) sub-group/Guideline Development Group of the HSE

Commissioned by the Clinical Effectiveness Unit, Department of Health

Gerard Fealy, Marina Zaki, Suzanne Donnelly, Gerardine Doyle, Maria Brenner, Elaine Mylotte

September 2015

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1. INTRODUCTION AND BACKGROUND

1.1 Introduction

Effective communication in acute care settings is essential to the provision of safe and reliable patient care (World Health Organisation 2009). One element of communication is handover, or 'handoff', which is defined as occurring 'when patient information and responsibility for care are passed from one clinician to another' (Kuester *et al*. 2014, p. S247). The point at which a patient's care is handed over from one healthcare professional or one clinical team to another carries inherent risks to patient safety (Arora *et al.* 2005; Arora and Johnson 2006; Sharit 2008; Manser 2011). Effective, evidence-based clinical handover is therefore an essential element of patient safety practices in acute care settings.

1.2 Aims and objectives of the review

The aim of this systematic review was to conduct a systematic search and review of literature on clinical handover systems and practices used in acute care settings, in order to provide robust evidence with which to inform the development of national guidelines on clinical handover for use in acute hospitals in Ireland. The objectives of the systematic review of literature were to:

1. Conduct a systematic search of published literature on clinical handover in acute hospital services, including children's hospitals
2. Review literature on cost and resource impacts of clinical handover improvement initiatives
3. Prepare a narrative synthesis of the evidence contained in both published and grey literature concerning the substantive topic
4. Propose recommendations on clinical handover in acute hospital services that could be incorporated into national multi-disciplinary clinical guidelines on clinical handover for use in acute hospital services in Ireland.

For the purpose of this review, clinical handover is taken to incorporate both the transfer of information and the transfer of clinical responsibility and accountability for the patient. The recommendations are presented in the unabridged review and are reflected in the clinical guideline statements of the guideline document.

2. DESIGN OF THE REVIEW

2.1 Search strategy and search terms

The design of the review was informed by the National Clinical Effectiveness Committee (NCEC) *Clinical Guidelines Development Manual 2013* (NCEC 2013). For the purpose of this review, the PICOS were modified to include 'healthcare setting' (PICOS(H)). Having conducted searches using the PICOSH, the search was refined as follows: Population, Intervention and Healthcare-settings only were applied in the searches of PubMed, CINAHL, Embase and PsycINFO. For the search carried out in the Cochrane Database for Systematic Reviews, the 'Intervention' search terms were applied.

The search strategy was informed by the search strategy employed for Phase 1 of the National Clinical Handover Guideline; however, the search strategy applied all PICOSH terms and relevant Medical Subject Headings (MeSH) terms at the outset and hence the search was systematic and independent of the search in Phase 1. The search strategy involved several steps. A preliminary search was conducted of CINAHL and PubMed to determine the scope of the review and to generate a list of the keywords. Following this, CINAHL, PubMed, EMBASE, psycINFO, the Cochrane Database of Systematic Reviews, were searched using combinations of the key words and their relevant MeSH terms. From the original review it emerged that ISBAR

and SBAR were the tools most commonly reported in the literature; accordingly, a secondary search using these terms was conducted. All searches were limited to English-language literature published from 1990 through to 31 May 2015. As the search proceeded, PICOS(H) were modified.

In order to identify clinical handover systems that might not be accessible through routine scientific database searching, a grey literature search was also conducted using the following resources: OpenGrey, HSRProj, Virginia Henderson International Nursing Library-Registry of Nursing Research, Robert Wood Foundation, Lenus, The Kings Fund, World Health Organisation (WHO), the National Academies Press, the Association of Academic Medical Colleges the Health Information and Quality Authority (HIQA) website, the (Irish) Department of Health (DoH) website, and the Irish Nurses and Midwives Organisation (INMO) website. In addition, the websites of regulatory and professional bodies and the royal colleges for healthcare professions were also searched for grey literature, including up-to-date policy documents on clinical handover.

Table 2.1 PICOHS search terms

ID	Search criteria (Filters activated: English Language. Publication date from 1990/01/01 to 2015/05/31)
Population	medical personnel, health personnel, hospital staff, medical staff, medical professional, health professional, healthcare professional, healthcare provider, nurse, physician, resident, doctor, clinician
Intervention	inter-professional communication, intra-professional communication, inter-departmental communication, intra-departmental communication, interdisciplinary communication, multidisciplinary communication communication practice, communication standard, communication method, communication tool, improving communication, communication improvement, communication failure, communication breakdown, poor communication, inadequate communication, ineffective communication handover, handoff, clinical handover, clinical handoff, patient handover, patient handoff , handover tool, handoff tool, shift change, change-of-shift, end-of-shift, shift report, shift-to-shift, inter-shift, sign-out, ISBAR, SBAR, standardised communication, standardising communication, structured communication, structuring communication, communication standardisation escalation of care, protocol
Comparison	(absence of communication standard, practice)
Outcome	Content measures: information items communicated, transferred Process outcomes: duration of communication, handover, interruptions during communication processes Staff outcomes: staff satisfaction, staff perception of safety and quality of communication Objective patient outcomes: length of stay (LOS), adverse events (AE), near misses, medical errors Subjective patient outcomes: staff perception of errors, staff perception of patient harm
Healthcare setting	Content measures: information items communicated, transferred Process outcomes: duration of communication, handover, interruptions during communication processes Staff outcomes: staff satisfaction, staff perception of safety and quality of communication Objective patient outcomes: length of stay (LOS), adverse events (AE), near misses, medical errors Subjective patient outcomes: staff perception of errors, staff perception of patient harm
Study designs	general hospital, private hospital, teaching hospital, urban hospital, acute hospital, acute services, acute care facility, tertiary hospital, tertiary referral centre, tertiary care centre, tertiary care facility, secondary hospital, paediatric hospital, children's hospital, secondary care centre, secondary referral hospital, secondary referral centre, secondary care facility

Economic evaluation

The primary objective of the economic evaluation element of the review was to identify and evaluate studies examining the cost effectiveness of clinical handover improvement initiatives and support systems, such as IT infrastructure, in acute care settings. The secondary objective was to evaluate methodologies used to inform the economic evaluation. In searching the economic literature, an economic filter developed by the Scottish Intercollegiate Guidelines Network (SIGN) was added to the keyword searches. Searches were performed using Embase Classic+Embase 1947 to Present and MEDLINE(R) In-Process and Other Non-Indexed Citations and MEDLINE(R) 1946 to Present, the Database of Abstracts of Reviews of Effects, the NHS Economic Evaluation Database, the Health Technology Assessment Database and the Cochrane Central Register of Controlled Trials and the Cochrane Database of Systematic Reviews. The reference lists of all items included were also reviewed for additional published articles not identified in the initial search strategy. Following the review of all sourced publications, a list of key author names was generated and used to conduct a further search of PubMed.

2.2 Inclusion and exclusion criteria

Inclusion criteria

Publications were included if they discussed any practice or tool used in the context of either inter- or intra-professional communications or inter- or intra-departmental clinical handover, such as team to team or one discipline to another. This included studies which:

1. assessed and evaluated existing clinical handover practices;
2. evaluated the impact of handover practices on patient and staff outcomes;
3. evaluated the impact of implementing a handover improvement initiative, including a specific handover or communication tool or electronic support, on patient and staff outcomes;
4. evaluated a training intervention aimed at improving clinical handover practice and assessed its impact on handover quality and on patient and staff outcomes;
5. described and evaluated the use of handover tools and escalation protocols.

Exclusion criteria

Published studies concerned with clinical handover during patient discharge from hospital to primary care and studies conducted outside of the acute hospital setting, such as maternity services, mental health, primary care, ambulatory care, rehabilitation, aged care, hospice care and so forth, were excluded. Publications which evaluated change management strategies to improve handover/communication, local audits of handover or communication practices were excluded. Studies which evaluated inter-professional collaboration and teamwork, as distinct from communication and handover practices, were excluded, with the exception of studies which evaluated specific elements of team performance among acute care teams. Publications reporting service user satisfaction as a means of evaluation or which discussed patient-professional communication were also excluded. Articles not based on empirical research, such as discussion and anecdotal papers, editorials and commentary pieces, and replies and author responses to published articles were excluded.

Economic evaluation inclusion and exclusion criteria

The titles and abstracts of papers identified through the searches outlined above were assessed for inclusion if they: applied cost-effectiveness analyses; were conducted in acute hospital settings; involved handover improvement initiatives and/or handover tools; and measured effectiveness with reference to patient and/or staff endpoints. Studies were excluded if they were assessed to be methodologically unsound. The quality of studies was assessed using the *British Medical Journal* checklist for economic evaluations (Drummond and Jefferson 1996).

2.3 Data abstraction, quality appraisal and synthesis

Data abstraction was undertaken according to the search criteria. Two reviewers pre-screened all search results for possible inclusion. Data were abstracted using *a priori* checklists, which included definitions of terms, constructs and concepts, study designs and key findings. Search outcomes were reported numerically (Table 3.1 and Table 3.2) and using the PRISMA framework (Figure 3.1). Identified publications were categorised by type, e.g. reviews, empirical studies, discussion articles, and so forth. Included empirical studies were critically examined with reference to: objectives; study setting (country, healthcare setting); clinical setting; study participants; methodology; description of intervention/handover improvement initiative; the main outcome measures; results for the main outcome measures; limitations and any additional information that potentially affected the results.

Studies were also assessed for internal validity using the Critical Appraisal Skills Programme (CASP) appraisal tools (http://www.casp-uk.net/) and the checklists published by the Scottish Intercollegiate Guidelines Network (SIGN). Included guidelines and standards were assessed in accordance with *The National Quality Assurance Criteria for Clinical Guidelines* (HIQA 2015). A search for relevant clinical guidelines and escalation protocols was also conducted and these were appraised using the 'rigour of development' domain as described by the *National Quality Assurance Criteria for Clinical Guidelines* (HIQA 2015, p.15). In addition clinical guidelines identified in other jurisdictions were appraised using AGREE II criteria (Brouwers *et al*. 2010; HIQA 2015). The findings of the review are presented in a narrative synthesis, supplemented with tabular summaries.

3 FINDINGS

3.1 Introduction

The systematic review monograph is presented under the following main headings: Findings; Discussion; Conclusions and Recommendations. The Findings section is presented in headings and subheadings that include: search outcomes; article types; communication, handover and patient safety; guidance and standards; the evidence base; Indicators of handover quality; barriers and enablers; handover improvement initiatives; education and training interventions; and economic evaluation studies. The monograph includes an evaluation of the evidence base for published handover policies and guidelines, including escalation protocols.

3.2 Search outcomes

When PICOSH search terms were initially deployed in combination when searching the individual databases, the searches yielded the following results: PubMed =3336; CINAHL = 474 items; EMBASE =6,156; PsycINFO = 479; the Cochrane Central Register of Controlled Trials =112 (Table 3.1). Of these numbers, 47 duplicate items were identified in the PubMed; EMBASE and PsycINFO data bases and, once identified, were excluded. This resulted in a total of 10,512 items for the data bases.

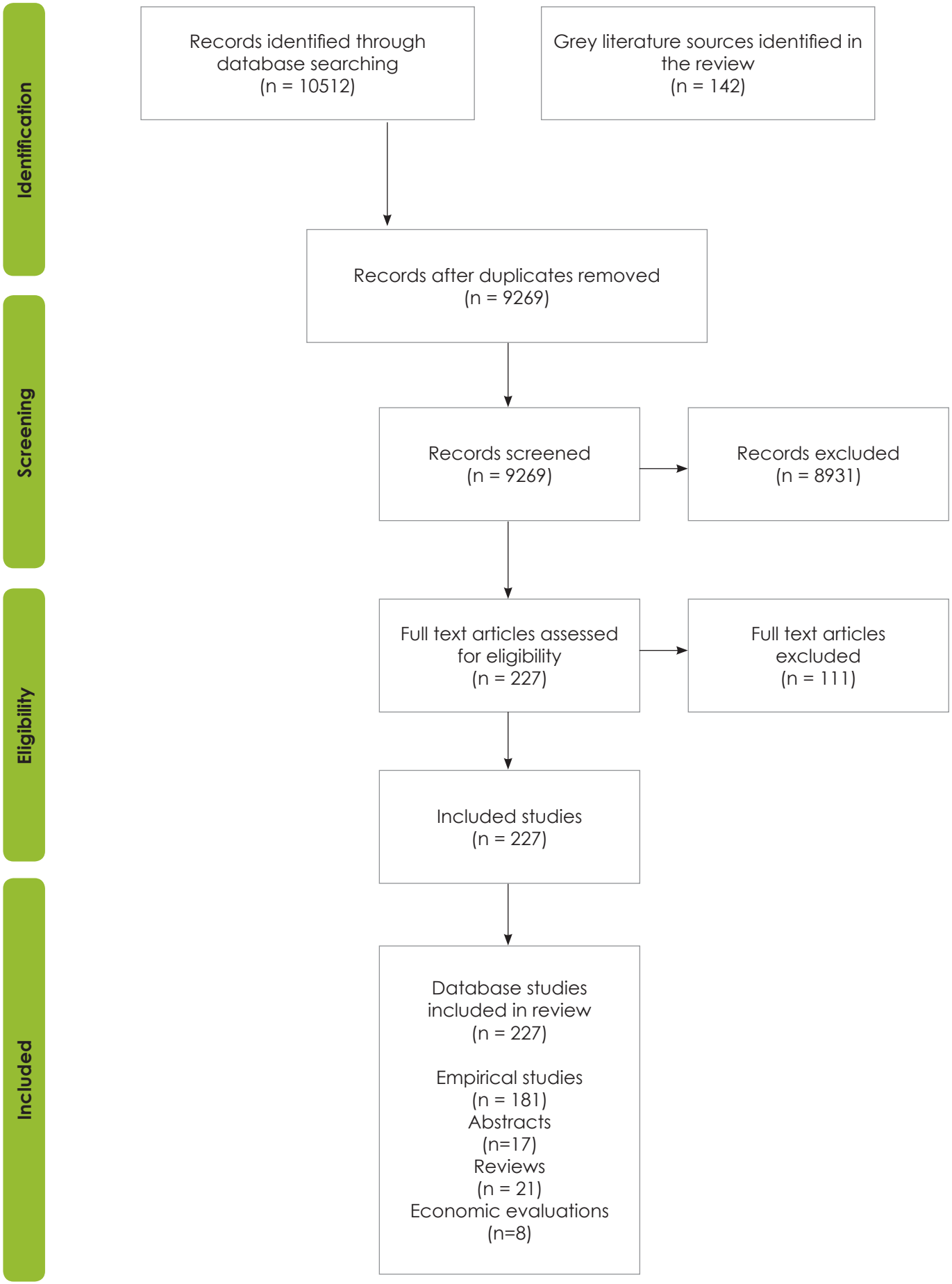

Figure 3.1 Article search and selection process using the PRISMA framework

Table 3.1 Search outcomes for five data bases searched

Database searched	Original search results number	Number of duplicates found	'Unfiled': New results after de-duplication
PubMed	3,337	1	3,336
CINAHL	474	0	474
EMBASE	6,156	40	6,116
PsycINFO	479	5	474
Cochrane	112	1	112
Totals	**10,558**	**47**	**10,512**

The search results from all databases were then combined and this search yielded a total of 1,243 duplicates. Once these were excluded, the total number of items retrieved was 9,262 (Table 3.2) and these were then examined for inclusion by title. This process resulted in the exclusion of 8,931 items, resulting in the inclusion of 331 items for review by abstract. This stage of the process resulted in a further 104 items being excluded, resulting in the inclusion of 227 items in the final review. The outcomes from the search strategy, using the PRISMA framework, are presented in Figure 3.1 below.

Table 3.2 Search outcome: Combined databases in Endnote (05/06/2015)

Total number of references	10,512
Number of duplicates found	1,243
Official number of references ('unfiled')	9,269

The search outcomes were managed in Endnote.

3.3 Findings: article types

Guidelines and protocols for clinical handover and escalation of care

We found a total of 19 statements, standards and best-practice guidelines on clinical handover from various bodies, including World Health Organisation (WHO) (2009); the Joint Commission (US) (2006); the British Medical Association (BMA) (2004); the Australian Medical Association (AMA 2006); and the Australian Commission for Safety and Quality in Healthcare (ACSQHC) (2010a, 2010b, 2012, 2014)[Wong, 2008].

The grey literature search revealed published guidelines specific to clinical handover from several professional bodies in the UK, including the Royal College of Physicians (RCP) (2004, 2011), the Royal College of Surgeons (RCS) (2007), the Royal College of Surgeons of England (RCSE) (2007); the Royal College of Paediatrics and Child Health (RCPCH) (2005) and the BMA issued its *Safe handover: Safe patients* guidelines in 2004 (BMA 2004). In Australia, the main statutory bodies for healthcare have also published specific guidelines on clinical handover; these include the ACQSHC (2010a, 2010b, 2012), and the various government departments of health in the Australian states and territories. The Royal Australian College of General Practitioners (2013) and the New Zealand College of Anaesthetists (2013) have similarly published guidelines on communication and clinical handover.

One guideline on clinical handover published by the Irish Department of Health (DOH 2014) was uncovered in the search of grey literature. While it is specific to maternity services, this guideline is entitled *Communication (Clinical Handover) in Maternity Services National Clinical Guideline No. 5* (DOH 2014) and is included here as it represents the first phase of a project to develop a series of national guidelines on clinical handover in Ireland. In addition, we found three national guidelines published by the Irish Department of Health (DOH), which incorporated clinical handover as an intrinsic component. These were: the *National Early Warning Score National Clinical Guideline No. 1* (DOH 2013); the *Irish Maternity Early Warning System National Clinical Guideline No. 4* (DOH 2013); and the *Sepsis Management National Clinical Guideline No.* 6 (DOH 2014). In addition the Irish Health and Quality Information Authority (HIQA) published *Health Technology Assessment of the use of Information Technology for Early Warning and Clinical Handover Systems* (HIQA 2015), which presented a health technology assessment (HTA) of the use of information technology for early warning and clinical handover systems. In addition, the Irish Department of Health's *e-Health Strategy for Ireland* report (DOH 2013) has relevance for clinical handover in that patient information to support handover activities will be stored in the proposed new national IT-based integrated system.

Review articles

Twenty-one review articles were identified through the literature search (Arora *et al.* 2009; Riesenberg *et al.* 2009a; Riesenberg *et al.* 2009b; McArthur 2010; Nagpal *et al.* 2010; Riesenberg *et al.* 2010; Kapadia and Addison 2011; Ong and Coiera 2011; Foster and Manser 2012; Segall *et al.* 2012; Flemming and Hubner 2013; Li *et al.* 2013; Moller *et al.* 2013; Russ *et al.* 2013; Weldon *et al.* 2013; Sherman *et al.* 2013; Robertson *et al.* 2014; Kitson *et al*. 2014; Anderson *et al*. 2014; Abraham *et al.* 2014). Additionally, one review article examined information and ICT interventions aimed at improving clinicians' communication (Wu *et al.* 2012) and the search uncovered one Cochrane systematic review which examined the effectiveness of different nursing handover styles (Smeulers *et al*. 2014).

Empirical studies[1]

The literature search identified numerous published studies that examined clinical handover practices in acute care services using a variety of methods. Observation studies (e.g. Berrios *et al*. 2014; Anderson *et al*. 2015; Kowitlawakul *et al*. 2015) and staff surveys (e.g. Krug *et al*. 2015;

1 For the purpose of this review empirical studies include all study types in which research data were generated.

Prochaska *et al*. 2015) were the most common means of eliciting evidence of practices and/or outcomes of handover improvement initiatives. Focus groups (e.g. Zagli *et al*. 2012; Murray *et al*. 2013; Pascoe *et al*. 2014) or semi-structured interviews with staff (e.g. Siemsen *et al*. 2012; Tiggle 2013; Hilligoss *et al*. 2014), or mixed methods approaches, typically combining some or all of surveys, interviews and observations were also commonly reported (e.g. Philibert 2009; Klim *et al*. 2013). Two articles reported experimental studies comparing communication modes (Pothier *et al*. 2005; Bhabra *et al*. 2007) and two performed a failure mode effects analysis (FMEA) (Redfern *et al*. 2009; Ong and Coiera 2010). Eight articles reported retrospective analyses of incident reports or malpractice claims (Beckmann *et al*. 2004; Greenberg *et al*. 2007; Kachalia *et al*. 2007; Singh *et al*. 2007; Pezzolesi *et al*. 2010; Rabol *et al*. 2011; Bongaerts *et al*. 2012). Of the intervention studies involving handover improvement initiatives, 61 articles reported a staff education and training initiative as either the primary intervention or a component of an intervention.

Excluding economic evaluation studies, the literature search identified 112 empirical studies which investigated the effectiveness of handover communication tools or practices, 17 were conference abstracts and 15 were pilot studies. Of the total number of intervention studies, 85 employed a before-and-after intervention design. One reported a randomised controlled trial (Downey *et al.* 2013) and one used a controlled, randomised before-and-after intervention design (Weller *et al.* 2014). Eleven intervention studies involved randomisation and control elements. One used a before-and-after design for the first stage, followed by a randomised trial for the second (Salzwedel *et al*. 2013). Four qualitative research designs were used to investigate the effectiveness of handover communication tools or practices (Lingard *et al*. 2005; Rice *et al*. 2010; Aase *et al*. 2011; Vardaman *et al*. 2012). Ten articles reporting the use of a retrospective audit or post-intervention review of practice and one longitudinal study of three phased interventions were also found (Craig *et al*. 2012b).

Reports of practice innovation

Several articles reported on clinical handover improvement initiatives; of these a number reported pilot studies using SBAR, ISBAR or ISoBAR. Some described the development and testing of bespoke mnemonic tools. Several articles advocated the use of SBAR or other mnemonic, but few offered robust empirical evidence to support their assertions.

3.4 Guidance and standards for clinical handover

The literature search uncovered published guidelines specific to clinical handover from several state statutory bodies and regulators of health professionals. There follows a synthesis of the key recommendations from these guidelines.

Key recommendations on clinical handover in published guidelines

Several guidelines incorporate principles on which clinical handover should be based; these include good governance, leadership (e.g. SA Health 2013), a team approach in handover (e.g. AMA 2006; Department of Health (Western Australia) 2013; SA Health 2013) and patient involvement in the process (e.g. Joint Commission 2006; ACSQHC 2012; Department of Health (Western Australia) 2013). The OSSIE guide recommends that staff should know the purpose of the handover, know the information that they are required to communicate at handover and be aware of the documentation necessary to hand over (ACSQHC 2010b). The ACQSHC (2013) also proposes that while healthcare organisations need an overarching policy concerning the conduct of clinical handover, 'flexible standardisation' is the key in ensuring that 'policies and procedures are relevant and appropriate for use in particular contexts of handover'. Handover should be monitored, evaluated and reported to a recognised clinical governance body, and high risk handover scenarios, in particular, should be identified and monitored and audited for their effectiveness (Department of Health (South Australia) 2013a).

Published guidelines on clinical handover make reference to roles and responsibilities in the process and the transfer of responsibility. Some guidelines specify the staff that should be present and define their respective roles and responsibilities in the process (NSW Department of Health 2010; Department of Health (South Australia) 2013a). In its *Good Practice in Handover*, the RCPCH (2005) recommends that each healthcare organisation should identify the staff grades that should attend shift handover and that attendance should take priority over all other work except emergencies. Several official bodies recommend that all relevant information be communicated during transfer of responsibility scenarios (GMC 2013; Australian Medical Board 2014; Royal College of Anaesthetists 2014). The GMC (2013) requires professionals to have a clear understanding of what is expected of them during handover and ensure that a named clinician or team has taken over responsibility for a patient at change of duty shift. Several other professional bodies refer to the importance of handing over or delegating to persons who are suitably qualified to assume responsibility (e.g. NMC 2008; NBMI 2013; AMB 2014; RCoA 2014). Guidelines for social workers (Social Workers Registration Board 2013) and radiographers (Australian Institute of Radiograph 2013) stipulate that professionals should use appropriate verbal and non-verbal communication, as contexts and scenarios demand.

The clinical guidelines reviewed contain many common recommendations. These include the need for governance and policy oversight of clinical handover and the need for handover to be planned and structured. Among common recommendations are the following: duty shift handovers should be facilitated at the level of the organisation through planned overlapping shifts (BMA 2004; NSW Department of Health 2010); handover should be supported by staff training in local handover policy (Department of Health (South Australia) 2013a; Department of Health (Western Australia) 2013); handover should be supported by ready access to information through a reliable IT infrastructure (BMA 2004; Royal College of Physicians 2004; Department of Health (Western Australia) 2013); handovers should be conducted in a suitable environment (BMA 2004; RCPCH 2005; Department of Health (Western Australia) 2013).

Several guidelines recommend that handover should take place with sufficient protected time (e.g. BMA 2004; RCP 2004; Joint Commission 2006; RCSE 2007; NSW Department of Health 2009; ACSQH 2012), close to areas of work that are most frequently used, in an area sufficiently large for all relevant staff to attend (BMA 2004), and be free from interruptions and distractions (e.g. BMA 2004; Joint Commission 2006). In addition, handover personnel should have access to supplementary clinical information, such as lab reports, X-rays and so forth (e.g. BMA 2004; Department of Health (Western Australia) 2013). Several guidelines recommend that handover should comprise a written proforma, complemented by face-to-face verbal handover (e.g. BMA 2004; Department of Health (South Australia) 2013).

Many official bodies support patient involvement in the handover process (e.g. AMA 2006; Joint Commission 2006; NSW Health 2009; SA Health 2013a, 2013b; Western Australia Health 2013). However, some guidelines advocate professional judgement on the information that is appropriate to hand over at the bedside, in the interest of patient privacy (NSW Health 2009) and of protecting sensitive information, such as test results, communicable diseases and social and family issues (Queensland Health 2013). Some policy guidelines also recommend facilitating team discussion (RCSE 2007), having a nominated leader to manage the process (BMA 2004; NSW Department of Health 2009), using 'read back' to ensure a common understanding of expectations (Joint Commission 2006) and having a short briefing to facilitate situational awareness (RCSE 2007).

The majority of published guidelines recommend that clinical handover should be standardised and conducted according to a written proforma, complemented by face-to-face verbal handover (e.g. BMA 2004; Department of Health (Western Australia) 2013; SA Health 2013a). Some guidelines recommend avoiding subjective language, jargon and unfamiliar or approved abbreviations (BMA 2004, Department of Health (Western Australia) 2013) and stress the importance of handing-over 'essential' information (RCSE 2007; WHO 2009). The use of handover

tools to support and augment clinical handover is widely advocated. For example, the Joint Commission (2013) supports the use of SBAR mnemonic tool during professional communications and a number of Australian state bodies also recommend the use of the ISBAR (e.g. ACSQH 2010; NSW Department of Health 2010) or ISoBAR (Department of Health (Western Australia) 2013).

3.5 The evidence base of clinical handover guidelines and escalation protocols

The review of clinical guidelines and escalation protocols examined the evidence base on which guidelines and protocols were built. The main source of such evidence was in-text citations and/or the inclusion of reference lists and bibliographies in the documents. Many of the references cited to support standard statements, were to other clinical guidelines. For the purpose of this analysis, a purposive sample of published guidelines was reviewed.

The evidence base: Clinical handover guidelines

The guidelines selected were mainly published by official statutory bodies, many of which were Australian. The *OSSIE Guide to Clinical Handover Improvement* (ACSQHC 2010) contains a list of 27 references, including a citation to a literature review on clinical handover conducted by a number of the OSSIE Guide authors (Wong *et al*. 2008). The Australian College of Emergency Medicine (2012) published a short guideline on clinical handover in the emergency department; the Guideline is supported by a short reference list, which includes the literature review published by the ACSQHC and the handover guidelines published by the AMA. The latter (AMA 2006) is a comprehensive clinical handover guideline that is supported by a list of references that includes a reference to the literature review on clinical handover and patient safety published by the ACSQHC. Conjointly prepared by the Joint Commission and the WHO Collaborating Centre for Patient Safety Solutions (2007), the *Statement of Communication during Handovers* is a short handover guideline. It contains a reference list of 22 sources, including the literature review on clinical handover published by the ACSQHC.

The Royal College of Physicians published a document entitled *Consistent structure and content standards for admission, handover, discharge, outpatient and referral records and communications*, an extensive guideline that sets out the content requirements for a range of clinical activities, including handover (RCP 2013). The report presents an extensive list of content standards that should be met in relation to achieving a consistent handover; however it does not contain a reference list. The BMA document *Safe Handover: Safe Patients* (BMA 2004) is a guideline on clinical handover aimed at medical staff and contains a small amount of supporting evidence from the literature and from good practice exemplars. The Irish Department of Health published the *Communication (Clinical Handover) in Maternity Services National Clinical Guideline No. 5* (DOH 2014), which is a guideline specific to maternity services and is supported by a systematic review of literature and expert evidence derived from a research project involving data gathering from key stakeholders. Each statement in the guideline on clinical handover is supported with evidence statements and the evidence is, in turn, graded according to the SIGN criteria.

The evidence base: Escalation of care protocols that reference clinical handover

A small number of protocols for escalation of care and/or responding to a deteriorating patient were found in the grey literature search. The number reviewed for this section was 16. All of these refer to clinical handover as part of the escalation protocol.

The UK National Institute for Health and Care Excellence (NICE) document entitled *Acutely Ill Patients in Hospital* (NICE 2007) recommends that a formal, structured handover of care should occur between the transferring and receiving teams in cases of inter-departmental transfer of a deteriorating patient. The document sets out the provenance of the guideline, including the names of the group that developed it. The SIGN Network issued consensus recommendations on

the care of deteriorating patients (SIGN 2014) that were developed through expert consensus, generated through the Delphi technique and the names of the guideline development team are listed.

The Government of South Australia's *Recognising and Responding to Clinical Deterioration Policy Directive* in (SA Health 2013) contains a reference to a review of the literature undertaken by the publisher to identify what is known about factors contributing to deterioration incidents. In a separate document, the Government of South Australia also issued Standard 9 of the ASQHS *National Safety and Quality Health Service Standards*, entitled *Recognising and Responding to Clinical Deterioration in Acute Care* (SA Health 2013a). The document presents examples of evidence against several of the required action statements. The Western Australian Government (WA 2014) also published guidelines on clinical deterioration that contain explicit statements on clinical handover and is supported by a short reference list that includes the guidelines issued by the ACSQHC.

A number of escalation of care protocols published by the Irish Department of Health (DOH) incorporate clinical handover as a component of the protocol. The *Irish National Early Warning Score* (NEWS) protocol on escalation of care recommends both verbal handover and the use of the ISBAR tool as a means of promoting effective communication at clinical handover during escalation of care (DOH 2013). The guideline is supported by an extensive list of references that includes six literature reviews on various aspects of deteriorating patients and it also contains the level of evidence and grade of evidence, as assessed using the Agree II tool (Brouwers *et al*. 2010). The *Irish Maternity Early Warning System National Clinical Guideline No. 4* protocol (DOH 2013) also recommends the use of the ISBAR communication tool when communicating information in relation to deteriorating and/or critically ill patients. This guideline is supported by a systematic review of literature. The *Sepsis Management National Clinical Guideline No. 6* (DOH 2014) is a clinical guideline for use by clinicians involved in the diagnosis and management of patients with sepsis. The guideline recommends the use of ISBAR as an element in the pathway of care for patients presenting with sepsis. The guideline is supported by a reference list containing 59 items and a review of literature on the economic impact of sepsis, and the quality of the guideline was assessed by three appraisers using the AGREE II criteria.

3.6 Studies evaluating clinical handover practices and support tools

Forty-one studies evaluated the use of mnemonic handover tools, 30 evaluated standardised checklists or proformas (e.g. Pappila and Hansson 2013; Kowitlawakul *et al*. 2015) and 36 reported on the use of electronic tools to support handover, many of which incorporated checklist formats (e.g. Gonzalo 2014; Gopalakrishnan *et al*. 2014; Agarwala *et al*. 2015; Gibbons *et al*. 2015). Three studies reported the use of web-accessible supports for handover (Van Eaton *et al*. 2005; Locke *et al*. 2009; Schnipper *et al*. 2012). An additional nine studies assessed multi-component protocols. Of those involving mnemonics in acute care settings, 19 evaluated SBAR or a derivative thereof (Adams and Osborne-McKenzie 2009; Rice *et al*. 2010) and four evaluated ISBAR (Marshall *et al*. 2009; Thompson *et al*. 2011; Marshall *et al*. 2012; Mardegan *et al*. 2013), with the remainder reporting on the use of various other types of mnemonics, such as IMIST AMBO (Iedema *et al*. 2012), SOAP and HAND-IT (Abraham *et al*. 2013), SIGNOUT (Bump *et al*. 2012) and D-BANQ (Adams and Osborne-McKenzie 2009). Several studies used SBAR as part of a training intervention (e.g. Marshall *et al*. 2012; Smith *et al*. 2015). One study used a combination of SBAR and SOAP to document elements of critical care physicians' handovers (Ilan *et al*. 2012).

Four studies examined the use of standardised checklists containing key patient information aimed at facilitating shared communication among staff members (Pronovost *et al*. 2003; Narasimham *et al*. 2006; Phipps and Thomas 2007; Agarwal *et al*. 2008). One study evaluated a structured 'cognitive aid' checklist, which contained prompts for the outgoing clinician to

present a rationale for the daily plan handed over at shift change (Weiss *et al*. 2013), one study examined the patterns of edits of an electronic handoff tool (Jiang *et al*. 2014) and one study analysed the volume and nature of medical handover tasks using an electronic handover system (Kader *et al*. 2011). Eight studies evaluated multi-component interventions (Dingley *et al*. 2008; Aase *et al*. 2011; Catchpole *et al*. 2013; Johnson *et al*. 2011; Vergales *et al*. 2014; Olm-Shipman *et al*. 2011; Starmer *et al*. 2013; Okafor *et al*. 2013; Sadri *et al*. 2014) and two studies reported the integration of electronic medical records with sign-out (Sarkar *et al*. 2007) and with handoff (Schuster *et al*. 2014).

3.7 Clinical handover and adverse patient outcomes

Retrospective analyses of patient safety incidents

Retrospective studies, which analysed malpractice claims or incident reports, have reported that communication failures may play a contributory role in adverse patient events across a variety of clinical specialities. The common contributory factor in all malpractice claims was communication breakdowns, including at clinical handover (Kachalia *et al*. 2007; Singh *et al*. 2007; Bongaerts *et al*. 2012) and during verbal interactions involving just two professionals (Greenberg *et al*. 2007).

Kachalia *et al*. (2007) reported that inadequate handoffs were among the leading contributors to cases of missed diagnosis and Pezzolesi *et al*. (2010) found that the majority of reported adverse incidents occurred at shift handover. Rabol *et al*. (2011) found that incidents often occurred during inter-departmental transfers and in cases where communication was not governed by a procedure or protocol. Arora *et al*. (2007) reported that the majority of daily sign-outs contained at least one omission error, resulting in discrepancies that had the potential to cause significant harm to patients.

Several authors reported an association between poor handoff and actual or potential adverse patient events, including uncertain decision making on patient care (Arora *et al*. 2005); a peak in the number of adverse events and a pronounced risk for medical errors (Harjola *et al*. 2013); and a high prevalence of errors in omission of handover content related to vital signs (Tanaka *et al*. 2012; Venkatesh *et al*. 2015). Anumakonda *et al*. (2011) also found omissions in information content, notably related to known patient allergies. Keuster *et al*. (2014) found an association between non-routine events and poor quality hand-off.

However, a number of studies failed to establish a clear association between clinical handover deficiencies and adverse patient outcomes (Stiell *et al*. 2003; Ye *et al*. 2007; Daud-Gallotti *et al*. 2010; Dravid *et al*. 2010; Daud-Gallotti *et al*. 2010; Gonzalo *et al*. 2014). While poor handover has been associated with adverse patient events, conversely, improved handover practice has been demonstared to result in a reduction in adverse events. For example, O'Leary *et al*. (2010a, 2011) reported a significantly lower incidence of preventable adverse events following the introduction of structured interdisciplinary rounds and Petersen *et al*. (1998) demonstrated a reduced rate of preventable adverse events following the introduction of computerized sign-outs.

Prospective observations, process mapping and fault analyses

Several studies have prospectively examined whether discontinuity of care or errors occurring during handover impacted negatively on patient outcomes. Deficiencies in clinical handover were shown to potentially impact negatively on the oncoming clinicians' ability to identify clinical deterioration and prioritising tasks (Horwitz *et al*. 2008), or to result in inefficiency, team tension, resource waste, delays, patient inconvenience and procedural error (Lingard *et al*. 2004). Failures in communication have also been observed to result from failure to include a key individual or failure to resolve an issue (Hu *et al*. 2012). Ong and Coiera (2010) reported that inadequate infection control resulting from inpatient transfers was most probably the result of a

failure at the verbal handover. Redfern *et al*. (2009) identified at least one failure mode for each of 21 communication steps in the care pathway.

Staff perceptions of communication and patient outcomes

Most studies of clinical handover and patient safety have retrospectively examined staff perceptions on the role of communication processes in patient safety (Sutcliffe *et al*. 2004; Jagsi *et al*. 2005; Sabir *et al*. 2006; McCann *et al*. 2007; Kitch *et al*. 2008; Sharit *et al*. 2008; Hinami *et al*. 2009, Horwitz *et al*. 2009; McSweeney *et al*. 2011). These studies indicate that health professionals frequently believe that omissions and errors in the information communicated at handover may have impacted negatively on patient outcomes. For example, Sharit *et al*. (2008) reported that staff cited omissions and ambiguity leading to incorrect interpretation of a communicated message as the source of failings in patient care. Similarly, Kitch *et al*. (2008) found that over half of medical residents believed that at least one patient had experienced minor harm during their most recent rotation as a result of problems with handoff and McCann *et al*. (2007) found that most nurses and senior house officers reported they had experienced a clinical problem directly related to a poor handover at least once over a three-month rotation.

3.8 Barriers and enablers of effective clinical handover

The effectiveness of clinical handover and other communication processes is, in much part, determined by enablers and barriers to effective communication. The barriers to achieving an effective clinical handover exist in the organisation and are a function of several factors, including context, culture, inter-professional relationships and the actual quality of the communication.

Barriers

Health professionals surveyed on the subject of clinical handover have reported barriers to effective handover, including a lack of organisational support structures and a lack of a formal policy for clinical handover (Health Foundation 2011; Siemsen *et al*. 2012), a failure to schedule adequate overlap time between shifts (Health Foundation 2011), a lack of education and training in handover (Horwitz *et al*. 2006; Health Foundation 2011) and a reluctance on the part of staff to comply with a standardised communication process (Wright *et al*. 2013). Several authors discuss the importance of having ready access to information to achieve effective inter- and intra-professional communications (Wilson *et al*. 2005; Åström *et al*. 2007; Grobman *et al*. 2011; Health Foundation 2011; Siemsen *et al*. 2012).

Frequent interruptions during handover are widely reported as a barrier (e.g. Chen *et al*. 2011; Bost *et al.* 2012; Murray *et al.* 2013; Siemsen *et al*. 2013; Smith *et al*. 2014) and these may be associated with staff movement in and out of the area where handover takes place (Smith *et al*. 2008). Staff attending to other tasks simultaneously is reported as a barrier (e.g. Sharit *et al*. 2008; Smith *et al*. 2008; Bost *et al*. 2012; Van Rensen *et al*. 2012). Anderson *et al*. (2015) reported that common distractions in surgical staff handover were pagers, telephone calls, interruptions from residents/medical students, talking and noise. Greenstein *et al.* (2011) identified staff conversations as the most common interruption followed by clinicians arriving late. Truncated or omitted information at handover is often the result of insufficient time (Horwitz *et al*. 2009; Siddiqui *et al*. 2012; Philibert 2009) and ineffective handover communication can result from end-of-shift fatigue (Sharit *et al*. 2008).

The working environment or social setting has also been reported as influencing staff relationships and interactions (Solet *et al*. 2005; Grobman *et al*. 2011; Smith *et al*. 2014), affecting how professionals perceive the role of clinical handover, including a failure on the part of staff to recognise the fact that clinical handover is a high-risk activity (Siemsen *et al.* 2012). A number of researchers have pointed to the role of professional interrelationships as potential impediments to effective handover (Bomba and Prakash 2005; Apker *et al*. 2007). These relational barriers

can also influence the extent to which clinical handover is a two-way process (Randell *et al*. 2012) and the degree to which staff feel that they can ask questions and seek clarification during handover (Greenstein *et al*. 2011). Information-seeking behaviour at handover may be influenced by level of experience and role as either sender or receiver of information in the exchange (Reader *et al*. 2007).

Several studies have indicated that other features of existing professional relationships may influence the effectiveness of communication. These features include the level of trust between the professionals involved (Philibert 2009; Bost *et al*. 2012) and whether the relationship of those involved is positive or negative (Carroll *et al*. 2012). Barriers may exist in a lack knowledge or recognition of the competencies of other team members (Siemsen *et al.* 2012) or the fact that different disciplines may differ in their respective need for information during handover (Beach *et al*. 2012). Kowitlawakul *et al*. (2015) found that the 'human factor' was the most common distracting factor during nursing and medical handovers of ICU patients.

The point of giving and taking responsibility for patients in clinical handover scenarios is often reported to be ambiguous, thereby impacting on handover effectiveness (Bomba and Prakash 2005; Williams *et al*. 2007; Wayne *et al*. 2008; Philibert 2009; Bost *et al*. 2012). The transfer of responsibility may be impacted by in-hospital bed shortages (Apker *et al*. 2007), a lack of appreciation as to when clinicians' responsibilities for the patient begin and end (Horwitz *et al*. 2009), or a lack of formal documentation to confirm that handover had taken place.

The most frequently-reported impediment to effective handover is the failure to communicate clear, complete and accurate information (Bomba and Prakash 2005; Apker *et al*. 2007; Lawrence *et al*. 2008; Smith *et al*. 2008; Siemsen *et al*. 2012). Several authors have reported that information communicated during handover lacks consistency and/or structure, often with no clear format or mechanism for transfer (Roughton *et al*. 1996; Thakore and Morrison 2001; Bomba and Prakash 2005; McFetridge *et al*. 2007; Ye *et al*. 2007; Lawrence *et al*. 2008; Chen *et al*. 2011; Wright *et al*. 2011; Keenan *et al*. 2013), resulting from a lack of local policies and protocols to guide the handover processes (Bomba and Prakash 2005; Horwitz *et al*. 2006; Sabir *et al*. 2006; Budd *et al*. 2007). In the absence of a defined handover protocol, practitioners may communicate certain types of information elements more frequently and more reliably than others (e.g. Evans *et al*. 2010; Bump *et al*. 2011; Maughan *et al*. 2011; Ilan *et al*. 2012), make errors or omit key information items (Aylward. *et al*. 2011; Derienzo *et al*. 2014) or distort the original communication (Owen *et al*. 2009).

The extent to which relevant information is conveyed at handover may depend on the outgoing clinician's ability to determine what information is pertinent to communicate (Philibert 2009) and this ability is partly a function of experience, a factor in handover quality (Apker *et al*. 2007; McFetridge *et al*. 2007; Horwitz *et al*. 2009b). Information quality has also been shown to be a function of differences in the perspectives and assumptions about the handover on the part of the information provider and receiver (Beach *et al*. 2012; Carroll *et al*. 2012; Riesenberg 2012; Siddiqui *et al*. 2012).

Communicating either too little or too much information may result in ineffective handover (Hinami *et al*. 2009; Welsh *et al*. 2010) and personal preferences and communication style may also impact on the quality of information exchanged (Sharit *et al*. 2008; Jenkin *et al*. 2007; Aase *et al*. 2011; Health Foundation 2011). Handovers were vulnerable to failure when face-to-face communication did not occur (Arora *et al*. 2005; Philibert 2009), when communication was not two-way and when there were no opportunities to clarify information (Philibert 2009).

Enablers

The evidence indicates that a more effective clinical handover can be achieved by having clear procedures for handovers (Health Foundation 2011; Siemsen *et al*. 2012), supportive work environments where interruptions can be reduced (Siemsen *et al*. 2012) and by educating staff

on the importance of handover and its potential impact on patient safety (Sharit *et al*. 2008). The evidence indicates that the most effective elements of organisational policy on handover include the requirement for all staff to be present at handover and for handover to happen face-to-face (Quin *et al*. 2009).

Organisational culture is also important and handover can be improved in organisations that support handover as a priority and see handover as a potential risk situation (Quin *et al*. 2009). This can be achieved, in part, by establishing a culture of communication openness in which team members feel safe in challenging each other if they have safety concerns (Reader *et al*. 2007; Health Foundation 2011). Addressing professional hierarchies and professional boundaries is also seen as a means of improving inter-professional communication (Reader *et al*. 2007; Williams *et al*. 2007; Health Foundation 2011). Additionally, several authors recommend creating an environment which limits interruption and distractions to promote more effective handover (McCann *et al*. 2007; Sharit *et al*. 2008; Klim *et al*. 2013).

Clarity on locus of responsibility for patients is viewed as essential in ensuring an effective handover process (Wayne *et al*. 2008). Accordingly, the transfer of responsibility at handover needs to be made explicit and clear (Siemsen *et al*. 2012) and tasks need to be assigned unambiguously at handover (Williams *et al.* 2007) so as to ensure continuity of care across shifts (Philibert 2009).

Face-to-face communication is advocated as a way of ensuring effective handover among nursing staff (Welsh *et al*. 2010), medical and nursing staff (Siemsen *et al*. 2012), medical interns (Arora *et al*. 2005), paediatric residents (McSweeney *et al*. 2011) and PICU physicians (Sharit *et al*. 2008), in that it facilitates clarity and comprehension (Welsh *et al*. 2010) and increases the accuracy of the information transmitted (Philibert 2009). Handovers that facilitate interaction and questioning enable a better understanding of patients (Ilan *et al*. 2012).

Several studies indicate that transferring information in a more systematic and standardised way may improve communication (e.g. Arora *et al*. 2005; Grobman *et al*. 2011; Bost *et al*. 2012; Siemsen *et al*. 2012; Klim *et al*. 2013) and may reduce medical errors (Welsh *et al*. 2010). Improving the quality of patient information available and making it more readily accessible and up to date can result in more effective handovers (Hinami *et al*. 2009; Philibert 2009; Grobman *et al*. 2011; Siemsen *et al*. 2012). Electronic supports should fit in with existing work processes (Sharit *et al*. 2008). Handover information should be brief, concise and relevant (Hinami *et al.* 2009; Bump *et al*. 2011; Siemsen *et al*. 2012) and presented in a common language (Sheppard *et al*. 2008). The use of read-back to verify information and close the exchange has been recommended as a way of improving communications (Williams *et al*. 2007; Hinami *et al*. 2009; Siemsen *et al*. 2012) and resolving disparities in expectations and ensure a common understanding (Siemsen *et al*. 2012).

3.9 Handover improvement initiatives: Effectiveness evidence

The literature indicates that the main approaches to improving handover effectiveness can be broadly classified using the following four-part typology: 1. topic standardisation using mnemonics; 2. content standardisation using checklists or structured templates; 3. content standardisation using electronic applications; and 4. performance standardisation using multi-component handover protocols.

Topic standardisation using SBAR

Despite the widespread use and promotion of SBAR, few rigorous research studies have been reported that examined its effectiveness. Of the 13 studies and one unpublished thesis identified that evaluated SBAR, just two used a randomised controlled trial (RCT) design (Cunningham *et al*. 2012; Joffe *et al*. 2013a) to investigate its effectiveness in telephone referrals and three

studies described different analyses of the same intervention (Cornell *et al*. 2013; Cornell *et al*. 2014, Townsend-Gervis *et al*. 2014).

The trials were conducted among resident interns (Cunningham *et al*. 2012) and nurses (Joffe *et al*. 2013a) and involved a ten-minute training intervention for interns in the use of SBAR in simulated telephone referrals (Cunningham *et al*. 2012) and the adoption of SBAR, also for use in simulated telephone referrals (Joffe *et al*. 2013a). Cunningham *et al*. (2012) demonstrated improved global rating score and reduced time to present the referral, but failed to demonstrate improvement in the transfer of critical data during the referral. Joffe *et al*. (2013a) demonstrated a higher rate of reporting the reason for patient hospitalisation, but observed a failure to report data related to background and situation cues. From a follow-up analysis Joffe *et al*. (2013b) reported that when the background cue supplied was poor the receiving clinician failed to treat the cause of the clinical condition.

Two before-and-after-intervention studies demonstrated a possible association between SBAR use and improved patient outcomes (Haig *et al.* 2006; De Meester *et al*. 2013). De Meester *et al*. (2013) tested a two-hour training intervention in the use of SBAR at nursing shift handover and at nurse-to-physician handover on deteriorating patients and demonstrated a significant reduction in the number of unexpected deaths per 1000 admissions and an increase in unplanned ICU transfers in the post-intervention period. Haig *et al*. (2006) showed a reduction in medication reconciliation errors and adverse events following an intervention using SBAR. Two additional intervention studies involving SBAR showed improved performance on Foley catheter removal and reduced likelihood of readmission (Cornell *et al*. 2014; Townsend-Gervis *et al.* 2014).

The SBAR form has shown improved consistency of shift reports (Cornell *et al*. 2013); improved efficiency of the handover process, with a 60 per cent reduction in the time taken to handover each patient (Sohi *et al*. 2011); higher quality of physician documentation of patient events (Albert *et al*. 2012); increased content transferred per patient at sign-out (Bavare *et al*. 2013); and increased medical background information handed over (Grover and Duggan 2013). The introduction of SBAR is also reported to improve staff perceptions of the handover in measures of: between-group communication accuracy and safety climate (Randmaa *et al*. 2014); overall satisfaction with handover (Haig *et al*. 2006; Moseley *et al*. 2012); perceived effectiveness of communication (Ormilon *et al*. 2012); perceptions of sign-out completeness and comprehensibility (Bavare *et al*. 2013); and nurse-physician collaboration (Gerard 2012). The SBAR has also been reported to have resulted in nurses gaining a sense of legitimacy in their communications with doctors (Vardaman *et al*. 2012).

Other reported benefits of SBAR based on staff reports indicate that it is simple and easy to use (Burton. *et al*. 2010; Wyckoff 2011; Wentworth *et al*. 2012), is associated with staff satisfaction (Williamson *et al*. 2011), improves continuity of care and patient-centred communication (Williamson *et al*. 2011) and has the potential to reduce handover time (Sohi *et al*. 2011). However, other reports on the use of SBAR have suggested that staff may selectively use elements of the mnemonic, omitting the 'R' (recommendations) component (Burton *et al*. 2010; Ilan *et al*. 2013). Moreover, not all studies demonstrated improved staff satisfaction with the use of SBAR (Grover and Duggan 2013).

Topic standardisation using ISBAR

A number of studies reported the use and effectiveness of the ISBAR mnemonic tool. One intervention trial reported using ISBAR (Marshall *et al*. 2009; Marshall *et al*. 2012) and one reported a before-and-after design (Thompson *et al*. 2011). Marshall *et al.* (2009) tested the impact of a training intervention using the ISBAR protocol for simulated telephone referrals and reported a higher mean total item score for pre-defined items of communication quality and significantly higher clarity among the intervention group. Follow-up measures of communication quality at six months suggested that the ISBAR training intervention was effective over the longer term (Marshall *et al*. 2012). Thompson *et al*. (2011) used a before-and-after design to examine the

effectiveness of training in the use of ISBAR among hospital doctors and demonstrated improved participant perceptions of handover, with reference to handover consistency, structure, and information transferred. However, there was no increase in the duration of handover and no significant change in doctors' perceptions of whether the amount of information received was sufficient to meet their needs. Mardegan *et al*. (2013) reported a positive staff response to the introduction of the ISBAR for use in handoff between ward staff and the arriving medical emergency team. Published anecdotal reports suggest that the ISBAR mnemonic was successfully implemented as part of communication improvement projects (Aldrich *et al*. 2009; Finnigan *et al*. 2010).

Topic standardisation using other mnemonic tools

Ledema *et al*. (2012) demonstrated the effectiveness of the IMIST AMBO mnemonic in emergency care, in reducing handover duration, the number of questions asked and repeated content (Ledema *et al*. 2012). However, Talbot and Bleetman (2007) investigated the impact of a modified version of the MIST mnemonic, deMIST, and found a higher average accuracy in retention of verbal information by ED staff when deMIST was *not* used. Abraham *et al*. (2013) demonstrated the benefits of the HANDOFF Intervention Tool (HAND-IT) over the commonly-used problem-based tool SOAP tool among two ICU teams, in terms of fewer communication breakdowns.

Other mnemonics have been tested for their effectiveness in a range of outcome measures, including user perceptions, duration of handover and quantity and quality of information transferred (Rudiger-Sturchler *et al*. 2010; Bump *et al*. 2012; DeKosky *et al*. 2012; Connor *et al*. 2013; Gopwani *et al.* 2013; Weller *et al*. 2014). Bump *et al*. (2012) demonstrated significantly improved content of sign-outs and more consistency in the data items recorded following a training intervention for medical interns in the use of SIGNOUT. Weller *et al*. (2014) observed an increase in the number of verbalised, diagnostic options and sharing of specific information probes following a training intervention for anaesthetists in the use of the SNAPPI tool.

Other novel or bespoke mnemonic tools have been examined for their effectiveness, including dINAMO (Rudiger-Sturchler *et al*. 2010), IMOUTA (Connor *et al*. 2013) SOUND (Gopwani *et al*. 2013) and SAFETIPS (Shaughnessy *et al*. 2013). The benefits of these tools have been reported in reduced duration of shift handovers and reduced quantity of missing or wrong information communicated (Rudiger-Sturchler *et al*. 2010); improved knowledge of diagnoses, hospital course, active concerns and treatment plans and overall comfort with the handover and perceived preparedness for the shift ahead (Connor *et al*. 2013); increased proportion of successful handoffs and improved completeness of handoffs (Gopwani *et al*. 2013); and improved information transfer (DeKosky *et al*. 2012; Shaughnessy *et al*. 2013). Annex 1 summarises the studies which evaluated mnemonics.

Content standardised checklists: Between-unit handovers

The literature search revealed several studies reporting evaluation or intervention studies of standardised checklists or forms primarily for use in inter-departmental (Joy *et al*. 2011; Zavalkoff *et al*. 2011; Craig *et al*. 2012; Petrovic *et al*. 2012; Smischney *et al*. 2012; Karakaya *et al*. 2013) or PACU handover (Salzwedel. *et al*. 2013). The evidence indicates that structured handover checklists for between-unit handovers can improve completeness of information transferred (Zavalkoff *et al*. 2011); increase the quantity of information transferred (Craig *et al*. 2012a; Karakaya *et al.* 2013; Petrovic *et al*. 2012; Salzwedel *et al*. 2013), reduce parallel conversations at handover (Petrovic *et al*. 2012), reduce omissions of information (Craig *et al*. 2012a) and improve information structure and content (Achaiber *et al*. 2012). However, checklists did not impact on the number of interruptions, irrelevant information, or confusing pieces of information transferred (Karakaya *et al*. 2013), a reduction in reported technical defects occurring at handover (Petrovic *et al*. 2012) or handover duration (Zavalkoff *et al*. 2011). Just two studies (Zavalkoff *et al*. 2011; Agarwal *et al*. 2012) evaluated checklists with reference to patient outcomes and reported a reduction in the number of complications observed per patient

following the introduction of a checklist to improve handover. Handover checklists may also aid staff in deciding when to conduct handover (Sahyoun *et al*. 2013).

Content standardised checklists, forms and protocols: Shift handovers

Eight studies reported the use of standardised checklist tools for use during shift handover (Lee *et al*. 1996; Berkenstadt *et al*. 2008; Ferran *et al*. 2008; Salerno *et al*. 2009; Stahl *et al*. 2009; Lyons *et al*. 2010; Weiss *et al*. 2013; Sadri *et al*. 2014). The evidence from these studies indicates improved handover, in terms of increased amount of relevant clinical information reported (Berkenstadt *et al*. 2008; Weiss *et al*. 2013), improved completeness of data recording (Lee *et al*. 1996) and improved follow-up of tasks handed over at shift change (Stahl *et al*. 2009). Studies also indicate users perceived improvements in the accuracy of handover information (Wayne *et al*. 2008) and fewer data omissions (Salerno *et al*. 2009).

A number of authors have reported on the effectiveness of a standardised peri-operative checklist to improve communications, in terms of significantly fewer overall communication failures (Lingard *et al*. 2008); significantly fewer communication breakdowns (Takala *et al*. 2011); improved information sharing and reduced handoff defects, including a reduced number of missed information items (Senger *et al*. 2015). Pincavage *et al*. (2015) reported the benefits of a standardised sign-out process supported by resident education in outcomes like increased handover duration, more verbal handoffs and more tests followed up appropriately. Annex 2 summarises the studies which evaluated checklists or standardised written protocols.

Performance standardisation using multicomponent protocols

Nine studies were identified, which reported the introduction of new multi-component handover protocols for improved handover (Dingley *et al*. 2008; Aase *et al*. 2011; Johnson *et al*. 2011; Catchpole *et al*. 2013; Okafor *et al*. 2013; Olm-Shipman *et al*. 2011; Starmer *et al*. 2013; Vergales *et al*. 2014; Sadri *et al*. 2014). Two protocols were reported to be effective in reducing the observed mean technical errors and omissions per handover (Catchpole *et al*. 2013) and achieving significant reductions in the rate of medical errors per admission and data omissions from residents' sign-out sheet (Starmer *et al*. 2013). Other reported changes to handover and communication processes have included increased satisfaction and improved perceptions of communication events (Dingley *et al*. 2008; Olm-Shipman *et al*. 2011; Johnson *et al*. 2013; Vergales *et al*. 2014) and reductions in errors (Johnson *et al*. 2013; Okafor *et al*. 2013). The introduction of other multi-component handover protocols has also resulted in reported benefits like reduced handover duration (Dingley *et al*. 2008); reduced errors made during hand over of care (Okafor *et al*. 2013); an improved handover process resulting in highlighting the key information to be communicated (Olm-Shipman *et al*. 2011); increased proportion of handovers containing complete patient information (Sadri *et al*. 2014); staff perceptions of improved quality of care (Vergales *et al*. 2014); and improved physician satisfaction with the process of receiving lab test results (Johnson *et al*. 2013). Annex 3 summarises the studies which evaluated performance standardisation.

IT and technological solutions

Typically electronic tools to support handover involve a structured electronic form with predefined data fields and some tools were integrated with data imported from the electronic medical record (EMR). The effectiveness of electronic tools in improving handover effectiveness was demonstrated in a significant improvement in the accuracy of physician recall (Pickering 2009), improvements in the recording of medical history and other pertinent medical data (Ahmed *et al*. 2012; Dubosh *et al*. 2012), and a significant increase in the number of completed information fields (Raptis *et al*. 2009). The use of IT-supported electronic tools has also improved the quality of verbal and written handoffs (Graham *et al*. 2013), reduced the mean duration of handover rounds (Van Eaton *et al*. 2005) and reduced the time from bed assignment to ED departure (Fischer *et al*. 2012).

Other studies have reported the effectiveness of electronic handover systems in significantly improving surrogate markers of patient care quality (Gibbons *et al*. 2015) and assisting in identifying unstable patients and clinical concerns, forwarding pending tasks, and providing anticipatory guidance (Gopalakrishnan *et al*. 2015). Jordan and Vernino (2014) reported several statistically significant benefits from the use of a bespoke standardised EMR tool for patient handoffs, in terms of resident physicians' increased frequency of face-to-face handoffs, increased use of a quiet location, greater confidence in handoff techniques and perceived greater consistency between handoffs and improved patient safety. Wilson *et al*. (2012) reported the impact of smartphone device use on pharmacists' efficiency when communicating clinical interventions, positive users' perceptions of the device as a communication tool resulting in improved efficiency of team communication. However, Wu *et al*. (2012) found that text-based communication led to oversimplified messages and the de-personalisation of communication.

Other studies demonstrated no improved outcomes following the introduction of IT-supported systems. For example, both Fischer *et al*. (2012) and Oroviogoicoechea *et al*. (2013) found that electronic tools had no impact on hospital length of stay. Hertzum and Simonsen (2008) reported no significant change in duration of handover following the introduction of a fully integrated EPR system to support handover and Senger *et al*. (2015) reported no significance in handover effectiveness between face-to-face and five other handphone handover methods.

Several studies reported improvements in staff perceptions of and/or satisfaction with handover quality following the introduction of a new electronic system of handover, including: improvement in perceived clarity of the patient plan and treatment (Hertzum and Simonsen 2008); perceived improvement in the quality of information passed over at handover (Patel *et al*. 2009), a reduction in perceived near misses, an increase in perceived completeness of information recorded and increased confidence with the handover received (Payne *et al*. 2012). The introduction of electronic handover/sign-out systems has also resulted in increased satisfaction with handover among physicians (Bernstein *et al*. 2010; Kochendorfer *et al*. 2010) and interdisciplinary staff (Barnes *et al*. 2011), an overall positive response among nursing staff (Sidlow *et al*. 2006), increased satisfaction and perceived accuracy of the system among neonatal ICU staff (Palma *et al*. 2011) and improved residents' perceptions of ease of use and handover quality (Anderson *et al*. 2010). Hertzum and Simonsen (2008) reported a significant reduction in the mean reported numbers of missing information per patient, but found no significant change in duration of handover at pre and post intervention following the introduction of a fully integrated EPR system to support handover.

Reported barriers to the adoption of IT solutions include restricted staff access to the electronic information system (Govier *et al*. 2012); limited functionality, such as not having information updated; and no facility for sorting patients by attending physician (Rabinovitch *et al*. 2009), limited portability (Staggers *et al*. 2011); dissatisfaction with the data entry element (Ram and Block 1993); and little flexibility for additional notes, and disparity between printed summary and verbal handover content (Staggers *et al*. 2011). Annex 4 summarises the studies which evaluated electronic tools and/or other IT solutions.

3.10 Education and training interventions to improve handover

There is evidence that the likelihood of communication errors at clinical handover are reduced when handover training is provided (Belziti *et al*. 2014). However, there is evidence that formal training in clinical handover is not being provided to healthcare professionals; this is particularly so in relation to emergency department practitioners (Goldberg *et al*. 2011; Kessler *et al*. 2013; Hern *et al*. 2014). A total of 26 articles and two published abstracts reporting education and training interventions were found. Most reported short training workshops in a handover/communication initiative being developed and most involved junior medical staff. Pedagogical approaches typically reported included simulation, role play and didactic teaching and

workshop content typically included information and training in the use of a new tool or topics like information transfer, responsibility and accountability, and systems-level aspects of handoff (Smith *et al*. 2015).

The principal approach used to test the effectiveness of educational interventions aimed at improving clinical handover practice was a before-and-after design (Beckett *et al*. 2009; O'Brien *et al*. 2009; Dankers *et al*. 2010; Gakhar and Spencer 2010; Gerard 2011; Sohi *et al*. 2011; Ahmed *et al*. 2012; McCrory *et al*. 2012; Grover and Duggan 2013; Gupta *et al*. 2013; Shaughnessy *et al*. 2013; Fisher *et al*. 2014; Weller *et al*. 2014; Petrovic *et al*. 2015; Smith *et al*. 2015); this was used in 15 studies. The randomised controlled trial was deployed in just three studies (Bump *et al*. 2012; Cunningham *et al*. 2012; Marshall *et al*. 2009, 2012).

Several authors reported improved staff outcomes and improved handover following training in the use of SBAR, such as improved staff perceptions of communications (Beckett *et al*. 2009), improved scores in handover performance and reduced time to conduct a telephone referral (Cunningham *et al*. 2012), and a significant improvement in participant attitudes to handover practice and improved skills application (Smith *et al*. 2015). McCrory *et al*. (2012) reported that more handoffs included an 'A' (assessment) or 'R' (recommendation) component following a short training intervention using SBAR. Others have reported the effectiveness of educational interventions involving the use of SBAR. These include: reduced handover duration (Sohi *et al*. 2011); improvement in communication techniques (O'Brien *et al*. 2009); improved user perception of communication accuracy and safety and reduced incident reports (Randmaa *et al*. 2014); increased efficiency and decreased duration of the handoffs, decreased interruptions, and increased satisfaction with the handover process (Registered Nurses' Association of Ontario 2012). Anumakonda *et al*. (2010) reported improved compliance with Association of Anaesthetists (AoA) guidance and standard of patient safety and improved handover practice following the introduction of the IsoBAR tool.

Two studies involving RCTs of training interventions for junior medical staff in the use of ISBAR were reported (Thompson *et al*. 2011; Marshall *et al*. 2009, 2012). Marshall and colleagues (Marshall *et al*. 2009; 2012) observed improved information transfer, more data items communicated and improved clarity of communication among an intervention group that received training in telephone handover; however, while information transferral and clarity improved in the intervention, these were less so than when rated immediately after the intervention. Thompson *et al*. (2011) found that participants believed there was an overall improvement in the structure and consistency of handover communication and reported feeling more confident when receiving handover, and believed that patient care and safety had improved. The intervention demonstrated increased transfer of key clinical information with no significant effect on handover duration.

Interventions involving training in the use of other mnemonic tools and bespoke handover protocols have been reported. Bump *et al*. (2012) reported a significant improvement in the content and consistency of data items recorded at signout following training in the use of SIGNOUT, while Shaughnessy *et al*. (2013) found an improvement in the inclusion of key information following training in the use of SAFETPIS tool. DeKosky *et al*. (2012) reported improved sign out practice and improved confidence in sign out following training workshops in the use of the UPDATED mnemonic and Weller *et al*. (2014) observed an increase in the number of verbalised, diagnostic options, and sharing of specific information probes following a video-based educational intervention in the use of the SNAPPI handover tool. Petrovic *et al*. (2015) demonstrated the effectiveness of educational sessions in the use of a bespoke standardised handoff protocol and checklist in reducing the number of missed information items and increased use of verbal reports per handoff.

Other training interventions not involving handover tools have also been reported. Fisher *et al*. (2014) found a statistically significant improvement in student confidence in telephone

communication and handover following the use of simulation sessions to improve telephone handover in emergency situations. Gakhar and Spencer (2010) found that medical interns' spoken sign-out performance had improved following the use of small group teaching and practice in sign-out skills. Gupta *et al*. (2013) found statistically significant improvements in post-intervention participant scores in measures of training effectiveness and satisfaction following a 2-hour training that included mandatory supervised handoffs. Following short training interventions in handover, Grover and Duggan (2013) demonstrated improved aspects of handover content and communicated recommendations and Dankers *et al*. (2010) reported improved medical resident perceptions of handoff quality and increased compliance with components of handoff quality. The benefits of training initiatives to improve nursing handover demonstrated improved comprehensive reporting of patient care (Forsey and O'Rourke 2013) and improved nurse-physician communication, as perceived by nurses (Gerard 2011).

Not all interventions indicated improvements in trainee outcomes. For example Ahmed *et al*. (2012) found residual participant deficits in areas like communicating the recording history, diagnoses and record of imaging performed and Shaughnessy *et al.* (2013) reported no increase in the use of read-back and no change in the number of questions asked during handover post the intervention. Other training intervention studies have failed to demonstrate improvements in handover practices, including no significant effect on handover duration (Thompson *et al.* 2012) and no significant improvement in data items communicated (Cunningham *et al*. 2012).

A large multicentre prospective study of NCHDs clinical handovers, conducted by Starmer *et al.* (2014), measured rates of medical errors, preventable adverse events, miscommunications and NCHD workflow. The study employed a before and after intervention methodology. The intervention included standardised written and oral clinical handovers, clinical handover and communication training and faculty development and sustainability campaign. In 10,740 patient admissions, the medical error rate decreased by 23% from the preintervention period to the postintervention period and the rate of preventable adverse events decreased by 30%. Conversely, the rate of non-preventable adverse events did not change significantly.

Across sites significantly increases were observed in the inclusion of all prespecified key elements in written documents and oral communication during clinical handover. There were no significant changes in the duration of clinical handovers.

3.11 Economic evaluation studies

The systematic search uncovered eight published articles that examined the economic cost of clinical handover and/or electronic systems to support clinical handover. Of the studies reviewed, six concerned economic analysis as the primary focus of the study (Palmer *et al*. 2002; Schmidt *et al*. 2006; Hess *et al*. 2010; Yao *et al*. 2012; Carr *et al*. 2012; Ahmad *et al*. 2015) and two included an economic evaluation as one of a number of outcome components (Flanagan *et al*. 1995; O'Leary *et al*. 2010;). Just two of the studies were specifically concerned with the economic impact of clinical handover approaches (Hess *et al*. 2010; Yao *et al*. 2012). Two additional articles were uncovered, which were discussion papers on the method (O'Byrne *et al*. 2008) and use (Jena and Philipson 2011) of cost-effectiveness analysis when adopting new technologies in health systems to improve communication.

Three of the studies evaluated the economic impact of work practices related to communication, specifically the cost impact of daily consultant rounds (Ahmad *et al*. 2015), structured interdisciplinary rounds (SIDRs) (O'Leary *et al*. 2010) and a Patient Care Partnership Project to improve communication between physicians (Palmer *et al*. 2002). Four of the studies examined the cost-effectiveness of specific communication systems to support clinical handover, namely a health information exchange (HIE) approach (Carr *et al*. 2012), a computer-based patient record (CBPR) (Flanagan *et al*. 1995), a laboratory electronic document management

systems (EDMS) (Schmidt *et al*. 2006), and a telephone report to supplement written handoffs at the point of discharge (Hess *et al*. 2010). One study evaluated the economic impact of a staff education programme for improving clinical handoff at the point of discharge (Yao *et al*. 2012).

Of the seven economic evaluation studies reviewed, and aside from data collection methods and measures of economic impact, just one study reported the use of a specific economic evaluation model (Yao *et al*. 2012). A number of authors reported the method of calculation costs; these included: analysis of the cost of reported services avoided (Carr *et al*. 2012); money saved by reducing inappropriate investigations and pharmacy drug use (Ahmad *et al*. 2015); the overall cost as a percentage of the gross operating budget or as a ratio to the volume of patient activities for the centre (Flanagan *et al*. 1995); adjusted length of stay (LOS) and cost for patients admitted after implementing a structured interdisciplinary round (SIDR) intervention (O'Leary *et al*. 1995); average cost per inpatient, length of hospital stay, 30-day readmission rates post the intervention (Palmer *et al*. 2002); and cost-benefit data, including the direct and indirect costs of copying paperwork and retaining physical paperwork in an accessible system (Schmidt *et al*. 2006). Specific outcomes measured in the economic analyses of the various initiatives to improve communication included the following: use of investigations and medications (Ahmad *et al*. 2015), reduction in unnecessary testing and treatments (Carr *et al*. 2012), cost of software development and maintenance, consultant fees and hardware maintenance (Flanagan *et al*. 1995), readmission within 72 hours of discharge (Hess *et al*. 2010), hospital length of stay (LOS) and cost (O'Leary *et al*. 2010), average cost per inpatient, length of hospital stay, 30-day readmission rates (Palmer *et al*. 2002), workflow (time savings and access to data) (Schmidt *et al*. 2006), and expected health gain in Quality Adjusted Life Years (QALY) (Yao *et al*. 2012).

Findings reported indicated a cost benefit where the interventions aimed at improving communication practices was effective in a number of economic outcomes. Hess *et al.* (2010) reported the benefits of combining written discharge report with a verbal telephone report in terms of 'a significant reduction in cost', while Yao *et al*. (2012) reported that a staff education programme for improving clinical handoff was 'highly cost-effective', as measured by a reduction of adverse events for all discharges. Ahmad *et al*. (2015) reported that while there was a 70 per cent increase in patient throughput, investigations and pharmacy costs per patient reduced by 50 percent over a 12-month period following the introduction of the daily consultant ward rounds. Palmer *et al*. (2002) reported significantly lower costs per patient and length of stay following the introduction of a Patient Care Partnership Project (PCPP) to improve communication between physicians. However, O'Leary *et al*. (1995) failed to demonstrate the economic benefit of structured interdisciplinary rounds (SIDRs), reporting that the adjusted LOS and hospital costs were not significantly different between intervention and control clinical units following the intervention. The economic benefits of introducing augmented communication systems were reported as follows. Carr *et al*. (2012) reported 'a noteworthy reduction' in resource use as a result of proving access to a regional health information exchange (HIE), with costs savings in avoidance of unnecessary radiologic studies and admissions. Flanagan *et al*. (1995) reported a low comparative cost of the computer-based patient record (CBPR), when judged against referent 'average medical centres'; the saving was of the order of 0.8 per cent. Hess *et al*. (2010) found 'a significant reduction in cost', following the introduction of a supplementary verbal report intervention; the intervention yielded an average saving of circa. $184,000 for every 100 patients discharged. Schmidt et al. (2006) reported 'modest' direct financial benefits from an electronic document management systems (EDMSs), but found 'indirect and intangible benefits', notably time savings and access to data for pathologists and residents.

While studies point to some economic benefits of improved communication practices, including clinical handover improvement initiatives (Hess *et al.* 2010; Yao *et al*. 2012), improved communication processes (Palmer *et al*. 2002, Ahmad *et al*. 2015), and augmented communication support systems (Flanagan et *al*. 1995, Schmidt *et al*. 2006; Carr *et al*. 2012;), the overall evidence regarding cost benefits must be treated with caution. This caution is warranted

since the evidence is based on a limited number of studies particular to clinical handover, the use varied methods for calculating costs across studies and the fact that studies were conducted at single sites and often involved specific patient sub-groups. For example, the study by Hess *et al*. (2010) was conducted with reference to patients with respiratory disease, a patient sub-group with a high risk of hospital readmission. Similarly, the study by Carr *et al*. (2002) was a pilot study conducted at the ED at an urban, academic medical center. Hence the application of the findings from the economic evaluation literature may not be generalisable to the entire acute care sector or to the Irish acute care sector.

4. DISCUSSION

4.1 Introduction

Clinical handover has been the subject of empirical research for well over two decades. However there has been a noticeable increase in the number of published outputs on the topic in the years after c.2005 and this is evident in the fact that 21 review articles have been published to date, including one Cochrane review. Medical practitioners, particularly NCHDs, medical students and nurses have been the focus of most studies, although a very small number also involved other healthcare professionals like pharmacists (e.g. Wilson *et al*. 2012; Gopalakrishnan *et al*. 2015). However, no studies directly involving diagnostic or laboratory professionals have been reported. This may be considered a gap in the research evidence on clinical handover; however, being mediated through standard paper or electronic forms and telephone reports, the practices of communicating patient information among these professional grades are somewhat different to those of physicians and nurses. Additionally, the notion of transferred responsibility and accountability for care of a finite group of patients during an entire duty shift may not apply to other healthcare professionals in the same way that it does to medical and nursing staff.

4.2 Handover practices and patient outcomes

The literature indicates a link between communication failures and actual threats to patient safety, with retrospective studies indicating that communication failures may contribute to adverse patient events (e.g. Beckmann *et al*. 2004; Greenberg *et al*. 2007; Kachalia *et al*. 2007; Singh *et al*. 2007; Pezzolesi *et al*. 2010; Rabol *et al*. 2011; Bongaerts *et al*. 2012; Venkatesh *et al*. 2015). Several authors reported an association between poor handover and actual or potential adverse patient events (Arora *et al*. 2005; Harjola *et al*. 2013; Keuster *et al*. 2014), including a high prevalence of errors of omission of content at handover (Venkatesh *et al*. 2015). The evidence indicates that inter-departmental transfers (Ong and Coiera 2010; Rabol *et al*. 2011), patient transfer from the ED to the inpatient ward (Apker *et al*. 2007, Horwitz *et al.* 2009) and handover associated with shift change (Pezzolesi *et al*. 2010) are particularly vulnerable to errors.

However, the evidence of an association between poor quality handover and risks to patient safety is somewhat equivocal, since a number of studies have failed to establish a clear association between handover deficiencies and adverse patient outcomes (Stiell *et al*. 2003; Ye *et al*. 2007; Daud-Gallotti *et al*. 2010; Dravid *et al*. 2010), even after handover improvement initiatives have been introduced (Gonzalo *et al*. 2014). Nevertheless, the evidence indicates that when handover practice is improved adverse patient events can be reduced (Petersen *et al*. 1998; Williams *et al*. 2007; O'Leary *et al*. 2010a, 2011).

Standards and guidelines

The guidelines published by state agencies healthcare professions' regulators (e.g. BMA 2004; AMA 2006; Joint Commission 2006; ACSQHC 2014) offer principles on how to govern the practice of handover at an organisational level, emphasising regular review of practice, and they suggest ways to effectively conduct handover, variously emphasising required content to be transferred

and the need for complementary verbal and written elements. While the provenance of the supporting evidence for the published guidelines is clear in many instances (e.g. ACSQHC 2012), many are based on prior published guidelines, which are themselves based, in much part, on expert opinion and consensus and less on published empirical evidence. While published official guidelines do not constitute empirical evidence per se, they are more likely to form the basis for local clinical guidelines and thereby inform the practice of clinical handover. Accordingly, it is critical that official clinical guidelines are based on the best available evidence, particularly evidence derived from systematic reviews of the literature, valid and reliable empirical studies, and expert opinion on what works best in practice.

The evidence from several studies indicates that information transferred at handover can be highly variable (e.g. Carter *et al*. 2009; Evans *et al*. 2010; Bump *et al*. 2011; Maughan *et al*. 2011; Ilan *et al.* 2012) and sometimes not relevant for patient care (Jenkin *et al*. 2007). Accordingly, the use of standardised tools and checklists, or prompts like mnemonic tools, is important in overcoming this potential deficiency.

4.3 The strengths and limitations of the research designs

The search identified a total of 21 review articles and one Cochrane review. We applied the SIGN checklist to rate eleven of the published reviews for quality (Arora *et al*. 2009; Riesenberg *et al.* 2009a; Riesenberg *et al.* 2009b; Riesenberg. *et al.* 2010; Flemming and Hubner 2013; Russ *et al.* 2013; Abraham *et al.* 2014; Anderson *et al*. 2014; Kitson *et al*. 2014; Robertson *et al.* 2014; Smeulers *et al*. 2014). We also applied the SIGN checklist to rate the quality of 10 RCTs that tested the effectiveness of handover tools. Using the SIGN checklist for RCTs we rated the quality of five of these as acceptable (Marshall *et al*. 2009; Cunningham *et al*. 2012; Downey *et al*. 2013; Salzwedel *et al*. 2013; Weiss *et al.* 2013) and we rated five as unacceptable, since they were likely to contain bias owing to poor reporting on randomisation, allocation concealment and blinding (Lee *et al*. 1996; Van Eaton *et al*. 2005; Bump *et al*. 2012; Joffe *et al*. 2013a). We also examined studies involving checklists or structured forms (Lee *et al.* 1996; Weiss *et al.* 2013; Salzwedel *et al.* 2013), and electronic applications to support handover (Van Eaton *et al.* 2005; Van Eaton *et al.* 2010) for design quality.

There were limitations in the acceptable RCTs. For example, assessors were inadequately blinded in some studies (Marshall *et al*. 2009; Cunningham *et al*. 2012; Salzwedel *et al.* 2013) and there may have been selection bias in the Marshall *et al*. (2009) study, while the Downey *et al*. (2013) study failed to achieve full control of all the variables, as there was no codified observation of either those using the intervention or those using standard handover procedures.

There was a high degree of heterogeneity of outcome variables used when measuring primary outcomes from the experimental and before-and-after designs; outcome measures variously included information transferred, practitioners' satisfaction with and perceptions of the handover process, utility of the tool being evaluated, number of medication errors, incident reports, technical errors and length of stay (LOS). Both the diversity of research methods, designs and settings used to evaluate clinical handover tools and the diversity of variables used to measure outcomes meant that it was not possible to statistically aggregate findings from multiple studies (Cohen and Hilligoss 2010; Riesenberg 2010; Abraham *et al.* 2014; Robertson *et al*. 2014).

Methodological approaches and limitations in the effectiveness evidence

The various studies reporting the use of SBAR have several limitations. The two effectiveness studies cited (Cunningham *et al*. 2012; Joffe *et al*. 2013) were limited by the fact that the assessors were not blinded to allocation and by small sample sizes, and the before-and-after studies (Haig *et al*. 2006; De Meester *et al*. 2013) did not allow for the examination of cause and effect. The studies reporting staff perceptions and attitudes are inherently limited, since a

change in perceptions of handover quality does not necessarily translate to improved handover. While the studies using multiple protocols provide evidence of handover improvements, the differentiated effect of any one element of the protocol is difficult to determine.

Many studies evaluated locally-developed protocols and tools, and this aspect of study design further limits the generalisability of results to other settings. Additionally, the RCTs which evaluated SBAR or ISBAR and the other mnemonics were conducted using simulations rather than real-world situations (Marshall *et al*. 2009; Cunningham *et al*. 2012; Joffe *et al*. 2013a) and this fact also limits their transferability to clinical settings and handover contexts. Just one study, which tested the 'IPASS the BATON' protocol, was conducted in the real world of clinical practice (Downey *et al*. 2013).

Most before-and-after design studies were small in scale and scope, with small samples and short or ill-defined follow-up periods, or observations of very few handover events. For example, several studies examined less than 50 handovers (e.g. Karakaya *et al*. 2013; Shaughnessy *et al*. 2013; Agarwala *et al*. 2015) and a number had remarkably small samples (Talbot and Bleetman 2007; Lyons *et al*. 2010). However, there is evidence that more recent studies have included larger samples of handovers; one study observed a total of 214 surgical resident handoffs over 18 months (Anderson *et al*. 2015), another observed 103 handoffs (Petrovic *et al*. 2015) and another observed 90 handovers (Kowitlawakul *et al*. 2015). Sampling strategies were also a limitation, with many studies reporting the use of convenience samples of handovers (Talbot and Bleetman 2007; Apker *et al*. 2010; Coutsouvelis *et al*. 2010; Venkatesh *et al*. 2015). Most studies were conducted at a single hospital site and, in many instances, at a single clinical department (e.g. Iedema *et al*. 2012; Tapia *et al*. 2013; Randmaa *et al*. 2014; Weller *et al*. 2014). This design aspect limits their generalisability beyond the immediate setting in which they were conducted.

Many studies used information content as a measure of handover quality (e.g. Cheung *et al*. 2010; Manser and Foster 2011); while this is a key index of quality, it is a limited approach in that it fails to account for the wider aspects of handover, including the notion of responsibility transfer. Staff satisfaction and staff perceptions of handover quality were frequently used in intervention studies (e.g. Oroviogoicoechea *et al.* 2013; Petrovic *et al*. 2012, 2015; Agarwala *et al*. 2015) and such subjective measures do not, in themselves, offer the most reliable effectiveness evidence, since they may be vulnerable to recall bias.

4.4 The practice of clinical handover: Some key findings

The evidence from the literature on clinical handover practices is largely accounted for in reports of the factors which either enable or act as barriers to effective clinical handover. Overall the evidence concerning barriers outside the immediate control of handover participants include a lack of a formal policy for clinical handover (Health Foundation 2011; Siemsen *et al*. 2012), a failure to schedule duty rosters to support handover as a distinct task (Health Foundation 2011), a lack of education and training in handover (Horwitz *et al*. 2006; Health Foundation 2011), and a lack of ready access to supporting information (e.g. Grobman *et al*. 2011; Siemsen *et al*. 2012). Workplace culture, including professional hierarchies, and the 'human factor' (Kowitlawakul *et al*. 2015) in interprofessional relationships are also cited as factors that can impede or facilitate the quality of clinical handover; this particularly relates to how well staff are willing to question each other during handover (Apker *et al*. 2007; Welsh *et al*. 2010; Greenstein *et al*. 2011; Randell *et al*. 2012).

At the level of the clinical handover event itself, the immediate environment is frequently cited as a critical factor in influencing the quality of the handover process. Several authors have listed factors like interruptions and other interference such as extraneous noise (Anderson *et al*. 2015) as barriers to effective handover. The evidence indicates that when extraneous interferences are reduced, clinical handover is more effective (Siemsen *et al*. 2012).

There is a considerable body of evidence to indicate that the quality of handover is a function of the extent to which the process is conducted according to a consistent and/or structured format or agreed mechanism for information transfer (e.g. Wright *et al*. 2011; Keenan *et al*. 2013) and the evidence shows that transferring information in a more systematic and standardised way can improve communication (e.g. Welsh *et al*. 2010; Grobman *et al*. 2011; Bost *et al*. 2012; Siemsen *et al*. 2012; Klim *et al*. 2013).

4.5 Evidence of the effectiveness of handover improvement initiatives

Effectiveness in information transfer

While the body of empirical research indicates that standardising tools like ISBAR are effective in improving information transfer, information quality, handover consistency, and staff perceptions of information quality, the studies on which these outcomes were demonstrated have limitations. These include the fact that many studies report local initiatives and/or educational interventions using simulations and not real-world handover events in their design. Other weaknesses include small sample sizes and lack of blinding in trials. These inherent methodological weaknesses mean that the effectiveness evidence of interventions needs to be treated with a degree of caution.

The majority of the published studies aimed at improving handover quality emphasised handover content and much of the evidence was generated from self-reports by clinicians and from intervention studies using simulations. The evidence indicates that using a mnemonic such as SBAR or ISBAR (Marshall *et al*. 2009; McCrory *et al*. 2012; Bavare *et al*. 2013; Grover and Duggan 2013; Thompson *et al*. 2013) and other mnemonics like SIGNOUT (Bump *et al*. 2012) and SNAPPI (Weller *et al*. 2014) can improve the transfer of information at duty shift change (Bump *et al*. 2012; Bavare *et al*. 2013; Thompson *et al*. 2013), during handover from OR to PACU (Grover and Duggan 2013), during simulated telephone referrals (Marshall *et al*. 2009), or during simulated critical events (Weller *et al*. 2014). However, improvements in the transfer of some information elements were not always demonstrated (Cunningham *et al*. 2012; Joffe *et al*. 2013a; Grover and Duggan 2013) and irrelevant information may still be communicated even with the use of these tools (Joffe *et al*. 2013a). There is also evidence that using SBAR or ISBAR can improve the overall clarity and quality of communication during telephone referrals (Marshall *et al*. 2009; Cunningham *et al*. 2012) and using SIGNOUT in a multi-component handover protocol can significantly reduce the rate of data omissions and medical errors per admission (Starmer *et al*. 2013).

The research evidence also indicates that using a checklist or structured proforma during duty shift handover (e.g. Weiss *et al*. 2013) or for inter-departmental handover (e.g. Craig *et al*. 2012a; Karakaya *et al*. 2013; Salzwedel *et al*. 2013) is associated with greater completeness of information transferred and improved clarity and organisation of communication (Weiss *et al*. 2013) and in more tests followed up appropriately (Pincavage *et al*. 2015). Checklists or proforma have also been associated with reduced omissions and technical errors during inter-departmental handover (Coutsouvelis *et al*. 2010; Joy *et al*. 2011; Craig *et al*. 2012a) and with improvements in the follow-up of tasks at shift change (Stahl *et al*. 2009). However, checklists or proforma may not assure the consistent transfer of all handover content (Ferran *et al*. 2008; Karakaya *et al*. 2013).

Augmenting verbal shift handover through the use of an electronically-generated template (Pickering 2009; Ahmed *et al*. 2012; Dubosh *et al*. 2012; Payne *et al*. 2012) or a template integrated with the EMR (Anderson *et al*. 2010; Graham *et al*. 2013) has been associated with improvements in data recording (Anderson *et al*. 2010; Ahmed *et al*. 2012), fewer omissions of data (Graham *et al*. 2013) and improved accuracy of patient information recall (Pickering 2009). However, as with mnemonics, checklists and proforma do not guarantee that all information elements will be handed over (Ahmed *et al*. 2012).

Effectiveness in improving the handover process
Several studies have examined the efficiency of the handover process as a measure of an intervention's effectiveness and have demonstrated improved efficiency. Using SBAR to structure shift report has been associated with reduced time to hand over each patient (Sohi *et al*. 2011; Cornell *et al*. 2013) and more time spent on other tasks at shift change (Cornell *et al*. 2013). Other mnemonics has also been associated with shorter handover duration (Rudiger-Sturchler *et al*. 2010; Iedema *et al*. 2012).

Electronic supports can significantly impact on the speed of information retrieval (Tange *et al*. 2015) and electronically-generated templates integrated with the EMR have been associated with reduced time spent preparing for shift handover (e.g. Anderson *et al*. 2010; Kochendorfer *et al*. 2010). While Pincavage *et al*. (2015) demonstrated that using a standardised sign-out increased handover duration, other studies failed to demonstrate a change in handover duration following implementation of a checklist or structured proforma (Zavalkoff *et al.* 2011; Craig *et al.* 2012a).

Effectiveness in improving patient outcomes
Improving care outcomes is a major rationale for handover improvement initiatives and there is some limited evidence to demonstrate that improved handover does achieve this desired outcome. For example, the SBAR mnemonic has been associated with reduced incident reports (Randmaa *et al*. 2014), reduced likelihood of readmission (Townsend-Gervis *et al*. 2014) and a decrease in unexpected deaths and increased transfers to ICU when used as part of the protocol for deteriorating patients (De Meester *et al*. 2013). However, no association could be demonstrated between the use of SBAR and LOS (Cornell *et al*. 2014).

Inter-departmental handover checklists have been associated with a reduction in the number of complications observed per patient (Agarwal *et al*. 2012), but with no demonstrable impact on LOS (Coutsouvelis *et al*. 2008). Additionally, no association could be demonstrated between electronic tools to support shift handover and a reduction in adverse events (Graham *et al*. 2013), preventable patient events (Petersen *et al*. 1998) or LOS (Oroviogoicoechea *et al*. 2013). However, combining an electronic tool and verbal handover can significantly reduce hospital LOS (Gibbons *et al*. 2015) and using a structured template e-mail system for shift handover was also associated with reduced LOS (Ryan *et al*. 2011). Electronic handover systems can also demonstrate significant improvements in surrogate markers of patient care quality (Gibbons *et al*. 2015) and guide clinicians to anticipate future events (Gopalakrishnan *et al*. 2015).

Effectiveness in improving staff satisfaction
The research evidence indicates that using mnemonics like ISBAR or SBAR improves staff perceptions of handover quality and accuracy (Haig *et al*. 2006; Rudiger-Sturchler *et al*. 2010; Thompson *et al*. 2011; Ormilon *et al*. 2012; Bavare *et al*. 2013; Randmaa *et al*. 2014). Other mnemonics or checklists can also improve staff sense of preparedness and knowledge for the upcoming shift (Connor *et al*. 2013) and staff perceptions of communication quality (Takala *et al*. 2011). Several multi-component approaches to handover improvement have been associated with increased staff satisfaction (e.g. Olm-Shipman *et al*. 2011; Johnson *et al*. 2013; Vergales *et al*. 2014). A number of studies also indicate staff satisfaction with standalone electronic tools or templates (Patel *et al*. 2009; Barnes *et al*. 2011; Payne *et al*. 2012) and with electronic tools integrated with the EMR (e.g. Anderson *et al*. 2010; Bernstein *et al*. 2010; Palma *et al*. 2011). Structured daily goals forms have been associated with satisfaction and improved shared goal understanding (Pronovost *et al*. 2003; Narasimham *et al*. 2006; Phipps and Thomas 2007; Agarwal *et al*. 2008).

4.6 Strengths and limitations of the current review

This systematic review of literature was conducted according to best practice standards for systematic searching of both published and grey literature. The searching process was supported by a health sciences librarian with expertise in the procedures of database searching. The search yielded a large volume of evidence in the English language and comprehensively addressed the main review questions. Nevertheless, the review had both inherent and potential limitations. It is possible that the systematic searches failed to identify all relevant articles. Additionally, by restricting the review to English language publications, it did not include the full range of published works on a topic in hand. The review was also limited in its geographical reach, as evidenced by the fact that the majority of published evidence on the topic was yielded from a small number of English-speaking developed countries, notably, Australia and New Zealand, the United States and Canada, and the UK.

5. SUMMARY OF KEY FINDINGS AND CONCLUSIONS

5.1 Introduction

Effective, evidence-based clinical handover practice is an essential element of patient safety practices in acute care settings in reducing the risk of adverse patient events. The evidence indicates that the clinical handover process is most effective when those conducting it are clear about its purpose and inherent risks and conduct it in a way that ensures relevant information transfer and prepares the oncoming clinician or team to plan ongoing care and anticipate future patient problems and needs. The effectiveness of clinical handover is a function of several factors, both internal to the event itself and externally within wider clinical, organisational, cultural and interpersonal contexts. Therefore, it is critical that clinical handover is practiced according to the best available evidence in order to achieve seamless and reliable information transfer and thereby mitigate the inherent risks of this routine clinical process. When used to inform clinical practice, the guidelines should contribute to improvement in patients' health outcomes, reduce variation in practice and improve the quality of clinical decisions.

5.2 Key findings to inform the national guideline on clinical handover

Inter-departmental clinical handover requires a degree of negotiation and collaboration between disciplines whose priorities and information requirements can differ greatly (Beach *et al*. 2012; Hilligoss and Cohen, 2013), including inter-departmental handover from the ED and inpatient wards (Apker *et al*. 2007; Horwitz *et al*. 2009), from OR and PACU to wards (Smith *et al*. 2008) and escalation to ICU (Li *et al.* 2011).

Handover content needs to be relevant to the clinical context and handover scenario in which it is occurring and essential data items should be agreed by the clinical leaders (SA Department of Health 2013a). Key data items to hand over in various handover scenarios have been suggested, including: during shift handover (BMA 2004; Royal College of Paediatrics and Child Health 2005; Solet *et al*. 2006; RCSE 2007; Bump *et al*. 2011); ED to ICU (McFetridge *et al*. 2007), within the ED (Klim *et al*. 2013), and during transfer from critical care to hospital ward (NICE 2007). Several studies have reported errors of omission of handover content (Anumakonda *et al*. 2011; Tanaka *et al*. 2012; Venkatesh *et al*. 2015).

The ACQSHC (2013) recommends that while healthcare organisations need an overarching policy concerning the conduct of clinical handover, 'flexible standardisation' is the key in ensuring that policies are relevant and appropriate for use in particular handover contexts. Randell *et al*. (2011) suggest that electronic tools to support shift handover should be designed to facilitate the practical aspects of the handover process, including facilitating two-way handover communications in order to permit errors to be corrected and information to be

validated, and be sufficiently flexible to permit some professional discretion as to which information should be retrieved and communicated.

Thompson *et al*. (2011) demonstrated improved participant perceptions of handover, with reference to handover consistency, handover structure, reduced omissions of information, as well as an observed increase in the number of clinical information items transferred. Mardegan *et al*. (2013) reported a positive staff response to the introduction of the ISBAR for use in handoff between ward staff and the arriving medical emergency team.

There is evidence that success in introducing a new handover tool or protocol is influenced by several factors, including long-standing professional relationships and staff 'habits' (Aase *et al*. 2011) as well as staff reluctance to make recommendations at handover (Burton *et al*. 2010). Selective or partial adaptation of a tool can also impact on its successful introduction; for example, nurses may use the assessment and recommendation elements of SBAR less frequently than medical residents (Goff *et al*. 2014). Staff may report background (Ilan *et al*. 2012) and subjective elements only at handover (Ilan *et al*. 2012), rather than the components relating to 'R' (recommendations) or 'A' (action), out of deference to the oncoming physician (Ilan *et al*. 2012).

Several guidelines recommend that handover should comprise a written proforma, complemented by face-to-face verbal handover (e.g. BMA 2004; Department of Health (South Australia) 2013). Handovers are vulnerable to failure when face-to-face communication does not occur (Arora *et al*. 2005; Philibert 2009), and such 'failure-prone' handovers can result in uncertain decision making on patient care (Arora *et al*. 2005). The evidence indicates that the most effective elements of organisational policy on handover include the requirement for all staff to be present at handover and for handover to happen face-to-face (Quin *et al*. 2009). Based on the evidence from a systematic review of literature of nursing handovers, Smeulers *et al*. (2014) recommend that the handover process should incorporate face-to-face communication, structured documentation, patient involvement and use of IT technology to support the process.

The literature suggests that shift handover is an opportunity to verify information and identify errors in information content (Perry *et al*. 2008*;* Randell *et al*. 2011), discuss operational matters (Farhan *et al*. 2010; Randell *et al*. 2011), and train junior members of staff (RCP and RCN 2012). Even when standardising tools such as ISBAR or checklists are used to structure handover they should not detract from this need to verify and clarify during handover (Cohen and Hilligoss 2010; Cheung *et al*. 2010).

Verbalising can potentially resolve disparities in expectations and ensure a common understanding (Siassakos *et al*. 2013) and it also can ensure that team members are aware of and recognise each other's competencies (Siemsen *et al*. 2012). Read back is also a way of improving communications (Williams *et al*. 2007; Hinami *et al*. 2009; Siemsen *et al*. 2012; Siassakos *et al*. 2013).

The literature suggests that approaches to improving handover must extend to system-wide changes, including cultivating a working environment where staff feel they can offer their opinions and question information (Reader *et al*. 2007; Health Foundation study 2011). There is evidence that communication between professionals tends towards information-giving rather than information-seeking, with limited opportunities for questions (Apker *et al*. 2007; Welsh *et al*. 2010; Greenstein *et al*. 2011). There is also evidence that different professional groups differ in their willingness to engage in handover communication as a two way process (Randell *et al*. 2012) and their engagement depends on their role as sender or receiver (Reader *et al*. 2007), or their level of experience and relative position within professional hierarchies (Reader *et al*. 2007; Sharit *et al*. 2008; Carroll *et al*. 2012).

Training in handover should extend to developing staff assertiveness (Leonard *et al*. 2004; Brindley and Reynolds 2011) and fostering mutual respect between professionals (Siemsen *et al*. 2012), so that professional hierarchies and inter-professionals relationships do not impede the successful adoption of a new handover process. There is evidence that professionals may lack clarity about each other's role (McFetridge *et al*. 2007; Siemsen *et al*. 2012) and trust and familiarity between professionals may influence their perception of the reliability of the handover data transmitted (Bost *et al*. 2012; Carroll *et al*. 2012). This suggests that inclusion of the 'identify' element of ISBAR may encourage staff to identify themselves and their professional roles at the beginning of handover communication.

There is evidence that distractions during handovers are common and that they are associated with longer duration handovers (Kowitlawakul *et al*. 2015). Among the most common distractions are pagers, telephone calls, interruptions from residents/medical students, talking and noise (Anderson *et al*. 2015). Greenstein *et al.* (2011) identified staff conversations as the most common interruption followed by clinicians arriving late. Communication processes in the hospital setting are frequently interrupted (Coiera and Tombs 1998; Lawrence *et al*. 2008; Sharit *et al*. 2008; Welsh *et al*. 2010; Aase *et al*. 2011; McSweeney *et al*. 2011; Bost *et al*. 2012) and minimising interruptions can improve perceptions of the quality of handover (Sharit *et al*. 2008; Klim *et al*. 2013).

A failure of healthcare organisations to provide readily available and up-to-date information is reported as a barrier to effective handover (Grobman *et al*. 2011; Siemsen *et al*. 2012). When compared to paper-based systems, electronic handover achieved a significantly higher number of completed fields and provided better continuity of care (Raptis *et al*. 2009).

Reported issues with electronic tools to support handover include limited access permissions (Govier *et al*. 2012), limited portability options (Staggers *et al*. 2011), failure to populate with up to date information (Wilson *et al*. 2005; Rabinovitch *et al*. 2009; Staggers *et al*. 2011; Govier *et al*. 2012), limited flexibility around sorting and arranging the information (Rabinovitch *et al*. 2009) or limited flexibility around adding notes (Staggers *et al*. 2011).

For electronic tools to work effectively in supporting handover, well described workflows with standardised procedures and protocols need to be in place, along with an effective IT system, including the possibility of mobile stations which can be transported to the bedside in order to increase access (Hertzum and Simonsen 2008). Electronic handover systems have been shown to result in significant improvements in surrogate markers of patient care quality (Gibbons *et al*. 2015) and in guiding clinicians to anticipate future events (Gopalakrishnan *et al*. 2015).

The evidence indicates that, when conducted according to a standardised protocol, improved handover quality can result, as indicated by the following outcomes: improved communication (Breuer *et al*. 2015), improved information sharing (Senger *et al*. 2015), improved data transfer (Ferran *et al*. 2008; Lyons *et al*. 2010), increased amount of relevant clinical information transferred (Berkenstadt *et al*. 2008; Weiss *et al*. 2013), improved completeness of data recording (Lee *et al*. 1996), improved follow-up of tasks handed over at shift change (Stahl *et al*. 2009), and more tests followed up appropriately (Pincavage *et al*. 2015).

There is evidence that formal training in clinical handover is not being provided to healthcare professionals (Goldberg *et al*. 2011; Shafiq ur *et al*. 2012; Kessler *et al*. 2013). Several studies have reported the benefits of staff training in clinical handover, including education in the use of standardised tools, in terms of reduced number of missed information items (Randmaa *et al*. 2014), reduced number of defects per handoff (Petrovic *et al*. 2015); enhanced quality of referral communication (Marshall *et al*. 2009) and reduced duration of handover (Sohi *et al*. 2011; Cunningham *et al*. 2012; Registered Nurses' Association of Ontario 2012). Training also improves staff attitudes to handover and knowledge about handover (Smith *et al*. 2015) and improves confidence in performing handoffs (Fisher *et al*. 2014; Smith *et al*. 2015). Hospitals might

consider mandatory handoff training and certification to enhance awareness of the importance of handover communication (Gupta 2013).

Studies have reported the effectiveness of electronic handover systems including assisting staff to identify unstable patients and clinical concerns and providing anticipatory guidance (Gopalakrishnan *et al*. 2015).

While the main purpose of clinical handover is to exchange patient information, it also has social, educational, organisational and planning functions (Kerr 2002, McFetridge *et al*. 2007). Several guidelines incorporate the principle that clinical handover practice should be based on good governance and leadership (e.g. SA Health 2013). Clinical leaders need to be identified who will champion good handover practice (Luther *et al*. 2014).

5.3 Conclusions

The key evidence from this systematic review of literature is that clinical handover is best practiced when it is planned and seen as a distinct task that needs to be conducted in a structured way, supported by ready access to available patient information. Additionally, the task is of such importance to patient safety that its conduct should be governed by an organisational policy and associated clinical guidelines that include statements about roles and responsibilities in the process and about how to conduct the process to achieve maximum effectiveness.

While the published effectiveness evidence indicates that standardised handover procedures improve information transfer, standardisation alone may not guarantee the accuracy of the information transferred, but rather that certain data items were or were not transferred. Standardising the process may be associated with gains in handover efficiency and increased staff satisfaction. Introducing structured protocols or new handover tools may impact on the handover process such as duration of handover and may impact on effectiveness. Accordingly, when introducing new tools and protocols, it is important to consider how well they fit with existing processes and workflows. This requires audit of the effectiveness of these tools with reference to their impact on work patterns.

Annex 1 (Literature Review Section)

Empirical studies which evaluated mnemonics					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Townsend-Gervis *et al* (2014)	Staggered introduction of Interdisciplinary rounds (IDR), paper and electronic SBAR	Before-and-after	US: Single site Nursing staff (n=111) Acute hospital	Shift handover	Improved performance of Foley catheter removal. Patient satisfaction with nursing care showed a non-significant improvement. 30 day readmission rates improved over study period.
Cornell *et al* (2014)	Staggered introduction of Interdisciplinary rounds (IDR), paper and electronic SBAR	Before-and-after	US: Single site Medical-surgical units. Nursing staff (no number reported)	Shift handover	Use of IDR reduced patient review times. Utilisation of the SBAR tool reduced review times. Use of the electronic SBAR tool was associated with significantly longer review times than when paper based was used. No association with LOS.
Randmaa *et al* (2014)	SBAR card and SBAR educational session	Before-and-after	Sweden: Two sites OR, ICU and PACU Nurses, physicians. Intervention site (n=139 respondents before; n=100 after) Non-intervention site (n=122 respondents before; n=69 after)	Multiple	Improved perception of between group communication accuracy. Improved perception of safety climate. Reduction in incident reports.
Cornell *et al* (2013)	Staggered introduction of Interdisciplinary rounds (IDR), paper and electronic SBAR report	Before-and-after	US: Single site Medical-surgical units Nursing staff (n=75)	Shift handover	Increased time spent on other shift report tasks when using SBAR tool. Increase in verbal communication used when SBAR tool in use. Decreased time spent on writing paper shift report but not electronic. Overall duration of report unchanged.

Empirical studies which evaluated mnemonics					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Bavare *et al* (2013)	SBAR pocket template	Before-and-after	US: Single site Medical and surgical PICU in the US. Clinicians (n=48) n=402 sign-out reviewed before implementation; n=333 patients after implementation	Verbal shift handover	Increase in the content transferred per patient at sign-out. Perceptions of sign-out completeness and comprehensibility increased.
De Meester *et al* (2013)	SBAR training in conjunction with ABCD	Before-and-after	Belgium: Single site Medical and surgical units Nursing staff (n=425)	Communicating about deteriorating patients Shift handover	Decreased number of unexpected deaths per 1000 admissions. Increase in the number of unplanned ICU transfers. SBAR elements recorded more frequently in patient records after implementation.
Grover and Duggan (2013)	SBAR and COLD educational session	Before-and-after	Ireland: Single site Post-anaesthesia recovery room Anaesthetists (no number reported)	Inter-departmental OR to recovery room	Improvement in the handover of assessment or background data. Improvement in the handover of some recommendation data. Improvement in handover of patient name.
Joffe *et al* (2013a)	SBAR structured form	RCT	US: Single site Nurses-physician pairs (n=22) n=92 phone calls	Simulated telephone referrals	The use of the SBAR did not improve performance during patient case communication by phone call. Data elements relating to Situation were reported with and without the use of the tool.
Joffe *et al* (2013b)	SBAR structured form	RCT	US: Single site Nurses-physician pairs (n=22) n=108 phone calls	Simulated telephone referrals	Physicians were observed to fail to treat the cause for the clinical condition, when the background information supplied by nurses was poor.
Ormilon *et al* (2012)	SBAR	(abstract) Before-and-after	US: Single site Nursing staff (no number reported)	Shift handover	Improvement in perceived effectiveness of communication (PEC) after implementation.
Albert *et al* (2012)	EHR template structured by SBAR	Before-and-after	US: Single site PICU (n=542 admissions)	Documentation of patient events	Higher quality documentation of patient events by physicians when SBAR template used compared to when only paper chart documentation, or electronic documentation with free-text notes were used.

Empirical studies which evaluated mnemonics					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Cunningham *et al* (2012)	SBAR educational session	RCT	Australia: Single site Medical or surgical interns (n=69)	Simulated telephone referrals	Improved Global Rating Score in intervention group. Non-significant improvement in data items communicated. No change in subjective self-rating. Intervention group took less time to conduct telephone referral.
Vardaman *et al* (2012)	SBAR	Case study	US: Two sites Medical-surgical units. Nurses, nurse managers, doctors (28 interviews (5 doctors, 9 nurse managers, and 14 staff nurses) (52 interviews (staff nurses))	Multiple	SBAR useful for constructing a mental model to aid patient evaluation. SBAR may legitimise practice for nurses. SBAR may aid development of social capital among staff.
McCrory *et al* (2012)	ABC – SBAR educational session	Before-and-after	US: Single site Paediatric interns (n =26)	Communicating about deteriorating patients (simulated scenario)	All handoffs improved in overall score with the exception of one. Increase in the number of handoffs including an assessment or recommendation. Decrease in elapsed time from the start of hand-off until the intern stated essential content items. Increase in total elapsed time of hand-off.
Moseley *et al* (2012)	SBAR structured form	(pilot) Before-and-after	US: Single site General Neurology, Stroke, and Neurologic ICU Postgraduate neurological residents (n =33 survey respondents before; n= 20 survey respondents after)	Shift handover	Increase in the % of residents who felt that important information was transmitted at handover. Increase in overall satisfaction with sign-out. Deficits in information transferred persisted with new tool.
Sohi *et al* (2011)	SBAR educational session	(abstract) Before-and-after	UK: Single site Paediatric trainees (no number reported)	Shift handover	60% reduction in the time taken to handover each patient.

Empirical studies which evaluated mnemonics					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Gerard, J.C. (2012)	SBAR educational session and learning aids	Before-and-after	US: Single site ICU Nurses (n=28) Physicians (n=30)	Multiple.	Nurses felt nurse-physician communication had improved, physicians did not. Both groups indicated in interviews that the recommendation element may have been too assertive.
Beckett *et al.* (2009)	SBAR Collaborative Communication Education (SBAR-CCE)	Before-and-after	US: Single site Paediatrics/Perinatal Multidisciplinary staff (n= 212)	Multiple	Improved staff perceptions of communications.
Haig *et al* (2006)	SBAR	Before-and-after	US: Single site Multiple specialities Nursing staff (no number reported)	Multiple	Authors report reduction in medication reconciliation errors, and adverse events but do not provide information on how this was assessed. Reported staff compliance and satisfaction.
ISBAR					
Mardegan *et al* (2013)	Medical Emergency Team (MET) running sheet in ISBAR format	Before-and-after	Australia: Single site MET staff (n=256 after survey)	Emergency response to deteriorating patient	Positive staff response. Good compliance recorded.
Thompson *et al* (2011)	ISBAR	Before-and-after	Australia: Single site Junior Medical Officer (JMO) (n=44)	After hours shift handover	Increase in the number of clinical information items transferred during handovers. Duration of handover did not increase. No change in doctor's perceptions of whether the amount of information they had received at handover was sufficient to meet their needs, and some JMO expressed concern that the ISBAR tool might be 'less flexible' and 'less useful' for certain types of handovers.

Empirical studies which evaluated mnemonics					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Marshall *et a.* (2012)	ISBAR educational session	RCT	Medical students (n=17) who received educational intervention six months prior	Simulated telephone calls	Information transferral improved compared with control but less so than when rated immediately after the intervention. Improved clarity compared with control but less so than when rated immediately after the intervention.
Marshall *et al* (2009)	ISBAR educational session	RCT	Medical students (n=168) 17 groups (9 intervention, 8 control)	Simulated telephone calls	Improvement in information transfer among intervention phone calls, that is, an increase in the number of data items communicated. Improvement in a clarity of communication.
Other mnemonics					
Weller *et al* (2014)	SNAPPI educational session	Randomised, blinded pre-post design	New Zealand: Two sites Simulated PACU Anaesthetists (n=43; n=40 had paired data available for analysis)	Communication during simulated critical events	Number of verbalized diagnostic options increased significantly in the SNAPPI group. Team information probe sharing increased to a greater degree by from base-line to follow-up in the intervention group.
Starmer *et al* (2014)	I-PASS Handoff Bundle and TeamSTEPPS teamwork and communication skills workshop	Prospective intervention study	US: n=9 hospitals Residents	Handoff improvement programme	Rate of medical errors and preventable adverse events was reduced from pre to post-intervention. No significant differences were noted post-intervention in the duration of the handover process or patient-family contact.
Abraham *et al* (2013)	Comparison of SOAP and HAND-IT tool	Before-and-after	US: Single site MICU Interns and residents (n=10)	Shift handover	Greater number of communication events when using HAND-IT and fewer communication breakdowns than when using SOAP. Fewer breakdowns relating to diagnostic evaluation, management and treatment when using HAND-IT.
Connor *et al* (2013)	IMOUTA	Before-and-after	US: Single site On-call otolaryngology residents (n=15)	Shift handover	Improvement in perceived knowledge of patient diagnosis, hospital course, active concerns and treatment plans. Improvement in overall comfort with handover. Improved perception of preparedness for oncoming shift.

Empirical studies which evaluated mnemonics					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Tapia *et al* (2013)	PACT	Before-and-after	US: Two sites Junior and senior residents (n=114 handovers before; n=140 handovers after)	Shift handover	Increase in discussion of PACT. Increase in handoff time. Decrease in the incidence of incomplete tasks and lack of patient knowledge. Senior residents reported junior residents were better able to handle emergencies.
Shaughnessy *et al* (2013)	SAFETIPS educational session	Before-and-after	US: Single site. Paediatrics and internal medicine interns (n=27)(n=23 observed before-; n=25 observed after)	Shift handover	Improvement in inclusion of key content. No increase in use of read-back post-intervention. No change in number of questions asked during handover.
Gopwani *et al* (2013)	SOUND	Before-and-after	US: Single site. Emergency Department. Trainee and staff physicians (no number reported)(n=286 handovers before; n=352 after)	Shift handover	Significant increase in the percentage of successful handovers. A mean increase in handover time.
Downey *et al* (2013)	In-use handoff tool compared with IPASS the BATON process	RCT	US: Single site. Urban inner city ED (n=107 patients)	Patients perspective of handoff in the ED	IPASS the BATON was found to be a useful tool for handoff in the ED as it involved the patient, which, in turn, increased patient-doctor communication. The patients were able to ask more questions and respond to them.
Iedema *et al* (2012)	IMIST AMBO	Before-and-after	Australia: two sites ED clinicians and ambulance paramedics (n=398)(n=73 handovers before; n=63 after)	Inter-departmental handover	Shorter handover duration. Decrease in the number of questions asked by triage nurses after the handover. Reduction in repeated content delivered by ambulance personnel.
Starmer *et al* (2012)	I-PASS	Pilot study: feedback from residents and observations made by staff	US: n=10 paediatric institutions	Shift handover	I-PASS mnemonic creates a structure for the handoff process.

Empirical studies which evaluated mnemonics					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Bump *et al* (2012)	SIGNOUT educational session, written handout, feedback from faculty	RCT	US: Single site General medicine residents (n=31)	Shift handover	Significant improvement in the content recorded at sign-out along with consistency of data items recorded.
Adams *et al* (2012)	7 P's	Post-implementation review	US: Single site EM residents, IM residents (no number reported) (n=78 handover observed)	Inter-departmental handover EM to IM	Correlation between the number of Ps communicated and the overall quality of the handover.
Farhan *et al* (2010)	The ABC of handover	Before-and-after	UK: Single site Emergency Department. Multidisciplinary staff (no number reported) (n=41 handover before; n=42 handovers after)	Shift handover	Improvement in transmission of information related to operational details. Participants agreed tool improved handover. Increase in the reporting of staffing issues during handover.
Rice *et al* (2010)	Four step guide for structuring interactions between professionals	(pilot) RCT using qualitative methods of comparison	Canada: Single site Multidisciplinary staff on (n=250). Internal medicine, Clinical Teaching Units (CTU)	Multiple	The uptake for the intervention was low There was low awareness Little difference between the intervention and control groups
Rudiger-Sturchler *et al* (2010)	dINAMO	Before-and-after	Switzerland: Single site Emergency Medicine (EM) Senior physicians (n=9) Residents (n=11)	Shift handover	Decrease in mean duration of handover. Decrease in the amount of perceived missing or wrong information at handover. Non-significant increase in the perceived quality of handover.
Talbot and Bleetman (2007)	deMIST	Before-and-after	UK: Two sites ED staff and ambulance personnel (10 handovers at each site)	Inter-departmental handover	Average accuracy of data retained by receiving staff when deMIST used was 49.2%, when not used, it was 56.6%.

Annex 2 (Literature Review Section)

Empirical studies which evaluated checklists or standardised written protocols					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Petrovic *et al* (2015)	Perioperative handoff protocol in adult PACU evaluated	Prospective, unblinded cross-sectional study	Perianesthesia care unit in a tertiary care facility (n=103 surgery patients) n=53 perioperative handoffs observed, Post-implementation of protocol training: n=50 handoffs observed	OR to PACU (perianesthesia care unit) shift handover	Average number of missing information from surgery and anaesthesia reports and technical defects decreased. Verbal reports increased mean duration of handoffs increased. Nurse satisfaction improved significantly with efficient information sharing.
Weiss *et al* (2013)	Cognitive aid (structured form with prompts to present rationale)	RCT	Canada: Single site PICU 1st and 2nd year residents (n=13; 7 intervention; 6 control)	Shift handover	Increased information transmitted at handover among intervention group. Intervention group handovers ranked higher on organisation, presentation and efficiency.
Karakaya *et al* (2013)	Standardised checklist	Before-and-after	Belgium: Single site Cardiac PICU Anaesthetists (no number reported). Handovers before (n=23); Handovers after (n=25)	Inter-departmental handover OR to PICU	Increase in overall data transfer Decrease in duration of verbal transfer No change in number of interruptions, irrelevant information and confusing information Improvement in median handover assessment score from ICU nursing staff but not medical staff
Sahyoun *et al* (2013)	Standardised checklist	Post-implementation review	US: Single site. ED Registered nurses, emergency medical technicians. Patient handovers (n=285)	Inter-departmental handover ED to ICU	Sensitivity of the communication template in detecting the need for admission to an ICU was 84%, the negative predictive value (NPV) was 95%, the specificity was 77%, and the positive predictive value (PPV) was 50%.
Salzwedel *et al* (2013)	Standardised checklist	Before-and-after. RCT.	Germany: Single site PACU Anaesthesiology residents (n=80; 40 intervention; 40 control)	Inter-departmental handover OR to PACU	Increase in % of data items communicated when physical checklist used compared to group who were just aware of data items to communicate. Increase in handover duration with use of checklist than without.

Empirical studies which evaluated checklists or standardised written protocols					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Petrovic *et al* (2012)	Standardised handover protocol	(pilot) Before-and-after	US: Single site Cardiac Surgery ICU (CSICU) Multidisciplinary CSICU and OR staff (no number reported)	OR to CSICU	The presence of all team members at bedside during handover increased. The sharing of information increased.
Achaiber *et al* (2012) (Abstract)	Standardised form	Before-and-after	UK: Single site PACU staff (no number reported)	Inter-departmental handover OR to PACU	Improvements in the structure and content.
Agarwal *et al* (2008)	Two step process: (1) Telephone handover using standardised pro forma (2) Face to face handover using standardised checklist	Before-and-after	US: Single site Paediatric Cardiac ICU (PCICU. Survey respondents before (n=61/89); Survey respondents after (n=114/124). Patients reviewed before (n=700; Patients reviewed after (n=369)	Inter-departmental handover OR to PCICU	Improved perceptions of adequate information communicated at handover. Reduction in the number of complications observed per patient after implementation.
Jukkala *et al* (2012)	Somatic communication tool	Before-and-after	UK: Single site MICU Nursing staff (n=70)	Shift handover	Improved perception of communication during shift report.
Craig *et al* (2012a)	Standardised handover form	Before-and-after	UK: Single site PICU Multidisciplinary staff (no number reported) Handovers before (n=21); Handovers after (n=22)	Inter-departmental handover OR to PICU	Reduction in information omitted during handover. Improvements in staff perceptions of readiness for handover, and ability to focus on handover. Reduction in the number of interruptions. No change in the duration of the handover.

Empirical studies which evaluated checklists or standardised written protocols					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Takala *et al* (2011)	Standardised checklist	Before-and-after	Finland: Four sites Surgical staff Survey respondents before (n=901); Survey respondents after (n=847)	Communication in the OR	Improved communication of patient identity. Increase in the discussion of critical events between surgeons and anaesthesiologists. Reduction in perceived communication breakdowns between circulating nurses and anaesthesiologists. No change in surgeons' perceptions of communication.
Joy *et al* (2011)	Standardised handover form	Before-and-after	US: Single site PICU Surgical team members (no number reported) Handovers before (n =41); Handovers after (n=38)	Inter-departmental handover OR to PICU	Reduction in the mean number of omissions per handover event. Reduction in the mean number of technical errors per handover event.
Zavalkoff *et al* (2011)	Standardised checklist	Before-and-after	Canada: Single site Cardiac PICU Surgical staff (n=33)	Inter-departmental handover OR to PICU	Improvements in completeness of data handed over. No change in handover duration.
Narasimham *et al* (2006)	Daily goals sheet	Before-and-after	US: Single site IC. Nurses, physicians (no number reported)	Handover rounds	Improvement in staff perceptions of team communication. Improvement in staff understanding of goals. Reduction in mean LOS over the course of 9 months compared with 9 months for same period of previous year.
Coutsouvelis *et al* (2010)	Standardised checklist	Before-and-after	Single site oncology and haematology units clinical pharmacists, critical care medical staff (no number reported) Handovers before (n=30) Handovers after (n=22)	Inter-departmental handover OHU to critical care	Non-significant decrease in median LOS in post-implementation period. Reduction in number of patients requiring a pharmacy intervention to rectify error in the in post-implementation period. Reduction in the average number of errors per patient handover in post-implementation period Increase in the number of prescribed therapies administered on time.

Empirical studies which evaluated checklists or standardised written protocols					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Lyons *et al* (2010)	Standardised handover protocol	Before-and-after	UK: Single site Neurological ICU NCHDs (no number reported) Handovers reviewed (n=10)	Shift handover	Timing of handover showed no significant difference by location but the timing of gaps between handover significantly different between locations. Clinical content of handover differed between ward and coffee room, and between ward and lecture theatre.
Salerno *et al* (2009)	Standardised checklist	Before-and-after	US: Single site General internal medicine Interns (n=34)	Shift handover (day to night)	Improvement in perception of sign-out by both night and day interns. Night interns perceived there was less data omitted at sign-out but not that sign-out was more accurate. Day interns perceived less frequency of dropped tasks post-implementation. No change in satisfaction with sign-out at post-implementation.
Stahl *et al (2009)*	Standardised checklist	Before-and-after	US: Single site Trauma and surgical ICU Clinical teams (interns, residents, fellows, attending trauma surgeon) Patient days observed (n=332)	Shift handover	Laboratory follow-up items significantly less likely to be lost when checklist was used.
Berkenstadt *et al* (2008)	Standardised checklist Teamwork training in use of checklist	Before-and-after	Israel: Single site. Medical step-down unit. Nursing staff on a hospital Handovers before (n=224) Handovers after (n=166)	Shift handover	Increased communication of patient physiologic parameters. Increased communication of demographic information. Increased communication of the reason for patient's presence in unit.

Empirical studies which evaluated checklists or standardised written protocols					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Ferran *et al* (2008)	Standardised handover form	Before-and-after	UK: Single site. Trauma and orthopaedic unit On-call physicians Patient handovers forms before (n=48) Patient handover forms after (n=55)	Shift handover	Increase in the amount of overall data handed over at shift change.
Lingard *et al* (2008)	Standardised checklist	Before-and-after	Canada: Single site Surgical staff (n=223)	Communication in the OR	Significant decrease in mean communication failures. Decrease in the number of communication failures associated with at least one visible negative consequence.
Wayne *et al* (2008)	Standardised handover form	Before-and-after	US: Single sit. 12 surgical services. Multi-disciplinary staff: Nurses (n=40) Residents (n=187)	Shift handover	Improvement in perceived accuracy of handover information.
Agarwal *et al* (2008)	Daily goals sheet	Before-and-after	US: Single site PICU . Multidisciplinary staff (no number reported)	Communication during morning handover rounds	Improved understanding of patient care goals among nurses and physicians. No change in LOS.
Phipps *et al* (2007)	Daily goals sheet	Before-and-after	US: Single site PICU Nursing staff (n=40)	Handover rounds	Perceived improvement in nurse-physician communication. Perceived improvement in communication between nurses on different shifts.
Lingard *et al* (2005)	Standardised checklist	Before-and-after	Canada: Single site Surgical staff (n=33)	Communication in the OR	Staff felt the checklist was not time consuming or difficult to use but may have been difficult to find the right 'timing' in which to go through the checklist. Checklist was not always used consistently.

Empirical studies which evaluated checklists or standardised written protocols					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Pronovost *et al* (2003)	Daily goals sheet	Before-and-after	US: Single site Surgical ICU Nurse practitioners (n=3) and residents (n=6) caring for patients during the study period	Handover rounds	Improvements in staff understanding of goals over eight week study period. Reduction in mean LOS over the course of a year following implementation.
Lee *et al* (1996)	Standardised sign-out card	RCT	US: Single site Cardiac ICU (CICU) Medical interns (n=19; 10 intervention; 9 control)	Shift handover	Improvement in data completeness among intervention sign-outs. Positive reaction by interns to the use of the card.

Annex 3 (Literature Review Section)

Empirical studies which evaluated performance standardisation					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Anderson *et al* (2015)	Standardized scoring system used to assess handoff quality (both giver and receiver)	Prospective observational study. Observed frequency of distractions and their impact on the handover quality	US: 3 teaching hospitals (university, county and veterans) 2 independent observers (n=214 surgical resident handovers observed in 18 months)	Surgical resident handovers	Distractions found in 48% of handoffs, included: pagers, phone calls, noise and less commonly room changes and other healthcare professionals' distractions. Evening handover distractions more common than in the morning handovers. Quality of handover not diminished by distractions but increased in length.
Venkatesh *et al* (2015)	ED shift handoffs observed	Prospective observational study; primary outcome: failure to communicate patient vital signs	US: urban academic hospital n=1,163 patient handoffs observed	ED shift handover	14% of handoffs involved a vital sign communication error oversight but were not related to ED overcrowding or interruptions in care.
Vergales *et al* (2014)	Multi-component process: and standard operating procedures; post-op 'huddle', Post-surgical summary	Post-implementation audit	US: Single site. OR and PICU Multidisciplinary staff (no number reported) (n=79 consecutive handovers observed)	Inter-departmental handover OR to PICU	Majority of staff felt the process improved the quality of care. High adherence to the process observed.
Sadri *et al* (2014)	Standardised handover protocol: ABCD of handover, standard operating procedures	Before-and-after	UK: Single site plastic surgery referral unit Multidisciplinary staff (no number reported)	Shift handover	Increase in presence of senior clinician at handover. Increase in complete patient information handed over.

Empirical studies which evaluated performance standardisation					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Bradley *et al* (2014)	Ethnographic interviewing and questions to staff on their perceptions of patient involvement	Mixed-method, pre-test, post-test evaluation	Australia: n=3 acute hospital wards n=9 inpatients and n=48 nursing staff	Nurse-to-nurse bedside handover	Patient preference was towards the bedside handover method, allowing for patients being aware of who cares for them and are more involved in the discussion. The authors concluded a more recent move towards and the benefits of bedside handover for a more patient-centred approach.
Catchpole *et al* (2013)	Multi-component process: Checklist Safety checks Facilitating assertiveness Task allocation Key individual	Before-and-after	UK: Single site PCICU Multidisciplinary staff (no number reported) (n=23 handovers before n=27 handovers after)	Inter-departmental handover OR to PICU	Reduction in mean technical errors and mean omissions.
Johnson *et al* (2013)	Multi-component process: standard operating procedures	Post-implementation review	US: Single site Laboratory staff, ED clinicians (no number reported)	Inter-departmental communication Laboratory and clinical staff	No adverse events related to contaminated samples. Increased physician satisfaction with the process of receiving test results.
Starmer *et al* (2013)	SIGNOUT, Team STEPPS Relocation Handover supervision	Before-and-after	US: Single site Paediatric units Resident physicians (n=84)	Shift handover	Reduction in overall medical error rates per 100 admissions. Reduction in key data omissions. No decrease in number of interruptions.
Okafor *et al* (2013) (Abstract)	Multi-component process: standard operating procedures	Before-and-after	US: Single site ED. EM residents, attending physicians (no number reported)	Shift handover	Reduction in the number of errors made during hand over of care.
Aase *et al* (2011)	Multi-component process outlining: standard operating procedures	Multistage focus group interview design	Norway: Single site ED nurses (n=12), ambulance personnel (n=10)	Inter-departmental handover Ambulance to ED	Ambulance staff felt nurses who may not want to leave a patient they are attending in order to receive handover of another. Nurses reported time constraints as a barrier to consistently using the protocol. Long standing relationships and habits are difficult to remove or alter with a protocol.

Empirical studies which evaluated performance standardisation					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Olm Shipman *et al* (2011) (Abstract)	Multi-component process:standard operating procedures	Post-implementation audit	US: Single site (n17 handover observations)	Inter-departmental handover OR to neuroscience ICU	Improvement in provision of a one-hour warning notification of handover. Increase in presence of all team members during the handoff. Increase in physician satisfaction.
Dingley *et al* (2008)	Training in use of SBAR team huddles Multidisciplinary rounds, daily goals sheets Escalation tool	Before-and-after	US: Single site MICU and Acute Care Unit (ACU) Multidisciplinary staff across the hospital	Inter- and intra-departmental communication	Less time was spent on communication issue resolution. Increase in surveyed nurses' overall positive perception of communication events.

Annex 4 (Literature Review Section)

Empirical studies which evaluated electronic tools/IT solutions					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Agarwala *et al* (2015)	Electronic checklist	Prospective observational assessment	US: Two sites Intraoperative n=39 handoffs observed with checklist; n=30 handoffs observed without checklist	Shift handover	Standardized and easily accessible electronic checklist for intraoperative handover significantly increased transfer of information, retention and ameliorated communication without increasing the duration of the process. High levels of satisfaction in clinicians and its continued use was voluntary intra-operatively and for post-operative planning. Bilateral communication was encouraged between the clinicians.
Popovici *et al* (2015)	Inter-clinician communication and interaction with IT. (Patient transfer process from ED to general internal medicine	Observational study	North America: Two sites. n=5 nurses and physicians involved in patient transfers were observed in separate occasions in each institution	Patient transfer	Design of new IT for in-hospital communications should consider: current hospital communication system, clinician workflow, barriers in communication (e.g. interruptions, lack of awareness in consultation statuses, mixed use of paper and electronic tools, lack of and updated contact details).
Prochaska *et al* (2015) (Abstract)	Mobile technology as preferred method of communication among residents for inpatient clinical care	Cross sectional survey	Internal medicine residents n=2 academic medical centers	In-hospital communication	SMS messages was the preferred method of in-hospital communication due to ease of use. Future studies are required to address the situation of security, especially regarding patient confidentiality of information, for in-hospital mobile technology.
Gonzalo *et al* (2014)	Electronic handoff tool	Prospective mixed-methods analysis (before and after eSignout tool implementation)	US: Single site University, tertiary care hospital Internal medicine resident physicians	ED to medicine ward patient transfer	eSignout tool more efficient (93%) than verbal communication and verbal signout process. The rate of reported adverse events were similar pre- and post-implementation of the tool. The authors concluded electronic tools should be used in conjunction with an optional verbal communication as a means of standardizing and improving the efficiency of patient handoffs.
Jiang *et al* (2014)	Electronic handoff documentation tool: analysis of its usage log data	Quantitative and qualitative analysis	US: single site Large teaching hospital	Patterns of edits in using an electronic handoff tool (clinicians)	Findings reveal the information in the documentation tool was consistently updated daily with residents reporting this was done for the information to be readily available for the other team members. Significant variation however, was seen in the frequency of updates between the units.

Empirical studies which evaluated electronic tools/IT solutions					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Montero *et al* (2014) (Abstract)	Computerized physician handoff (CHT) tool	Prospective observational cohort study	US: Single site (university hospital) n=6 resident teams	Physician handoffs	When compared to written sign-outs, medications recorded on the CHT were more accurate but there was concern for a "clutter" effect.
Oroviogoicoechea *et al* (2013)	Electronic template integrated with the EMR	Post-implementation review	Spain: Single site Medical and surgical nurses (n=81/121 survey respondents)	Shift handover	Majority of nurses perceived the tool as useful and that it had a positive effect on communication at shift change. The number of words recorded in the free text component of the shift report decreased following introduction of the template.
Graham *et al (2013)*	Electronic handoff template linked to EHR Requirement of verbal face-to-face handoff	Before-and-after	US: Single site Primary and night-time covering interns (n=39) at a US hospital (n=200 written handoff reviewed)		After implementation, verbal and written handoffs rated higher quality by interns. No reduction in AE. Non-significant reduction in near misses. Quality of written handover content improved post-intervention. Significantly fewer data omissions in post-intervention handoff forms.
Dubosh *et al* (2012) (Abstract)	Electronic sign-out checklist	Before-and-after	US: Single site EM and non-EM residents rotating in the ED (n=115 handovers before; n=72 after)	Shift handover	Improvements in completeness of sign-out information. No reduction in the duration of sign-out per patient.
Payne *et al* (2012)	Standalone Web based application: Ward Manager	Before-and-after	US: Single site Internal medicine 12 resident teams (n=80 respondents before; n=161 after)	Shift handover	Reduction in the perceived number of near misses. Increase in the completeness of information handed over. Increase in reported confidence with the received handover.
Govier *et al* (2012)	Standalone electronic spreadsheet stored on shared drive	Post-implementation review	UK: Single site Weekend on-call doctors (no number reported)	Week to weekend handover	Good compliance with new system recorded. Some access permission issues reported by weekend team members. The fact that information not always regularly updated was reported as a limitation.
Fischer C.M *et al* (2012) (Abstract)	Web based patient tracking application	Before-and-after	ED and ICU. Not specified.	Inter-departmental handover ED to inpatient ward	No change in ED LOS. Decrease in median time from ED departure to bed assignment.

Empirical studies which evaluated electronic tools/IT solutions					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Ahmed *et al* (2012)	Structured handover template on intranet 40 min. educational session	Before-and-after	UK: Single site Acute surgical ward NCHDs (no number reported) (n=37 admissions before; n=155 admissions after)	Shift handover	Improvements in the recording of: medical history, demographics and hospital number although issues still remained in the recording of history, diagnoses, and record or imaging performed.
Clark *et al* (2011)	Excel document stored on shared drive. Requirement for face-to-face verbal handover		US: Single site. General surgery residents, residency faculty, care providers, and hospital administration (numbers not reported)	Shift handover	Majority of documentation was compliant. Adequate sign-out performed by majority of residents.
Ryan *et al* (2011)	Electronic template filled out by SHO and emailed to on-coming team Verbal face-to-face handover	Before-and-after	Ireland: Single site Surgical staff (no number reported)	Shift handover	Reduction in median patient LOS in the two week post-intervention period.
Staggers *et al* (2011)	Electronic handoff template integrated with the EHR	Post-implementation review	US: Single site Acute care units Nursing staff (n=26)	Shift handover	Electronic printed summary underutilised by staff. Information was felt to be incomplete on some occasions. Summary did not always match the information felt required at handover. Portability of handwritten notes was a benefit. Act of writing notes felt to aid cognition.
Palma *et al* (2011)	Electronic handoff application integrated with the EMR	Before-and-after	US: Single site. Neonatal ICU (NICU) Multidisciplinary neonatal care staff (n=52 before; n=46 after)	Shift handover	Increase in provider satisfaction. Increase in perceived accuracy of the information handed over. More time required to update the new system.
Anderson *et al (2010)*	Electronic handoff application integrated with the HER	Before-and-after	US: Four sites. Internal medicine residents (n=550 handover sheets before; n=413 after)	Shift handover	Improved recording of vital information. Improved perceptions of the ease with which handoff document could be read. Decrease in time spent preparing handoff documents.
Bernstein *et al* (2010)	Electronic handoff template integrated with the EHR	Before-and-after	US: Single site: Academic children's hospital Physicians (no number reported)	Shift handover	Increase in staff satisfaction with the sign-out process. Demonstrated good adoption of the tool, which was sustained over three year period, indicating its compatibility with existing work processes.

Empirical studies which evaluated electronic tools/IT solutions					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Campion *et al* (2010)	Standalone electronic application	Qualitative analysis (grounded theory approach)	US: Single site Resident physicians (n=730 sign-out notes reviewed)	Shift handover	Four data entry techniques appear beneficial for standardising sign out communications: templates, automatic input, structured data capture, and free text.
Kochendorfer *et al* (2010)	Electronic 'rounding' report integrated with the EMR	Before-and-after	US: Single site. Inpatient wards Residents, faculty members (n=53/93 before n=62, 108 after)	Shift handover	Decrease in time spent on pre-rounding i.e. gathering data for the handover report. Increased provider satisfaction with the report. Majority felt rounding report improved patient safety.
Stein *et al* (2010)	Electronic application, integrated with the EMR	Retrospective, descriptive analysis of free text entries	US: Two sites. Primary and covering physicians (~8 months of data from Site A, and ~18 months of data from Site B)	Shift handover	Common terminology and phrases utilised between the two medical centres. Indicate potential for standardised terminology and drop down boxes to be incorporated in electronic system.
Van Eaton *et al (2010)*	Electronic handoff app. integrated with the HER	RCT Crossover design	US: Two sites. Surgical and internal medicine residents (n=161)	Shift handover	No negative impact on medical errors, medication errors, and the number of resident-reported incidents.
Flanagan *et al* (2009)	Patient Handoff Tool (PHT), integrated with the EMR	Post-implementation review	US: Single site. Internal medicine. Residents, physicians (n=35/42 survey respondents)	Shift handover	Hand off of printed PHT forms is inconvenient. PHT needs to be organised by patient location.
Little *et al* (2009) (Abstract)	Electronic application, e-HOT, integrated with EMR	Before-and-after	US: Single site EM Residents (no number reported)	Shift handover	EM residents tended not to adopt a new process of electronic handover, e-HOT, if they believed their current practice of handover was appropriate.
Patel *et al* (2009)	Web based program, TraumaPal	Before-and-after	UK: Single site Trauma and orthopaedic unit NCHDs (n=43)	Shift handover	Majority reported improvements in the quality of information handed over at sign-out.
Pickering *et al* (2009)	Electronic handover template (printed out for handover)	Before-and-after.	Ireland: Single site ICU Junior and senior staff (no number reported) (n=137 handover s reviewed)	Shift handover	Improvement in 'clinical intent score' (principal and secondary goals in relation to patient treatment). Improvement in 'handover score' (assessment of accuracy of patient information recall with reference to notes gathered during handover process).

Empirical studies which evaluated electronic tools/IT solutions					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Rabinovitch *et al* (2009)	Intranet based application integrated with the EMR	(pilot) Before-and-after	Canada: Single site Neurosurgery ward Nurse practitioners (n=25) (n=13 respondents before n=20 after)	Shift handover	Poor overall response to the system. Decrease in number of logins to system over the intervention period.
Raptis *et al* (2009)	Electronic handover template integrated with the EMR	Before-and-after	UK: Single site Acute hospital Medical interns (no number reported) (n=773 handovers before n= 872 handovers after)	Day to night shift handover	Greater number of information data fields complete post-intervention.
Hertzum *et al* (2008)	Fully integrated EMR	Before-and-after Five day trial	Denmark: Single site Stroke unit Nursing staff (no number reported) (n=10 handovers reviewed)	Shift handover	No change in handover duration. Improvement in clarity of nursing plan among nursing staff but not nurse leader. Reduction in the mean number of missing data per patient. Reduction in the mean number of messages to pass on per patient. No change in nurses' mental workload during handover.
Wong *et al* (2007)	Electronic application: Extracts information from the admin and pathology system	Case study	Australia: Single site Internal medicine Clinicians (n=20 interviewed) (n=50 handovers observed)	Shift handover	Discrepancy between handover reported in interviews (efficient process, good information exchange) and observed handovers (cultural, environmental, human factors) impacted on the effectiveness of the handover process. Authors highlight the difficulty in implementing an IT solution when the perceptions and observations of handover process do not necessarily align.
Barnes *et al* (2011)	Electronic application linked to OpenKIMS database	Before-and-after	Australia: Single site Medical interns and registrars (n=12 survey respondents before n=13 respondents after)	Shift handover	Majority of staff reported satisfaction with new system of handover with preference for typed rather than written notes.
Sidlow *et al* (2006)	Electronic handoff application integrated with the HER	Post-implementation review	US: Single site General medicine Nursing staff (n=19/20 survey respondents)	Shift handover	Overall positive response to the new system. Participants felt that the sign-out form should make it clear who the responsible physician for the given patient is.

Empirical studies which evaluated electronic tools/IT solutions					
Author	**Tool**	**Design**	**Setting and sample**	**Context**	**Outcomes**
Van Eaton *et al (2005)*	Electronic handoff application integrated with the HER	RCT Crossover design	US: Two sites Surgical and internal medicine residents (n=161)	Shift handover	Reduced number of reported patient missed out during handover rounds among the intervention group. Reduced time spend pre-handover (copying data from EHR). Reduced handover duration.
Petersen *et al* (1998)	Electronic handoff template on shared server	Before-and-after	US: Single site Inpatient wards Physicians (n=99) (n=1874 admissions before; n=3747)	Shift handover	Trend towards reduced number of adverse events among patients in the post-intervention period. Unable to conclude whether the intervention led to a reduction in the number of preventable events.
Ram and Block (1993)	Electronic template	Before-and-after	US: Two site Family practice department Residents (n=7)	Shift handover	Increased satisfaction post-implementation. Residents felt that the new system was improved legibility and satisfaction with sign-out. Residents disliked the data entry element such that information was not always updated, and the need to be trained on the new system.

Summary of economic evaluation studies retrieved			
Author	**Article focus**	**Aims and setting/population/design**	**Conclusions**
Ahmad *et al.* (2015)	Cost-benefit analysis of twice-daily consultant ward rounds	Study conducted at two medical words that received acute admissions from medical assessment and ED. Data collected for two years regarding: total number of patients admitted; investigations carried out; pharmacy costs	The cost-benefit analysis, revealed the net amount of money saved by decreasing unnecessary investigations and pharmacy medication use.
Yao *et al.* (2012)	Evaluation of a predevelopment service delivery intervention to improve clinical handovers	Estimated the expected cost-effectiveness of an intervention, aimed to ameliorate patient handover between hospital and the community. Estimated health service costs with preventable adverse events and conducted sensitivity analysis and calculations of health benefits.	One third of adverse events are preventable upon improving the handover process with cost-savings (€14.3) reported, calculated per discharge. The intervention was found to be cost-effective at around €214 per quality adjusted life year.
Carr *et al.* (2012)	The cost impact of a health information exchange (HIE) on the management of patients	Pilot study to investigate the HIE to avoid inappropriate testing and treatment of patients (urban, academic ED setting) and a cost analysis to evaluate the impact the HIE in ED had on institutional costs. Survey on physicians, residents, medical students.	Observational data showed a decrease in the resource uses, a result of gaining access to a regional HIE. $283,477.69 in savings was reported from avoided radiologic studies and admissions. Time was saved and an improvement in the quality of care was reported for patients, when information was obtained from the HIE.
Hess *et al.* (2010)	The value of adding a verbal report to written handoffs on early readmission following prolonged respiratory failure.	Study to investigate if supplementing a written report with a verbal phone report by physicians and nurses, decreased rates of re-admission and reduced hospital costs. Respiratory acute care unit (one hospital) over a two year period.	A significant reduction in cost, with estimated median total cost of care significantly less; average saving of circa. $184,000 for every 100 patients discharged.
O'Leary *et al.* (2010)	The impact of structured interdisciplinary rounds on a medical teaching unit.	Controlled trial to compare structured format for communication and regular interdisciplinary meetings of a medical teaching unit to a similar unit (control). (n=147 survey participants)	A greater number of nurses on the intervention ward gave high ratings to the quality of collaboration with resident physicians (intervention) in comparison to the control group. Adjusted length-of-stay and hospital costs, however, were not significantly different between the two units.
Schmidt *et al.* (2006)	Evaluated the integration of scanned document management with the anatomic pathology laboratory information system	Scanned document management systems (SDMS) were implemented for a laboratory information system. Cost-benefit data was collected	The authors concluded the SDMS had time-saving and workflow benefits but reported "modest" direct financial benefits. Modest direct financial benefits from an electronic document management systems (EDMSs), and 'indirect and intangible benefits', notably time savings and access to data for pathologists and residents.

Summary of economic evaluation studies retrieved			
Author	**Article focus**	**Aims and setting/population/design**	**Conclusions**
Palmer *et al.* (2002)	Examined the effect of a patient care partnership project on cost and quality of care	Aimed to improve communication among physicians, nurse discharge planners and hospital administration and to optimise cost and quality to patients. Setting: tertiary care referral centre,	The intervention showed a decrease in average costs per patient and length-of-stay.
Flanagan *et al.* (1995)	Examined the cost-effectiveness of a health information systems	Information Network for Online Retrieval and Medical Management (INFORM) and health information system (HIS) for one hospital, analysed to develop a computer based patient record system, in a cost-effective way.	Physician's use of the system was mainly for obtaining laboratory results while nurse usage was more diverse. Cost of the HIS system was reported to be relatively low as a percentage of the gross operating budget or a ratio to the volume of patient activities within the medical centre. INFORM was a cost-effective solution to the information demands of staff in an organised manner.

Annex 5 (Literature Review Section)

Description of common mnemonic tools

SBAR

SBAR is a situation briefing model developed by the United States Navy and originally developed for healthcare by Michael Leonard, MD, Physician Leader for Patient Safety, along with colleagues Doug Bonacum and Suzanne Graham at Kaiser Permanente with a view to improving communication and patient. Safety in the context of perinatal care. SBAR serves as a mechanism to structure conversations, in particular, critical communications. As outlined in the OSSIE Guide to Clinical Handover Improvement (Australian Commission on Safety and Quality in Healthcare 2010b) the acronym refers to: Situation, a report on the current issue, Background, on the clinical background to the problem, Assessment, a presentation of the current problem, and Request or Recommendation, a suggestion on what should be done or requested to be done for the patient. While the mnemonic can be used in many varying healthcare communication scenarios, it is typically adapted for use in the specific environment, by including prompts of specific information under each of the four data elements (Haig *et al.* 2006). An example, obtained from the NHS Institute for Innovation and Improvement is shown below. (http://www.ihi.org/resources/pages/tools/sbartechniqueforcommunicationasituationalbriefingmodel.aspx)

Situation	• Identify yourself the site/unit you are calling from • Identify the patient by name and the reason for your report • Describe your concern
Background	• Give the patient's reason for admission • Explain significant medical history • You then inform the consultant of the patient's background: admitting diagnosis, date of admission, prior procedures, current medications, allergies, pertinent laboratory results and other relevant diagnostic results. For this, you need to have collected information from the patient's chart, flow sheets and progress notes
Assessment	• Vital signs • Contraction pattern • Clinical impressions, concerns
Recommendation	• Explain what you need – be specific about request and time frame • Make suggestions • Clarify expectations

ISBAR

ISBAR originates from SBAR and was developed for use as part of an Australian National Clinical Handover Initiative project led by Hunter New England Area Health Service (Aldrich, R. *et al.* 2009). It additionally includes the Identify data element to ensure that the relevant clinicians and patient are identified as part of the communication. As outlined in the HSE Acute Medicine Programme, the mnemonic refers to: Identify, confirming your identity, the identity of the required clinician and reporting the identity of the patient in question, Situation, reporting the current situation, and the reason for communication, Background, reporting relevant medical history and background for the patient, Assessment, a report on what you feel is the problem, Recommendation, what you feel the receiving clinician should do. An example of how ISBAR may be adapted for use on an obstetric unit is obtained from the South Australia Department of Health, is shown below.

(http://www.hse.ie/eng/about/Who/clinical/natclinprog/acutemedicineprogramme/earlywarningscore/isbarchart.pdf)

Identify	• Patient's MRN, Name and DOB • Name and title/role of staff handing over • Operation and date (e.g. Vag hyste + A/P repair)
Situation	• Reason for admission (e.g. Hyperemesis @12 weeks) • Diagnosis if known (e.g. Active stage of labour) • Mode of delivery and date (e.g. LSCS for CTG changes)
Background	• Relevant previous history (e.g. Elective LSCS for breech, allergic to penicillin, any social issues of note)
Assessment	• Latest clinical assessment, clinical and investigations (e.g. VE: 4 cm ROT -1 at7.30, Urine output, Labs, Hb ,B/P, pulse, temperature and respirations, pain score, patient anxiety)
Recommendation	• Actions required after handover (e.g. Call surgeon for urgent consult –specify level of urgency with timeframe; "Dr Jones to discuss situation with patient and partner at 10:00am") • Risks (e.g. eclampsia) • Assign individual responsibility for conducting any task

ISoBAR

ISoBAR was originally developed as part of collaboration handover improvement project led by the Western Australian Country Health Service (WACHS) and Royal Perth Hospital (Porteous *et al.* 2009) for use in the communication relating to inter-hospital transfer whereby communication occurred by telephone, supplemented by written documentation. As outlined in the OSSIE Guide to Clinical Handover Improvement (Australian Commission on Safety and Quality in Healthcare, 2010b) the mnemonic refers to: Identification, a report on three key identifiers: Name, DOB, and Medical record number to ensure patients are correctly identified, Situation and Status, a report on the patient's current status, that is, whether they are improving or deteriorating, Observation, the incoming team are informed of latest observations, Background and history, the incoming team are informed of the background to the patient's situation including the present problems, underlying issues, diagnosis, and whether current management is working, Assessment and actions, this aims to ensure all pending results or unusual findings are conveyed to the oncoming team, actions that still remain to be completed, and a plan for escalation and communication of the case to higher level of care, Responsibility and risk management, responsibility for the patient must be transferred to oncoming team, by way of

signing relevant paperwork, that is, handover reports, and by closing the communication loop, carrying out read-back of core information. Observation was included as a separate element to distinguish between 'old' or inaccurate information that was frequently found to be handed over under Situation. Data communicated under Observation is intended to prompt a call or trigger for emergency assistance.

SBAR-R / ISBAR-R

As part of the Quality and Safety Education for Nurses (QSEN) project, a variation of SBAR and ISBAR, which includes an additional R for Read back has been implemented in the curriculum at the University of Pittsburgh Medical Center Shadyside School of Nursing (http://qsen.org/reformulating-sbar-to-i-sbar-r/) and at the University of Akron, Ohio (Enlow *et al.* 2010). The latter provide the template below as an example of how the mnemonic may be used to prepare report prior to calling a physician.

Identify	• Name, title and unit
Situation	• The patient you calling about and the room number • The reason you are calling
Background	• Admission diagnosis and admission date • State pertinent medical history • Brief synopsis of treatment if pertinent
Assessment	• Most recent vital signs • Changes in vital signs or assessment from prior assessment
Recommendation	• Report what you think would be helpful or needs to be done (e.g. medications, treatments, tests, X-rays, EKG, CT, transfer to critical care, physician evaluation, consultant evaluation) • Ask about any changes in orders
Read Back	• Restate the orders you have given • Clarify how often to do vital signs • Under what circumstances to call back

SHARED

The SHARED mnemonic, was developed as part of a Australian Clinical Handover Initiative project conducted at the Mater Hospital (Hatten-Mastersonand Griffiths 2009) to improve communication between Visiting Medical Officers (VMO) and midwives, specifically to ensure clinical information is handed over at crucial time-points: 1. Referral to the VMO from midwife following a change in woman's condition and, 2. Referral from VMO to recovery nurse/midwife post-Caesarean. As outlined in the OSSIE Guide to Clinical Handover Improvement (Australian Commission on Safety and Quality in Healthcare 2010b) the mnemonic refers to: Situation, a report on the reason for patient admission, or for the phone call, History, a report on the details of recent treatment and actions along with medical history, Assessment, a reports on any recent results obtained, and an assessment of the severity of the situation, Risk, a report on any specific risks associated with the case; i.e., allergies, risk of infection, any susceptibility to certain incidents, falls for example, Expectation, a report on the expected plan for care, and patient outcomes, and Documentation, a report on any relevant documents, progress notes, details of a care path, and medical record.

IMIST-AMBO

The mnemonic IMIST-AMBO is commonly used in the context of handover from ambulance personnel to ED staff and was originally developed by Jacinta Young, to improve handover from paramedics in the Northern regions of New South Wales (NSW) (Iedema and Ball 2010). The MIST model, incorporated in the IMIST AMBO protocol, was originally developed from a model, by Professor Tim Hodgetts in the UK, for use in South Africa (Talbot and Bleetman 2007). The IMIST AMBO mnemonic may be used in conjunction with ISBAR as outlined in a toolkit developed by the ARCHI (2013a). As outlined by Iedema and Ball (2012), the mnemonic refers to: Identification of the patient, Mechanism of injury/illness, Injuries sustained or suspected, Signs, vitals and GCS, Treatment given and trends/response to treatment, Allergies, Medications, Background history, and Other (social) information.

SOAP

The SOAP note was originally used as a generic tool for coordinating patient-care delivery and management process in the Medical ICU (MICU), allowing clinicians to standardise entries to the medical record in a problem-based format that is, recording data about the health status of a patient in a problem-solving system. The mnemonic reminds clinicians to document a patient's Subjective symptoms and complaints, Objective physical findings and test results, as well as their Assessment and management Plan.

ISHAPED

The ISHAPED mnemonic was originally developed by Friesen *et al.* (2013) as part of the Picker Institute Always Events initiative, with the aim of improving the experiences of patients and families and making care more patient-centred.

Annex 6 (Literature Review Section)

Level of evidence of the included studies		
1++	High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias (RCTs rated as high quality (++) using the SIGN checklist for RCTs)	-
1+	Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias (RCTs rated as acceptable (+) using the SIGN checklist for RCTs)	Smeulers *et al*. (2014), Marshall *et al.* (2009), Marshall *et al.* (2012), Cunningham *et al.* (2012), Weiss *et al.*(2013), Salzwedel *et al.* (2013)
1-	Meta-analyses, systematic reviews, or RCTs with a high risk of bias (RCTs rated as unacceptable (-) using the SIGN checklist for RCTs)	Joffe *et al.* (2013a), Bump *et al.* (2012), Lee *et al.* (1996), Van Eaton *et al.* (2005), Van Eaton *et al.* (2010)
2++	High quality systematic reviews of case control, cohort studies, RCTs or before-and-after intervention studies (Rated as high quality (++) using the SIGN checklist for reviews)	Abraham *et al.* (2014)
2++	High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal	Pothier *et al.* 2005; Bhabra *et al.* 2007
2+	Systematic reviews of case control, cohort studies, RCTs or before-and-after intervention studies with a possible risk of bias (Rated as acceptable (+) using the SIGN checklist for reviews)	Breuer *et al.* (2015), Arora *et al*. (2009), Downey *et al*.(2013), Russ *et al.* (2013), Riesenberg *et al*. (2009b), Flemming *et al*. (2013), Robertson *et al*. (2014)
2+	Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal	-
2-	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal. Before-and-after intervention studies with a risk that the relationship is not causal.	Remaining empirical studies which evaluated the effectiveness of tools or practices
3	Non-analytic studies, e.g. case reports, case series, post-implementation audit/review	Studies which evaluated the effectiveness of tools or practices: Vergales *et al.* (2014), Olm Shipman *et al.* (2011), Johnson *et al.* (2013), Adams *et al.* (2011), Vardaman *et al.*(2012), Chaboyer *et al.* (2008) Remaining empirical studies which assessed current practice in handover.
4	Expert opinion	-

Annex 6 continued /...

Table 7: Grading of recommendations

A	At least one meta-analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population or; A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1++ or 1+
C	A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 2++
D	Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2+

Table 8: National Quality Assurance Criteria Score

Title	**Score**
British Medical Association (BMA) (2004). *Safe handover: safe patients. Guidance on clinical handover for clinicians and managers.*	3
Cincinnati Children's Hospital Medical Center (2013). *Best Evidence Statement. Increasing Patient Satisfaction by Moving Nursing Shift Report to the Bedside.*	5
Department of Health, Western Australia (2013). *WA Clinical Handover Policy*. Perth: Department of Health, WA.	3
Department of Health (South Australia). (2013). *Clinical Handover Guideline*. Department of Health (South Australia). (2013). *Clinical Handover Policy*.	3
Royal College of Surgeons of England. (RCSE) (2007). *Safe handover: Guidance from the Working Time Directive working party*.	N/A
NSW Department of Health (2009). *Implementation Toolkit. Standard Key Principles for Clinical Handover*.	N/A
Australian Commission on Safety and Quality in Health Care (ACSQHC) (2012). *National Safety and Quality Service Standards. Standard 6: Clinical Handover.*	N/A

Appendix 6: National fieldwork report – analysis of existing clinical handover practices

Research Project to Support the Development of a National Clinical Guideline (Clinical Handover: Acute Hospitals)

Commissioned by the Clinical Effectiveness Unit, Department of Health

Final report

Gerard Fealy, Suzanne Donnelly, Gerardine Doyle,
Maria Brenner, Elaine Mylotte, Mary Hughes, Marina Zaki

August 2015

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Summary of key findings from the national survey of hospitals

A national postal survey of all acute care hospitals in Ireland was conducted to establish current organisational policy and professional practices in relation to clinical handover. The national survey involved the administration of the Clinical Handover Practices Questionnaire (CHaPs-Q), a self-report instrument. Just 13 of the 44 acute hospitals sampled returned the completed CHaPS-Q, representing a response rate of c.30%. The sample consisted of 9 acute general hospitals, 3 public voluntary hospitals and 1 orthopaedic hospital and the sample represented both small and larger hospitals in almost equal amounts.

While all the hospitals in the sample indicated that there was a hospital committee responsible for monitoring care quality and patient safety, most reported that clinical handover was not a standing item on the committee agenda. The majority reported that they provided supports for staff to help them achieve best practice in the conduct of clinical handover, such as staff training in clinical handover, but over one third did not provide such support. Two-thirds also reported that clinical handover was designated as a scheduled clinical activity. The majority of hospitals had an electronically accessible patient information system, which enabled information sharing between clinical departments. Just one hospital named ISBAR as a recommended handover tool.

The majority of clinical directors indicated that all new medical staff received instruction in clinical handover as part of their induction and the majority also reported that clinical handover was designated as a scheduled clinical activity. However, fewer than half reported that clinical guidelines on clinical handover had been issued to all medical staff and just two clinical directors reported that all medical staff are recommended to use a standardised clinical handover tool when conducting clinical handover.

The majority of directors of nursing indicated that all new nursing staff received instruction in clinical handover and the majority also reported that clinical handover was designated as a scheduled clinical activity for duty shift handover. However, just a quarter reported that clinical guidelines on clinical handover had been issued to all nursing staff and a minority also reported that all nursing staff are recommended to use a standardised clinical handover tool when conducting clinical handover.

The majority of directors of clinical services responsible for therapies professional grades reported that all new therapies professionals received instruction in clinical handover and approximately half also reported that clinical handover was designated as a scheduled clinical activity for therapies professionals. However, the majority reported that guidelines on clinical handover had not been issued to all therapies professionals. The majority reported that clinical handover was standardised through a written hospital policy, but none reported that therapies professionals were recommended to use a standardised clinical handover tool when conducting clinical handover.

Directors of clinical services also reported on clinical handover policy and practice in respect of laboratory and other diagnostic professionals. Approximately half reported that all new diagnostic professionals received instruction in clinical handover and the majority reported that clinical handover was designated as a scheduled clinical activity. The majority also reported that diagnostic professionals were required to use a standardised reporting protocol when communicating non-urgent diagnostic test results to medical staff and were required to use a standardised reporting protocol when communicating urgent diagnostic test results to medical staff. Just one director of clinical services listed a bespoke standardised form for use during clinical handover. The majority of the directors of clinical services also reported that social work and social care staff received instruction in clinical handover; however just one of the directors reported that social work and social care staff were required to use a standardised report form when communicating information to other health care professionals.

In the sample, just one clinical director and three directors of nursing reported that poor clinical handover involving medical staff and nursing staff, respectively, was identified as a contributory factor in an adverse patient event. No director of clinical services reported that poor clinical handover involving diagnostic or social care professionals, respectively, was identified as a contributory factor in an adverse patient event.

Summary of key findings from the national survey of training schools
A national survey of health professionals' training schools in Ireland was also conducted using a short self-report questionnaire designed to elicit information on the content of health professions' training in relation to risk management and clinical handover. A total of 12 completed questionnaires were returned from health professionals' training schools, representing a response rate of c.43%. A total of 28 training programmes, representing 10 different programme types were represented in the sample.

Fewer than half of the programmes included 'competence in clinical risk assessment' as an explicit programme outcome, but three quarters included 'competence in patient safety' as an explicit programme outcome. However, just over one third included 'competence in clinical handover' as a programme outcome. The majority of the programmes provided 'specific learning activities leading to the achievement of competence in clinical risk assessment/ patient safety'. Among the activities listed were: simulation-based teaching on handover, EWS use, risk assessment; skills sessions [that] incorporate documentation and clinical judgment; and clinical simulation in patient safety with emphasis on prescribing, medicines management and dispensing and patient use of medicines.

While the majority of the programme included learning activities associated with NEWS or PEWS, just half included specific learning activities leading to achievement of competence in clinical handover and approximately one third incorporated learning activities using a standardised clinical handover tool (e.g. ISBAR). Fewer than half incorporated formal assessment of competence in clinical handover. Most respondents agreed or strongly agreed that clinical handover should be mainly the responsibility of the training hospital and agreed or strongly agreed that all students should be required to demonstrate competence in clinical handover before graduating.

Summary of findings from non-participant observation events
Seventeen handover events were observed in four acute general hospitals in a variety of settings, including medical, surgical, ED and OR departments. The handover events were conducted for a variety of purposes, including change of duty shift, inter-departmental transfers, inter-professional referrals, and intra-department handovers. A total of 59 participants were involved in the observed handover events and the staff involved included NCHD and junior medical grades and senior and junior nursing grades.

Most handovers involved face-to-face communication and all were augmented with the use of supplementary materials and media, such as care plans, patient chart/notes, handover sheets, whiteboards, notebooks or random paper. Some observed telephone handovers were augmented with electronic referral as well as varying types of documentation. All inter-departmental handovers were observed to involve associated telephone calls, ranging from 1 to 4, in order to negotiate a time for the handover.

The information transferred at handovers varied according to handover type; nursing and medical duty shift handovers involved information transfer about plans of care for the next care period. Managers of nursing services discussed operational and patient safety issues. The noise levels and extraneous interference at each observed handover event were remarkably high and interruptions were observed in most events.

Summary of findings from interviews and focus groups

We conducted a series of focus group discussions and individual interviews with clinicians from across the major healthcare professions in the acute care services. We also conducted two focus groups with service users. A total of 132 healthcare professionals participated in 43 data collection events; this included 28 interviews and 15 focus group discussions among physicians, surgeons, nurses and nursing managers, and other diagnostic and healthcare professionals, as well as service users.

Participants indicated that there was little formal policy regarding the way that clinical handover should be conducted in most organisations. Many identified specific local clinical department handover policies while others indicated that they were unaware of any local policy in place in their organisations, but assumed that one did exist. Although the local policies described were concerned with protocols for interdepartmental clinical handovers, policy on intradepartmental handover was generally described as informal and implicit. Many participants acknowledged a lack of specific education and/or training related to how to conduct an effective clinical handover.

The evidence indicates that nursing and medical teams have separate and distinct handover events and that their particular handovers reflected their respective needs for information in order to ensure continuity of care. The data contained descriptions of both medical and nursing handover practices for a variety of scenarios. Descriptions of clinical handovers from junior medical staff described them as prospective and task orientated in their focus. The information content during medical handovers was generally based on the clinician's own judgement and not on a formal, structured proforma. Medical staff accounts described clinical handover as taking place largely in an unstructured way and supported with a variety of formal and informal documentary media.

Nursing participants described scheduled handover events such as morning and evening change of duty shift handovers and some also described afternoon and evening updates, and interdepartmental patient transfers for handover purposes. The local system of nursing work organisation that was particular to each clinical department determined the way that clinical handover was conducted at duty shift change. The function of the clinical handover also determined the content of information transferred. In this regard, some participants described the content as being based on a retrospective review of events and patient progress, and others based the content on prospectively reviewing the needs of the oncoming staff and their patients. Information transfer also happens between medical and nursing staff and nursing staff frequently acted as intermediaries for relaying medical instructions to other health and social care professionals.

Participants spoke about the tools they use to support and augment verbal clinical handovers. Some participants described a range of systems and tools, including both documentary and electronic supports. A number of participants referred to bespoke documentary supports that were variously referred to as 'handover sheet' and 'structured handover sheet'. Some participants identified the ISBAR mnemonic as being used for specific clinical handover situations, notably for telephone referrals in escalation of care scenarios, with some disciplines using it for occasional routine phone calls. The quality of relationships within and between teams appeared to be a valued part of everyday communication practices.

The data provided evidence of the threats to an effective clinical handover. The most frequently discussed threat was frequent interruptions which, in turn, impacted on the duration of handover. The main contributory factor in causing interruptions was the unsuitable location in which handovers, particularly nursing duty shift handovers, took place. Particular vulnerabilities were identified in busy clinical departments, including the ED. While extraneous interruptions were the main source of interruptions, and included other staff and extraneous noise, participants within

the handover event itself were also a source of interruptions, with evidence of unnecessary extraneous discussions happening during the handover.

Most participants spoke about the facilitators of an effective clinical handover and the necessary conditions required in order to maximise the effectiveness of the process. To participants this ideally should include: pre-specified protected time; an explicit handover policy and education on the policy; a suitable environment in which to conduct handover, free from interruptions; and sufficient staffing levels to permit adequate cover to enable handover to happen uninterrupted; and a readily accessible IT system to facilitate effective information transfer.

We conducted two focus groups with service users and these generated rich data on aspects of clinical handover and provided insights into the perspectives of patients in acute and children's hospital services. Some of the participants recalled aspects of clinical handover among staff, such as bedside handover and handover during transitions of care, and spoke of particular instances in which the process of communication had impacted on them in different ways, some positive and some negative. Some of the data indicated that participants experienced barriers to effective clinical handover, particularly at points of admission and transfer of care and in situations involving hospitalised relatives. However, several participants mentioned positive experiences they had, either as a participant in a bedside clinical handover or as a relative of a patient. Service users expressed a preference for 'simple' and sincere ways of communicating with them and their families.

1. INTRODUCTION AND BACKGROUND

1.1 Introduction

Effective communication in acute care settings is essential to the provision of safe and reliable patient care (World Health Organisation 2009). This is especially important at the time of clinical handover when both patient information and responsibility for care are passed from one clinician or team to another (Kuester *et al*. 2014). The process of clinical handover carries inherent risks to patient safety and continuity of care (Arora *et al.* 2005, Arora and Johnson 2006; Sharit 2008; Manser 2011). Ineffective clinical handover has been implicated in adverse patient events in the Irish healthcare system (Health Service Executive (HSE) 2008; Health Information and Quality Authority (HIQA) 2012; HSE 2013; Department of Health 2014).

Established as part of the Patient Safety First Initiative by the Irish Department of Health, the National Clinical Effectiveness Committee (NCEC) is a Ministerial committee with a remit to prioritise and quality assure national clinical guidelines to the level of international methodological standards. In November 2014 the Committee published guidelines for clinical handover for use in maternity services following a tragic maternal death, in which poor communication processes were implicated (Health Information and Quality Authority (HIQA) 2012; Health Service Executive 2013). The development of the clinical guidelines was supported by evidence from a systematic review of literature, expert opinion and a field study incorporating interviews and focus group discussions to ascertain clinical handover practices in maternity services. The present study was conducted as part of the process of stakeholder consultation and evidence gathering to inform the new clinical guidelines on clinical handover for use in acute care services.

1.2 Aims and objectives

The overall aim of the research project was to describe current clinical handover practices in acute hospital services in Ireland using a scoping exercise, in order to establish baseline clinical

handover practices in acute hospitals, (i) between and within teams and (ii) between shifts. The objectives were:

- To examine a range of clinical handover scenarios in acute hospital services, in particular, (i) between and within teams and (ii) between shifts
- To examine a range of clinical handover events involving single teams interdisciplinary teams and patients
- To examine clinical handover tools in use to support and augment the handover process
- To examine the extent of organisational support and infrastructure to support effective and efficient clinical handover
- To examine current training content on clinical handover in preparatory nursing and medical education programmes
- To examine the enablers and barriers to effective clinical handover
- To document examples of good handover practices
- To document handover practices that may be at variance with best evidence.

2. DESIGN

2.2 Research design

The design for the research project to establish baseline clinical handover practices involved a methodological triangulation approach using multiple methods in combination, including a national survey of acute service organisations, a national survey of health professions' training schools, focus group discussions and individual interviews with key informants and non-participant observation of clinical handover events. The methodological triangulation approach provided multiple sources of information while counteracting the limits inherent in a single source. The data collection methods and sources of data are summarised in Figure 2.1.

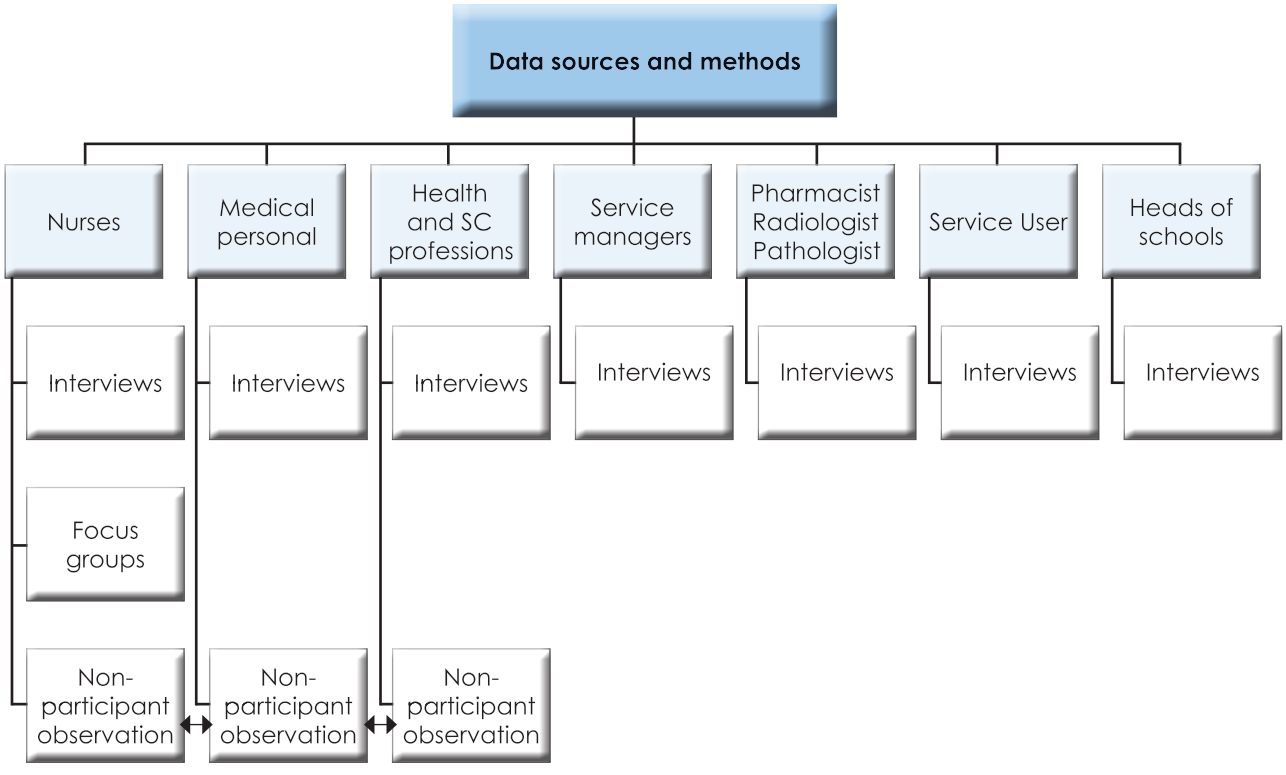

Figure 2.1 Methods of data collection and sources of data

The national postal survey of all acute hospitals in Ireland involved the administration of the Clinical Handover Practices Questionnaire (CHaPs-Q), a self-report instrument designed to elicit information on clinical handover policy and practices. The ChaPs-Q is presented in four sections, with each section designed to collect information from each of the following: the hospital Chief Executive Officer, the Clinical Director, the Director of Nursing and the Director of Clinical Services with responsibility for therapies professionals, health and social care professionals and diagnostic and laboratory professionals. The national survey of health professions' training schools in Ireland was conducted using a short self-report questionnaire designed to elicit information on the content of health professions' training in relation to risk management and clinical handover.

We conducted non-participant observation of clinical handover events using a structured observation instrument, developed for the purpose. The instrument enables a structured description of the content and process of handover events. We conducted focus group discussions and individual interviews with a purposive sample of key stakeholders, including clinicians and service users. Each focus group was moderated by a research nurse and conducted according to a topic guide. The discussions were directed towards the participants' experiences of handover and related practices.

Sample and sampling

The national survey was administered to all of the acute hospitals, including children's hospitals. The unit of analysis was the individual hospital. The unit of analysis for health professions' training schools was the training programme and not the school. Sampling for the non-participant observation was by purposive sampling; we sampled across all of the large and small acute care hospitals in all of the hospital trust regions to ensure a representative geographical spread. Sampling for the focus groups and interviews was also on the basis of purposive sampling.

Data collection procedures

We administered the ChaPS-Q questionnaire by postal survey to the chief executive officer or their equivalent at each hospital and we instructed each CEO to request the relevant clinical directors, viz. the Clinical Director, the Director of Nursing and the Director of Clinical Services, to complete the section for which they were respectively responsible. We also administered the national survey of the health professions' training schools by post to each head of school and each school was asked to return a completed questionnaire in respect of the training programmes for which they were responsible. We conducted the non-participant observation across multiple sites, having obtained the permission to gain access from the clinical director or director of nursing, or director of clinical services, as appropriate. We conducted the individual interviews and focus group discussions at or near to the participants' place of work, in a private meeting room.

Data handling

Data obtained using the CHaPs-Q were analysed using SPSS Version 20.0 (SPSS Inc. Chicago IL). Calculations of frequency distributions, measures of central tendency and measures of variability were conducted to summarise the data. Data obtained in the non-participant observation checklist were analysed using frequency distributions and measures of central tendency and variability. The data from the interviews and focus groups were handled as a single data set. The aim of qualitative data analysis was to extend existing knowledge using textual descriptions of practices; hence we analysed the qualitative data using directed content analysis (Hsieh and Shannon 2005).

Ethical considerations

Prior to commencing data collection, we subjected our protocols for all elements of the data collection to full ethical review by the UCD Human Research Ethics Committee (HREC). All focus group participants, interviewees and participants involved in the non-participant observation were asked to give written informed consent prior to their participation, having been provided

with an information sheet in advance. The return of completed questionnaires was taken to indicate consent to participate in the national postal surveys.

3. FINDINGS PART 1: NATIONAL SURVEYS AND NON-PARTICIPANT OBSERVATION

3.1 Findings: National survey of hospitals

Of the 44 hospitals surveyed, a total of 13 returned the completed questionnaires, representing a response rate of 29.54%. The sample consisted of 9 (69.2%) acute general hospitals, 3 (23.1%) public voluntary hospitals and 1 (7.7%) orthopaedic hospital (Figure 3.1).

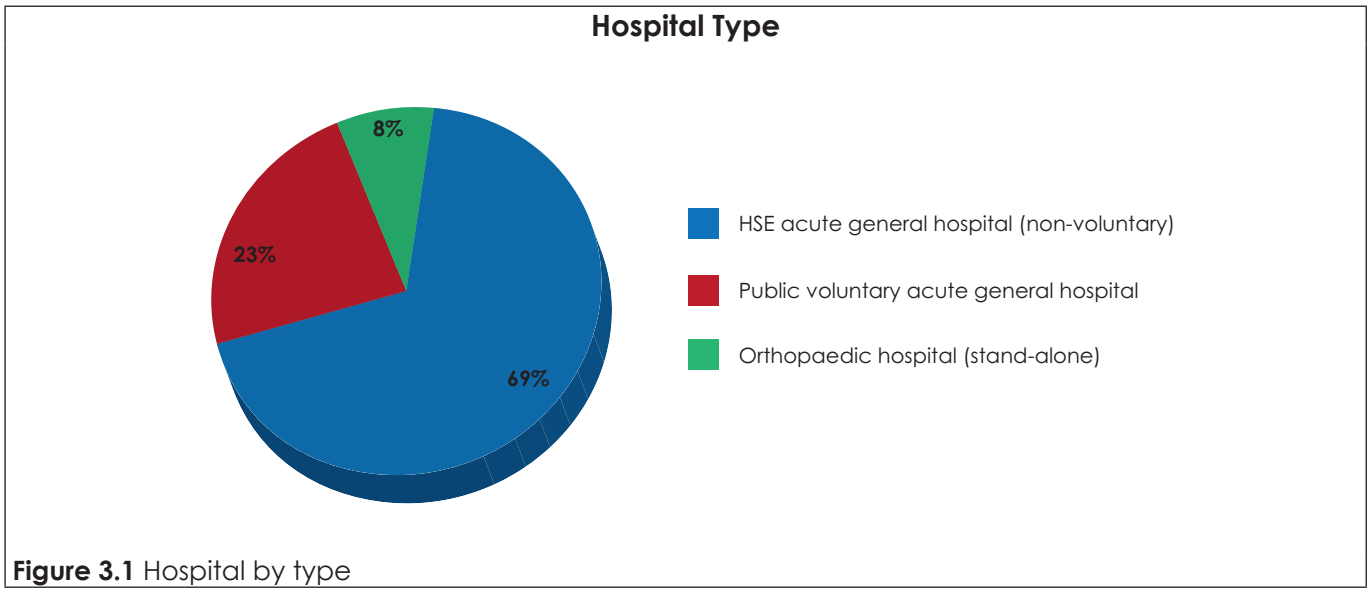

Figure 3.1 Hospital by type

Hospital size and activity

Seven of the hospitals (53.8%) provided full 24-hour cover and the remainder partial ED cover (e.g. medical assessment, minor injuries only). Approximately half had fewer than 200 beds, indicating that the sample was split evenly between small and larger hospitals (Figure 3.2).

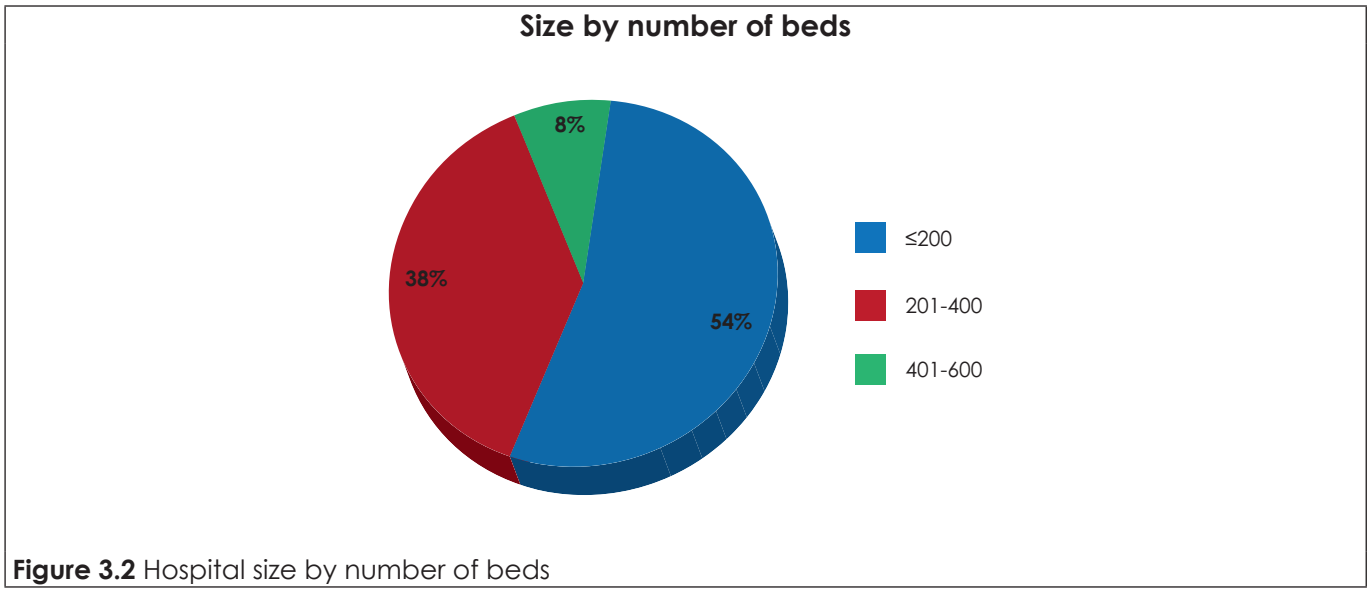

Figure 3.2 Hospital size by number of beds

Hospital activity, as represented in the number of in-patient hospital discharges in the previous year indicated that a little under half had equal or fewer than 5000 discharges per year, indicating a relatively low level of activity, and just two had ≥20000 discharges per year (Figure 3.3)

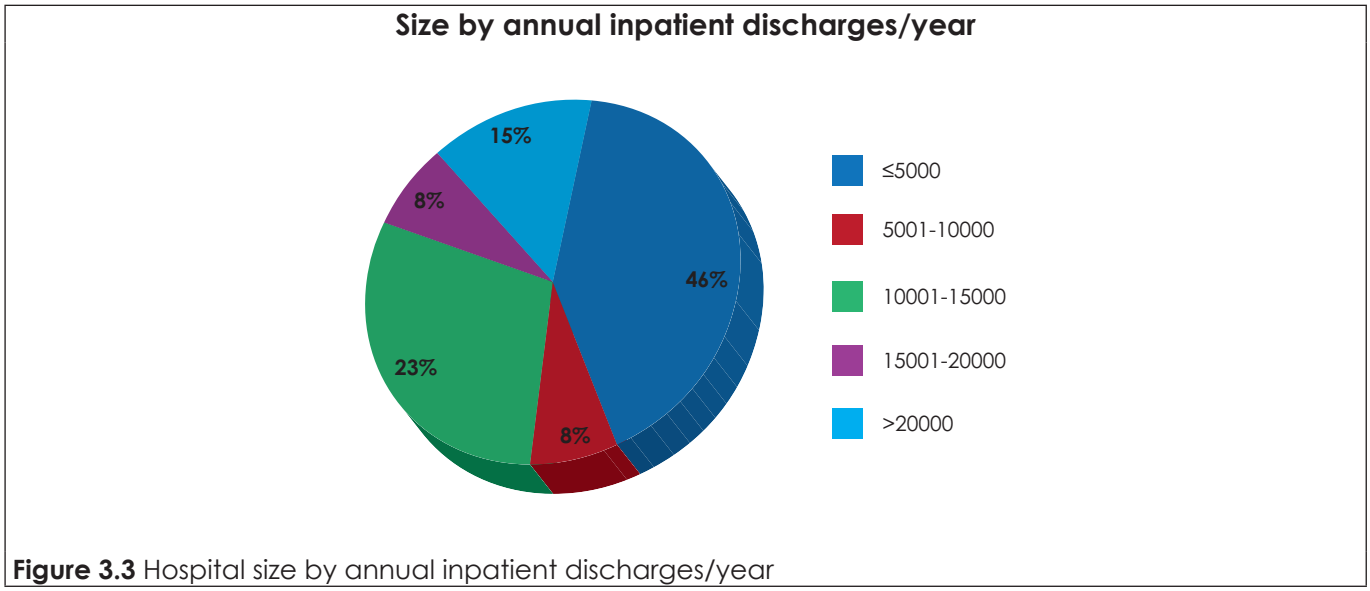

Figure 3.3 Hospital size by annual inpatient discharges/year

Staffing and working hours

All hospitals in the sample reported that the system of care was 'consultant led'. Approximately half of the hospitals in the sample reported that they were fully compliant with the European Working Time Directive (EWTD) on NCHDs' working hours and approximately half reported that they were partially compliant (Figure 3.4).

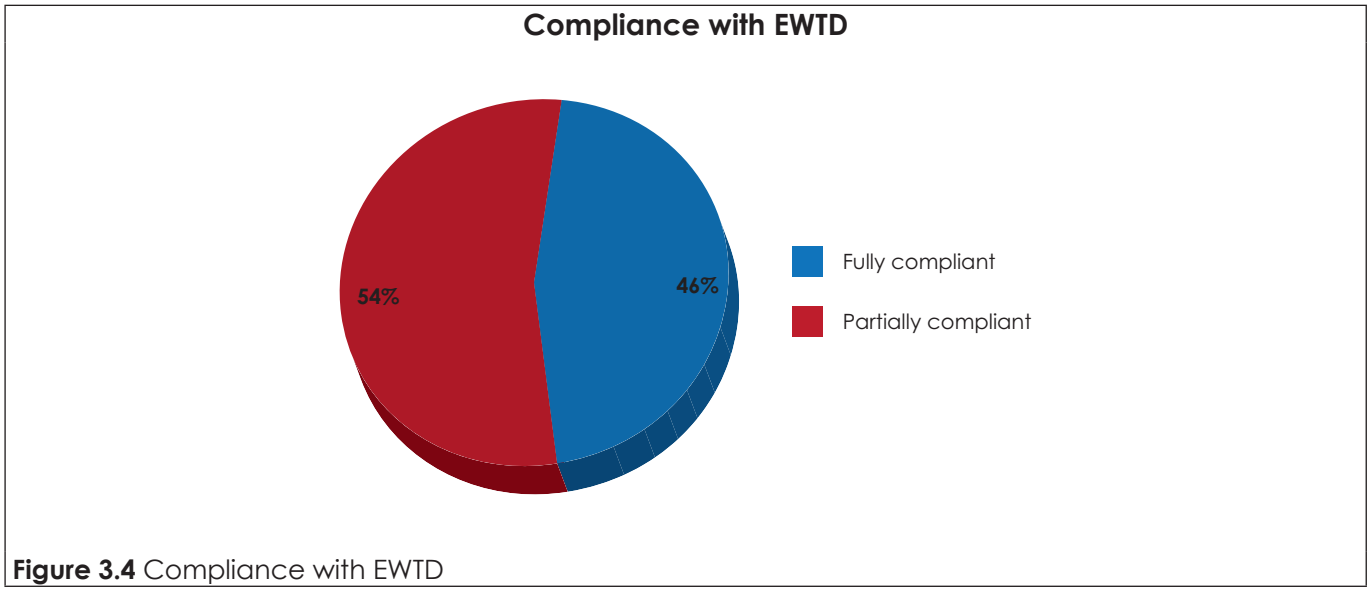

Figure 3.4 Compliance with EWTD

The findings indicate that a wide spread of hospitals, in terms of staffing, was represented in the sample. Of note is the range in the number of consultants, with one hospital reporting just 6 and one reporting 132. There were similar wide variations in the numbers of clinical nurse managers and staff nurse grades across the sample (Table 3.1).

Table 3.1 Number of whole time equivalent staff by grade

Number of WTE (number responding)	Range	M (SD)
Medical staff: day duty (n=10)	14–398	105.75 (125.81)
Medical staff: night duty (n=12)	1–37	11.83 (12.15)
In-house consultants (incl. anaesthetist/intensivist) (n=12)	6–132	38.46 (39.64)
In-house registrars	4–134	35.61 (36.42)
Senior house officers	5–116	33.16 (33.38)
Interns	2–53	10.69 (13.57)
Non-contract (e.g. locums) (n=10)	0–24	5.31 (7.46)
Radiologists, pathologists, microbiologists (n=9)	1–16	5.05 (4.89)
Physiotherapists, nutritionists, radiographers, occupational therapists (n=12)	11–108.3	39.34 (27.76)
Clinical psychologists and social workers (n=12)	0–8.14	2.43 (2.95)
Clinical nurse manager grade (n=12)	13.5–208.39	54.1 (54.27)
Clinical specialist, advanced practitioner grades	1.5–50.3	17.57 (12.73)
Staff nurse grade (n=12)	71.9–912	279.12 (245.41)

Number of respondents = 13

Organisational policy on clinical handover

The findings indicate that while all the hospitals in the sample indicated that there was a hospital committee responsible for monitoring care quality and patient safety, most (N=12) reported that clinical handover was not a standing item on the agenda of the committee. The majority (61.5%, n=8) reported that they provided supports for staff to help them achieve best practice in the conduct of clinical handover, such as staff training in clinical handover; however, a sizeable proportion reported that they did not provide such support (38%, n=5). Two-thirds also reported that clinical handover was designated as a scheduled clinical activity, i.e. there is protected staff time for the activity at duty shift change (66.6%, n=6); however, one-third reported that clinical handover was not designated as a scheduled clinical activity (Table 3.2).

Table 3.2 Organisational policies (by number)

	Yes	No
There is a hospital committee responsible for monitoring care quality and patient safety (e.g. a clinical risk management committee)	13	0
Clinical handover is a standing item on the agenda of the patient safety /clinical risk management committee	1	12
The patient safety / clinical risk management committee monitors clinical handover practices in the hospital	3	2
The patient safety /clinical risk management committee has issued a hospital-wide policy on clinical handover to all relevant staff	1	3
The patient safety/clinical risk management committee has issued clinical guidelines specific to clinical handover to all relevant staff	1	3
The clinical guidelines on clinical handover include a recommendation to use a designated standardised clinical handover tool	1	4
The hospital provides supports for staff to help them achieve best practice in the conduct of clinical handover (e.g. staff training in clinical handover)	8	5
Clinical handover is designated as a scheduled clinical activity, i.e. there is protected staff time for the activity at duty shift change	8	4

Number of respondents = 13

Supports for clinical handover

Just one hospital CEO named ISBAR as the recommended handover tool. The majority (n=10) reported that they had an electronically accessible patient information system, which enables the collection, storage and retrieval of information on each patient and, of this number, most reported (n=8) that the system could be shared *between* clinical departments. Additionally, most (n=11) reported that the patient information system was subject to an access control policy, i.e. the level of access was determined by the staff grade and information type. Fewer than half (n=5) reported that the information system had an in-built warning system to alerts of potential risks to patients, such as drug allergy alert.

Handover policy and practice: Medical staff

Regarding policy, the majority of clinical directors (10) indicated that all new medical staff received instruction in clinical handover as part of their induction during NCHD changeover and the majority (61.5%, n=8) also reported that clinical handover was designated as a scheduled clinical activity for medical staff. However, fewer than half (46.6%, n=6) reported that clinical guidelines on clinical handover had been issued to all medical staff (Table 3.3).

The majority of clinical directors (n=11) reported that, in the previous year, poor clinical handover involving medical staff was not identified as a contributory factor in an adverse patient event. Just one respondent indicted 'yes' to this item. Just one clinical director named ISBAR as the recommended handover tool. Clinical directors also reported on medical practice in relation to clinical handover. The majority (n=10) reported that all new medical staff received instruction in clinical handover as part of their induction during NCHD changeover and the majority (n=8) also reported that there was protected time for clinical handover at each duty shift. Just two clinical directors reported that all medical staff are recommended to use a standardised clinical handover tool when conducting clinical handover. The majority (n=8) reported that the process of clinical handover was conducted according to the discretion of each individual medical team.

Table 3.3 Medical policies (selected items)

	Yes n (%)	No n (%)
As part of their induction during NCHD changeover, all new medical staff receive instruction in clinical handover	10 (76.9%)	3 (23.1%)
Clinical handover is designated as a scheduled clinical activity for medical staff, i.e. there is protected time at each duty shift change	8 (61.5%)	5 (38.5%)
Clinical guidelines on clinical handover have been issued to all medical staff (e.g. via medical team consultants)	6 (46.2%)	7 (53.8%)
All medical staff are recommended to use a standardised clinical handover tool when conducting clinical handover	2 (15.4%)	11 (84.6%)
The process of medical clinical handover (i.e. timing, method, personnel) is standardised through a written policy	2 (15.4%)	11 (84.6%)
The process (i.e. timing, method, personnel) of clinical handover is conducted according to the discretion of each individual medical team	8 (66.7%)	4 (33.3%)
During medical transfer of care (e.g. at duty shift handover) a designated individual is responsible for conducting clinical handover	5 (41.7%)	7 (58.3%)
In the previous year, poor clinical handover involving medical staff was identified as a contributory factor in an adverse patient event	1 (8.3%)	11 (91.7%)
Medical staff *routinely* (i.e. daily practice) use the hospital's electronically accessible patient information system to retrieve patient data	11 (91.7%)	1 (8.3%)
Medical staff routinely use the electronically accessible patient information system to record real-time instructions on individual patients	4 (33.3%)	8 (66.7%)

Number of respondents = 13

Most clinical directors reported that medical staff frequently or always conducted clinical handover in a private area (n=12) and used verbal face-to-face for individual patients (n=12) and for escalating care (n=13). The majority also reported that medical staff never or rarely routinely conducted clinical handover using a standardised clinical handover tool (n=10) or conducted clinical handover on individual patients using electronically-enhanced communication (e.g. e-mail, text) (n=11). Additionally, medical teams never or rarely used a safety pause in order to anticipate risks to the quality of patient care (Table 3.4).

Table 3.4 Handover practices, medical staff

In this hospital …	**Never or rarely n (%)**	**Sometimes n (%)**	**Frequently or always n (%)**
Medical staff conduct clinical handover in a private area (e.g. ward office) of the clinical department to which they are assigned	1 (7.7%)	0	12 (92.3%)
Medical staff conduct clinical handover in a public area (e.g. ward station) of the clinical department to which they are assigned	6 (46.2%)	3 (23.1%)	4 (30.8%)
Medical staff conduct clinical handover on individual patients using verbal face-to-face communication	0	1 (7.7%)	12 (92.3%)
Medical staff conduct clinical handover on individual patients using telephone communication	6 (46.2%)	7 (53.8%)	0
Medical staff conduct clinical handover on individual patients using electronically-enhanced communication (e.g. e-mail, text)	11 (84.7%)	1 (7.7%)	1 (7.7%)
When conducting clinical handover, medical staff *routinely* (i.e. in their daily practice) use a standardised clinical handover tool	10 (76.9%)	3 (23.1%)	0
When transferring a patient between hospital departments medical staff conduct clinical handover using face-to-face verbal communication	2 (15.4%)	2 (15.4%)	9 (69.3%)
When escalating a patient's care to a higher level of care medical staff conduct clinical handover using face-to-face verbal communication	0	0	13 (100%)
When transferring care to the oncoming on-call medical team, medical staff give a clinical handover report on *all* their patients	9 (69.3%)	1 (7.7%)	3 (23.1%)
When transferring care to the oncoming on-call medical team, medical staff give a clinical handover report on *selected* patients only	0	2 (15.4%)	11 (84.7%)
When off duty, medical staff *routinely* communicate with the on-duty medical team to discuss outstanding handover items	5 (38.5%)	3 (23.1%)	5 (38.5%)
When conducting clinical handover, medical staff *routinely* use the hospital electronically accessible patient information system	7 (53.9%)	1 (7.7%)	5 (38.5%)
Medical staff use the ISBAR tool as part of the National Early Warning Score (NEWS) protocol/ PEWS protocol	2 (16.6%)	3 (25%)	7 (53.9%)
On each duty shift medical teams use a safety pause (e.g. HSE Safety Pause) in order to anticipate risks to the quality of patient care	10 (76.9%)	2 (15.4%)	1 (7.7%)
Medical staff *routinely* document in the relevant patient's notes the fact that a clinical handover was conducted	9 (69.3%)	3 (23.1%)	1 (7.7%)
Medical staff participate in nurse-led clinical handovers (e.g. duty shift handover reports)	12 (92.3%)	0	1 (7.7%)

Number of respondents = 13

Handover policy and practice: Nursing staff

Regarding policy, the majority of directors of nursing (n=11) indicated that all new nursing staff received instruction in clinical handover and the majority (n=12) also reported that clinical handover was designated as a scheduled clinical activity for duty shift handover. However, just a quarter (n=6) reported that clinical guidelines on clinical handover had been issued to all nursing staff and a minority (n=4) also reported that all nursing staff are recommended to use a standardised clinical handover tool when conducting clinical handover (Table 3.5). The majority of directors of nursing reported that, in the previous year, poor clinical handover involving nursing medical staff was not identified as a contributory factor in an adverse patient event (n=9), although 3 directors reported in the affirmative. Just one director of nursing named ISBAR as the recommended handover tool.

Table 3.5 Nursing policy (selected items)

	Yes n (%)	No n (%)
As part of their induction, all new nursing staff receive instruction in clinical handover	11 (84.6%)	2 (15.4%)
Clinical handover is designated as a scheduled clinical activity for nursing staff, i.e. there is protected time for the activity at each duty shift change	12 (92.3%)	1 (7.7%)
Clinical guidelines on clinical handover have been issued to all nursing staff (e.g. via clinical department heads)	3 (25%)	9 (75%)
All nursing staff are recommended to use a standardised clinical handover tool when conducting clinical handover	4 (36.4%)	7 (63.6%)
The process of nursing clinical handover (i.e. timing, method, personnel) is standardised through written policy	3 (23.1%)	9 (69.2%)
The process of clinical handover is conducted according to the discretion of the individual nursing teams involved	12 (100%)	0
In the previous year, poor clinical handover involving nursing staff was identified as a contributory factor in an adverse patient event	3 (23.1%)	10 (76.9%)
Nursing staff *routinely* use the hospital's electronically accessible patient information system to retrieve patient data	10 (76.9%)	3 (23.1%)
Nursing staff who routinely use the electronically accessible patient information system use the system to support clinical handover	7 (53.8%)	6 (46.2%)

Number of respondents = 13

Most directors of nursing reported that nursing staff frequently or always conducted clinical handover in a private area (n=8), but 5 reported that the location was frequently or always a public area. The majority reported that nurses frequently or always used verbal face-to-face for individual patients (n=10) and for escalating care (n=13). Fewer than half of directors of nursing reported that nursing staff frequently or always conducted clinical handover using a standardised clinical handover tool (n=5). The vast majority reported that nursing staff rarely or never conducted clinical handover on individual patients using electronically-enhanced communication (e.g. e-mail, text) (n=12). Additionally, fewer than half of nursing staff frequently or always used a safety pause in order to anticipate risks to the quality of patient care and most directors of nursing reported that nursing staff used ISBAR as part of the National Early Warning Score (NEWS) protocol/PEWS protocol (n=12) (Table 3.6).

Table 3.6 Handover practices, nursing staff

In this hospital …	Never or rarely n (%)	Sometimes n (%)	Frequently or always n (%)
Nursing staff conduct clinical handover in a private area (e.g. ward office) of the clinical department to which they are assigned	2 (15.4%)	3 (23.1%)	8 (61.6%)
Nursing staff conduct clinical handover in a public area (e.g. ward nurses' station) of the clinical department to which they are assigned	4 (30.8%)	4 (30.8%)	5 (38.5%)
Nursing staff conduct clinical handover on individual patients using verbal face-to-face communication	3 (23.1)	0	10 (76.9%)
Nursing staff conduct clinical handover on individual patients using telephone communication	9 (69.3%)	3 (23.1%)	1 (7.7%)
Nursing staff conduct clinical handover on individual patients using electronically-enhanced communication (e.g. e-mail, text)	12 (92.3%)	0	0
Nursing staff use an audio recorder to pre-record a verbal handover report when conducting duty shift clinical handover	11 (84.7%)	0	2 (15.4%)
When transferring a patient between hospital departments a nurse gives a face-to-face verbal clinical handover to the receiving nurse	1 (7.7%)	1 (7.7%)	11 (84.7%)
When escalating patients' care to a higher level of care, a nurse gives a face-to-face verbal clinical handover to the receiving nurse	0	0	13 (100%)
When conducting clinical handover, nursing staff *routinely* (i.e. in their daily practice) use a standardised clinical handover tool	6 (46.2%)	1 (8.3%)	5 (38.5%)
When conducting clinical handover, nursing staff *routinely* use the hospital electronically accessible patient information system	7 (53.9%)	2 (15.4%)	4 (30.8%)
When transferring a patient between hospital departments, nursing staff *routinely* use a standardised clinical handover tool	7 (53.9%)	3 (23.1%)	3 (23.1)
Nursing staff use ISBAR as part of the National Early Warning Score (NEWS) protocol/ PEWS protocol	1 (7.7%)	0	12 (92.3%)
On each duty shift nursing teams use a safety pause (e.g. HSE Safety Pause) in order to anticipate risks to the quality of patient care	1 (7.7%)	1 (14.3%)	5 (38.5%)
Nursing staff *routinely* document in the relevant nursing notes the fact that a clinical handover was conducted	5 (38.5%)	2 (15.4%)	6 (46.2%)
Nursing staff participate in medical-led clinical handovers (e.g. medical team handover)	6 (46.2%)	2 (15.4%)	5 (38.5%)

Number of respondents = 13

Handover policy and practice: Health and social care staff

The hospitals' directors of clinical services responsible for all therapies professional grades were asked to complete a section of the ChaPs-Q that pertained to all therapies professionals, including physiotherapist, dietician, occupational therapist, speech and language therapist and clinical psychologist grades. Regarding policy, the majority of directors of clinical services reported that all new therapies professional grades received instruction in clinical handover (n=9) and approximately half (n=7) also reported that clinical handover was designated as a scheduled clinical activity for therapies professionals. However, the majority reported that guidelines on clinical handover had not been issued to all therapies professionals (n=10) and the majority also reported that the process of clinical handover was standardised through a written hospital policy (n=11). None reported that therapies professionals are recommended to use a standardised clinical handover tool when conducting clinical handover (n=13) (Table 3.7).

The majority of directors of clinical services reported that, in the previous year, poor clinical handover involving medical staff was not identified as a contributory factor in an adverse patient event (n=12); just 1 director responded 'yes' to this item. Just one director of clinical services listed a bespoke standardised form for handover.

Table 3.7 Health and social care professions' policy ('therapies' professionals) (selected items)

	Yes n (%)	No n (%)
As part of their induction, all new therapies professional grades (hereafter 'therapies professionals') receive instruction in clinical handover	9 (69.2%)	4 (30.8%)
Clinical handover is designated as a scheduled clinical activity for therapies professionals, i.e. there is protected time for the activity	7 (63.6%)	4 (36.4%)
Clinical guidelines on clinical handover have been issued to all therapies professionals (e.g. via clinical department heads)	2 (16.7%)	10 (83.3%)
All therapies professionals are recommended to use a standardised clinical handover tool when conducting clinical handover	0	13 (100%)
The process of clinical handover (i.e. timing, method, personnel) is standardised through a written hospital policy	2 (15.4%)	11 (84.6%)
In the previous year, poor clinical handover involving therapies professionals was identified as a contributory factor in an adverse patient event	1 (7.7%)	12 (92.3%)
Therapies professionals *routinely* use the hospital's electronically accessible patient information system to retrieve patient data	12 (100%)	0
Therapies professionals who routinely use the electronically accessible patient information system use the system to support clinical handover	9 (75%)	3 (25%)

Number of respondents = 13

The majority of directors of clinical services reported that therapies professionals frequently or always conducted clinical handover in a private area of their clinical departments (n=10), and most reported that therapies professionals never or rarely conducted clinical handover in a public area (n=8) The majority also reported that therapies professionals use a standardised clinical handover tool (n=10). While over half of therapies professionals (n=7) never or rarely conducted clinical handover using electronically-enhanced communication like e-mail or text and a small proportion reported that these media were used 'sometimes'(n=4) (Table 3.8).

Table 3.8 Handover practices, Health and social care professions ('therapies' professionals)

In this hospital …	Never or rarely n (%)	Sometimes n (%)	Frequently or always n (%)
Therapies professionals conduct clinical handover in a private area (e.g. office) of the clinical department(s) to which they are assigned	0	1 (9.1%)	10 (90.9%)
Therapies professionals conduct clinical handover in a public area (e.g. ward station) of the clinical department to which they are assigned	8 72.7%)	4 (30.8%)	1 (7.7%)
Therapies professionals conduct clinical handover on individual patients using face-to-face verbal communication	0	1 (8.3%)	3 (81.7%)
Therapies professionals conduct clinical handover on individual patients using telephone communication	4 (33.74%)	6 (50%)	2 (16.7%)
Therapies professionals conduct clinical handover on individual patients using electronically-enhanced communication (e.g. e-mail, text)	7 (58.3%)	4 (33.3%)	1 (7.7%)
Therapies professionals conduct clinical handover on individual patients by written communication (e.g. special report form)	2 (15.4%)	4 (30.8%)	7 (58.3%)
When conducting clinical handover, therapies professionals use a standardised clinical handover tool	10 (90.9%)	1 (9.1%)	0

Number of respondents = 13

Handover policy and practice: Laboratory and diagnostic professionals

The hospitals' directors of clinical services responsible for all laboratory and diagnostic professional grades, including microbiologist, pathologist, haematologist, immunologist, biochemist, physicist, radiologist and radiographer grades, were asked to complete a section of the ChaPs-Q pertaining to these grades. Approximately half of directors of clinical services reported that all new diagnostic professionals received instruction in clinical handover (n=7) and the majority (n=10) reported that clinical handover was designated as a scheduled clinical activity for diagnostic professionals (Table 3.9). The majority also reported that diagnostic professionals were required to use a standardised reporting protocol when communicating non-urgent diagnostic test results to medical staff (n=10) and were required to use a standardised reporting protocol when communicating urgent diagnostic test results to medical staff (n=10) (Table 3.9). The majority of directors of clinical services reported that, in the previous year, poor clinical handover involving therapies professionals staff was not identified as a contributory factor in an adverse patient event (n=13) and no director responded yes to this item. Just one director of clinical services listed a bespoke standardised form for handover.

Table 3.9 Diagnostic professionals' policy

	Yes n (%)	No n (%)
As part of their induction, all new diagnostic professional grades (hereafter 'diagnostic professionals') receive instruction in clinical handover	5 (41.7%)	7 (58.3%)
Clinical handover is designated as a scheduled clinical activity for diagnostic professionals, i.e. there is protected time for the activity	2 (16.7%)	10 (83.3%)
In the previous year, poor clinical handover involving diagnostic professionals was identified as a contributory factor in an adverse patient event	0	13 (100%)
Diagnostic professionals *routinely* use the hospital's electronically accessible patient information system to update patient records (e.g. to post lab results)	10 (76.9%)	3 (23.1%)
Diagnostic professionals are required to use a standardised reporting protocol when communicating *non-urgent* diagnostic test results to medical staff	10 (83.3%)	2 (16.7%)
Lab professionals are required to use a standardised reporting protocol when communicating *urgent* diagnostic test results to medical staff	10 (90.9%)	1 (9.1%)

Number of respondents = 13

The majority of directors of clinical services reported that laboratory professionals frequently or always communicated non-urgent (routine) diagnostic test results using a printed report (n=8) and using the hospital's electronically accessible patient information system (n=10). The majority also reported that laboratory professionals frequently or always communicated non-urgent (routine) diagnostic test results using other media, including verbal face-to-face (n=8), telephone (n=7) and electronically-enhanced communication (e.g. e-mail, text) (n=7). The majority of directors of clinical services also reported that diagnostic professionals communicated results requiring urgent attention using a special alert system (Table 3.10).

Table 3.10 Handover practices, diagnostic professionals

In this hospital …	Never or rarely n (%)	Sometimes n (%)	Frequently or always n (%)
Diagnostic professionals communicate *non-urgent* (routine) diagnostic test results using a printed report	0	2 (20.0%)	8 (66.6%)
Diagnostic professionals communicate *non-urgent* diagnostic test results using the hospital's electronically accessible patient information system	1 (9.1%)	0	10 (90.9%)
Diagnostic professionals communicate *non-urgent* diagnostic test results using face-to-face verbal communication	8 (66.6%)	3 (25.0%)	1 (8.3%)
Diagnostic professionals communicate *non-urgent* test results using telephone communication	7 (58.3%)	4 (33.3%)	1 (7.7%)
Diagnostic professionals communicate *non-urgent* diagnostic test results using electronically-enhanced communication (e.g. e-mail, text)	7 (58.3%)	3 (25.0%)	2 (16.7%)
Diagnostic professionals communicate diagnostic test results requiring *urgent* attention using a special alert system	0	1 (9.1%)	10 (90.9%)

Number of respondents = 13

Handover policy and practice: Social work and social care staff

The hospitals' directors of clinical services responsible for all social work and social care staff, including medical social workers, were asked to complete a section of the ChaPs-Q pertaining to policy and practice on clinical handover. The majority of the directors of clinical services who responded to this item reported that all new social work and social care staff received instruction in clinical handover (n=6) and over half (n=5) reported that clinical handover was designated as a scheduled clinical activity for diagnostic professionals (Table 3.11). The majority also reported that social work and social care staff frequently or always communicated reports on patients using telephone communication (n=5). All of the directors of clinical services reported that, in the previous year, poor clinical handover involving reports on patients using telephone communication was not identified as a contributory factor in an adverse patient event (n=8).

Table 3.11 Social work and social care staff

	Yes n (%)	**No n (%)**
As part of their induction, all new social workers and social care staff receive instruction in clinical handover	6 (75%)	2 (25%)
Clinical handover is designated as a scheduled clinical activity for social workers and social care staff, i.e. there is protected time for the activity	5 (62.5%)	3 (37.5%)
In the previous year, poor clinical handover involving social workers or social care staff was identified as a contributory factor in an adverse patient event	0	8 (100%)
Social workers and social care staff *routinely* use the hospital's electronically accessible patient information system to update patient records	6 (75%)	2 (25%)
Social workers and social care staff are required to use a standardised report form when communicating information to other health care professionals	1 (12.5%)	7 (87.5%)

Number of respondents = 8

Directors of clinical services also reported on aspects of handover practice among social work and social care staff using a five-point frequency Likert scale. Table 3.12 summarises the findings.

Table 3.12 Handover practices, Social work and social care staff

In this hospital …	**Never or rarely n (%)**	**Sometimes n (%)**	**Frequently or always n (%)**
Social workers and social care staff communicate reports on patients using a printed report	1 (14.3%)	3 (42.9%)	3 (42.9%)
Social workers and social care staff communicate reports on patients using the hospital's electronic patient information system	5 (62.5%)	1 (14.3%)	1 (14.3%)
Social workers and social care staff communicate reports on patients using face-to-face verbal communication	0	0	7 (87.5%)
Social workers and social care staff communicate reports on patients using telephone communication	1 (14.3%)	1 (14.3%)	5 (71.4%)
Social workers and social care staff communicate reports on patients using e-mail communication	3 (37.5%)	2 (28.6%)	2 (28.6%)
Social workers and social care staff communicate reports on patients using electronically-enhanced communication (e.g. e-mail, text)	4 (57.0%)	1 (14.3%)	2 (28.6%)

Number of respondents = 8

3.3 Findings: National survey of health professions' training schools

We conducted a national survey of health professions' training schools in Ireland using a short self-report questionnaire. A total of 28 questionnaires were administered by post and 12 completed questionnaires were returned representing a response rate of 42.85%. Some of the training schools that received a questionnaire offered more than one type of training programme. From the 12 returned questionnaires, a total of 28 training programmes, representing 10 different programmes types were represented in the sample (Table 3.14). Of this number the largest proportion (n=5) was the BSc (Hons) in General Nursing. Four undergraduate medicine programmes and 4 undergraduate pharmacy programmes were also represented. No graduate entry medicine programmes were represented.

Table 3.14 Training programmes by type in the sample

Degree name	No.
MB, BCh, BAO (Hons.)	4
MB BS	0
Royal College Membership	1
BSc Hons. Nursing (General Nursing)	5
BSc Hons. Nursing (Children's and General Nursing)	1
BSc Hons. Nursing (Mental Health)	4
BSc Hons. Nursing (Intellectual Disability)	2
BSc Midwifery	3
BSc Hons. Radiography	1
BSc Hons. Physiotherapy*	3
BSc Hons. Pharmacy**	4
TOTAL	**28**

Number of respondents = 28

*Includes graduate entry Physiotherapy; **Includes graduate entry Pharmacy

Table 3.15 summarises the size of programmes by the number of students enrolled. The majority of the programmes (n=7) had fewer than 100 students enrolled. Two programmes in undergraduate medicine had more than 500 students enrolled.

Table 3.15 Programme size by number of students enrolled

	Number of students enrolled (n)					
	≤100	101–200	201–300	301–400	401–500	>500
MB, BCh, BAO (Hons.)		2				2
MB BS						
Royal College Membership						
BSc Hons. Nursing (General Nursing)	2	2				
BSc Hons. Nursing (Children's & General)	1					
BSc Hons. Nursing (Mental Health)	4					
BSc Hons. Nursing (Intellectual Disability)	2					
BSc Midwifery	3					
BSc Hons. Radiography	1					
BSc Hons. Physiotherapy*	2	1				
BSc Hons. Pharmacy**		1	2			
TOTAL	**15**	**6**	**2**			**2**

Number of respondents = 28

*Includes graduate entry Physiotherapy; **Includes graduate entry Pharmacy

Learning outcomes and learning activities

Respondents reported on whether a number of learning outcomes or graduate attributes were included in their respective training programmes. Fewer than half (64%, n=13) of the programmes included 'competence in clinical risk assessment' as an explicit programme outcome, and three quarters (75%, n=21) included 'competence in patient safety' as an explicit programme outcome. However, just over one third (36%, n=10) of all programmes included 'competence in clinical handover' as a programme outcome. The majority of the programmes (75%, n=21) provided 'specific learning activities leading to the achievement of competence in clinical risk assessment/patient safety' and respondents listed several learning activities using free text. Among the activities were:

- Simulation-based teaching on handover, EWS use, risk assessment
- Instruction in manual handling, and risk assessment
- Skills sessions [that] incorporate documentation and clinical judgment
- Clinical simulation in patient safety with emphasis on prescribing, medicines management and dispensing and patient use of medicines

Respondents were asked to indicate whether learning activities associated with clinical risk assessment/patient safety included using the National Early Warning Score (NEWS) or the Paediatric Early Warning Score (PEWS). The majority of the programme (68%, n=19) included learning activities associated with NEWS or PEWS. Just half of the programmes (50%, n=14) were reported to include specific learning activities leading to achievement of competence in clinical handover. Respondents listed a wide range of learning activities leading to the achievement of competence in clinical handover. A number of programmes included simulation-type training and a number incorporated learning activities as part of internship and/or assessment of competence during clinical placements. Among the specific pedagogical approaches that were listed included sim-based scenarios, hi-fidelity simulation, and ward-based caseload management.

Approximately one third (32%, n=9) of programmes incorporated learning activities using a standardised clinical handover tool (e.g. ISBAR). However a further 8 (29%) were reported as having plans to incorporate learning activities using a standardised clinical handover tool (e.g. ISBAR). Additionally the majority of programmes (64%, (n=18) incorporated scheduled opportunities specifically to practice clinical handover during clinical training. However, fewer than half of the programmes (46%, n=13) incorporated formal assessment of competence in clinical handover. For those programmes that did indicate assessment of competence in clinical handover, a range of methods of assessment were listed:

- Formative assessment in senior cycle 2 for ECP module and formative assessment in SC1 core clinical competency assessment
- Assessed clinically as part of the competency assessment process
- Assessed as part of assessment of 'interpersonal relationships' and 'organisational management of care' clinical competence domains
- Part of assessment clinical records

In just two of the programmes (an undergraduate medicine and an undergraduate physiotherapy programme) were there planned shared learning activities with other disciplines. The majority of programmes (75%, n=21) were reported as providing students with training in team based communication.

The findings to a five-point Likert scale indicate that there was no consensus on whether training in clinical handover should be provided by the training school. Most respondents who completed the scale agreed or strongly agreed that clinical handover should be *mainly* the responsibility of the training hospital (n=8) and agreed or strongly agreed that all students should be required to demonstrate competence in clinical handover before graduating (n=12) (Table 3.16).

Table 3.16 Training policy

	Statement	Strongly disagree (n)	Disagree (n)	Unsure (n)	Agree (n)	Strongly Agree (n)
1	Training in clinical handover should be *mainly* the responsibility of the training school	0	5	1	4	1
2	Training in clinical handover should be *mainly* the responsibility of the post-graduate training bodies (e.g. royal colleges, professional bodies)	1	5	2	3	0
3	Training in clinical handover should be *mainly* the responsibility of the training hospital during the students' clinical placements	1	1	2	5	3
4	All students should be required to demonstrate competence in clinical handover before graduating	0	0	0	6	6
5	All students should be required to demonstrate competence in using a standardised clinical handover tool before graduating	0	1	1	5	5
6	All students should be required to demonstrate competence in using the National Early Warning Score (NEWS) before graduating	0	0	2	3	7

Number of respondents = 28

3.4 Findings: Non-participant observation

A total of 17 handover events were observed in 4 acute hospitals. The total number of participants involved in the 17 observed events was 59 (Table 3.17).

Table 3.17 Handover events observed by hospital type

Setting	Participants
Acute hospital (HSE)	34
Acute hospital (Public voluntary hospital)	25
TOTAL	**59**

Purpose and location of handover

Ten handovers occurred at a ward station and one in a closed office. One handover occurred at a seated area adjacent to a hospital coffee shop, with four telephone handovers also occurring at ward stations. One observed handover took place at the patient's bedside and included the patient and a significant other (Table 3.18 and 3.19).

Table 3.18 Handover events observed by location

Location	Observed		Comment
	Events	Participants	
Closed setting (ward office)	1	3	
Ward nurses' station	10	42	Range 2–9 participants
Entrance/Exit to a department	0	0	
Telephone at ward station	4	4	Excl. telephone call recipient
Bedside	1	2	
Other:			
Adjacent to coffee Shop	1	8	
TOTAL	**17**	**59**	

All inter-departmental transfers were preceded by at least one telephone call with up to 4 telephone calls required before one transfer. Inter-professional handovers were all by telephone and documentary supports and/or electronic referrals were sent before or after the telephone call.

Table 3.19 Handover events observed by type/purpose

	Observed	
Type/purpose	**Events**	**Participants**
Change of duty shift handover	6	35
Intra-departmental handover	4	14
Inter-professional handover	3	3
Inter-departmental handover	4	7*
TOTAL	**17**	**59**

*One telephone phone call handover followed by hospital porter transfer. Telephone recipient not a participant.

Mode of handover communication

The mode of communication observed in most handovers was face to face verbal, with some telephone only handovers and some face to face verbal handovers preceded by a number of telephone calls also. All observed handovers were supported by the use of written documentation in a variety of formats, such as a personal notebook, sheets of paper with patient identification stickers, care plans, a pre-printed handover sheet, white boards, ward day book, patient chart, and medical notes (Table 3.20).

Table 3.20 Mode of handover

Mode of handover	Events	Comment
Verbal by face-to-face	13*	Email follow-up after 1 face-to-face
Verbal by telephone verbal	4	
TOTAL	17	

*Telephone calls preceding verbal face-to-face inter-departmental transfers in 4 of the 15 observed

Personnel

Nursing duty shift handovers varied with regard to grade, with all including manager(s), staff nurses and nursing students, with some also including healthcare assistants (n=1). The participants in NCHD handover events were medical or surgical interns. The bedside handover observed included nursing staff and also included the patient and a significant other (next of kin) and some inter-departmental transfers involved verbal handover by telephone conducted by the clinical nurse manager (CNM) or staff nurse or both. In one case the hospital porter or healthcare assistant conducted the physical transfer of the patient following the telephone handover to the receiving ward (Table 3.21).

Table 3.21 Handover personnel

	Observed	
Personnel	**Events**	**Participants**
Nurses (1 to 1)	5	9*
Nurses (team)	8	39
Doctor to allied health professional	3	3
Doctor to doctor (team)	1	8
TOTAL	**17**	**59**

*Included a telephone handover

Tools and content

All observed handovers utilised a variety of tools and written documentation to support verbal clinical handover, either as a single support or multiple complementary supports. Documentary supports included: a local bespoke pre-printed handover sheet, nursing care plans, nursing notes, medical notes, random blank paper, a blank sheet with patient identification sticker, individual notebooks, a white board and a magnetic white board on the wall beside a ward station. In all handovers oncoming staff were observed to write notes. In five of the handovers, staff were observed to use a combination of documentary support media. E-mail was used after one handover to follow-up with the relevant personnel and telephone calls were used to arrange handover in 5 of 17 observed events. The use of a mnemonic tool was observed in none of the handover events (Table 3.22)

Table 3.22 Supporting tools

Tools supporting handover	Number used
Electronic medical record (on screen)	0
Electronic medical record (print out)	0
Mnemonic tool	0
Pre-printed handover sheet	2
Nursing care plans	2
Nursing/Medical Notes	2
Whiteboard (not electronic)	4
Random paper	3
Notebook	1
Combination of all the above	3
TOTAL	**17**

Characteristics of observed handover events: Interruptions

All observed handovers were interactive, with an evident atmosphere that permitted questioning; however, in two handovers clinical nurse managers only were observed to ask questions with another handover observed to be directed or led by the receiving member of staff. Additionally, in 2 observed handover events the outgoing staff were unable to address fully the questions/clarifications sought by oncoming staff, and further clarifications were neither sought nor offered. In all observed handovers oncoming staff sought clarifications as opposed to asking questions. In three handovers the use of read-back was observed; on one occasion this was used to identify omitted supplementary documents and omitted information about the proposed surgical intervention and the follow up plan required to address this.

The handovers were conducted in an environment that was not free from interruptions, with most observed handovers subjected to external interruptions. Overall, the level of extraneous background noise during handovers was remarkably high. Background noise included the general noise of ward trolleys being wheeled by caterers, porters, phlebotomy staff, and laundry staff, staff external to the handover talking on corridor, patient call bells, telephone ringing, pager calls resulting in telephone calls and general clinical activity in the vicinity of the handover. In the handovers at ward stations, numerous staff were observed to approach the station and/or work close to the handover location during the handover time. In some instances, staff external to the handover approached the handover location and did not interrupt the handover directly, but staff participating in the handover acknowledged their presence with non-verbal cues. Other staff, such as nurses, doctors, physiotherapists, phlebotomy staff and pharmacists were observed to create unintentional, yet unavoidable, noise through such activities as opening drawers, using sinks, moving chairs, using printers, moving trolleys with patient charts, and whispering among themselves.

The remarkably high level of extraneous noise was present in all the handovers that were observed; however the handover participants appeared not to attend to or comment on the extraneous noise. In three of the observed handovers interruptions involved confused patients approaching the handover vicinity and required direct care intervention by staff attending handover. The number of questions in handover events observed ranged from 1 question to 14 questions during one handover (medical on-call handover) (Table 3.23).

Table 3.23 Interruptions observed

	Observed	
Interruption type	**Events**	**Interruptions**
Interruptions (external)	15	48
Questions and clarifications	17	76
Read back	3	0

Information transferred

The information content transferred at observed handover events varied according to the event type. For example, events that involved emergency admissions, inward transfers from the ED or outward transfers from the OR were somewhat different in the content transferred than routine duty shift handovers. Items of information most commonly transferred included: admission and biographical details; medical history; recent unanticipated changes in patient's condition; matters requiring special attention in the short-term; plan of care for next interval of care; drugs prescribed and administered; and the patient's emotional response to situation. Items infrequently communicated included adverse drug reaction(s), including anticipated reactions; histopathology, haematology and biochemistry; and recent anticipated changes in patient's condition.

At nursing handovers for change of duty shift all patients were discussed in some, with only the primary nurse giving handover in others. The information content in most was guided by care plans and/or nursing notes or a bespoke handover sheet. At medical handovers for change of shift, specific individual patients were discussed, most frequently patients about whom doctors expressed particular concern.

All observed handovers included information regarding matters requiring attention in the short term and most included the plan of care for the next care period. The observed handovers varied in the amount of time spent discussing particular aspects of content; for example some events focused on aspects of psychological care and others aspects of social status. In all the observed handovers oncoming staff asked questions and/or sought clarifications and, in some instances, outgoing staff could not provide the answers.

4. FINDINGS: FOCUS GROUP DISCUSSIONS AND INTERVIEWS

4.1 Introduction

We conducted a series of focus group discussions and individual interviews with clinicians from across the major healthcare professions in the acute care services, including large and small hospitals, as well as paediatric hospitals and co-located paediatric units. We also conducted two focus groups with service users. We generated rich data on participants' perspectives on clinical handover policy and their experiences of clinical handover practice. A total of 132 healthcare professionals participated in 43 data collection events; this included 28 interviews and 15 focus group discussions among physicians, surgeons, nurses and nursing managers, and other diagnostic and healthcare professionals, as well as service users (Table 4.1).

4.2 Major themes

We treated all qualitative data from the interviews and focus groups as a single data set and subjected it to direct content analysis (Hsieh and Shannon 2005). The outcome of the qualitative data handling process was the development of emergent themes, described in narrative accounts and supported with exemplary data extracts. Participants in the interviews and focus groups provided rich nuanced and differentiated accounts of their everyday experiences of conducting clinical handover. The participants spoke about situations and circumstances in which they were directly involved in clinical handover, either as outgoing or incoming clinicians. Many spoke about wider organisational policy, their own practices and those of others, and the constraints experienced in conducting clinical handover.

Table 4.1 Focus groups and interviews

Data Source	Grade	No. of events	No. of participants
Interview	Consultant physician	1	1
	Consultant surgeon	1	1
	Consultant in Emergency Medicine	1	1
	NCHD (Registrar)	2	2
	NCHD (Senior house officer)	2	2
	NCHD (Medical intern)	4	4
	NCHD (Surgical Intern)	2	2
	Director/Assistant Director of Nursing	3	3
	Clinical nurse manager grades 1,2 and 3	5	5
	Clinical nurse specialist	1	1
	Staff nurse: RGN	1	1
	Radiographer	1	1
	Microbiologist	1	1
	Physiotherapist	2	2
	Occupational Therapist	1	1
Total		**28**	**28**
Focus group	**Grade**	**No. of events**	**No. of participants**
	Service user	2	16
	Clinical nurse manager grades 1 and 2	4	26
	Clinical nurse specialist	1	3
	Staff nurse: RGN	4	27
	Staff nurse: RGN/RCN	3	18
	Nursing student (General)	0	0
	Nursing student (Children's & General intern)	1	14
Total		**15**	**104**
Overall TOTAL		**43**	**132**

The data provided rich qualitative information, which we reduced and categorised into three broad themes, each with a number of sub themes, as set out in Figure 4.1. The first two themes describe organisational policy and training, medical and nursing handover practices for a variety of scenarios and tools used to support handover and as well as threats to effective handover. The third theme describes service users' accounts of their experiences of their role and participation in clinical handover, including bedside handover.

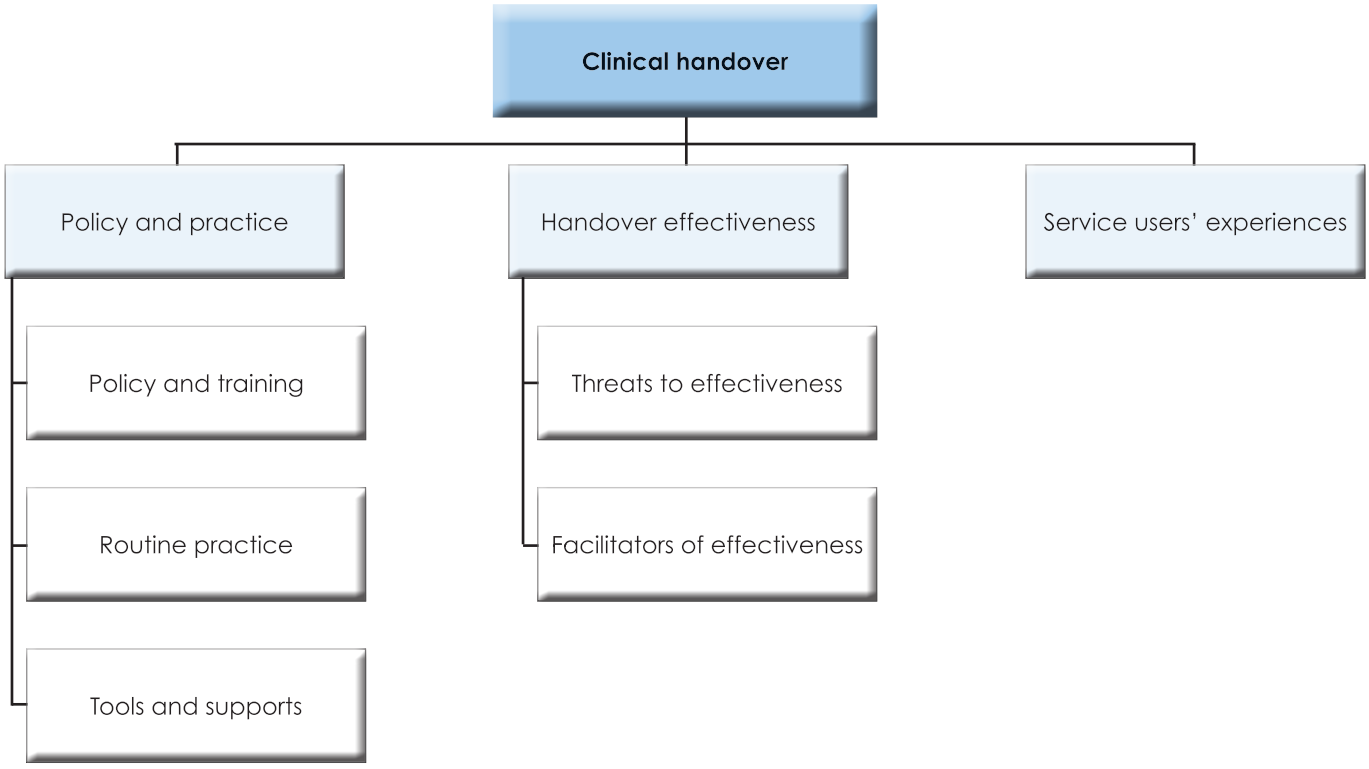

Figure 4.1 Interview and focus group data: Themes and subthemes

4.3 Theme 1: Handover policy and practice

Overall this theme describes the participants' accounts of local policy and their usual practices in relation to clinical handover. The theme comprises three sub-themes, as follows: 'policy and training'; 'routine practices'; and 'tools and supports'. Our data indicates that medical and nursing handovers are very different communication events and, accordingly, we present the findings under the sub-theme 'routine practices' from medical participants' data separately to that of nursing participants.

Policy and training

This sub-theme describes clinical handover practices and local policies and the participants' accounts of the training that they received in relation to clinical handover. For the most part, their accounts indicated that there was little formal policy regarding the way that clinical handover should be conducted and little formal training specific to clinical handover. In describing organisational policy, participants described a lack of formal organisation wide policy; however many described a variety of local clinical department handover policies and/or guidelines. For example in their accounts some participants attached to specialist clinical departments, such as intensive care, operating theatre, endoscopy and microbiology described a very clear local policy for their particular department/wards, as the following extracts illustrate:

> [In Microbiology] the process is clear … there is a process for everything, [a] standard operating procedure for everything we do, including reporting results (Consultant microbiologist, interview)

> We would have a policy, all right, on the discharge of patients from recovery or the initial admission to theatre, which would have a handover section and the signing of the handover and things like that … there is time set aside for handover, that the time is there, that the noise levels are low and that it goes through two people and that you actually sign that you have actually handed over the handover and the person … that they have actually received it (Clinical Nurse Manager 2, FG)

Others referred to: 'a proper format and a proper signing off' for transfers between ITU and theatre' (CCNM 2, FG), 'a designated transfer communication sheet' (clinical nurse specialist, FG), and 'a guideline' for patients undergoing OGD or colonoscopy (CNM2, FG). Although the local policies were concerned with protocols for interdepartmental clinical handovers, policy on intradepartmental handovers was generally referred to as something that was informal in which policy was more implied than explicit. For example, a clinical nurse manager spoke of an 'unwritten policy', whereby 'each area knows this is what is to be handed over' (CNM2, FG) and a consultant surgeon similarly remarked that 'there isn't a specific policy, but it is just based on what we would consider appropriate clinical practice' (Consultant surgeon, interview).

Many participants admitted to being unaware of any formal organisational-level policy in place for clinical handover; for example an emergency department (ED) consultant said 'I am not aware that there is [policy]', a clinical nurse manager 2 admitted that 'I don't know that there is a hospital wide [policy]', and an assistant director of nursing similarly admitted: 'I am not aware of an organisational clinical handover guideline'; however a number indicated that they assumed that an organisational policy existed: ' I am not 100 per cent, I haven't come across it or had to check it up' (CNM 1, interview). One medical consultant commented that an organisation-wide policy or guideline might not be appropriate for the smaller hospitals within a group structure.

Some participants described a communication proforma, with ISBAR being the most-frequently cited tool. For the most part accounts indicated that participants were aware of and used the ISBAR communication tool for telephone handovers, with just a few instances of ISBAR being integrated into written duty shift clinical handover reports:

> We implemented that about two years ago. If I had a conversation with a doctor on the ward about a patient there would be ISBAR along the margin of my note (Consultant microbiologist, interview)

> So we use the ISBAR tool [for phone calls] and I think the physios are good at using that because we are fairly strict on it (Physiotherapist, interview)

Participants were asked to describe the type and content of formal training in clinical handover and the use of handover tools. Some described training in the use of ISBAR for escalation of care, but having no direct education or training on how to conduct a clinical handover. Just two participants, a medical microbiologist and a physiotherapist, reported formal training arrangements in clinical handover. The consultant medical microbiologist described formal training in handover in the Medical Microbiology department:

> There is a standard operating procedure and ... when people come there is a training log, so every new person that comes to the lab, whether they are a medical scientist or doctor, has to do their training log ... everyone who works has to have documented induction (Consultant Microbiologist, interview)

The physiotherapist reported that physiotherapy staff received formal instruction in the use of SOAP mnemonic and also in the use of ISBAR for telephone handovers: 'We would practice by SOAP notes ... the training I suppose is documentation standards and then induction into the way that communication happens' (Physiotherapist, interview).

However, most participants reported that they had not ever received formal training in clinical handover and describe any training as informal and something that was experienced through exposure while undertaking their clinical training. Several participants referred to the role of peer training as the basis of their competence in the practice of clinical handover, as one surgical intern commented: 'unofficially we were told by previous interns what is the best way to do it'. A senior registrar described 'training on the job' and an ED consultant described learning 'little

bits, not formally'. Others similarly spoke of 'something you learned in your nurse training' (CNS, FG) and learning in the practicum: 'You kind of learn as you go along … we never really had teaching about documentation' (Nursing intern, FG).

While most participants indicated that they received no formal training specific to clinical handover practice, some participants described training in the use of clinical handover tools such as ISBAR and SOAP, the National Early Warning Score (NEWS) and the Paediatric Early Warning Score (PEWS) protocols. For example, an ED SHO stated that 'this well-known way, ISBAR it is called … has been told [to us] many times so we try to follow that' and a children's staff nurse indicated that training was provided in the use of PEWS. A consultant surgeon recalled 'some literature circulated in relation to these things' when training was being provided in relation to the European Working Time Directive (EWTD).

When discussing local policy and guidelines the majority of participants recognised the benefits of having a clear policy or guideline and the importance of training on clinical handover. A medical intern spoke of the importance of having a policy for staff 'new on the scene' and a surgical intern observed that training was important:

> Because sometimes it is hard to know what information to pass on and what is irrelevant, so even just, this is what you need to know and this is what you don't (Intern #5, Interview)

Clinical handover: Routine medical practice

We interviewed a total of 13 medical staff including consultant physicians and surgeons, registrars, senior house officers and medical and surgical interns. Among the key points to emerge from the medical staff accounts of their routine practices were that, while clinical handover is a scheduled activity, it is conducted in a largely unstructured way, and supported with a variety of formal and informal documentary media. Verbal face-to-face handover was reported to be the most common medium, but telephone communication also appears to be very common. Handovers conducted by junior medical staff to the oncoming on-call team were reported to be prospectively oriented, being mainly concerned with communicating lists of tasks or 'jobs' to be performed by the oncoming team. The data also indicates that information transfer also happens between medical and nursing staff and nursing staff also act as intermediaries for relaying medical instructions to other health and social care professionals.

Medical participants spoke about how the hierarchical structure within each consultant-led team determined who handed over to whom and what information was handed over. Clinical handovers were reported to take place routinely and were associated with communicating events and treatment plans within individual teams or with the transfer of responsibility to or from an on-call team. Unlike a nursing duty shift handover, in which all staff congregate for a planned communication activity, medical handovers in the morning typically involved just two or three individuals, and only when a consultant-led round was taking place were all the team members present.

The location of medical handovers for on-call shift change was variously reported as taking place at ward stations, 'at the front where the coffee is served' (intern #4) and in the medical residence: 'It usually occurs in the [medical] res, but we don't have a designated place (Consultant physician, interview). A consultant surgeon described the function of clinical handover within the surgical team:

> So the handover, per se, really is the discussion about the list of patients and then seeing all those patients. And then having seen all those patients the team would then decide what patients need CT scans … and what patients need immediate surgery (Consultant Surgeon, interview).

The same participant qualified this by indicating that other members of the surgical team might see handover as having a different function and went on to describe the tenor and content of the handover in the following way:

> It is a human discussion. We are discussing it so there isn't a formal [approach]. We don't kind of tabulate, now we will sit down and talk, we go through the list and if there are any queries we discuss them with a view to understanding. (Consultant Surgeon, interview)

An ED consultant confirmed this sense of the informal nature of the clinical handover when describing the combined medical and nursing morning handover that occurred each morning in the ED: 'within the department it is ... very informal. We don't have any structured time so that tends to be more informal' (ED Consultant, interview)

A number of participants referred to intern-to-intern handovers and registrar-to-registrar handovers when on-call teams were communicating with incoming teams; these handovers were described as informal and 'just done on the telephone'. A surgical registrar described the practice for weekend handover to the oncoming on-call team:

> [It is] mostly face to face but sometimes over the phone, maybe text … There is no formalised structure, but each registrar would take ownership of their patients and make sure that important information is passed onto the person who is on call for the weekend (Surgical registrar, interview).

The oncoming duty NCHD, especially the intern and the SHO, were reported as the individuals who generally took the report from the outgoing medical or surgical teams. Accounts suggest that handovers to oncoming on-call teams appeared to be short duration events, being variously described as taking 'less than 5 minutes not very long', '5 to 10 minutes', 'roughly 10 minutes' and '10 to 15 minutes'. One intern described the duration as ranging from 'two minutes if there is nothing to hand over or 15 or 20 if there are lots of detailed patients'. An ED SHO explained that the duration 'depends on the scenario'.

In addition to handovers involving transfer of care to the oncoming on-call team, other circumstances gave rise to clinical handovers by medical staff. These included, intradepartmental transfers for escalation or de-escalation of care and 'consults' or 'referrals', in which one team requests another team to review a patient. The medium for these transfers tended to be initial telephone communication followed by face-to-face verbal, generally from the transferring NCHD to his/her receiving counterpart.

Regarding information transfer, participants' accounts indicate that this varied according to the reason for conducting the handover and the patient needs. Information transfer was frequently reported to focus on the needs and plans of particular individual patients and not all the patients who fell within the team's remit of responsibility. A consultant physician described handing over 'just specific patients ... people who are acutely unwell and needed attention'. A surgical intern also indicated that handover to the oncoming on-call team was conducted on selected patients only:

> Just if there is someone who has particular jobs to be done or someone you are worried about or if there is someone coming in who you want them to keep an eye out for that you will need a lot done for them. But you wouldn't go through every patient (Intern #2, interview).

Information transferred was reported to be at the discretion of the outgoing doctor. For example, a consultant physician described how 'we don't give too many details ... [we] transfer information to the registrar on anyone who has caused problems overnight' (Consultant physician, interview). A medical intern described the morning handover report involving

the outgoing and oncoming interns as follows: 'you either give the information or take the information as needed; it is just a matter of who is sick' (Intern #4, interview). Another intern described the content of a Monday morning handover following a weekend of being on call: '[I hand over on] … just anyone who had anything different or I had any concern about' (intern#1, interview). Information transfer also rested on experience and not a formal handover structure: 'it is just our experience; you kind of know what information you need' (ED consultant, interview).

One intern described read back at clinical handover as not occurring formally, but rather as 'more of a conversational thing, it is not such a formal thing and if they have questions they will ask there and then' (Medical intern#1, interview). A consultant in emergency medicine described facilitating a number of consultant-led handovers in the ED, in which the teams were provided with 'the relevant information'. All of the interns interviewed referred to the practice of identifying tasks to be completed, either by themselves or the oncoming on-call team, as a key element of information transfer. Many referred to this as the 'jobs' that needed to be completed and these tasks were recorded as lists as the following extracts illustrate:

> You handover to the next intern on call … your bleep and then a list of any outstanding jobs ... any jobs to be done that day, bloods or referrals (Intern #2, interview).
>
> What we do is we have a list of things, of jobs, and they write their own little list of jobs (Intern #5, interview).

Clinical handover: Routine nursing practice

Nurses described their routine handover practices, mainly with reference to duty shift handover, but also in relation to particular situations like interdepartmental patient transfers. All nursing participants described the routine duty shift handover as the main reason for conducting a clinical handover. Participants also spoke about how the system of organising nursing work determined the way that clinical handover was conducted, including the personnel who attended the duty shift handover. One staff nurse described a 'patient allocation' system and a paediatric clinical nurse manager (CNM) also described a system of 'team nursing' in which handover was conducted with reference to the needs of both individual teams and the full complement of staff on duty.

A clinical nurse manager summarised the main circumstances in which clinical handover took place; these were the change of each shift, receiving a new patient from the ED or from another department, receiving an inward patient transfer for escalation of care and conducting outward transfer to a lower level of care. The function of clinical handover typically determined the participants involved and, for the most part, nursing duty shift handovers involved nurses only, typically one or more outgoing nurses and all oncoming nurses. A director of nursing reported receiving 'a nursing handover report' from her night duty counterpart with 'details of any patient concerns with high early warning scores or any patients requiring specials [and] any major issues overnight (DON, interview).

Participants spoke of the main function of nursing duty shift handover, variously describing it as a means of updating on the events of the previous shift and a review of 'what needs to be done in the following shift'. Just one participant specifically mentioned the transfer of responsibility and accountability function of nursing duty shift handover, whereby a standard operating procedure was introduced for interdepartmental patient transfer.

The function of the clinical handover also determined the content of information transferred and information transferred at duty shift handover was mainly reported as including information on the patient's health/medical status and treatments or tasks completed or yet to be completed. One clinical nurse manager summarised the main content transferred at duty shift as 'the patient problems, any updates on them, how they have been in the previous shift … nursing needs and any communication with the family or the medical team' (CNM2). For

some participants information transfer involved retrospectively reviewing what had happened on the outgoing duty shift: '[The] night nurse hands over specifically [on] what has happened over night' (Children's CNM1, interview). For others the content was more concerned with prospectively reviewing the needs of the patients, such as 'the basic things that needed to be done during the night' (Children's CNM, FG)

Handover content could also be determined by the outgoing nurse's interpretation of what she/he believed the oncoming nurse needed to know. Some participants described how they would moderate content according to their interpretation of what needed to be transferred at the time. For example, one CNM described how, 'I would skim over [it] very quickly because I was in again [the following day]'. A children's nurse remarked how 'experience helps you recognise what [content] is required ... what information you need [to transfer]' and another similarly commented: 'over the years I picked up what I feel is a priority'.

The content of information transferred, in turn, determined the duration of clinical handover. Duration could vary greatly according to local practice, and in some instances, duty shift handover was seen as a specific task to be completed and therefore allocated a finite amount of time. The duration indicated included '15 minutes', '30 minutes', '45 minutes' and 'up to an hour sometimes'. A clinical nurse manager expressed his displeasure at unnecessary waste of staff time for patient care when scheduled start time for clinical handover was delayed: 'And I am out of the ward then going ballistic because I am multiplying how many minutes they are each and how much time is taken' (CNM2, Interview).

Participants spoke about the location of nursing handover; the location was often determined by the function of the handover and by the physical layout of the clinical department in which it occurred. Several participants mentioned the nurses' station as the location. Others mention the ward office, 'the staff room' and one mentioned the 'the handover room'

Clinical handover practice: Tools and supports

When describing their routine practices, nurses, doctors and other healthcare professionals describe the tools and supports that they used to augment verbal clinical handover. Many described a range of systems and tools to support clinical handover, including both documentary and electronic supports.

A number of nursing participants described the use of a whiteboard, which functioned mainly as a medium for updating information for the interdisciplinary team. The whiteboard also appeared to function as a locus for meeting and taking stock of the situation: 'sometime during the mid-morning or afternoon you just get each nurse to go to the board and … have an update of what is going on ' (CNM, FG). Aside from an ED consultant, no medical participants mentioned the use of a whiteboard. One nursing participant referred to the use of an electronic board, which the interdisciplinary team referred to 'the patient status at-a-glance board'.

Participants described the use of a range of documentary supports for clinical handover, including the 'kardex', the medical notes, the 'nursing process' paperwork, an Excel sheet, a Word document template, a 'day book', a pre-printed list of the patients, paper based notes and a personal notebook. A number referred to bespoke documentary supports that were variously referred to as 'handover sheet' and 'structured handover sheets'. A clinical nurse specialist described how, because of her particular coordinating role within the interdisciplinary team, 'a lot of our communication is through the phone or through email or text message'.

Medical interns also described using a variety of documentary supports, including 'an A4 sheet of paper [with] all the patients', 'paper and pen' and the '[patient's] notes' and a number referred to 'lists'. Several medical interns described writing updates in the patient's notes; the notes/chart functioned as an important medium for communication facts, changes in treatment and care plans about the patient and were 'read through completely by every

doctor'. The medical notes also provided a medium for alerting the oncoming on-call team to a patient's status: 'if we have any concerns about someone who needs attention at the weekend we write it down' (Consultant physician, interview) and they were also used as a medium of communicating instructions to other healthcare professionals, such as ordering 'chest physio'.

Some medical participants referred to ISBAR, either to confirm its use or to admit that it was not used or not appropriate. One ED SHO described using ISBAR as part of NEWS and for telephone handovers: 'you tend to stick to the ISBAR as close as possible' and a surgical intern also reported using ISBAR for telephone consultation and for communicating about deteriorating patients: '[I use] the ISBAR format with the vital signs' (Intern #5).

Several nursing participants cited ISBAR, but the evidence from the data suggests that the tool was not widely used and/or was used in limited circumstances and for specific purposes. For example, one nurse indicated that it was used for nurse-to-physician handover and an ED clinical nurse manager reported that ISBAR was used to 'cover all the bases' for ED outward transfers with selected patients who needed close supervision. A staff nurse cited the use of ISBAR for 'the emergency response' and another cited its use with the National Early Warning Score (NEWS) protocol. Another staff nurse stated that ISBAR was used occasionally, but not on a day-to-day basis and another remarked that 'we do try to use the ISBAR'. However, very few participants indicated that ISBAR was used routinely or extensively.

4.4 Theme 2: Handover effectiveness

This theme describes the participants› perspectives on the effectiveness of clinical handover, including their experiences of the factors that threatened handover effectiveness and their suggestions for improving clinical handover effectiveness. The theme is represented in two-sub themes, 'threats to handover effectiveness' and 'facilitators of handover effectiveness'.

Threats to handover effectiveness

Several nursing participants commented on the duration of the handover as a factor impeding an effective duty shift handover. A consultant surgeon saw the problem of being 'pressed for time' as a particular constraint to effective handover and a surgical registrar saw the absence of a structured, electronic proforma to support handover as a barrier, which would obviate the need for 'these dribs and drabs of little notes that people are taking themselves'.

Several nursing participants bemoaned the fact that duty shift handovers were subject to extraneous and unnecessary talking and a number referred to this, variously, as 'chit-chat' and 'chatter' (CNM2, FG). A staff nurse commented on the impact of extraneous talking on handover duration: 'I find that [the] chit-chat starts and ... even this morning I was thinking: "when is this going to end?"' A director of nursing noted how extraneous talking or unnecessary information interfered with participants' ability to assimilate handover information: '[Some people] are actually sitting and chatting, half of them aren't listening and ... they are not listening to [the handover report] and they are not taking it on board ... and it is wasting a lot of people's time' (DON, interview).

One participant observed that holding clinical handovers in an open environment like the nurses' station gave others external to the handover a pretext for interrupting: 'when they see four nurses sitting down, [they think] "oh they are having a great time" and [are] constantly interrupted' (staff nurse, interview). Duty shift handovers were reported to be particularly vulnerable to interruptions due, in part, to local environment in which they were held and due to participating staff themselves:

> The telephone interrupts the handover, relatives and patients interrupt the handover … [and] there … are people interrupting for things like keys and that is what we found when we audited handover (CNM 2, FG).

The environment of the emergency department was seen as particularly vulnerable to interruptions at handover and interruptions in the ED were accepted as inevitable, as an ED consultant observed: 'our interruptions get interrupted; it is just the nature of emergency medicine and the department … it is just the business of it'.

Other barriers to effective communication included a failure on the part of medical staff to document instructions in the patient's medical chart – 'he says what he wants but he would never document it and I didn't feel very happy with that' – or removing the medical chart from the ward. Incomplete nursing documentation could also interfere with the effectiveness of duty shift handover, as one clinical nurse manager remarked: 'if the nursing care plans aren't updated and aren't accurately portraying the condition of the patient then you are not going to be able to handover properly from them' (CNM 2, FG). Another clinical nurse manager argued that handover content that focused only on a retrospective review of events was ineffective: 'It is constantly retrospective, there is no forward planning in the handover; what we need to be doing is [forward planning]' (CNM 2, FG).

A clinical nurse manager commented that medical and nursing staff 'speak different languages' when it comes to interdisciplinary training in clinical handover. A radiographer similarly acknowledged that often the 'biggest limiting factor to handover is not understanding why it is necessary', with a physiotherapist reporting this as often 'trying to pull information out of people', which she observed to be 'quite difficult if you are waking up in the middle of the night to a phone call' (Physiotherapist, interview).

Several of the medical participants spoke about the relationship within the medical team as being the key factor in the success of handover and a number referred to trust in the other team members as the basis for assuming that sufficient and relevant information was transferred. This idea of implied mutual trust within the team appeared to obviate the need for a formal handover process and therefore determined both content and conduct of handover, as one surgical registrar remarked: 'If it is just an informal handover between a team that know each other well [and so] it probably doesn't need to be formalised and structured'. The quality of relationships within and between teams appeared to be a valued part of everyday communication practices among junior and NCHD staff. The implied mutual trust appeared to be associated with mutual reliance and seemed to be a part of the early socialisation of NCHDs, as evidenced in the following extract, in which an intern described how junior staff shared information through their informal handover practice:

> Basically the routine [is] – and it is kind of like an unspoken rule – that when you end your shift or when you begin your shift you meet [and] … you ask who is on this, who is on that, and then you either give the information or take the information as needed (intern #4, interview).

A surgical registrar also referred to the importance of team relationships that facilitated open communication within the team as contributing to effective handover: 'Oh yes it is very open. I think it is actually a really good way for us to start our day [with] "good morning" to everyone'. An ED consultant implied that experience was an important factor in relation to decisions about information transfer: 'A lot of it depends on people's experience … I suppose it just relies on both sides having some understanding of what the important stuff is' (ED Consultant, interview). In describing the development of an informal system of interdisciplinary communication in a small hospital, a consultant physician remarked that the system had led to effective communication:

> I think the fact that it is a small place and everybody knows each other [and] ... I think it is informal at the moment, but I think it works well because it has grown organically here over the years … but it is not bullet proof (Consultant physician, interview).

The same participant recognised that the risks inherent in relying on mutual trust and saw that a more formal system would be safer: 'I think it depends on conscientiousness, which is a dangerous bar to have. I think a formal written mandatory handover would be beneficial and would ensure safety'.

Facilitators of effective handover

Participants proffered proposed solutions to some of the problems and constraints in achieving an effective handover. Many suggestions were related to achieving a more effective handover process, particularly in relation to time management at the duty shift handover and the focus of information transferred. Many participants saw the solution as simply changing the location to a quiet environment where fewer interruptions were likely.

Punctuality was seen as an important factor in ensuring that handovers were not overlong: 'I think the most important thing about giving reports is that nurses come on duty on time (CNM2, FG). Keeping the duty shift clinical handover 'short and concise' was also seen as a way of avoiding unnecessary interruptions: '[Make it] sharp, concise, no talk … [and] give the information and move on' (CNM 2, interview). For some participants, the way to address unnecessary interruptions among the handover participants was to address the problem directly with the individuals concerned, as the following extracts indicate: 'If someone has waffled ... I will go out after them and say to them' (Children's CNM, FG).

Medical staff also spoke of the importance of having interruption-free clinical handovers, including having protected time for the process: 'Ideally it needs to be protected without interruption because that is when mistakes get made' (ED consultant, interview). An ED SHO similarly recommended protected time for clinical handover: 'I would include ... a fixed time for handover, fixed people [and it] ... shouldn't be done in a rush'.

Well maintained documentation was seen as a way of ensuring that information transfer could be focused on essential information and thereby reduce unnecessary overlong duty shift handovers. A clinical nurse manager argued that 'nursing documentation doesn't lend to a good handover' and went on to recommend that the way to address effective handover was to firstly address poor documentation of care: 'I think if you are looking at handover are you purely putting a sticking plaster over a bigger problem, i.e. documentation' (CNM 3, interview). This was similarly described by a physiotherapist in the way that the standardised written referral form is not clear in the way it is designed: 'They don't really identify what they want us to do. So the problem is in the [order] form itself' (Physiotherapist, interview).

A number of participants suggested that a structured proforma should be used to support clinical handover and many cited ISBAR in this regard. While few reported using the ISBAR mnemonic regularly, many medical and nursing participants endorsed the tool: 'ISBAR is good'; 'ISBAR is effective' and '[ISBAR is] the place to go'; '[ISBAR is a way of] honing in on exactly what you want to hone in on'. One clinical nurse manager commented that ISBAR 'makes things very concise, very clear and very precise, there is no fluffing around it' (CNM2, interview) and another saw its usefulness across a whole range of handovers, including telephone and interdepartmental: 'Should it be standardised? Yes, and I think that is where your tool like ISBAR would [help]' (CNM3, interview). A clinical nurse specialist saw the value of ISBAR in promoting patient safety ' it is not rushed, it is very structured, it just makes more sense, it is safer' (CNS, interview).

Clear documentation of handover at interdepartmental handover was also seen as important so that 'nothing can be missed' in information transfer. A consultant physician also endorsed the use of a 'formal written mandatory handover' as a way of ensuring patient safety and spoke of the imperative of instituting such a system: 'I think a formal written simple mandatory handover would be beneficial to us and I think we are going to have to get our act together and do it' (Consultant physician, interview).

Several participants spoke of the availability of a readily accessible IT system as a facilitator of good communication and handover. This was seen to promote interdisciplinary collaboration and thereby meant that there was 'no chasing up of bedside notes'. An IT system was also seen as a way of overcoming the problem of interpreting illegible writing in medical notes.

4.5 Theme 3: Service user experiences

We conducted two focus groups with service users and these generated rich data on aspects of communication and handover events and provided insights into the perspectives of patients and relatives in acute hospital and paediatric services. While some of the participants recalled aspects of clinical handover among staff, such as bedside handover and handover during transitions of care, most spoke of particular instances in which the process of clinical handover had impacted on them in different ways, some positive and some negative.

Some participants feared that communication of key information regarding their care might not have been handed over when they were being transferred from one department to another, e.g. drug treatments and allergies. They also described a fear of 'human error' when information was being passed from one healthcare professional to another.

Some participants described their experience of handovers between healthcare professionals as 'routine' and observed that 'the same things were being said', another identified not understanding the ' jargon' used. This was especially so when multiple teams of healthcare professionals were involved in their care. Some participants described their experience of bedside handover as confusing, 'fast' and often not knowing who the people were or, when they sought answers, of being referred to someone else. Inappropriate information could be provided which might cause undue upset for patients.

Despite these experiences, several participants acknowledged that the modern hospital was a busy place which was possibly a factor in communication barriers. One service user spoke of being disconcerted at the fast throughput of patients. Another described witnessing an efficient bedside handover in which the method used by doctors was effective, test results were explained and they understood what was happening. Many service users indicated that they believed that handover was something that was 'done at the nurses' station'. One participant commented that handover in a public place like the nurses' station was a threat to patient confidentiality: 'people are standing in the corridor, they can hear, names are mentioned [and] … so anybody could hear anything about any of the patients'.

Service users discussed the importance of listening to relatives as they know the patient best. Some service users expressed unease at the way their clinical details had been communicated from experiences they had, particularly at points of admission and transfer of care from one department to another e.g. drug treatments and drug allergies. Some service users proffered suggestions as to how communication associated with handover might be improved. These included better use of information technology, such as computerised information that didn't need to be written down at every handover, and hand-held device for readily accessible information for healthcare professionals.

5 DISCUSSION AND CONCLUSIONS

5.1 Introduction

This study was conducted as part of the process of stakeholder consultation and evidence gathering to inform the development of new clinical guidelines on clinical handover for use in acute care services. The aim of the study was to describe clinical handover practices in acute care services, including paediatric services, in Ireland.

5.2 Organisational policy on clinical handover

Poor clinical handover is acknowledged as a contributory factor in avoidable errors and adverse patient events (e.g. Joint Commission 2007; ACSQH 2011). Hence effective communication among health care staff is seen as a core competency and several national bodies have issued policy statements and/or standards for best practice in clinical handover (BMA 2004; WHO 2009; ACSQHC 2014). The evidence from the present study is that the vast majority of hospitals have in place a committee on care quality and patient safety; however, the fact that few of the hospital committees include clinical handover as a standing item on their respective committee's agendas may indicate that this aspect of patient safety does not hold the level of importance that it might otherwise warrant.

The hospitals' focus on the more generic aspects of patient safety over a specific aspect like clinical handover is also reflected in the fact that, while the majority of health professionals' training schools seek to develop competence in clinical risk assessment and competence in patient safety, just one third reported that their programmes listed competence in clinical handover as a programme outcome. Since only one third of training programmes in universities incorporated learning activities using a standardised clinical handover tool, it is likely that most competencies in the use of tools are attained in the practicum. A more effective handover can be achieved by having clear procedures for handovers and supportive work environments (Siemsen *et al*. 2012) and by educating staff on the importance of information transfer and highlighting its potential impact on patient safety (Sharit *et al*. 2008).

Reported barriers to effectice communication include a lack of organisational support structures, a lack of a formal policy for clinical handover (Health Foundation 2011; Siemsen *et al*. 2012), and a failure to schedule adequate overlap time between shifts (Health Foundation 2011). The South Australia Department of Health (SA Health 2013) recommends that clinical handover should be based on good governance and leadership (e.g. SA Health 2013). It appears that this may not be occurring in hospitals in Ireland since the majority of hospitals reported that they did not issue clinical guidelines to medical, nursing or therapies professionals.

A number of guidelines contain the recommendation that clinical handover should involve a team approach (e.g. AMA 2006; SA Health 2013; Department of Health (Western Australia) 2013). The evidence from the focus groups and interviews among all grades indicates that, while there may be sharing of information across disciplines, medical and nursing handovers are very distinct activities with somewhat distinct purposes and, in some respects, involve quite different modes of communicating. This reflects traditional and highly routinised practices that have become institutionalised in modern hospitals and are, in part, determined by disciplinary culture and by each organisations' need to function effectively. While it will always be necessary to have separate handovers for medical and nursing staff, to achieve multidiciplinary team handover will require a change of embedded traditional practices that will require, as a starting point, the establishment of clinical handover as a deliberate clinical task requiring protected time.

Several official bodies recommend that duty shift handovers should be facilitated at the level of the organisation through planned overlapping shifts (BMA 2004; NSW Department of Health 2010). The evidence from this study indicates that handovers associated with nursing duty shift changeover are a well established routine in hospitals, generally involving a handover on all patients, whereas medical handover associated with on-call team changeover is not established within a protected time framework and with information transferred on selected patients only. Additionally, the evidence is that the location of medical handover, particularly among junior medical staff, is also not formal and can occur in various public places such as cafes or corridors.

Among the recommendations common to many published guidelines on clinical handover are that handover practice should be supported by staff training in local handover policy (Department of Health (South Australia) 2013a; Department of Health (Western Australia) 2013). Most hospitals reported that they provided training to new staff on clinical handover as part of staff orientation and that clinical handover was a designated activity, in that it was a scheduled task. However, the data from the interviews and focus group discussions indicate that there was little formal policy regarding the way that clinical handover should be conducted in most organisations and little formal training specifically in relation to clinical handover. Where training was provided, it tended to be associated with standardised operating procedures for patient transfers, particularly in OR. In the absence of a defined handover protocol, practitioners may communicate certain types of information elements more frequently and more reliably than others (e.g. Maughan *et al.* 2011; Health Foundation 2011; Ilan *et al.* 2012) or make errors or omit key information items (Aylward. *et al.* 2011).

5.3 Clinical handover practice

Frequent interruptions during handover are widely reported as a barrier to effective handover (e.g. Bost *et al.* 2012; Siemsen *et al*. 2013; Smith *et al*. 2014). The data from the national survey of hospitals indicated that, in the majority of hospitals, clinical handovers were conducted in a private area such as the ward office; however, data from focus group discussions and interviews reveal a somewhat different picture, indicating that nursing handovers were mainly conducted at the ward station, a location that was generally open and public, and that medical duty team handovers were sometimes conducted in public places. Several nursing participants spoke of interruptions to duty shift handover from extraneous sources and this evidence was further confirmed in the non-participant observation data, in which there was a remarkably high level of extraneous background noise. A total of 51 interruptions were recorded in 15 observed events.

Several studies have pointed to the benefits of standardised checklist tools during shift handover, in terms of increasing the amount of relevant clinical information reported (Berkenstadt *et al*. 2008; Weiss *et al*. 2013), improved completeness of data recording (Lee *et al*. 1996) and improved follow-up of tasks handed over at shift change (Stahl *et al*. 2009). There was evidence in this study that many clinical departments use standardised checklists to support or augment clinical handover, particularly for between-unit transfers. However data from the non-participant observation indicate that, while various documentary supports were used to augment handover, no standardised tool was observed.

Empirical evidence points to the benefits of ISBAR in leading to handover consistency, including improving the content clarity and quality of information transferred (Marshall *et al*. 2009; Thompson *et al*. 2013). While several nursing participants cited ISBAR and a small number indicated that they used it in limited circumstances and for specific purposes like telephone handovers, for the most part, clinical handovers did not appear to incorporate a tool for topic standardisation like ISBAR. Many nursing and medical participants endorsed ISBAR as a tool for achieving standardisation of clinical handover. A small number of medical participants were somewhat equivocal on the appropriateness of the ISBAR tool, seeing it as a possible barrier to the quality of the communication exchange among medical team members, where informality and trust in the intra-professional relationship were considered important to the success of a handover. Laboratory staff interviewed appeared to be the exception among all healthcare professionals in terms of standardising handover, by both insisting on a standardised reporting protocol when communicating both non-urgent and urgent diagnostic test results to medical staff and ensuring that staff received training in the protocol.

5.4 Threats and enablers

Handover effectiveness can be threatened by factors like interruptions from extraneous sources, such as noise and from other staff not directly involved in the handover (Siemsen *et al*. 2013; Smith *et al*. 2014). Greenstein *et al.* (2011) identified that staff conversations were the most common interruption followed by clinicians arriving late. Among the study participants the main factor threatening an effective handover was frequent interruptions which, in turn, impacted on the duration of handover, resulting from the unsuitable location in which handovers, particularly nursing duty shift handovers, took place. Particular vulnerabilities were identified in busy clinical departments, including the ED. While the main source of interruptions were from extraneous sources, including other non-participants and extraneous noise, participants within the handover were also a source of interruptions, with unnecessary discussions happening during the handover.

A lack of a reliable IT infrastructure is seen as a barrier in limiting the accessibility of information, making it difficult for staff to source updated and accurate patient data (Siemsen *et al*. 2012). A number of study participants cited a poor patient information system as a barrier to positive and accurate communication about patients and some commented on the poor quality of the hospital IT infrastructure.

Ineffective handover communication can result from end-of-shift fatigue (Sharit *et al*. 2008). While the European Working Time Directive may address the problem of end-of-shift fatigue among junior medical staff, the evidence from data provided by the hospitals is that fewer than half of the hospitals that responded to the national survey were fully compliant with the EWTD.

The working environment may influence staff relationships and interactions (Solet *et al*. 2005; Grobman *et al*. 2011), affecting how professionals perceive the role of clinical handover, consequently acting as a barrier to effective communication. Junior medical staff were clear about their role in the handover process, seeing it as a way of ensuring that data transfer included key tasks to be performed by the oncoming team. The quality of relationships within medical teams appeared to be a valued part of everyday communication practices among junior staff. For more senior medical participants, good intra-team relationships, involving mutual trust and mutual reliance, were seen as important to the success of information transfer and appeared to take precedence over topic standardisation, which was seen to stifle an open dialogue in the handover process.

Handover effectiveness may be impacted by ambiguity as to when responsibility for patients in clinical handover scenarios is transferred (Bost *et al*. 2012; Chin *et al*. 2012). Nursing participants in the study recognised the role of duty shift handover in information transfer, but just one participant referred to the transfer of responsibility and accountability function of handover. Medical handovers at change of on-duty team tended to be associated with prospectively communicating treatment plans and specific tasks to be completed by the oncoming team and therefore inferred transfer of responsibility. However, data transfer was frequently reported to focus on the needs and plans of particular individual patients and not all the patients who fell within the oncoming team's remit of responsibility.

The most effective elements of organisational policy on handover include the requirement for all staff to be present at handover (Quin *et al*. 2009). While most organisations reported that they provided protected time in duty rosters for clinical handover, there did not appear to be a policy that required staff to attend. Nevertheless, routine handover events, such as nursing duty shift handover and NCHD-to-NCHD handover appeared to implicitly require all relevant personnel to be present.

5.5 Conclusions

The data collected in this study provided rich information, which described organisational policy and training, medical and nursing handover practices for a variety of scenarios and tools used to support handover, as well as threats to effective handover. The evidence from the national survey of acute care hospitals indicates that, while hospitals have the governance structures in place to monitor and improve patient safety, policies or practice guidelines on clinical handover are not widely in evidence. As a potentially high risk activity in relation to patient safety, it appears that clinical handover may not merit the level of prominence in hospital policies or operating procedures that it should otherwise warrant. Additionally, many health professionals' training programmes do not particularise clinical handover as a required clinical competence for health professionals.

While participants in the interviews and focus groups were able to identify specific local clinical department handover policies and standard operating procedures, many indicated that they were unaware of any local policy in place in their organisations. Clinical handover was a scheduled activity for nursing staff duty shift handovers only. When conducting handovers during duty team handovers, medical staff did not have a scheduled time for this activity and tended to conduct handover on selected patients only. Hence the evidence indicates that nursing handovers are more formal and explicit events, with duty rosters planned to ensure protected time, whereas medical handovers, while formal in their intent and execution are not afforded the same protected time as nursing handovers. Observations of scheduled clinical handover events, such as nursing duty shift handovers and junior medical staff handovers, suggest that they are vulnerable to interruptions and distractions, thereby threatening their effectiveness. Many participants in focus group discussions and interviews also attested to the high prevalence of interruptions and distractions. Hence, the practice of clinical handover among nursing and medical staff appears to be at variance with policy and best-practice evidence in several respects, notably in the efficiency and effectiveness of the actual process.

Although reported improvements were being initiated in some clinical departments and among some disciplines, participants in focus groups and interviews acknowledged that there was a need to review and improve the process of clinical handover. Clinical handover improvement initiatives should be developed in consultation with staff to ensure changes to handover practice fit with existing work processes and accommodate the needs of different healthcare professionals. Any contemplated changes should also consider how best to facilitate patient and, where appropriate, relatives' involvement in the handover process.

Appendix 7: Pre-requisite quality assurance criteria for the Irish context

Pre-requisite quality assurance criteria for the Irish context	Yes/No
1. National health policy and programmes and relevant existing guidelines should be specifically considered. Guidelines should be specifically cross-referenced with key recommendations of all National Clinical Guidelines endorsed by NCEC	Yes
2. The Guideline Development Group should include the intended users or their representatives of the guideline in the Irish setting for example, healthcare professionals, hospital managers, CEO hospital groups, two patients/service users and methodological experts etc	Yes
3. Conflicts of interest if declared should include a statement on the level of influence that the conflict of interest had on the decision making with regard to the recommendations and a description of the measures taken to minimise influence on guideline development. A copy of the Guideline Development Group's conflict of interest forms should be provided to NCEC for retention.	Yes
4. The evidence review should include both clinical and cost effectiveness to ensure that the clinical guideline is based on best available evidence. The full clinical and economic search strategy should be clearly outlined.	Yes
5. The methods or tools for assessing the quality of the evidence should be documented. The level of evidence should be explicit and strength of recommendations graded.	Yes
6. Consideration of cost-effectiveness, resource implications and health service delivery issues should be included in the development of the recommendations. Resource implications from an Irish health service perspective should be explicit and include equipment, staff, training etc.	Yes
7. A description of the selection process for experienced and knowledgeable external reviewers and how the information gathered was used by the Guideline Development Group should be provided. Two international reviews should be included. (See Table 3 for sample set of international external reviewers' questions).	Yes
8. An explicit time interval (no more than 3 years) should be used for review and updating of the guideline. Responsibility for update of the guideline should be detailed.	Yes
9. Guideline recommendations should: (a) clearly identify responsibility for implementation of the recommendations in the Irish health system i.e. corporate, organisational and healthcare staff responsibilities. Practical guidance can be included under recommendations to support the delivery of the recommendations. (b) include a description of the population (e.g. hospital, community, older person, surgical etc.) or clinical situation most appropriate to each recommendation/ option.	Yes
10. The monitoring or audit criteria should assess implementation of guideline and the impact of implementing the recommendations. Consideration should be given to key performance indicators (KPIs) at local, regional and national level including KPIs for inclusion in HSE service plans as appropriate. KPIs should be developed in line with guidance from HIQA on Developing Key Performance Indicators and Minimum Datasets to Monitor Data Quality (February 2013).	Yes

Appendix 8: AGREE II tool

Appraisal of Clinical Guideline

Using

AGREE II INSTRUMENT

Title of guideline being appraised: Communication (Clinical Handover) in acute and children's hospital services, National Clinical Guideline No.11.

Version / date of publication: November 25th 2015

Date of appraisal: October 2015

Appraised by (GDG – self appraisal):

Domain 1: SCOPE AND PURPOSE

1. The overall objective(s) of the guideline is (are) specifically described.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

2. The health question(s) covered by the guideline is (are) specifically described.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

Domain 2: STAKEHOLDER INVOLVEMENT

4. The guideline development group includes individuals from all relevant professional groups.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

5. The views and preferences of the target population (patients, public, etc.) have been sought.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

6. The target users of the guideline are clearly defined.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

Domain 3: RIGOUR OF DEVELOPEMT

7. Systematic methods were used to search for evidence.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

8. The criteria for selecting the evidence are clearly described.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

9. The strengths and limitations of the body of evidence are clearly described.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

Domain 3: RIGOUR OF DEVELOPEMT – continued

10. The methods for formulating the recommendations are clearly described.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

As appropriate

11. The health benefits, side effects, and risks have been considered in formulating the recommendations.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

As appropriate

12. There is an explicit link between the recommendations and the supporting evidence.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

Domain 3: RIGOUR OF DEVELOPEMT – continued

13. The guideline has been externally reviewed by experts prior to its publication.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

In progress

14. A procedure for updating the guidelines is provided.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

Domain 4: CLARITY OF PRESENTATION

15. The recommendations are specific and unambiguous.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

16. The different options for management of the condition or health issue are clearly presented.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

Not relevant

17. Key recommendations are easily identifiable.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

Domain 5: APPLICABILITY

18. The guideline describes facilitators and barriers to its application.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

19. The guideline provides advice and/or tools on how the recommendations can be put into practice.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

In practical guidance

20. The potential resource implications of applying the recommendations have been considered.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

21. The guideline presents monitoring and/or auditing criteria.

1 Strongly Agree	2	3	4	5	6	7√ Strongly Disagree

Comments

Domain 6: EDITORIAL INDEPENDENCE

22. The views of the funding body have not influenced the content of the guideline.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

23. Competing interests of guideline development group members have been recorded and addressed.

1	2	3	4	5	6	7√
Strongly Agree						Strongly Disagree

Comments

No conflict of interest identified

OVERALL GUIDELINE ASSESSMENT

1. Rate the overall quality of this guidelines

1 Lowest possible quality	**2**	**3**	**4**	**5**	**6**	**7√** Highest possible quality

2. I Would recommend this guideline for use.

Yes	
Yes, with modifications	
No	

Recommendations for Modification:

Appendix 9: International Expert Review feedback

Communication (Clinical Handover) in acute and children's hospital services
International Expert Review Feedback Summary

Two international experts in the field reviewed the guideline and provided feedback for consideration by the GDG. The GDG identified the international reviewers based on their proven achievements in the field. A sub-group of the GDG, consisting of the co-chairs and project manager, collated and organised the feedback received from the two international experts. All feedback was considered and the sub-group highlighted the areas that were amended within the draft guideline, for discussion with the GDG at the sign off meeting on Monday 28th September 2015.

The entire feedback, received from the two international experts was provided at that meeting.

International reviewers

Name and title	Academic and professional qualifications	Role(s) and affiliation(s)
Vineet Arora MD MAPP	Handoff researcher Developed handoff recommendations for Society of Hospital Medicine	Associate Professor & Assistant Dean for Scholarship & Discovery Director, GME Clinical Learning Environment Innovation Pritzker School of Medicine, University of Chicago
Amy J. Starmer, MD, MPH	Assistant Professor of Pediatrics, Harvard Medical School Director of Primary Care Quality Improvement, Boston Children's Hospital	Project Leader, I-PASS Study

International reviewers were provided with a template containing six questions to structure their feedback. The template was adopted from the sample set of international external reviewers questions provided in the *National Quality Assurance Criteria for Clinical Guidelines Version 2* (HIQA and NCEC 2012).

Both international reviewers complimented the guideline for its quality and comprehensiveness and provided suggestions/advice from their experience and previous research. Similar suggestions were grouped together and the following table includes the feedback from the international reviewers and the resulting amendments made to the guideline.

Questions	Comment/Suggestion from reviewers	Amendments to guideline
1. Has the appropriate evidence been identified and reviewed in line with the scope and clinical questions posed by this guideline?	a. For interruptions, one study to consider is by Greenstein *et al.* (2011) which showed that staff conversations were the most common interruption followed by clinicians arriving late. I see it is reviewed, but not in the interruptions literature. b. To truly change behaviour monitoring is needed. c. Both reviewers suggested that it would be important to reference / more thoroughly cite and describe the findings from the I-PASS Study, published in the New England Journal of Medicine in November of 2014. This is the only study in the literature that assesses the impact of a handoff intervention at multiple institutions on medical error rates captured in a prospective manner using systematic error surveillance (the gold-standard methodology in the field).	a. Greenstein included in: o Rationale for rec. 16 – page 46 o Lit review ▪ Barriers and enablers page 89, ▪ Key findings page 110 ▪ Discussion page182 b. Practical guidance for rec. 26 page 58 was amended to read: 'The GDG encourage: o sharing of ideas and locally developed resources to avoid unnecessary duplication of work amongst healthcare organisations o monitoring behaviour as part of measuring the effectiveness of implementing this guideline The national implementation group could decide how this could be facilitated.' c. See next section below

Questions	Comment/Suggestion from reviewers	Amendments to guideline
2. Are there specific links between decisions and the available scientific evidence?	a. The I-PASS study manuscript in the New England Journal would be rated as 2++ according to the grading criteria in the report. Therefore, it was difficult to reconcile this with Recommendation 2.2.3 recommending the use of the $ISBAR_3$ mnemonic based on much lower level evidence (grade D recommendation, level of evidence 2- and 4).	a. Recommendation 13 was amended to read - Healthcare organisations should provide staff with validated education training, using a variety of techniques including workshops and simulation, to support the implementation and practice for clinical handover. This should be mandatory and form part of staff orientation/induction and ongoing in-service education. Level of evidence was changed to 2++. Grade of recommendation was changed to B. The following text was also added to the rationale for recommendation 13 – 'Implementation of a simulation based handover training programme has been associated with a significant reduction in medical errors and preventable adverse outcomes (Starmer *et al.* 2014).' This study employed a before and after intervention methodology. The intervention included standardised written and oral clinical handovers, clinical handover and communication training and a faculty development and sustainability campaign. In 10,740 patient admissions, the medical error rate decreased by 23% from the pre-intervention period to the post-intervention period and the rate of preventable adverse events decreased by 30%. Conversely, the rate of non-preventable adverse events did not change significantly. Across sites significantly increases were observed in the inclusion of all pre-specified key elements in written documents and oral communication during clinical handover. There were no significant changes in the duration of clinical handovers.

Questions	Comment/Suggestion from reviewers	Amendments to guideline
3. Have the risks and potential harms of recommendations been fully considered in the context of clinical practice?	a. We do not yet have evidence in the field to suggest that one intervention might lead to fewer reductions in patient harm than another.	a. The following sentence was added to the rationale for recommendation no. 3 on page 30. – 'One international reviewer of this national clinical guideline, Dr. Amy Starmer, acknowledged that we do not yet have evidence in the field to suggest that one tool might lead to less reductions in patient harm than another. She also identified that the field of clinical handover research is in great need of comparative effectiveness studies, to compare different organising frameworks and mnemonics.' And for practical guidance for recommendation 28 on page 60 – 'The GDG support the recommendation from one international reviewer that comparative effectiveness studies on the use of different organising frameworks and mnemonics should be undertaken'.
4. Is the guideline clearly written, user friendly and allow for individual clinician decisions?	a. One reviewer said that the guideline is very long and would benefit from an executive summary or table with all the guidelines clearly laid out in the front so that one could read them upfront to understand what is recommended. The executive summary should also highlight the grade and evidence so that it is clear that a lot of this is expert opinion and a gap for high quality studies remains.	a. A summary document will also be available

Questions	Comment/Suggestion from reviewers	Amendments to guideline
5. Is the guideline suitable for routine use as intended (in so far as you are able to comment on the Irish situation)?	a. One reviewer was concerned about the specification of a standard template in Recommendation 2 with the use of $ISBAR_3$. She suggested providing for the end-user customization that is needed for folks to "buy in" to using the template. b. She also identified that every specialty is different so there may be specific fields that need to be customized. For example for a ventilated patient, vent settings may be important to include. At least some line about user customization to facilitate adoption would get around the fact that during implementation, purists would say "we have to adopt this" and front line personnel may say, well I have a way to make it better. c. You also want to keep it open for future research which may evaluate one template vs. another.	a. The following text was added to the practical guidance for recommendation 3 – 'One international reviewer of this national clinical guideline, Dr. Vineet Arora, highlighted the importance of customising the template for use by the end-user "for folks to buy-in to using the template".' b. The following text was also added 'The $ISBAR_3$ clinical handover tool is the nationally recommended standardised tool for conducting clinical handover for both situations. It provides a standardised framework, at the same time permitting clinical handover to be tailored to the needs of each department, unit or ward, for example, in the emergency department patient admission status and bed availability may be included, in the inpatient wards they may want to include infection status, frailty score, Waterlow Score, social circumstances, and in the ICU they may want to include ventilation settings. This concept is known as 'flexible standardisation'.' c. The following sentence was added to practical guidance for recommendation 28 on page 60 – 'The GDG support the recommendation from one international reviewer that comparative effectiveness studies on the use of different organising frameworks and mnemonics should be undertaken'.
6. Are there relevant international or well referenced guidelines (recommendations) on the same topic that these guidelines are in conflict with, and if yes are the reasons for this justified in the guidelines?	Both reviewers said that they did not know of any guidelines that this guideline is in conflict with.	

Additional comments:

How to implement the guideline will be an issue… for example if someone does not follow the guideline, what happens next? How will institutions be judged on whether they are following the guideline? Perhaps this comes with the implementation committee but it may be prudent to spell this out in terms of what the implementation committee could do.

The guideline and process used to develop them are truly a model that more countries should follow.

Appendix 10: National feedback

Communication (Clinical Handover) in acute and children's hospital services
National Stakeholder Review Feedback Summary

The draft guideline was circulated to a wide variety of national stakeholders including: GDG members who distributed to their representative groups, National Clinical Programmes via programme managers and clinical leads, Hospital Group CEOs, Hospital Group Directors of Nursing, Clinical Directors, Director's of Nursing and Hospital CEOs in all acute hospitals, the Irish Medical Council, NEWS contacts in all acute hospitals and others were consulted.

A sub-group of the main group (included the 2 co-chairs and the project manager) worked on the feedback that was received from the on-line survey and emails. Each piece of feedback was considered and the sub-group highlighted within the guideline document the areas that were amended for discussion when presented to GDG at a subsequent meeting. A copy of the complete set of feedback was provided at the meeting.

Eighty one respondents provided feedback on the guideline using the online survey and email. There were a total of 286 individual comments/suggestions; 19 of there were in the 'overall comment' section of the template; 137 were comments agreeing with the recommendations - some of the comments related to healthcare staff experience of good and poor practice in their own areas; 3 were outside the scope of the group's work, e.g. reference to clinical handover in the community and governance issues in healthcare organisations; 127 were suggestions - all similar suggestions were grouped together in the table below.

Comment/Suggestion from respondents	Action by GDG
Consistency of terminology – healthcare 'organisation' versus 'institution' was recommended	The guideline was searched amendments using 'organisation' instead of 'institution' were made.
Document too long	A summary document will be provided in line with NCEC recommendations
As well as those agreeing with the use of electronic systems for clinical handover, 16 individuals put in additional comments highly recommending the use of IT for patient records and clinical handover	The GDG agree that this would be the ideal and this is addressed in Recommendation 3

Comment/Suggestion from respondents	**Action by GDG**
36 individuals highlighted challenges for implementing the guideline, these included resources/lack of staffing, especially for on call staff at weekends – recommended shift overlap/protected time/ consultant contract/bed availability to accommodate patients under one consultant (specialty) in one area/limited space for conducting handover/ allocation of protected time/ overall change in culture especially for medical staff.	While some of these challenges will have to be addressed within the hospital groups, the GDG developed the guideline as a best practice guideline and acknowledge its implementation will require a cultural change especially for medical staff. Other issues are outside the scope of the GDG e.g. bed availability, grouping of patients under one consultant in the same area and space for conducting handover. It is acknowledged that resources will be required for the implementation of the guideline especially for education and training of staff. Recommendation 26 identifies the need for a national implementation group to oversee implementation of the guideline. Overall the GDG felt that the guideline should recommend best practice based on the available evidence, international views and expert opinion within the group.
The safety pause aspect of $ISBAR_3$ was felt to be an important feature of the handover process and the template should be provided within the guideline section with the other templates for convenience for staff.	The safety pause information sheet was added immediately following the $ISBAR_3$ templates within the document for convenience for staff see section 2.2.3.
2 respondents felt that there was a lack of understanding of the term 'flexible standardisation', auditing would be difficult if there was not a clinical handover standard tool used and that education of staff would be difficult. 1 individual asked for the term to be removed from the recommendation as it would allow too much flexibility.	A further explanation of the term 'flexible standardisation' was provided. It was recommended that auditing could be carried out using a customised tool (see section 1.12 of the guideline document) and likewise education could be provided on the standard tool with the 'improviso' that the standardised tool could be customised for use as required in individual areas. The GDG removed the term from the recommendation but felt strongly that it should be retained in the 'practical guidance' section of the document, to support effective implementation by empowering staff to make the tool relevant for their particular area. The GDG identified that it had been used in Phase 1 – Communication (Clinical Handover) in Maternity Services (Recommendation 5) and was signed off by the GDG, was part of the quality assurance by NCEC and signed off by the then Minister for Health in 2014, this is Phase 2 of that process. The NCEC encourage consistency across national guidelines. In recommendation 3 and 11 practical guidance was amended accordingly.
Other individuals agreed with the term 'flexible standardisation' and felt it was required and essential for successful implementation.	See Recommendation 11.

Comment/Suggestion from respondents	Action by GDG
It was generally acknowledged that clinical handover practices recommended in this guideline will require a major change in practice.	The GDG acknowledged that this was true and a major cultural change would be required.
There was a lot of comments about the importance of training and education for effective implementation of this guideline and that there would be sufficient resources allocated to this.	The GDG was in agreement with this and felt that this was very important as a significant patient safety initiative.
Reference to the management, storage and accessibility of records relating to Clinical Handover was queried.	It was agreed that there is variation in different hospital groups around management, storage and accessibility of records and this should be addressed in local policies. An additional piece was added to Recommendation 10 as follows: the local policy should clearly identify how clinical handover records are to be managed, stored and accessed.
Some comments related to how the guideline should be implemented and recommended that a national group be set up to oversee implementation.	See recommendation 26. The GDG acknowledged that while implementation is very important from a patient quality and safety perspective, that it will be a major cultural shift for staff especially medical staff who would not have been accustomed to shift rosters. Education and training will play a significant role in successful implementation including simulation training.
It was recommended that as well as patients that parents/ guardians of children should be included in the wording of the recommendations.	The GDG agreed and this was included where appropriate in the wording of the recommendations.
A number of overall comments on the guideline as follows: Well structured excellent guideline, would welcome a shorter user friendly version, a standardised approach with some flexibility for specialty areas is welcomed, very comprehensive, guideline allows adaptability for specific requirements, would encourage flexible standardisation, practical recommendations – hope it is implemented, each profession will need to adopt it for specific requirements, resources will be required to successfully implement it, the guideline is a vital missing piece of safe clinical practice.	The GDG acknowledged the positive comments and addressed the challenges identified by respondents within its scope as far as possible.

Appendix 11: Audit tool sample templates for:

A) ISBAR$_3$ communication tools (inter-departmental and shift clinical handover)
B) ISBAR communication tool for communication in relation to a deteriorating patient
C) Organisational compliance with the National Clinical Guideline

A) ISBAR$_3$ Communication (clinical handover) tool – Inter-departmental handover Audit Tool sample template:

Note: The ISBAR$_3$ communication (clinical handover) tool should be documented in the patient notes and audited as part of a documentation audit and as a step in a quality improvement process.

Was the handover face to face, telephone supported by follow up documentation etc?
Please specify_____

Was the handover documented? Yes No

Date: _____/_____/_____ **Ward:**_____

Did the documentation contain the following as part of the ISBAR$_3$ communication (handover) tool for the transfer?

Identification
Identity of person providing handover evident Yes No
Identity of individual(s), team receiving the handover Yes No
Identity of patient Yes No

Situation
Location of patient Yes No
Brief summary of patient's current status Yes No
Was a problem identified? Yes No

Background
Concise summary of reason for inter-departmental
Clinical handover Yes No
Summary of treatment to date Yes No
All baseline observations (current admission Yes No
BP; Pulse; Resps; SpO_2; Temp; AVPU
NEWS/PEWS/IMEWS (Previous NEWS/PEWS/IMEWS if appropriate) Yes No

Assessment
Evidence of patient assessment Yes No

Recommendation
Were recommendations made re: care of patient? Yes No

Read-back
Is there evidence of read-back to confirm
clinical handover information? Yes No

Risk
Was the safety pause included in the handover? Yes No
Were any risks identified? Yes No

Is there evidence of acceptance of responsibility
and accountability for patient care ? Yes No

Observational studies may also be carried out to audit communication in relation to communication (handover).

A) ISBAR$_3$ Communication (clinical handover) tool – Shift Handover – Audit Tool sample template:

Note: The ISBAR$_3$ communication (clinical handover) tool should be documented in the patient notes and audited as part of a documentation audit and as a step in a quality improvement process.

Was the handover face to face, telephone supported by follow up documentation etc
Please specify_____

Was the handover documented? Yes No

Date: _____/_____/_____ **Ward:**_____

Did the communication (clinical handover) identify that all patients in the unit were handed over? Yes No

Did the documentation contain the following as part of the ISBAR$_3$ communication (handover) tool:

Identification
Identity of the lead handover person evident Yes No
Identity of individual(s), team receiving the handover Yes No
Identity of patient(s) Yes No

Situation
Location of patient(s) Yes No
Brief summary of current status Yes No
Was a problem identified? Yes No

Background
Concise summary of reason for admission Yes No
Summary of treatment to date Yes No
All baseline observations (current admission) Yes No
BP; Pulse; Resps; SpO_2; Temp; AVPU
NEWS/PEWS/IMEWS (Previous NEWS/PEWS/IMEWS if appropriate) Yes No

Assessment
Evidence of patient assessment Yes No

Recommendation
Were recommendations made re: care of patient? Yes No

Read-back
Is there evidence of read-back to confirm clinical handover information? Yes No

Risk
Was the safety pause included in the handover? Yes No
Were there any risks identified? Yes No

Is there evidence of acceptance of responsibility and accountability for patient care? Yes No

Observational studies may also be carried out to audit communication in relation to communication (handover).

B) ISBAR communication tool for communication in relation to a deteriorating patient - Audit Tool sample template:

Note: The ISBAR communication tool should be documented in the patient's notes and audited as part of a documentation audit and as a step in a quality improvement process.

Date: _____/_____/_____ **Ward:**_____

Was the communication face to face, telephone etc please specify_____

Was the communication documented? Yes No

Did the documentation contain the following as part of the ISBAR communication tool for patient deterioration:

Identification
Identity of individual communicating deterioration Yes No
Identity of individual(s) receiving communication Yes No
Identity of patient Yes No

Situation
Was the reason for calling identified? Yes No
Were concerns identified? Yes No

Background
Was the relevant background documented? Yes No

Assessment
Was there evidence of patient assessment? Yes No

Recommendations
Were any recommendations documented for this patient? Yes No

Patient Outcome
Stabilised
Transferred HDU/ICU
Transferred to other facility
Death

Observational studies may also be carried out to audit communication in relation to patient deterioration

C) Organisational adherence to the Communication (Clinical Handover) in Acute and Children's Hospital Services National Clinical Guideline No. 11. - Audit Tool guidance

Date:_____ **Hospital:**_____ **Signed:**_____

Each recommendation must be included in the organisational audit of compliance with the national clinical guideline and level of compliance identified as follows:

Recommendation No.		
	Yes/No	Evidence
Fully compliant		
Partially compliant		
Non-compliant		

If partially or non-compliant organisations must put a Quality Improvement Plan in place identifying how compliance can be achieved within agreed timelines.

Appendix 12: Sample templates for the ISBAR$_3$ communication tools for inter-departmental and shift clinical handover

ISBAR$_3$ Communication (Clinical Handover) Tool SAMPLE Inter-departmental Handover	
I Identify	**Identify:** You Recipient of handover information Patient
S Situation	**Situation:** Location of patient as appropriate Brief summary of patient's current status Is there a problem?
B Background	**Background:** Concise summary of reason for interdepartmental handover Summary of treatment to date Baseline observations (current admission) Vital Signs: BP, Pulse, Resps, SpO_2, Temp, AVPU. NEWS/PEWS/IMEWS (include previous NEWS/PEWS/IMEWS if appropriate)
A Assessment	**Assessment:** What is your clinical assessment of the patient at present?
R_3 Recommendation Read-Back Risk	**Recommendation:** Specify your recommendations Read-Back: Recipient(s) to confirm clinical handover information Risk: Include the safety pause to identify possible risks

Adapted by GDG with permission from Dr S. Marshall, Monash University, Australia.

ISBAR$_3$ Communication (Clinical Handover) Tool SAMPLE Shift Clinical Handover	
I Identify	**Identify:** Lead clinical handover person Individuals/Team receiving clinical handover Patient(s)
S Situation	**Situation:** Location of patient(s) Brief summary of current status Is there a problem?
B Background	**Background:** Concise summary of reason for admission Summary of treatment to date Baseline observations (current admission) Vital Signs: BP, Pulse, Resps, SpO_2, Temp, AVPU. NEWS/PEWS/IMEWS (include previous NEWS/PEWS/IMEWS if appropriate)
A Assessment	**Assessment:** What is your clinical assessment of the patient at present?
R_3 Recommendation Read-Back Risk	**Recommendation:** Specify your recommendations Read-Back: Recipients to confirm clinical handover information Risk: Include the safety pause to identify possible risks

Adapted by GDG with permission from Dr S. Marshall, Monash University, Australia.

Appendix 13: Safety pause information sheet

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Quality and Patient Safety Directorate

We are all responsible…and together
we are creating a safer healthcare system

An Roinn Sláinte
DEPARTMENT OF HEALTH

THE SAFETY PAUSE: INFORMATION SHEET

Helping teams provide safe quality care

Why	Safety awareness helps all teams to be more proactive about the challenges faced in providing safe, high quality care for patients.
Who	Team lead and available multidisciplinary team members.
When	Any time (aim for a maximum of five minutes).
How	Focus on things everyone needs to know to maintain safety. Based on one question *'what patient safety issues do we need to be aware of today'* - resulting in immediate actions. The four P's below provide examples to prompt the discussion (any prolonged discussion on specific issues can be deferred until after the safety pause).

THE SAFETY PAUSE

QUESTION:

WHAT PATIENT SAFETY ISSUES DO WE NEED TO BE AWARE OF TODAY?

Examples

- **Patients:** are there two patients with similar names; patients with challenging behaviour; wandering patients; falls risk; self harm risk; or deteriorating patients?
- **Professionals:** are there agency, locum or new staff who may not be familiar with environment/procedures?
- **Processes:** do we have: new equipment or new medicinal products (are all staff familiar with these?); missing charts; isolation procedures required; or care bundles for the prevention and control of medical device related infections?
- **Patterns:** are we aware of any recent near misses or recently identified safety issues that affected patients or staff?

Heads-up for today

- Challenges e.g. illness related leave, staffing levels, skill mix, demand surges.
- Meetings/training sessions staff need to attend e.g. mandatory training.
- New initiatives/information e.g. new protocols; feedback from external groups.
- Any other safety issues or information of interest to the team – has this been communicated to the team e.g. notice board/communication book/ patient status at a glance (PSAG) board/ other communication system etc.

Patient Feedback

- Update on actions from recent patient feedback on their experience (complaints, concerns or compliments) that we need to be aware of today?

Follow-ups	Issues raised previously (confirm included on existing risk register if appropriate), solutions introduced or being developed. For those involved in the 'productive ward' initiative this is an opportunity to review the 'safety cross' data and any improvements.
Team morale	Recent achievements, compliments from patients and what works well.

Acknowledgements:
The HSE Clinical Governance Development initiative wishes to thank the National Emergency Medicine Programme for assisting in the development of this information sheet. It has been adapted with permission from Clinical Microsystems "The Place Where Patients, Families and Clinical Teams Meet Assessing, Diagnosing and Treating Your Emergency Department"©2001, Trustees of Dartmouth College, Godfrey, Nelson, Batalden and the IHI Safety Briefing tool Copyright © 2004 Institute for Healthcare Improvement.

An initiative of the Quality and Patient Safety Directorate, May 2013

For further informaton see www.hse.ie/go/clinicalgovernance

Tús Áite do Shábháilteacht Othar
Patient Safety First

Appendix 14: Sample template for the ISBAR communication tool for communication in relation to a deteriorating patient

ISBAR Communication Tool SAMPLE Patient Deterioration	
I **Identify**	**Identify:** You Recipient of clinical handover information Patient
S **Situation**	**Situation:** Why are you calling? (Identify your concerns)
B **Background**	**Background:** What is the relevant background?
A **Assessment**	**Assessment:** What do you think is the problem?
R **Recommendation**	**Recommendation:** What do you want them to do?

Adapted by GDG with permission from Dr S. Marshall, Monash University, Australia.

Appendix 15: Levels of critical care

Acute Care	Level 0	Hospital ward clinical management
	Level 1	Higher level of observation eg. PACU
Critical Care	Level 2	Active management by critical care team to treat and support critically ill patients with primarily single organ failure
	Level 3	Active management by critical care team to treat and support critically ill patients with two or more organ failures
	Level 3 s	Level with regional / national service

Reference: Levels of Critical Care, *National Standards for Adult Critical Care Services,* Joint Faculty of Intensive Care Medicine of Ireland *(2011)*

Appendix 16: PeerVue (Radiology)

PeerVue is software recently purchased by the HSE and currently being installed in public hospitals and which went live in University Hospital Waterford in May 2014.

With regards to hand-over / communications, PeerVue permits Radiologists to issue "Alerts" to Clinicians with varying levels of urgency.

Three levels of urgency are defined: "Critical" – the report must be transmitted within the hour, "Urgent" – the report must be transmitted within 24 hours, and, "Clinically Significant and Unexpected" - the report must be transmitted within 1 week.

For Critical and Urgent findings, although an Alert is raised, the Consultant still pursues the Clinician by phone, or if necessary in person, to ensure the report is received. The Alerts function then simply records that this communication has taken place and that the report has been acknowledged.

For Clinically Significant and Unexpected findings, the Radiologist can issue an alert from the workstation, to be delivered via the means of the Clinician's nomination i.e. email, fax or text. This occurs automatically at a button-push on the reporting workstation. These Alerts are then followed up by clerical support staff who ensure the Alert has reached its destination and has been acknowledged.

The benefits of this system are manifold, the most important of which include aiding in the time appropriate transmission of results and the documentation of acknowledgement of same.

Guidelines for the Implementation of a National Radiology Quality Improvement Programme - Version 3.0 available at:
http://www.radiology.ie/wp-content/uploads/2012/05/National-Radiology-QI-Guidelines-V31.pdf

Appendix 17: MedLIS (National Medical Laboratory Information System) project

The purpose of the National MedLIS Project is to deliver a single national standardised laboratory information system, replacing the multiple disparate systems currently in use. The remit of the National MedLIS project is to procure a modern laboratory information system to support the clinical and business needs of all laboratories, and secondly to support hospital objectives in relation to laboratory services in the context of patient care for the next 7-10 years.

The strategic goal for the MedLIS project is ***"To ensure patients healthcare providers have rapid 24-hour access to complete and up-to-date accurate laboratory data across all sites",*** i.e. a single national laboratory record. The deployment model for the proposed solution will be a single National system based on a central single instance of the software and database. This model will facilitate a single national laboratory record and end to end connectivity, thereby ensuring that clinicians have access to the full laboratory diagnostic data on each patient irrespective of where the patient is located and where the patient's tests were carried out.

As part of the MedLIS solution, PowerChart message centre can be used to alert clinicians of abnormal results. Results are published in the Inbox of message centre as soon as they become available and an alert flag set on the patient record so that a user accessing that record can immediately see if a new result requires their attention. It is possible to flag abnormal results using user definable colours and/ or by the addition of alpha characters such as H for high, L for Low, C for critical etc. The return of critically abnormal results can also be highlighted to clinicians using the Clinicians Message centre Inbox functionality. A message showing the actual result is available to the clinician from any computer he logs into. There is also an alert in the tool bar to show that Critical or abnormal results exist and need attention. The rules engine can be set up to send an alert to a designated mobile or pager, indicating an abnormal test has been sent and the clinician needs to access the system to action it.

Abnormal results can be flagged (rules based) for telephoning. Telephone functionality and automatic population of telephone queues based on parameters which include a please phone requests, critical results, cancelled requests, exceptions and problems exist in the system. Critical results can be prioritised in these queues. The telephone functionality also gives the ability to log unsuccessful call attempts.

Security privileges exist in the system that allow restrictions to access of results and can where necessary be tailored down to individual user privileges. This can be achieved by a combination of Organisation level, role based and individual task access controls and privileges. There is a full audit trail. Whenever a record is assessed or viewed an audit of this event is captured in the system and the user name and date and time are recorded against this event.

Appendix 18: Budget impact assessment

1. INTRODUCTION

This budget impact analysis is based on the anticipated resource implications of implementing the recommendations outlined in *Communication (Clinical Handover) in Acute and Children's Hospital Services National Clinical Guideline No. 11*. Conducted as part of the development of this clinical guideline, the budget impact analysis included an estimation of the cost of current practice and the cost of introducing a new standardised clinical handover protocol for all clinical staff, including the cost of staff training.

The GDG consider the Budget Impact Analysis to be useful but preliminary in nature. The full budget impact with regard to both cost and savings are dependent on implementation in several different models of healthcare in the acute hospital sector. The GDG recognises that current practice varies significantly across different healthcare institutions, in particular the practice of rostering protected time for Clinical Handover. The recommendations within this Guideline require a degree of adaptation to local context which would influence the proportion of existing and additional resources required to achieve implementation in each unit/department/healthcare institution.

Cost of existing clinical handover practice

Analysis of the cost of current practice is based on observations of five different clinical handover event types conducted in a judgemental sample of large and smaller acute hospitals in Ireland. In this BIA study the cost of each clinical handover type was derived using a time driven activity based costing methodology (Kaplan and Porter, 2011), whereby the clinical handovers were observed and the costs computed by reference to the duration of the handover process and the salary of the staff involved in the particular clinical handover type (inclusive of employers' PRSI and pension contribution).

Based on five different clinical handover scenarios observed, and reflecting variables like duration of handover event and the staff grades involved, the estimated cost of current handover practice amounts to €162,210 per day across the entire acute hospitals sector in Ireland. This amounts to an estimated overall cost of clinical handovers involving five different handover types of approximately €59m (€59,206,614) per annum. This estimated cost represents a typical day in an acute hospital with 15 clinical departments in which the following occurs: two nursing duty shift handovers, per clinical department two medical on-call handovers, two nursing service manager handovers, thirty intra-departmental nursing handovers (patient transfers, morning updates, afternoon shifts) and thirty inter-departmental nursing handovers (patient transfers such as ED to ward, ward to theatre, ward to ward, ICU to ward). The cost analysis assumes that each handover event type described above is fairly typical, in that it takes place as part of routine everyday clinical practice. This cost does not reflect the additional costs associated with related elements, such as antecedent telephone calls, the use of supporting media like handover sheets, notebooks, pre-printed handover sheets and the shredding costs of these media following clinical handovers.

Overview of budget impact analysis structure

The budget impact analysis focuses on the additional cost implications that may arise from implementing this National Clinical Guideline. Those recommendations which will not result in additional resources are not included in the calculation of additional costs, since the budget impact is considered minimal. Those recommendations *not* included for calculating the budget impact relate to guidelines on hospital policy and best-practice that do not directly involve additional human or material resources; these are recommendations 1, 2, 5, 8, 9, 10, 11, 12, 19, 20, 23 and 24 and 27. No budget impact is anticipated from these recommendations since they constitute guidelines on how hospitals should regard clinical handover in the context of patient safety and patient involvement. Similarly no budget impact is anticipated in respect of recommendations 25 and 26, which contain guidelines addressed to agencies external to

the HSE. Recommendations 15 and 16, which relate to IT infrastructure for patient records and designated space for handover, respectively, are not included in the budget impact analysis, as they already exist in all the hospitals. Where these infrastructural supports are used effectively, they provide the necessary capacity to support the two guidelines in question.

The specific recommendations for which the budget impact was calculated include the following three categories of recommendation: Category 1: recommendations related to the use of tools and other supports (recommendations 3, 4, 21 and 22); Category 2: recommendations related to handover structure and content (recommendations 6, 7, 17 and 18); and Category 3: recommendations related to staff training (recommendations 13 and 14).

2. BUDGET IMPACT OF RECOMMENDATIONS

Category 1: Budget impact of recommendations related to handover tools and supports
The following recommendations give rise to additional costs in relation to tools and supports. Recommendation 3: Inter-departmental and shift clinical handover should be conducted using the $ISBAR_3$ communication tool; Recommendation 4: Organisations should provide the necessary infrastructure to support effective clinical handover, including the availability of readily accessible patient information in electronic format; Recommendation 21: Clinical handover should be conducted face-to-face, be conducted verbally, be conducted with relevant accurate and up-to-date information, facilitate a two-way communication …; Recommendation 22: The ISBAR communication tool should be used when communicating information in relation to patients who are critically ill and/or deteriorating.

The introduction of $ISBAR_3$ across the entire acute care sector will result in additional costs for printing and for making the tool available in electronic format. The electronic formats are of two types, namely delivered as an electronic form via the hospital intranet or via a smart-phone or tablet application (app.). For the purpose of this budget impact analysis, the costs are calculated on the basis of both printed and the hospital intranet delivered electronic option, since the latter option has not yet been considered. The cost of printing a consignment of $ISBAR_3$ blank forms is **€4,086** per annum (including VAT and delivery). This cost is based on a single 100gm dual-sided handover sheet (colour) and a print run of 198,000, which is the estimated number for all 44 hospitals in the acute care sector, based an average of 15,000 in-patient discharges per year over 3 years. While the ISBAR tool is in use in some hospitals, the proposal to print for all the hospitals is based on the need to achieve standardisation of the material across all the hospitals. However, as the ISBAR is in use in some hospitals, the additional cost (i.e. budget impact) of implementing these recommendations will be lower than the value provided. Consistent with Recommendation 3, we propose that the paper version be used to promote early adoption and compliance, but that the paper version be phased out after 3 years and presented in electronic format only thereafter. Tendering for printing may result in a reduced cost.

The cost of delivering the $ISBAR_3$ in electronic format via the hospital intranet is estimated to be minimal, and relates to the cost of IT staff time in designing and developing the electronic template and associated intranet delivery system in consultation with the relevant clinical staff. This estimated once off cost for the entire acute care sector is €6,139 and is calculated as follows:

> Practical capacity per hour for IT technician @€17.44/hour x 8 hours x 44 hospitals = **€6,139** (The hourly rate is calculated at the mid-point salary scale (including pension contribution) of €35,379).

This is a development cost and no ongoing maintenance cost is anticipated, since the IT department will assume responsibility for maintenance and updating revisions as part of their routine duties in maintaining the hospital intranet and its information management functions. The total costs associated with Category 1 recommendations are **€10,225** (Table 1).

Table 1: Costs associated with Category 1 recommendations

Recommendation number and description	Additional Costs	Estimated Cost Per Annum €
3. Clinical handover should be conducted using the $ISBAR_3$ communication tool	Printing Costs and $ISBAR_3$ in electronic format	€4,086 (yrs 1-3) €6,139 (yr 1) Total =€10,225
4. Availability of readily accessible patient information in electronic format		
21. Clinical handover should be conducted face-to-face		
22. ISBAR communication tool should be used for patients who are critically ill and/or deteriorating.		

Category 2: Budget impact of recommendations related to handover structure and content
Some aspects of clinical handover, at the level of structure and content, will require additional resources in terms of staff time. The recommendations in question are as follows: Recommendation 6: Healthcare organisations should implement interdisciplinary shift clinical handover where possible; Recommendation 7: All patients in the department/unit/ward must be handed over at shift clinical handover; Recommendation 17: Protected time should be designated for interdepartmental clinical handovers: Recommendation 18: Healthcare organisations should ensure that there is mandatory protected time for shift clinical handover. While the current cost of intradepartmental duty shift handover has been estimated as €93,412 per day across the sector (Appendix 1, Table A1), it is anticipated that the introduction of the $ISBAR_3$ handover tool will render the process more streamlined through more deliberate and reduced extraneous information exchange. Based on these four recommendations, the following costs implications are estimated.

The evidence from research conducted in acute care settings in Ireland in the course of developing these guidelines indicates that morning and evening duty shift handover is an integral and routine part of nursing work and is conducted as a specific task with protected time, facilitated by a c.30 minute duty shift overlap. While the process may vary in terms of content due to lack of structure, extraneous interference and undue delays, the introduction of $ISBAR_3$ should result in no net additional time and may indeed offset the need for additional time required to hand over all patients. Accordingly, there are no direct additional cost implications for three of the four recommendations within this category of recommendations (specifically for recommendations 7, 17 and 18) in respect of nursing staff. However there will be an additional cost related to recommendation 17 for medical staff Table 2a. Recommendation 6 recommends 'interdisciplinary shift handover where possible'; beyond the costs incurred under Recommendation 17, there is no additional cost associated with Recommendation 6, since nursing and medical staff who undertake shared handover will typically do so in the same protected time already allocated to nursing.

Our study provides evidence that medical duty shift handover is not a routine structured task involving protected time and, on foot of recommendation 17, there will be an additional cost in ensuring a minimum of 30 minutes for duty shift overlap. Assuming that medical staff will conduct two duty shifts per day, the estimated duration of protected time is 1 hour (x2 30 minutes). This additional cost is estimated to be **€149,766** per day across the entire acute care sector. This calculation is based on the salary of the registrar, SHO and medical intern grades, but not the consultant grade, at the mid-point scale and the calculation is summarised in Table 2a. Appendix 2 and 3 indicate the basis for calculating the cost of staff training.

Table 2a. Medical handover (protected time@30 minutes x2 duty shifts)

	Mean no. medical grades		
Grade	**Registrar**	**SHO**	**Intern**
Mean number WTE per hospital*	35.61	33.16	10.69
Cost	€	€	€
Cost (practical capacity per 1 hour)	49	41	28
Total cost per hospital	1,744.89	1,359.56	299.32
Total cost in 44 hospitals	76,775	59,821	13,170
Total overall cost per day			149,766
Total overall cost per annum			54,665,590

*Mean number by grade based on a sample of 11 acute hospitals

The total costs associated with Category 2 recommendations are €54,665,590 per annum (Table 2b).

Table 2b Costs associated with Category 2 recommendations

Recommendation number and description	Additional costs	Estimated cost Per Annum €
6. Implement interdisciplinary shift clinical handovers	Medical Duty Shift Handover	€54,664,590
7. All patients must be handed over at shift clinical handover		
17. Protected time should be designated for interdepartmental clinical handovers		
18. Ensure mandatory protected time for shift clinical handover		

Evidence indicates that health and social care professionals conduct handover through various methods and media, including the use of a structured handover tool in some instances. The introduction of $ISBAR_3$ should render clinical handover as more efficient and focused and will therefore have no additional cost implications. Evidence also indicates that clinical handover is not a scheduled activity for the majority of diagnostic professionals. The introduction of the $ISBAR_3$ should render clinical handover as more efficient and focused for this group of professionals and it is therefore anticipated that there will be no additional cost implications in respect of their role in clinical handover.

Category 3: Budget impact of recommendations related to staff training

The following recommendations give rise to additional costs for the acute care sector: Recommendation 13: Healthcare organisations provide staff with mandatory education and training to support the implementation and practice for clinical handover; Recommendation 14: Healthcare organisations should incorporate human factors training into all clinical handover education.

The cost of mandatory education and training specifically relates to ensuring that the handover improvement initiative associated with the introduction of $ISBAR_3$ handover tool has maximum exposure across the sector. A 'train the trainer' model should be adopted to enable the roll out of the training in the use of the $ISBAR_3$ and related best practice in clinical handover. This model assumes that a cadre of individual health care professionals across the major disciplines directly involved in clinical handover will undergo initial training and thereafter cascade the training

through local continuing professional development programmes. The disciplines requiring training will be medical, nursing and health and social care professionals and, ideally, training should be conducted within a multidisciplinary context, with staff from all indicative disciplines present in training sessions. For this type of training model, the time of both those delivering the training and those attending the training is included in the costs. The cost of training is based on a face-to-face training with staff release; however, ongoing refresher training should be delivered via online training and this would typically involve a self-directed on-line learning session that could be delivered on the HSELanD e-learning platform.

The estimated cost of training is based on four elements as follows: the cost of a one-day train-the-trainer programme; the cost of a 2-hour staff training session; the cost of refresher training and the cost of training materials.

Train-the-trainer costs

The cost of the train-the-trainers programme is based on each hospital having four trainers, two from medical staff at the Registrar grade and two from nursing staff, one at the ADON grade and one at the CNM2 grade. The overall cost of the train-the-trainer programme is calculated to be **€75,388** and includes the cost of staff release, the training programme costs, including training materials. These are once-off costs that will be incurred in Year 1. The train-the-trainers programme will be delivered over a single working day and the estimated cost is **€69,696** (Table 3a). The additional cost is calculated on the following: Two medical staff (at registrar grade) and two nursing staff (on ADON grade and one CNM2 grade) at each hospital across the entire sector will attend an 8-hour training session by attendance. The estimated cost is summarised in Table 3a. Staff salary costs are calculated at the mid-point salary scale with the addition of PRSI, pension and premium payments.

Table 3a Train-the-trainer costs (participants)

Type	**Medical**	**Nursing**	
Grade	**Registrar**	**CNM2**	**ADON**
Number (WTE)	2	1	1
	€	€	€
Cost (practical capacity per 1 hour)	49	22.5	27.5
Total cost for 2 WTE per hour	98	45	55
Total cost for an 8 hour training day	784	360	440
Total cost in 44 hospitals	34,496	15,840	19,360
Total overall cost			69,696

Facilitating the train-the-trainer 8-hour programme will also result in additional costs related to the personnel involved and the materials and supports used. The cost of the facilitator is based on the mid-point on the college lecturer scale and is estimated at a once-off cost of **€4,372** (Table 3b).

Table 3b Train-the-trainer costs (trainers)

	Mean no. H&SCP grades
Grade	**College lecturer**
Number WTE nationally	8*
Cost	€
Cost (practical capacity per 1 hour)	68.31
Cost per 8-hour training session	4,372
Total overall cost	4,372

*Anticipate number required for initial training in 4 centres nationally

Training materials

Additional materials will be required, including a train-the-trainers manual and learning materials to augment the training sessions. The main cost of training materials will be the cost of printing a train-the-trainer manual. This cost is calculated at **€1,320** based a print run of x200 copies at a unit cost of €6.60.

Staff training: Initial phase

The main cost of implementing this guideline will be the requirement to provide structured initial and on-going training and education for healthcare staff in the acute hospital sector. It is estimated that 17,608 WTE staff across all grades and across the entire acute care sector will require training in the use of the $ISBAR_3$ tool and associated content on clinical handover, including skill development. The cost of training all staff across the acute care sector is based on a 2-hour training session, to include content on the role of clinical handover in patient safety, human factors in clinical handover and the use of the $ISBAR_3$. As there is a skill component, the second hour should focus on practical experience in the use of $ISBAR_3$ hospitals. The cost of initial training is calculated to be **€1,578,184**. This figure comprises medical (4,116.92 WTE), nursing (11,024.36 WTE) and health and social care professionals (2,466.64 WTE) and assumes that all grades will require training in clinical handover. The estimated cost is summarised in Table 4. Staff salary costs are calculated at the mid-point salary scale with the addition of PRSI, pension and premium payments.

Table 4 Staff training costs: Initial phase

Grade	Medical	Nursing	H&SCP*
Number (WTE)	4,117	11,024	2,467
	€	€	€
Cost (practical capacity per hour)	49	45	37
Total cost	201,733	496,080	91,279
Total cost x 2 hours training	403,466	992,160	182,558
Overall total			1,578,184

*Calculated at mid-point of physiotherapist scale

Staff training: continuing education

It is proposed that following initial training, ongoing training will involve a bi-annual refresher training session based on a model of self-directed, but verifiable online training with a self-assessment component. Assuming this refresher training takes approximately one hour to complete with no additional material costs, the estimated overall cost per annum will be

€449,290, which includes the cost of staff release for one hour per every two years (**€437,014**) and the cost of developing the online learning materials (**€12,276**). This is based on the same number of staff estimated to need the initial training and the costs of developing the online refresher course materials. The estimated cost for medical, nursing and health and social care professional grades is summarised in Tables 5, 6 and 7.

Cost of refresher training: Medical staff (biannual refresher)
The cost of refresher training for medical grades is summarised in Table 5.

Table 5 Refresher training: Medical grades

	Mean number of medical grades			
Grade	**Consultant**	**Registrar**	**SHO**	**Intern**
Mean number WTE per hospital*	38.46	35.61	33.16	10.69
Cost	€	€	€	€
Cost (practical capacity per x1 hour)	97	49	41	28
Total cost per hospital	3,730.62	1,744.89	1,359.56	299.32
Total cost in 44 hospitals	164,147	76,775	59,821	13,170
Total overall cost				313,913
Total overall cost per annum				156,957

*Mean number by grade based on a sample of 11 acute hospitals

Cost of refresher training: Nursing staff (biannual refresher)
The cost of refresher training for nursing grades is summarised in Table 6.

Table 6 Refresher training: Nursing grades

	Mean number of nursing grades	
Grade	**CNM1&2**	**Staff grade**
Mean number WTE per hospital*	54.1	279.12
Cost	€	€
Cost (practical capacity per x1 hour)	43**	32
Total cost per hospital	2,326.3	8,931.84
Total cost in 44 hospitals	102,357	393,001
Total overall cost		495,358
Total overall cost per annum		247,679

*Mean number by grade based on a sample of 11 acute hospitals
** Based on average of midpoint across two scales

Cost of refresher training: Health & social care professional grades (biannual refresher)
The cost of refresher training for health and social care professional grades is summarised in Table 7. The three grades represented are: physiotherapist, nutritionist, and radiographer.

Table 7 Refresher training: Health and social care professionals

	Mean no. H&SCP grades
Grade	**Physiotherapist, nutritionist, radiographer**
Mean number WTE per hospital*	39.34
Cost	€
Cost (practical capacity per x1 hour)	37.41
Total cost per hospital	1,471.70
Total cost in 44 hospitals	64,755
Total overall cost	64,755
Total overall cost per annum	32,378

*Mean number by grade based on a sample of 11 acute hospitals
** Based on average of midpoint across three scales (point 8 of 14)

In addition there will be some costs associated with the development of the online training materials and these costs are calculated on the same basis as those for the development of the $ISBAR_3$ tool in electronic format, i.e. costs will be associated with the salary and time costs of an IT technician.

The cost of establishing and maintaining the online training materials for delivery in an online platform in consultation with the relevant clinical staff for the entire acute care sector is calculated as follows: Practical capacity per hour for IT technician @€17.44/hour x 16 hours x 44 hospitals = €12,276 per annum (The hourly rate is calculated at the mid-point salary scale (including pension contribution) of €35,379).

It is recommended that the learning materials for the online refresher training should be developed within the present HSE resources or could be purchased from an existing online training course, such as that provided by the Higher Education and Training Institute, a body that supports education and training for excellent health care across the NSW Health system in Australia (see: http://www.heti.nsw.gov.au/courses/clinical-handover/).

The costs associated with Category 3 recommendations comprise a once-off cost for initial training of €1,653,572 (train the trainer programme (€75,388), plus staff training (€1,578,184), plus an annual ongoing staff training cost of €449,290 (refresher training all grades (€449,290) plus technician costs (€12,276) and totals **€2,102,862**. (Table 8).

Table 8 Estimated total costs associated with Category 3 recommendations

Recommendation number and descriptio	**Initial Costs**	**Ongoing Costs**	**Estimated cost Per Annum €**
13. Provide staff with mandatory education and training to support	1,653,572	449,290	2,102,862
14. Incorporate human factors training into all clinical handover education.			

Summary of overall costs

Table 9 summarises the costs associated with those recommendations in the *Communication (Clinical Handover) in Acute and Children's Hospital Services National Clinical Guideline No. 11*. The overall estimated cost of implementing the Guidelines in the acute care sector results from nine key recommendations that relate to the materials associated with $ISBAR_3$, the structure and content of clinical handover, and staff initial training and refresher training.

Table 9 Costs associated with recommendations in National Clinical Guideline No 11.

Recommendation number and description	Additional Costs and Timing of Costs	Estimated Cost over 5 years €
3. Clinical handover should be conducted using the $ISBAR_3$ communication tool	Printing costs €4,086 per annum	€20,430
4. Availability of readily accessible patient information in electronic format		
21. Clinical handover should be conducted face-to-face	$ISBAR_3$ in electronic format €6,139 year 1 only	€6,139
22. $ISBAR_3$ communication tool should be used for patients who are critically ill and/or deteriorating.		
6. Implement interdisciplinary shift clinical handovers	Medical Duty Shift Handover €54,664,590 per annum	€273,322,950
7. All patients must be handed over at shift clinical handover		
17. Protected time should be designated for interdepartmental clinical handovers		
13. Provide staff with mandatory education and training to support	Train the trainer' cost €75,388 year 1 only	€75,388
14. Incorporate human factors training into all clinical handover education.	Staff Training: Initial phase €1,578,184 year 1 only	€1,578,184
	Continuing education training materials €449,290 per annum	€2,246,450
TOTAL ESTIMATED COSTS over 5 years		**€277,249,541**

The total cost extrapolated over five years amounts to €277,249,541. However the most significant cost is the protected time recommended to be allocated by medical staff for medical handover of €273,322,950. However, this cost may be viewed as an opportunity cost, i.e. a cost already incurred within the working time of medical staff. Therefore the other costs of implementation of the *Communication (Clinical Handover) in Acute and Children's Hospital Services National Clinical Guideline No. 11* amount to approximately €4 million (€3,926,591).

The GDG recognise that the time commitment for clinical handover for Consultants is difficult to separate out in financial terms in the context of current service delivery. An effort was however made to detail this time. This was estimated at two 30 minute handover overlaps and the full cost is estimated at €60million per annum. There is variability across the country in terms of use of scheduled overlaps and an amount but not all of the cost may be an opportunity cost. The implementation of this guideline will require different approaches depending on current handover practice in services. For some services the roll out of the guideline will occur with judicious rostering and review of current activities. Any additional hours will only be evident as the guideline roll out commences and services examine new rostering and review of current activities. Where services are not able to meet handover requirements and consider additional

hours are required this will require business planning in the context of the service planning process.

3. ANTICIPATED COST SAVINGS

The link between poor clinical communication and adverse patient events has been demonstrated empirically. While most preventable adverse events result in minor impairment with complete recovery within one month, a small proportion can result in permanent disability or death (Brennan *et al*. 2004; deVries *et al*. 2008, Rafter *et al*. 2015). Conversely, the benefits of good clinical communication practices, such as those set out in this clinical guideline, are associated with a demonstrable reduction in preventable adverse events. Published evidence on the economic benefits of interventions aimed at improving communication and clinical handover practices indicates effectiveness in a number of economic indicators. These include: costs savings from a reduction in adverse events (Starmer *et al*. 2014; Yao *et al*. 2012); reduced length of stay (Palmer *et al*. 2002); avoidance of unnecessary radiologic studies and admissions (Carr *et al*. 2012); and reduced costs of investigations and pharmacy costs (Ahmad *et al*. 2015).

While the costs of introducing the clinical guideline are largely related to the staff training costs needed to introduce and embed the guideline, the health system can expect significant overall net economic benefits, through savings achieved from a reduction in preventable adverse patient events, such as prescribing errors, unnecessary repeated tests, failure to recognise sepsis and delayed discharge. While the precise cost savings are difficult to quantify, drawing on published evidence from Ireland and from other jurisdictions, it is possible to infer what the economic benefits of the guideline will be for the acute care services in Ireland (Table 10). While not all adverse events are related to poor clinical communication.

The State Claims Agency reported an outstanding estimated liability of €1.16 billion in respect of 2,844 'clinical claims' for the health services in 2014. Additionally, the Agency provided figures for the source of claims for adverse events for 2012, which indicate that approximately 44 per cent of claims were reported for the acute care and paediatric services (State Claims Agency 2012). This suggests that the outstanding liability for clinical claims in respect of the acute care sector is **€0.51bn** and that avoidance of such preventable adverse events would result in a saving of up to this amount.

A review of the cost benefits to the National Health Service (NHS) in the UK of avoiding adverse preventable events suggests a cost benefit of between £1bn and £2.5bn annually to the NHS (Frontier Economics 2014). Based on the total annual cost of acute care services in the NHS for 2013–14, at £112bn, this represents a saving of between 0.89–2.23 per cent. When extrapolated to the budget for the acute care sector in Ireland, at €3.7bn in 2014, the cost of preventable adverse events in Ireland may range from €3.3m to €82.5m. Avoidance of such preventable adverse events would therefore result in a potential cost saving of up to **€82.5m**.

There is empirical evidence that introducing a clinical handover improvement initiative similar to the one proposed in this guideline, namely 'a mnemonic to standardise oral and written handoffs, handoff and communication training, a faculty development and observation programme, and a sustainability campaign' (Starmer *et al*. 2014) can result in significant cost savings. Based on a sample of 10,740 patient admissions, Starmer *et al*. (2014) demonstrated that the clinical handover improvement initiative, involving the I-PASS Handoff Bundle, significantly reduced the rate of preventable adverse events by 30 per cent and the rate of medical-error by 23 per cent, per 100 admissions. Extrapolating an equivalent 30 per cent saving on preventable adverse events on the cost of clinical claims for adverse events in the acute care services in Ireland, it is estimated that the clinical guideline could yield a saving of up to **€153m**.

Table 10: Potential cost savings of clinical guideline

Referent report	Basis of calculation	Potential saving (€)
State Claims Agency 2012, 2014	Outstanding liability for adverse events in acute care services	0. 51bn
Frontier Economics Report (NHS) 2014	Saving of 2.23 % on annual budget for acute care services	82.5m
Starmer *et al*. 2014	30% reduction in claims for preventable adverse events	153m

While research is ongoing at the time of writing to examine adverse events in the Irish health care system (Rafter *et al*. 2015), in the absence of precise data on the proportion of preventable adverse events caused by poor clinical communication, these anticipated cost savings assume that the cause is communication breakdown. In conclusion, there are net cost benefits from putting in place measures to reduce these preventable adverse events and effective clinical communication through a standardised clinical handover protocol, as set out in this clinical guideline is one such measure.

Annex 1
Basis for calculating the cost of existing practice

Introduction

Analysis of the cost of current practice is based on observations of five different clinical handover event types conducted in a judgemental sample of large and smaller acute hospitals in Ireland. The estimated costs per clinical handover type are reflective of an acute hospital with 15 clinical departments. While this is an arbitrary number it can be used as the basis for calculating the cost of an average clinical handover type in an acute hospital per day. This cost does not reflect the additional costs associated with related elements, such as antecedent telephone calls, the use of supporting media like handover sheets, notebooks, pre-printed handover sheets and the shredding costs of these media following clinical handovers.

The estimated cost is based on handovers observed in the course of non-participant observations of 17 clinical handover events. The cost of handover event type is calculated on the basis of the following variables: average staff number present per event; staff cost by grade (calculated at the mid-point of a national salary scale and inclusive of additional costs to employer, including pension, PRSI contribution and premium payments); and the duration of each event. The Kaplan & Porter (2011) methodology of computing the practical capacity for each type of personnel was used to determine the overall cost based on these variables.

Intra-departmental nursing handover: duty shift

Four Intra-departmental nursing duty shift handovers were observed. These were all verbal and face to face at a nurses' station and involved various grades of nursing staff, including nursing interns, staff nurses, CNM1, CNM2 and, in one event, a healthcare assistant. Participants at the observed handovers utilised various media to support the handover, including pre-printed handover sheets, patient care plans, random sheets of paper and a white board. Table A1 summarises the cost of this clinical handover type, based on the observed handover events and assumptions concerning the number of handovers and the size of hospitals.

Table A1 Intra-departmental nursing handover: Duty shift

Category of variable	Variable	Number	Cost €
Duration (mean duration in minutes)	Duration (minutes)	27.25	
Personnel involved (grade)	Nursing Intern	1.5	9.45
	Staff nurse	3	43.65
	CNM 1	0.25	4.697754636
	CNM 2	0.5	10.23752511
	HCA	0.25	2.717219468
Materials and supports	Handover sheets	Not recorded	/
	Nursing care plans	"	/
	Random paper	"	/
Total cost per handover			70.76632349
No. of handovers per hospital per day			30
Total cost per individual hospital*			2,122.8
No. handovers in acute hospital sector per day?			1,320
Total cost per acute hospital sector per day (Rounded)			93,412

*Assumes a mean of 15 clinical departments

Intra-departmental nursing handover: miscellaneous purposes

Four additional intradepartmental handovers of the nature of nursing updates were also observed and these included one intra-departmental transfer from ED triage to the main ED clinical area; these handovers were conducted during the morning and afternoon. All were verbal face to face and involved various grades of nursing staff, including nursing interns, staff nurses and CNM2 grades. Participants at the observed handovers utilised various media to support handover, including nursing handover sheets, nursing assessment sheet, ward day books and white boards. Table A2 summarises the cost of this clinical handover type, based on the observed handover events and assumptions set out in respect of the first type of handover.

Table A2 Intra-departmental nursing handover: miscellaneous purposes

Category of variable	Variable	Number	Cost €
Duration (mean duration in minutes)	Duration (minutes)	16.5	
Personnel involved (grade)	Nursing Intern	0.75	2.863684137
	Staff nurse	2.25	19.82497197
	CNM 1		9.298302621
	CNM 2	0.75	
	HCA		
Materials and supports	Handover sheets	Not recorded	/
	Nursing care plans	"	/
	Random paper	"	/
Total cost per handover			31.98696
No. of handovers per hospital per day			30
Total cost per individual hospital*			959.6
No. handovers in acute hospital sector/day?			1,320
Total cost per acute hospital sector per day (Rounded)			42,223

*Assumes a mean of 15 clinical departments

Inter-departmental handover: nursing

Four inter-departmental handovers were observed between nursing staff. All four were conducted for the purpose of patient transfer. Three were verbal face to face with one telephone handover between two CNM2s. Telephone calls (range 1–4) were observed to occur before each handover took place to negotiate the arrangements for patient transfer. Table A3 summarises the cost of this clinical handover type, based on the observed handover events and assumptions set out in respect of the first type of handover.

Table A3 Inter-departmental nursing handover

Category of variable	Variable	Number	Cost €
Duration (mean duration in minutes)	Duration (minutes)	7.0	
Personnel involved (grade)	Nursing Intern	0.25	0.4049654
	Staff nurse	1.25	4.6725523
	CNM 1		
	CNM 2	0.5	2.629823
	HCA		
Materials and supports	Handover sheets	Not recorded	/
	Nursing care plans	"	/
	Random paper	"	/
	Telephone calls	range 1–4	
Total cost per handover			7.7073407
No. of handovers per hospital per day			30
Total cost per individual hospital*			231.22
No. handovers in acute hospital sector per day			1,320
Total cost per acute hospital sector per day (Rounded)			10,174

*Assumes a mean of 15 clinical departments

Nursing handover: service manager-to service manager at duty shift change

One event involving nursing service manager-to service manager handover at duty shift change was observed. This event involved handing over responsibility for the entire population of patients in the hospital, but information transfer focused on selected patients only and also involved discussion of operational matters related to the oncoming duty shift. The event was verbal face to face and involved 2 ADONs and 1 DON. A pre-printed handover sheet was used as well as an email follow up after the handover. Table A4 summarises the cost of this clinical handover type, based on the observed handover events and assumptions set out in respect of the first type of handover.

Table A4 Nursing handover: service manager-to service manager at duty shift change

Category of variable	Variable	Number	Cost €
Duration (mean duration in minutes)	Duration (minutes)	20.3	
Personnel involved (grade)	ADON	2	35.5401719
	DON	1	20.31398659
Materials and supports	Handover sheets	Not recorded	55.85415849
	Nursing care plans	"	/
	Random paper	"	/
	E-mail follow-up	1	
Total cost per handover			111.708317
No. of handovers per hospital per day			2
Total cost per individual hospital			111.7
No. handovers in acute hospital sector			88
Total cost per acute hospital sector per day (Rounded)			4,915

Medical handover: on-call team shift change

One medical on-call team handover for duty shift change was observed during the day to night handover period (8.30 pm). This involved 8 junior doctors (intern grade), of whom 5 were outgoing and 3 were oncoming. The interns in this event used various media to support the handover, including notebooks, handover sheets with patient stickers, and random note paper. Table A5 summarises the cost of this clinical handover type, based on the observed handover events and assumptions set out in respect of the first type of handover.

Table A5 Handover event Type 5: Medical handover: on-call team shift change

Category of variable	Variable	Number	Cost €
Duration (mean duration in minutes)	Duration (minutes)	35	
Personnel involved (grade)	ADON	2	35.5401719
	DON	1	20.31398659
Materials and supports	Handover pagers	Not recorded	55.85415849
	Notebook	"	/
	A4 sheets with patient stickers	"	/
Total cost per handover			130.5371824
No. of handovers per hospital per day			2
Total cost per individual hospital			261.0743648
No. handovers in acute hospital sector			88
Total cost per acute hospital sector per day (Rounded)			11,487

Inter-professional handover
Three inter-professional handovers were observed between medical staff and other health and social care professionals. All were telephone handovers and were observed to be supported by medical notes, electronic referrals and random note paper. Costs were not calculated for this clinical handover event type as recipients of the telephone calls were not participants in the study fieldwork.

Navigational hubs
Two navigational hubs were observed. These represented operational planning meetings between the hospital bed management teams and hospital and ward managers (CNM2, ADON and DON). The meetings involved information transfer relating to operational matters and did not involve the transfer of responsibility from one group to another. Accordingly, this event type is not included in the budget impact analysis.

Cost of existing practice
The costs per clinical handover type are reflective of an acute hospital with 15 clinical departments. While this is an arbitrary number it can be used as the basis for calculating the cost of an average clinical handover type in an acute hospital per day. This cost does not reflect the additional costs associated with the use of supporting media such as antecedent telephone to face-to-face handover, handover sheets, notebooks, pre-printed handover sheets and the shredding costs of these media following clinical handovers.

The cost of existing practice across the entire acute services sector is calculated based on an arbitrary number of handovers per event type and is based on the 44 acute hospitals in Ireland with a mean number of 15 clinical departments. On a calculation based on the observed clinical handover scenarios and the assumed variables in Tables A1 to A5, inclusive, the estimated cost of €162,210 per day across the acute hospitals sector in Ireland. This amounts to an estimated overall cost of clinical handovers involving the five types observed at over €59m per annum (€59,206,614). This figure assumes that each event type described above is fairly typical, in that it takes place as part of routine everyday clinical practice. A typical day in an acute hospital with 15 departments in which two nursing duty shift handovers, two medical on-call handovers, two service nurse manager handovers, thirty intra-departmental nursing handovers (patient transfers, morning updates, afternoon shifts) and thirty inter-departmental nursing handovers (patient transfers such as ED to ward, ward to theatre, ward to ward, ICU to ward) will cost €162,209.90/ day. This does not include the costs of supplemental media used during clinical handover, the cost of telephone calls, paper, printing and shredding.

Annex 2
Basis for estimating cost of staff training in acute hospital sector: Salaries

Table A6 Estimated cost of staff training in acute hospital sector

Staff grade	Salary scale*	Average	Approx. costs**	Daily salary Cost§	^Practical capacity/ hour	Practical capacity/ minute
	€	€	€	€	€	€
Nursing intern	15,853	15,853	19,816	89	14	0.2314
RN	27,211–45,954	36,583	45,728	205	32	0.5340
HCA	21,741–32,906	27,324	34,155	153	24	0.3989
CNM1	43,288–51,191	47,240	59,050	265	41	0.6896
CNM2	47,089–55,858	51,474	64,342	289	45	0.7514
CNM3	54,336–61,491	57,914	72,392	325	51	0.8454
ADON	54,870–65,066	59,968	74,960	336	53	0.8754
DON	55,513–81,552	68,553	85,691	384	60	1.0007
Medical intern	31, 938	31,938	39,922	179	28	0.4662
SHO	38,839–54,746	46,793	58,491	262	41	0.6831
Registrar	50,578–60,305	55,441	69,301	311	49	0.8093
Physiotherapist	33989–50033	42,011	52,514	235	37	0.6132

* Source: http://www.rcni.ie/wp-content/uploads/HSE-Health-Sector-Consolidated-Salary-Scales-July-2013.pdf and https://www.inmo.ie/salary_information
**Additional costs inclusive of PRSI, pension and premiums on mid-range salary included
§ Based on 223 average working days per year when 104 weekend days, 9 public holidays, 26 holidays and 3 sick days are excluded
^Practical capacity daily working hours: 80% of time is available for patient care (20% of time spent on training/education, administration, breaks) (Kaplan & Porter, 2011) 8hrs x 80% = 6.4hrs practical capacity per day

Annex 3
Basis for estimating cost of staff training in acute hospital sector: WTEs

Table 6 Estimated WTE training requirement in acute hospital sector[2]

Number (WTE) hospitals 1–11 ...	Medical (Consultant, registrar and NCHD)	Nursing (CNS ANP, CNM, staff grade	Health and social care professionals*
	185	540.56	62.2
	40.17	35.61	117.31
	79.93	234.23	52.68
	38.4	21.86	143.54
	21	1.6	14.6
	270	572	76
	120.53	359.2	30.89
	26	107.6	12
	115.5	369	2.25
	25	133.49	34.9
	107.7	380.94	70.29
Total	**1,029.93**	**2,756.09**	**616.66**
Total @44 hospitals	**4,116.92**	**11,024.36**	**2,466.64**

Merged Totals representing each staff group = 17607.92 WTEs

*Includes the following grades: physiotherapist, radiographer, occupational therapist, dietician, radiologist, pathologist and microbiologist, social worker

2 Based on data collected from the national survey of acute hospitals

Appendix 19: Details of consultation process

Date	**8th October 2015**
Patients and members of the public	On September 3rd 2015, the draft guideline document was submitted to all GDG members for them to distribute to the group that they were representing on the GDG and anyone else that they deemed relevant to provide feedback. Both patient representatives on the GDG circulated the draft guideline and survey link to a wide audience with 3 weeks for them to provide feedback. National feedback, including patient and members of the public feedback is included in Appendix 10.
External review	On September 3rd 2015, the draft guideline was submitted to two international experts in the field of clinical handover for peer review. The international peer reviewers were: Dr Vineet M Arora, MD MAPP, Associate Professor and Assistant Dean for Scholarship and Discovery, Director, GME Clinical Learning Environment Innovation, Pritzker School of Medicine, University of Chicago, IL. Dr. Amy Starmer, MD, MPH, Director of Primary Care Quality Improvement and Assistant Professor of Pediatrics at Boston Children's Hospital and Harvard Medical School. Internatonal expert review feedback included in Appendix 9.
National consultation	On September 3rd 2015, the draft clinical guidelines document was submitted to a wide range of national stakeholders including clinical leaders and healthcare managers, national committees and professional groups with a three-week period allowed for individuals and groups to feedback comments and suggested amendments. National feedback included in Appendix 10.

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Department of Health, Hawkins House, Hawkins Street, Dublin, D02 VW90, Ireland
Tel: +353 1 6354000 • Fax: +353 1 6354001 • www.health.gov.ie