Mortality and Morbidity Reviews

Practice Guide – Working Version

Contents

Foreword

It is a real pleasure to contribute to the introduction of this important and practical document.

It is evident that hospital episodes occasionally result in unintended outcomes. Sometimes the safety of patients can be compromised by failures in the delivery or system of care. It is also evident that, as responsible clinicians, we ought to record, review and most importantly, learn from these experiences. Therein lies an important key to enhancing the delivery of safe effective care.

Reflection and learning from the past has driven advances in care for centuries and underpins the professional codes for all clinicians. The challenges in developing approaches, which allow and enable open, non-judgemental conversations and learning have led to these reflective practices being less impactful than they might otherwise have been. Creating a culture in which such reflections are enabled to be open, supportive and oriented to improvement for the future rather than created around blame and mired in the past needs vision and action.

In North America, one duty of the Center for Disease Control and Prevention is to inform public awareness and national research priorities. Their work has emphasised the importance of recognising the systemic breakdown in patient safety that can result from a range of causes. These include communication breakdown, errors of judgement and the results of a deviation from the ideal process of care, resulting in acts of omission or commission which can occasionally lead to patient harm or even mortality. It is clear that life in the NHS is no different. It is vital that we deliver a well-researched and robust system to allow all our clinical team members to have access to the benefit of learning from those occasions when the intended outcome was not achieved.

This practice guide provides both the scholarly background and practical advice needed to run professional and high value mortality and morbidity meetings which are essential to improve the quality of care we can deliver. This guide builds on the work of the Scottish Audit of Surgical Mortality (SASM) and many other systematic reflections on practice and sets out the conditions, methods and approaches under which improvement will flourish.

The approach is based on a responsible, open and honest culture of practice where staff are protected and learning opportunities are paramount. The principles, practice and details explained in this practice guide will allow all clinicians to participate in this vital activity. Such nationwide participation will foster a culture, which promotes learning and strives for the expert delivery of the safest care.

We would like to express our sincere thanks to Dr Manoj Kumar, Dr Andrew Longmate, Chrissie Watters, Dr Alex Stirling and many others who have invested in creating this guide.

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1   Introduction

1.1   Background

Mortality and morbidity reviews traditionally exist in healthcare organisations and take place in the context of wider clinical governance and management structures.[1]These reviews have been professionally driven in the interests of learning and are aimed at improving care for patients in the future.[2, 3]

A mortality and morbidity review describes a systematic approach that provides members of a healthcare team with the opportunity for peer review of adverse events, complications or mortality to reflect, learn and improve patient care.[2]Importantly, mortality and morbidity reviews also provide the opportunity to share good practice in patient care.[4]The mortality and morbidity review includes initial identification of a case, the mortality and morbidity meeting itself through to implementation of identified actions and improvements.[2, 5, 6]

It is important to note that not all mortality and morbidity reviews are the result of an adverse event or errors in care. However, where this is the case, the event should also progress through the organisations adverse event, risk management or clinical governance systems.

The evidence suggests that learning and improvement outputs from the mortality and morbidity review process are underutilised and that gaps exist in linking mortality and morbidity review outputs to other reflective practice and wider organisational governance and quality assurance framework.[1, 7]This type of educational approach can 'improve accountability of mortality data and support quality improvement without compromising professional learning', particularly when a standardised review and facilitation process are employed.[5, 8-10]

Whilst there are examples of good practice across NHSScotland, a recent survey[7]highlighted significant variation in the governance, structure, practice and presentation of outputs. This is supported by the published evidence, which highlights variations in the process and conduct of meetings, and the impact on learning and improvement.[11-14]

1.2   Scottish Mortality and Morbidity Programme

The Scottish Mortality and Morbidity Programme (SMMP)[15] aims to improve mortality and morbidity reviews within NHSScotland through:

- learning and training to provide skills and support to design, run and participate in effective mortality and morbidity reviews and processes
- sharing learning from mortality and morbidity outputs across NHSScotland, and
- advise and facilitate discussions on technology and IT systems to support mortality and morbidity reviews.

It is important to recognise related work in the field of 'learning from the past' alongside this guide. Some examples of related work in Scotland are set out below:

- Duty of Candour[16]
- National Adverse Events Framework[17]
- Measuring and Monitoring of Safety Framework[18]
- Mental health services and suicide reviews[19]
- Scottish Patient Safety Programme,[20] and
- Death certification in Scotland.[21]

It is recognised that this is complex and multi-faceted, however, the SMMP will continue to work with relevant teams and national workstreams to further align these approaches.

1.3   Scope of the practice guide

The practice guide, developed by the SMMP, is intended to:

- cover clinical care provided in NHSScotland, including acute care
- support local clinical teams in undertaking mortality and morbidity reviews and can be adapted by individual departments or services for local implementation
- provide opportunities for improvement in patient care
- support improvement local processes and standardise practice to ensure appropriate standards of review and facilitate wider learning, and
- provide an example on a structured pathway for reporting and learning, which includes alignment with existing organisational clinical governance, including adverse events management (see Appendix 2).

The practice guide outlines:

- the high-level principles to inform a fundamental understanding of an effective mortality and morbidity review process
- undertaking analysis of events through an understanding of 'human factors' issues and a 'systems' approach
- creating conditions for an effective learning environment, and
- practical advice on establishing and running structured and standardised mortality and morbidity meetings.

This guide is supported by a literature review relating to mortality and morbidity meetings and theory on human factors, systems approaches and incident analysis.[22-32]

1.4   Definitions

Wherever possible, we have incorporated generic terminology which can be applied across all specialties and settings.

Mortality and morbidity meetings are also known as mortality and morbidity reviews or conferences, case conferences or clinical teaching conferences. The term 'patient safety' or 'quality improvement' or 'quality assurance' (or a similar variant) is occasionally appended as a prefix.

An adverse event is defined as an event that could have caused (a near miss) or did result in, harm to people or groups of people.[17]

1.5   Implementation of the practice guide

NHS boards and other care organisations should have a system for reporting, reviewing and learning from adverse events, including mortality and morbidity reviews.[17] Organisations and clinical teams can use the guide to standardise and incorporate mortality and morbidity reviews into current organisational governance processes for learning and improving systems of care.

The SMMP is developing a national training programme to support clinicians and healthcare staff to design and run effective mortality and morbidity reviews.[15] This includes embedding a basic understanding of human factors, conducting case reviews or analysis, and effective

chairing of meetings. Core elements of this training will be based on theory noted in the guide.

The SMMP will serve to function as a platform for teams and NHS boards to share evidence of good practice and experience in running effective mortality and morbidity reviews as well as learning from mortality and morbidity meetings on the ihub or a dedicated website.

The SMMP is currently working with e-Health and NHS National Services Scotland (NSS) to assess available IT systems to support the mortality and morbidity review process.

We recognise that guidance alone has a limited impact on sustainable improvements in care and, therefore, this work has been designed by clinicians working in NHSScotland as a practical support within a wider context of improvement at local and national levels.[17-21]The importance of 'context' is widely recognised in the literature and in practice.[33]

We also recognise that further work is required on supporting implementation and we will publish additional resources during 2017–2018 informed by further local testing.

2   Practice guide

2.1   Aim of a mortality and morbidity review

A mortality and morbidity review provides opportunity for peer review, collective learning and quality improvement and is an integral part of organisational clinical governance systems.

Mortality and morbidity reviews are also an opportunity to focus on learning from normal everyday clinical work and excellence in care.

A successful mortality and morbidity review relies on a number of key factors:[17]

- clinical leadership and ownership
- an organisational culture of openness, honesty, transparency and professional accountability, based on sound educational principles
- a focus on learning and improvement of systems and processes of care and not on individual performance, which includes learning from excellence in care and sharing good practice
- a systems approach to the discussion and analysis of case presentations is necessary at all times to ensure in-depth understanding, effective team learning, the implementation and development of appropriate improvement actions and recommendations
- performance management and competency issues should be raised by the mortality and morbidity chair with the relevant senior leader (for example, the clinical director) outside the forum
- effective links with clinical governance, quality improvement, adverse events management, clinical audit, departmental teaching and training programmes, and
- outcome data from the mortality and morbidity forum should be recorded, integrated with and used to inform other organisational safety and improvement initiatives and obligations to maximise collective learning.

2.2   Governance structures

The success of mortality and morbidity reviews is dependent on the existence of a reporting, learning and a 'just culture' within the NHS board.[2, 22-24, 34-38]

A structured approach to reporting, recording and learning provides a department or organisation with a memory of outcomes from mortality and morbidity reviews. This is relevant for identifying trends and conducting appropriate analysis or audits of care. An example of a mortality and morbidity review process or structured pathway for reporting and learning is provided in Appendix 2.

The organisation and clinical teams are responsible for ensuring that mortality and morbidity reviews are effectively linked within the organisational context and associated systems (see Figure 1 below).

Figure 1: Organisational processes that link with mortality and morbidity reviews

To support mortality and morbidity reviews, the organisation provides a reporting system and learning structure that:

- enables staff to record and discuss cases within an agreed organisational time frame
- enables the relevant information and IT systems to be available for undertaking a review
- is aligned with organisational systems and processes
- identifies trends and analysis, and
- is linked with quality improvement.

Staff have access, training and guidance in local adverse events management systems and the mortality and morbidity review process.

Outcomes and learning from mortality and morbidity reviews should be regularly reported back to relevant organisational and governance committees.

The organisation and management teams should consider how a mortality and morbidity review fits within other organisational systems, such as adverse events and quality improvement, specifically:

- the process for initiating a mortality and morbidity review
- data collection and IT systems to be utilised
- the governance and reporting structures for ensuring actions and improvement plans are undertaken, and
- the administrative and management support required to clinical teams to undertake a review.

2.3   Supporting patients and families

In addition to the organisational adverse events system, there will be a mechanism to provide support and information to patients and families involved in the adverse event. There are a number of tools and information leaflets available to support staff in discussions with patients

and families. The Duty of Candour will require all organisations in Scotland providing care to inform people if there has been an event involving them, where the organisation recognises that there has been physical or psychological harm as a result of their care and treatment.[16]

Staff involved in mortality and morbidity reviews must have access to procedures and training to support them in discussions with patients and families.[19]

2.4   Supporting staff

There should also be recognition that staff may have been emotionally impacted by the event, and appropriate support for the team or individual be made available by the organisation. There are good resources to support staff dealing with a death.[39]

2.5   Mortality and morbidity review panel

A mortality and morbidity review panel may be convened to support the mortality and morbidity meetings and processes. The composition of the review panel will depend on the case or cases and specialties involved, for example the panel may include a consultant, charge nurse, trainee and administrator. A senior clinician or manager should oversee the entire review. Consideration should be given to the chair, subject and process experts.[17, 19]

The review panel has responsibility for:

● identifying cases for mortality and morbidity review and meetings within agreed organisational structures
● identifying if the mortality and morbidity review requires reporting on other organisational systems, for example adverse events
● identifying staff to support and present cases
● preparing mortality and morbidity review, including use of an agreed system or proforma for case selection, for example, structured judgement review,[40] and
● initial analysis of cases for discussion in the mortality and morbidity review (see Section 3).

The review panel is supported by local management teams, ensuring that adequate resources, time and training are allocated for the reviews.[3, 5, 37]

2.6   Case selection

For consistency and standardisation of reporting and mortality and morbidity review analysis, local team, departments or specialties may provide guidance on:

● a definition of morbidity, for example using national clinical audit or registry definitions[41], and
● specific criteria to be used for case selection.

Examples of criteria include:

● inpatient deaths, including in emergency departments and theatres
● delayed discharge due to complications in treatment
● unplanned ITU admissions
● unplanned readmission to hospital
● post-operative complications, and
● learning from when care goes well and excellent care episodes.

Based on agreed case selection criteria, the mortality and morbidity review panel will:

- prioritise cases with significant learning points and educational value or where improvements in systems or care of patient is required
- undertake in-depth analysis for mortality and morbidity meetings, and
- review any cases not selected to ensure data is recorded and available for trend analysis and audit.

The discussion and analysis of cases of good clinical care with positive outcomes provide opportunities to understand and learn from everyday clinical work.[25, 38, 42]

2.7 Organisation of a mortality and morbidity meeting

A mortality and morbidity review will be undertaken in line with organisational guidance. Depending on the case, it may be linked with other governance or processes. Review of case and presentation at meetings should occur in a timely manner to ensure learning and improvements are identified promptly. Where feasible this should not be longer than 6 weeks from the event.

Mortality and morbidity meetings:[3, 5, 25, 37, 38, 42]

- are held on a regular basis, for example weekly, fortnightly or monthly to provide an opportunity for cases to be discussed in a timely manner
- are held in a dedicated meeting room which is accessible to, and large enough for, participants and is well-equipped with audio-visual equipment and other supporting educational aids
- in order to effect change and ensure good system governance, should be connected with the wider organisation's clinical governance and shared learning arrangement, and
- planned in advance with wide promotion and regular reminders using appropriate aids.

2.8 Who should attend mortality and morbidity meetings?

The mortality and morbidity meeting is a highly relevant educational forum. Participation is an integral part of routine education and learning for clinicians, doctors in training and healthcare staff.[35-38, 42]

Attendance at mortality and morbidity meetings should be monitored and used by staff as evidence in appraisals, medical revalidation and continued professional development for non-medical staff.

Clinical leads and management teams are responsible for ensuring that attendance and time required for the preparation for mortality and morbidity meetings are protected.

The meeting attendees should be inclusive, multidisciplinary and reflect how frontline patient care is delivered and supported.

IT systems or other methods to facilitate shared learning should be made available where it is not feasible to have multi-specialty attendance at the meetings.

2.9 Mortality and morbidity case presentation

A standardised format is recommended for mortality and morbidity case presentations, for example using the SBAR approach (see Table 1).[6, 43]

This facilitates:

- consistency of approach
- improvement of quality of presentations
- learning opportunities for participants, and
- a focus on actions for improvement.

All case presentations should, where possible, maintain anonymity and not identify patients or staff members. For example, use patient A, Dr X, nurse Y.[17]

Participants are reminded at the start of the mortality and morbidity meeting that all information shared is confidential.

Table 1: Example of SBAR approach for mortality and morbidity presentations[6]

Heading	Areas for inclusion
Situation	Statement of the issue, including: - admitting diagnosis - procedure or operation - details of the event or adverse outcome, and - details of episodes of excellent care.
Background	Clinical information pertinent to the adverse outcome, including: - patient history - indication for intervention - laboratory and imaging studies - procedural details - hospital course – non-procedural events related to the outcome - how and when the complication or event was recognised, and - management of the complication or event.
Assessment and analysis	Evaluation of what happened and why. - Describe the sequence of events leading to the adverse outcome - Examples of good care. - Why it occurred – description of contributory factors and how these interacted across the system. Prioritise as appropriate. Use PAcE analysis model or similar approach.
Review of literature	Present the evidence base relevant to the complication.
Recommendations	Recommendations may: - identify how the complication or event could have been prevented or better managed - inform improvements in systems, processes and clinical practice

	• identify learning points from the case and findings from the contributory analysis
	• Communication plan for sharing learning
	• identify actions with timelines and assigned staff member to prevent or minimise future reoccurrence, and
	• improve patient and family experience.

2.10   Mortality and morbidity core dataset

It is recommended that the dataset collated for mortality and morbidity meetings is incorporated into existing IT and incident reporting systems.

Data collection for mortality and morbidity meetings must comply with the NHS boards' information governance and data protection policies and procedures.

Accuracy and completeness of data collection and coding will ensure a system that is able to monitor trends and provide effective feedback for learning and improvement.

Having an effective electronic system provides 'organisational memory' of relevant output from mortality and morbidity meetings. It also facilitates dissemination of learning between teams and other NHS boards.

The mortality and morbidity dataset, where feasible, should include the following five core aspects:

- learning points to be addressed (summary of event)
- contributing factors (identification and prioritisation of system-wide issues)
- incorporate patient and family experience
- lessons learned and action points to mitigate against future occurrence as well as measures taken to disseminate learning. This should include individual or team responsibilities and timelines, and
- Duty of Candour[16] (professional and organisational).

In addition to these core aspects, the mortality and morbidity dataset may include:

- meeting details – including frequency and attendance lists
- patient demographics and characteristics
- details of the incident
- primary and secondary diagnosis and other relevant medical history
- procedures and treatment
- complications, and
- mortality.

An example of a mortality and morbidity meeting recording form is provided in Appendix 4. The core dataset is included and the points noted in the assessment should be used to generate discussion among the attendees.

2.11 Role of the chair in mortality and morbidity meetings

The chair is integral to creating a positive learning culture that encourages collaboration and collegiality, and contributes to building a strong safety culture locally.[2, 25, 34-36, 38, 42]

The role of the chair includes:

- overseeing the preparation and organisation of mortality and morbidity meetings
- facilitating meetings, keeping to time, encouraging participants to become involved and to summarise learning and actions
- managing conflict diplomatically and sensitively when it arises, and
- facilitating consensus on any decision-making, and ensuring action points for improvement are captured and implemented.

Other considerations:

- the chair should be impartial to the case under review and be given time to prepare for meetings, and
- appointment of a rotating and/or deputy chair.

Knowledge, skills and experience

The chair is required to have the appropriate knowledge, skills and attributes to effectively manage discussions around mortality and morbidity cases, while also ensuring that learning is captured and improvement actions agreed.[17, 19]

The chair should ideally have:

- an understanding of organisational adverse events management, clinical governance structures and associated policies and procedures, for example data protection
- an understanding of the organisational mortality and morbidity review process and how it aligns with other organisational systems
- experience of chairing and facilitating multidisciplinary groups to identify learning and improvement
- a working knowledge and application of key principles and theory, for example systems approach, human factors, and quality improvement methods, and
- an understanding of the evidence base relating to patient safety issues in healthcare.

The SMMP is working with NES to develop a training programme for mortality and morbidity meetings that will include training for chairs.

2.12 Managing the mortality and morbidity meeting

The chair will be required to manage conflict that arises during the discussions. A requisite skill of the chair is the ability to manage these situations decisively, diplomatically and sensitively.[19, 26]

Where there is a fear of blame, judgement and perceived negative consequences, participants may become reluctant to engage with the mortality and morbidity review process and likely to withhold information about events.[19] This may impact on the effectiveness of the mortality and morbidity review process.

The following pointers may be useful.

- Establish ground rules at the beginning of the meeting – the chair can reiterate that the session should be open, honest but blame free. Participants are reminded to refrain from attributing direct personal blame or criticism towards colleagues. Feedback should be fair, constructive, sensitively delivered and practically useful.
- Recognition that colleagues involved may have been emotionally impacted by the event and this may not be immediately obvious. If you think someone is affected in a mortality and morbidity meeting, the chair should make a plan to follow this up.[39]
- Bullying and overbearing behaviours should never be tolerated by the chair or mortality and morbidity meeting participants.
- Monitor team dynamics and interactions to ensure wide participation.
- Staff resilience – recognise emotion in the discussion, acknowledge it and allow appropriate expression within the group. Signpost to sources and support for colleagues dealing with death.[39]
- Remain objective, avoid giving unwarranted opinions or colluding with individuals during discussions.
- Summarise and share the contributions, and facilitate discussions from other participants to respectfully challenge arguments, assumptions and behaviours that are causing conflict.

The following questions may be helpful for the mortality and morbidity chair to reflect on during these situations:

(a) What effect is the conflict or behaviour having on you?
(b) How are you responding to this conflict or behaviour?
(c) Is there an explanation for the conflict or behaviour?
(d) How is the conflict or behaviour affecting other participants?
(e) What strategy can be used to encourage consensus and manage conflict?

2.13   Engaging participants

A number of tactics can be used to ensure full participant engagement, including:[26]

- the timing of the meeting to maximise attendance
- establishing ground rules to encourage inclusive participation
- providing refreshments and a comfortable learning environment
- ensuring time is protected
- asking open and challenging questions to encourage interaction
- using appropriate aids or systems to demonstrate key points and to prompt discussions, and
- keeping case presentations concise with adequate time for questions and feedback.

3   Analysis of mortality and morbidity events

The mortality and morbidity review process often requires analysis of events where there has been harm or potential for harm to a patient. The analysis of mortality and morbidity events in healthcare occurs in a short time frame.

This section identifies some of the theory to support the analysis of mortality and morbidity events. Using these concepts can aid the learning process and emphasise that mortality and morbidity events in healthcare are often the result of complex systems with numerous interacting factors at play.

Analysis of events should ideally be carried out prior to the meeting and outcomes used to support discussions at the meeting. Where new information is obtained at the meeting, this should be taken into account and documented accordingly.

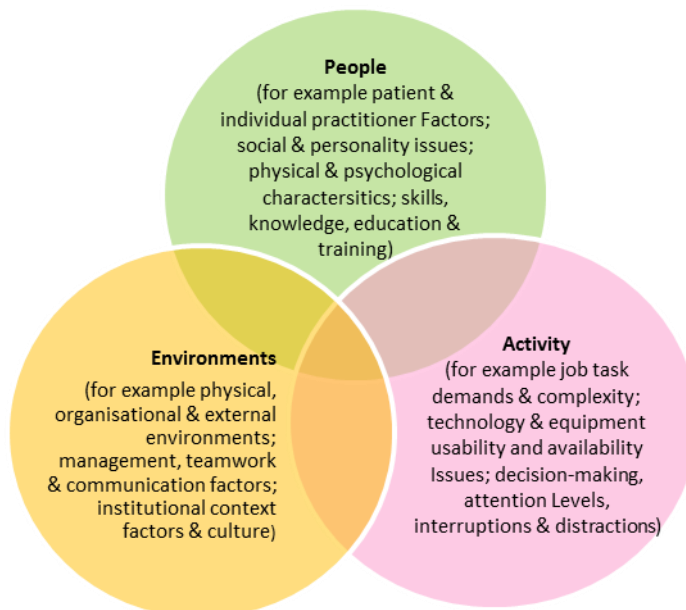## 3.1   What is a systems approach?

The application of a systems approach to the mortality and morbidity review process aids understanding and supports improvement in the quality and safety of patient care. It requires a definition and understanding of the system and interactions in which the event happened.[8-10, 34, 37]

Using the systems approach in mortality and morbidity analysis involves the following three principles.[27, 28]

1.   Understanding system relationships and interactions

For each episode of patient care being discussed and analysed, attempt to understand the interactions and relationships between different elements of the care system and how these contributed to the incident. Change and improvement are also implemented by identifying, considering and prioritising these interactions (see Figure 2).

Figure 2: PAcE analysis model of a systems approach to analyse patient safety incidents and problems in healthcare settings

People
(for example patient & individual practitioner Factors; social & personality issues; physical & psychological charactersitics; skills, knowledge, education & training)

Environments
(for example physical, organisational & external environments; management, teamwork & communication factors; institutional context factors & culture)

Activity
(for example job task demands & complexity; technology & equipment usability and availability Issues; decision-making, attention Levels, interruptions & distractions)

2. Actively seek multiple perspectives

There will be different perspectives on the way the system works, and everyday interactions and relationships will change frequently. For example, a clinical protocol may reflect the evidence base but not adequately reflect the system at a local level. When analysing mortality and morbidity cases, it is important to capture the perspectives of all relevant staff groups.

3. Defining the system boundary

Systems are influenced by many internal and external factors and it is not possible to consider all of these. When analysing a specific mortality and morbidity event, there requires to be an agreement on the system boundaries. This may alter by case. The boundary can be defined by location (for example ward, theatre or hospital building), by professional groups or settings (for example social work, facilities department or central laundry).

All factors considered essential to the healthcare system being analysed should be included within the boundary. For example, the team may decide to examine prescribing within the ward setting. However, if the overall role of the pharmacy department is important to the mortality and morbidity case then the boundary should be extended.

3.2 Systems models to guide case analysis

Various models are available to guide the adoption of a systems approach and thinking by frontline care teams when analysing mortality and morbidity cases in the short timescale available. All essentially perform the same task in this respect in terms of helping to identify and then prioritise contributory factors to the event under discussion. Three examples can be found in Appendix 3.

3.3 Understanding the concept of human error

Human error is often used to indicate the 'cause' of an accident or incident, particularly when there is no obvious technical, mechanical or organisational cause.[27, 28, 43, 44]

To learn from mortality and morbidity events, there is a need to recognise that human error is highly likely to be a symptom of a problem in the wider care system. The issue of systems can be used as the trigger point for the discussion and analysis of an event if, for example, a patient was harmed or could have been harmed.

Human error is, therefore, not often the cause of the event or problem at hand. For Reason (1997), suggests human error is a normal part of everyday life, including in the workplace, and is a natural condition and occurrence that enables us to develop, function and learn.[45]

Mortality and morbidity related learning and improvement could be more objective, meaningful and effective, if we move away from focusing on individual human error.

It is important to note that all of this should take place within the context of a 'just culture',[24] which balances learning from patient safety incidents with accountability from their impacts. In this culture, clinicians and others are not punished for actions, omissions or decisions taken by them, which are commensurate with their experience and training, however, wilful neglect or egregious behaviours are not tolerated.

3.4 Practical pointers

It should be self-evident that staff do not go to work to do a bad job.

When looking back on staff and colleagues' decision-making on a particular case, remember that decisions were made based on the dynamic circumstances faced at the time and the often very limited information that was available.

When analysing mortality and morbidity cases, the outcome will be known and the review panel will also have access to other information that would not be available to those colleagues involved at the time.

People are all influenced by cognitive biases (for example hindsight bias and attribution bias) that affect how we view incidents and the decisions made. These need to be acknowledged and considered when investigating events as part of mortality and morbidity meetings.[25, 26, 43, 44]

4 Mortality and morbidity meeting – what happens next?

4.1 Shared learning

The focus of the mortality and morbidity meeting is to learn from events and improve patient care.

The organisation should ensure processes are in place to share learning across the organisation and nationally. Examples of learning summaries with key learning points are available.[17, 19]

The output from mortality and morbidity reviews should report back to the organisational adverse events management system. This ensures lessons learned are documented, recorded and appropriately shared with relevant staff and specialties.

This process can be supported through relevant organisational IT systems.

Learning from mortality and morbidity review should be incorporated into training and learning within the department or organisation, for example in the development of simulation training, induction training or incident analysis training.

A quarterly summary report of outcomes from mortality and morbidity meetings should be made available to the respective governance committees in each NHS board area.

4.2 Using mortality and morbidity output for improvement

It is encouraged that output from mortality and morbidity meetings be used to initiate and complete improvement work.

Periodical review of data and trend analysis of outcomes should be undertaken and reviewed by the relevant governance committees to ensure improvements in care have been made.

Review of mortality and morbidity meeting outputs should be undertaken regularly to ensure that action points have been followed up and completed in a timely manner.

Consider nominating a member of the clinical governance or improvement team to work alongside the mortality and morbidity chair to support the following activities.

- Identify patterns in mortality and morbidity outcome data and integrate this with wider quality and safety initiatives across the organisation.
- Ensure that agreed actions are followed up and completed and that any changes to existing care systems are implemented and monitored. Where this has not been achieved, for example due to resource issues, this is escalated to senior clinical and administrative managers in the organisation.
- Draft and circulate:
  - periodic reports on the progress and contribution of the mortality and morbidity review process
  - organisational learning and improvement, and
  - examples of successes.

- Highlight and address any relevant challenges.

4.3 Additional support or resources

Additional support from administrative staff, clinical governance staff or other supportive services is often required to support the chair and/or review panel in mortality and morbidity

reviews. This support may be included as part of a wider role within the department, service or organisation.

NHS boards may wish to assign a member of the clinical governance or improvement team to work alongside the mortality and morbidity chair to support the following activities.

Duties may vary depending on the requirements of the department, service or organisation, and may include:

- supporting the chair and mortality and morbidity review panel to organise meetings
- ensuring reports are documented within relevant systems, and collated for review by the review panel and at meetings
- assisting in data retrieval and presentation for meetings
- recording meeting outputs, follow-up on actions and disseminating the learning points
- producing summary reports of mortality and morbidity meeting outcomes, and
- liaising with governance committees to ensure oversight of the process.

Mentorship or supervision may also be of value in supporting the chair. This may provide an opportunity for professional development and succession planning.

5   Evaluation of the mortality and morbidity review process

Evaluation of mortality and morbidity reviews, meetings and outcomes should be ongoing and integrated in the educational process and adverse events reporting processes. The evaluation should include:

- regularly capturing and acting on feedback from participants, and
- seeking evidence of the impact of the mortality and morbidity review process on improving the quality and safety of patient care, team performance and organisational learning.

The following questions can be used as a guide to evaluating the mortality and morbidity review process:

- What is working well?
- What needs improvement?
- Are the goals of the mortality and morbidity review process being consistently achieved?
- What evidence is there that the meetings are being effective in terms of patient care and learning (individual, team and organisational levels)?
- Does the mortality and morbidity review process take a systems approach to learning and improvement?
- Does the mortality and morbidity analysis adhere to human factors principles and approaches?
- Is the mortality and morbidity review process contributing to building a safe and just culture?

A number of methods can be employed to collate feedback, including:

- annual online or email surveys of participants
- contributory analysis (output, planning, evaluation)
- short evaluation forms at the end of meetings every few months
- information or data relating to reduction in events, complaints from patients, families or carers
- open discussion and questioning of participants on what is working well and what could be improved
- formal focus groups with key groups of participants, and
- informal discussions with selected participants to reflect different disciplines and staff groups.

Examples can be found in Appendix 4.

Appendix 1: Development of the guide

The guide was developed through:

- a comprehensive review of the literature relating to mortality and morbidity meetings and theory on human factors, systems approaches and incident analysis[22-29, 31, 32]
- a review of existing good practice guidance developed by professional bodies and Royal Colleges[2, 34-36, 46]
- a national survey of NHSScotland hospital consultant staff aimed at understanding current mortality and morbidity practices[7]
- a 1-day stakeholder workshop with over 80 clinical leaders, frontline clinicians, clinical governance specialists and patient safety experts to explore and define what good practice should look like, and
- a national stakeholder consultation on a preliminary draft of the practice guide document to gather and incorporate opinions and suggestions for improvement.

Authors of the practice guide

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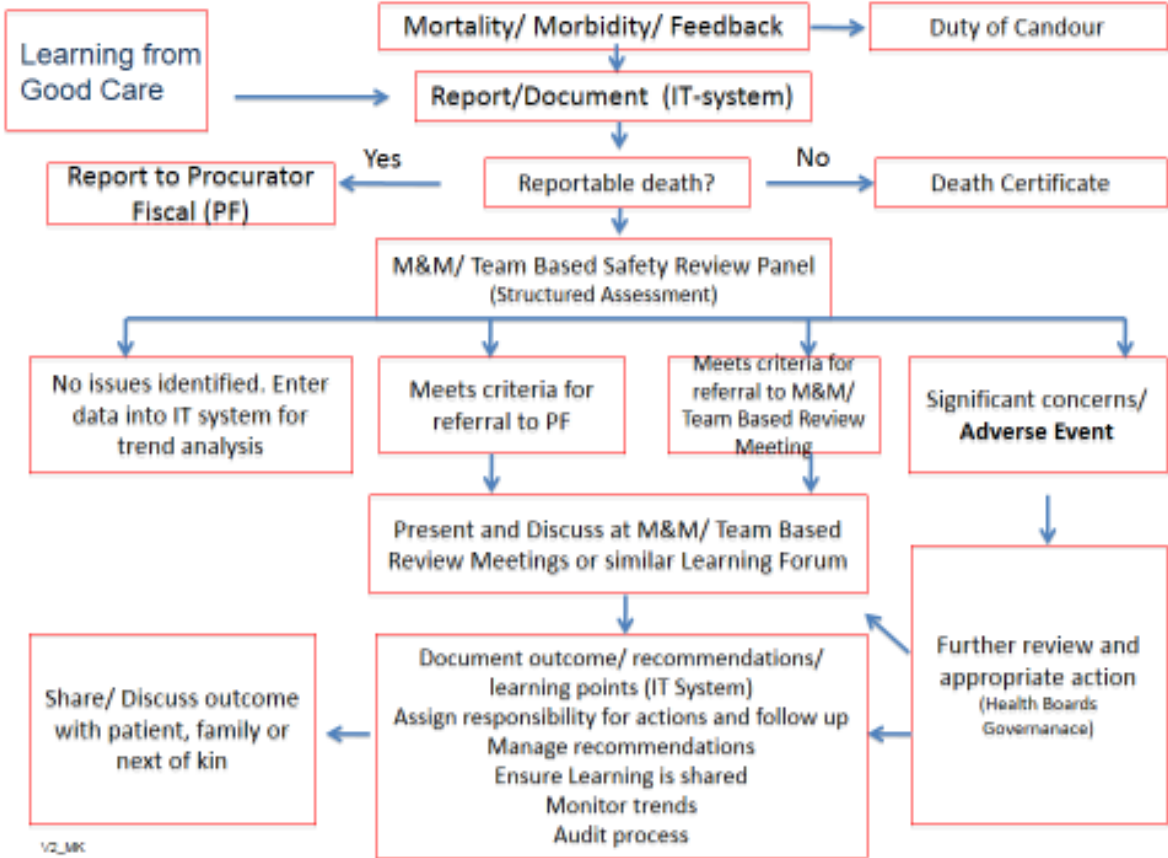- Paul Bowie, NHS Education for Scotland

Peer review group

A group was convened to peer review the draft practice guide prior to consultation.

Name	Position	Organisation
Rachael Abernethy	Quality Improvement Advisor	NHS Grampian
David Galloway	President	Royal College of Physicians and Surgeons, Glasgow
Aileen Keel	Director, Innovative Healthcare Delivery Programme / Honorary Professor	University of Edinburgh
Mike Lavelle-Jones	President	Royal College of Surgeons, Edinburgh
Jennifer Layden	Programme Manager	Healthcare Improvement Scotland
Jason Leitch	National Clinical Director, Healthcare Quality and Strategy	Scottish Government
Andy Longmate	Senior Medical Officer	Scottish Government

Name	Position	Organisation
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Karen Ritchie	Deputy Director of Evidence	Healthcare Improvement Scotland
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Craig White	Divisional Clinical Lead	Scottish Government

Appendix 2: Example of a mortality and morbidity review process or structured pathway for reporting and learning

```
                          Mortality/ Morbidity/ Feedback  ──────►  Duty of Candour
Learning from                          │
Good Care        ──────►      Report/Document (IT-system)
                               │
  Report to Procurator    Yes  │         No
  Fiscal (PF)     ◄──────  Reportable death?  ──────►  Death Certificate
                               │
                    M&M/ Team Based Safety Review Panel
                          (Structured Assessment)
```

| No issues identified. Enter data into IT system for trend analysis | Meets criteria for referral to PF | Meets criteria for referral to M&M/ Team Based Review Meeting | Significant concerns/ **Adverse Event** |

Present and Discuss at M&M/ Team Based Review Meetings or similar Learning Forum

Further review and appropriate action
(Health Boards Governanace)

Document outcome/ recommendations/ learning points (IT System)
Assign responsibility for actions and follow up
Manage recommendations
Ensure Learning is shared
Monitor trends
Audit process

Share/ Discuss outcome with patient, family or next of kin

V2_MK

Appendix 3: Systems models to guide case analysis

Various models are available to guide the adoption of a systems approach and thinking by clinical teams when analysing mortality and morbidity cases in the short timescales available. All essentially perform the same task in this respect in terms of identifying and prioritising contributory factors to the event under discussion. Three examples are outlined below:[27, 28]

The PAcE analysis model

This model (see Figure 2) considers the interactions between:

- *People factors*– for example, severity or uncertainty of the patient's condition, social and personality factors, clinician and staff training, skills, knowledge and competence, and physical and psychological characteristics such as fatigue, stress, motivation and needs.
- *Activity factors*– for example, job task demands such as mental and physical workload, decision-making, time pressure, attention levels, distractions and interruptions, volume and complexity of tasks; and interacting medical devices, tools and technology issues such as their availability and usability.
- *Environment factors* – for example, organisational issues such as how work is done, teamwork, verbal and written communication; staff levels, skill mix and shift patterns; information flow; leadership, management and supervisory issues; physical environment factors such as lighting, noise levels, workspace layout and design; prevailing safety culture and priorities; policies and standards; financial resources; and external pressures.

Think in-depth about the interactions between people, the activity that was undertaken and the immediate and wider healthcare systems and environment that people work in.[29] This model is a basic attempt to condense and simplify the various systems factors contained within the systems models illustrated in figures 3 and 4 for busy and time-pressured clinical teams.

The Safety Engineering in Patient Safety (SEIPS model)

Figure 3: The SEIPS model
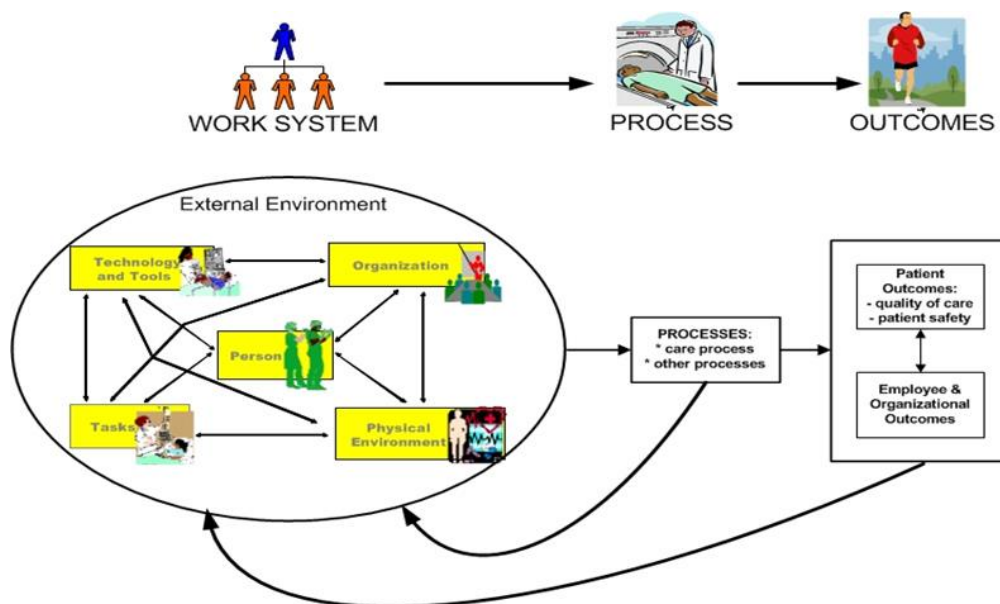
The London protocol

The London protocol describes the factor types and contributing influencing factors (see Table 2 below).

Table 2: The London protocol[46]

Factor types	Contributory influencing factor
Patient factors	• condition (complexity and seriousness) • language and communication • personality and social factors
Task and technology factors	• task design and clarity of structure • availability and use of protocols • availability and accuracy of test results • decision-making aids
Individual (staff) factors	• knowledge and skills • competence • physical and mental health
Team factors	• verbal communication • written communication • supervision and seeking help • team structure (congruence, consistency, leadership)
Factor types	**Contributory influencing factor**
Work environmental factors	• staffing levels and skills mix • workload and shift patterns • design, availability and maintenance of equipment • administrative and managerial support environment • physical
Organisational and management factors	• financial resources and constraints • organisational structure • policy, standards and goals • safety culture and priorities
Institutional context factors	• economic and regulatory context • National Health Service Executive • links with external organisations

Appendix 4: Examples of mortality and morbidity evaluation tools

Example 1: The adapted OM3 score

Department:		Date:		
Clinical / mortality and morbidity lead				
Understanding your current process *Instructions: against each criteria identify the most appropriate statement for your current* mortality and morbidity meetings, *and enter the corresponding score in the final column.*				

Criteria	0	1	2	3	Score
M&M meeting/activity frequency	None	Low (more than once per quarter)	Moderate (less than once per quarter)	Regularly (at least monthly)	
Method	-	No group learning (human/system factors not considered)	Group learning (human/system factors considered)	Group learning with facilitator trained/experience in human factors or quality improvement	
Case finding	-	Chart review / ad hoc	Multiple sources	Multiple sources & active surveillance (e.g. screening process)	
Case Selection		*Fascinomas' (for example, unusual interesting cases but little learning regarding system and human factors)*	*Mix of fascinomas and appropriate cases*	*Appropriate (for example,. cases that have system and human factor learning points which have potential to lead to QI)*	
Case Analysis		*Unstructured*	*Structured tool with no clear identification of cognitive or system issues*	*Structured tool includes cognitive and systemic issues*	
Reach	*No attendance*	*Poorly attended or involves few members*	*Well attended by clinicians*	*Well attended by clinicians, nursing and/or allied healthcare professionals*	
Impact	*No record/ dissemination*	*Some record of M&M meeting*	*Some dissemination (e.g. only to select sample of local team)*	*Well disseminated (e.g. to wider hospital team and governance structures)*	
Outcomes	*No actions*	*Ad hoc, individual basis*	*Clear action items identified at end of rounds*	*Actions forwarded to Quality committee, actioned and measured*	
				Total OM3 Score	

(adapted from Kwok et al http://www.slideshare.net/PatientSafetyCanada/cpsi-virtual-poster-kwok-oct-22-2014)

Example 2: Kirkpatrick's learning evaluation framework

Kirkpatrick's learning evaluation framework[32] is used to evaluate the effectiveness of learning interventions within medical education. This may also guide the mortality and morbidity review process evaluation (see Table 3 below).

Table 3: Kirkpatrick's learning evaluation framework

Level	Area	Criteria
Level 4	Results	To what extent pre-determined outcomes occur as a result of participation in mortality and morbidity meetings and subsequent reinforcement of related good practice guiding principles?
Level 3	Behaviour	To what degree participants applied what they learned back on the job and the amount of learning transfer?
Level 2	Learning	To what degree participants acquire the intended knowledge, skills and attitudes, based on their participation in mortality and morbidity meetings?
Level 1	Reaction	To what degree mortality and morbidity participants react favourably to meetings, what they think and feel?

Collation of feedback on how the mortality and morbidity review process is working at different levels of expected learning and improvement is essential to gauging success and what elements need to be tweaked or altered. The evaluation can also demonstrate the effectiveness of clinical governance arrangements and evidence of sharing learning more widely.

Example 3: Audit checklist

The checklist content can be adapted to periodically audit mortality and morbidity performance and impact, and directed related learning and improvements to this educational process.

Topic area	Compliance (Yes/No)	Action	Completion/Review date
Attendance/structure			
Attendance record maintained			
Adequate levels of senior staff			
Adequate levels of trainees			
Adequate levels of other groups			
Meetings occur as scheduled			
Room is fit for purpose			
Meetings start and finish on time			
Chair			
A named Chair is in place			
Meeting is effectively chaired			
Meeting outcomes are disseminated			
Previous meeting noted reviewed			
Administrative support			
Dedicated support available			

Appendix 5: Example of mortality and morbidity record

SMMP M&M RECORD v2.0
(Minimum dataset)

Meeting Date: _____/_____/___
Presenter: _____
Chair: _____
Attendees register attached: ☐

Patient Demographics

CHI: ☐☐☐☐☐☐☐☐☐☐

Admission Date: _____/_____/_____   Date of Death if Applicable: _____/_____/_____

Admitting Consultant: _____   Other Consultants/Team Involved: _____

Situation

Category: ☐ Morbidity   ☐ Mortality
Duty of Candour: ☐ Professional   ☐ Organisational

Background

☐ Emergency   ☐ Elective   ☐ Day Case   ☐ Outpatient

Primary Diagnosis: _____   Procedure(s): _____

Secondary Diagnosis: _____   Complication(s): _____

Relevant Medical History: _____

Learning Points to be Addressed (Details of Incident)

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```

Assessment

☐ Communication   ☐ Leadership   ☐ Decision making
☐ Team working   ☐ End of life care ☐ Patient factors
☐ Technique   ☐ Medication error ☐ Recognition of critically unwell patient
☐ Management   ☐ Staffing   ☐ Issue with escalation of care
☐ Specialty specific ☐ System wide issue ☐ Learning from excellence ☐ Other: _____

Lessons Learned

```
```

Recommendation

Action Points

   a) Action initiated to help mitigate future occurrence

Action	Assigned to	Completion Date

   a) Action/ Measures taken to disseminate learning

Action	Assigned to	Completion Date

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Glossary

adverse event	An adverse event is defined as an event that could have caused (a near miss) or did result in, harm to people or groups of people.
attribution bias	A cognitive bias that refers to the systematic errors made when people evaluate or try to find reasons for their own and others' behaviours.
complex socio-technical systems	Systems that involve understanding and accommodating the complex interaction between humans, machines and the environmental aspects of the work system. In human factors terms, most healthcare settings can be viewed as complex socio-technical systems.
decision-making	The process of reaching a judgement, choosing an option or course of action that best meets the needs of a given situation.
demand	The work activities and resources (equipment time, staff time, room time) required to respond to all the requests/referrals coming in from all sources and be dealt with in the time required.
design	Good design in primary care is reflected in work systems, software, technology and equipment that are usable, that is they are easy to learn, effective to use, and contribute to a safe experience for all people concerned. In contrast, poor or inadequate design is characterised by related frustration, stress, additional workloads, annoyance and time-taken etc. A key goal of HFE is to reduce these negative aspects of user experiences.
distractions and interruptions	Consists of anything that disrupts an individual from the current task by diverting one's attention. Sources for interruptions and distractions include noise, other people, or electronic devices. Noises may include alarms, ringing phones, and other clinicians. Electronic distractions include beepers, text messages, emails, or other communication. It is important to note that distractions and interruptions are not always a negative development but can be necessary for both safety and performance.
fatigue	Tiredness associated with prolonged effort or activity, resulting in a person being unable to continue to function at normal levels.
hindsight bias	The inclination, after an event has occurred, to see the event as having been predictable, despite there having been little or no objective basis for predicting it.

human error	An action or decision by a frontline operator which was not intended or desirable. This can be due to diverse interacting factors such as time pressure, workload, fatigue, inadequate communication processes, poor design of a device or IT software, lack of knowledge or training, or the local prevailing safety culture.
human factors	Human factors (or ergonomics) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimise human wellbeing and overall system performance.
human factors issue or problem	In the context of the healthcare workplace, anything, internally or externally, that impacts on the wellbeing of people (for example patients, clients, visitors and staff) and/or the performance (for example safety, efficiency, productivity) of individuals, teams or organisations.
just culture	A culture in which frontline clinical, management, administrative, and support workers and others are not punished for actions, omissions or decisions taken by them which are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.
mortality and morbidity meeting	A team learning approach that involves clinicians and others critically reviewing and improving selected episodes of patient care. Meetings provide clinicians with a routine forum for the open examination of adverse events, complications, and errors that have led to illness or death in patients.
near miss	An unplanned event that did not result in injury, illness, or damage - but had the potential to do so. Only a fortunate break in the chain of events prevented an injury, fatality or damage; in other words, a miss that was nonetheless very near.
organisation	A group of people working to a common goal with formal structures, processes and methods created to enable work to be done efficiently and effectively.
patient safety	The simplest definition is the prevention of errors and adverse events to patients associated with healthcare.
patient safety incident	A circumstance where a patient was harmed (adverse event), whether physical or psychological and however minor, or could have been harmed (near miss).

performance	Job performance issues such as the need for greater accuracy, reliability or efficiency, improved safety and quality, higher productivity, reduced harm, improved patient experience, shorter length of stay, shorter waiting lists, and so on
PDSA cycle	Plan, Do, Study, Act (PDSA) is a method to test an idea by temporarily trialling a change and assessing its impact. This approach is useful in a healthcare setting because, traditionally, new ideas are often introduced without sufficient testing.
procedures	Define how the work is performed. They are typically documented in a step by step order with detailed descriptions of how the work is to be performed and who is responsible for performing the work.
process	Defines **what is done and by whom.** Often depicted in diagrammatical form such as a decision tree, map or flowchart where the work performed is split into logical interrelated steps or 'activities'. A process should have a 'trigger' or start event and a 'terminator' or end event that achieves a specific result.
protocol	Agreed standardised way of performing a task –a process that is repeatable and reproducible.
psychological safety	A shared belief that the care team is safe for interpersonal risk taking. In psychologically safe teams, team members feel accepted and respected.
quality improvement	Defined as better patient experience and outcomes achieved through changing provider behaviour and organisation through using a systematic change method and strategies.
quality improvement collaborative	Involve groups of professionals coming together, either from within an organisation or across multiple organisations, to learn from and motivate each other to improve the quality of health services. Collaboratives often use a structured approach such as setting targets and undertaking rapid cycles of change.
reliability	The probability that a system, will satisfactorily perform the task for which it was designed or intended, for a specified time and in a specified environment.
resilience (system)	Resilience is the intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions.

risk	The chance, high or low, that any hazard will actually cause harm to people and/or organisations.
safety culture	The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management. Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures.
system	A set of inter-dependent elements that interact to achieve a common aim. These may be human, process or procedures, technology, equipment, or policy and regulatory requirements.
systems approach	In HFE healthcare terms, a systems approach means considering issues across the whole system, including organisational factors, that impact on patient safety and quality of care. For instance, improving the physical design of a medical device or the cognitive interface of IT software is important; but without understanding the organisational context in which these technologies are used, people may develop work-arounds, the tools may not be used safely, and health IT may be usable but not useful.
task	The set of physical and mental actions that are required to deliver, or fulfil, a function and achieve a goal.
teamwork	Teamwork is where two or more individuals work together with different responsibilities, towards common goals.
usability	A measure of the effectiveness, ease and comfort with which a system or device can be learned or used safely.
user	A user is anyone that comes into contact with the system, processes or equipment.
wellbeing	The health, safety, emotional wellbeing and enjoyment of people such as patients, families, staff and visitors and their experiences of care and work.

A more comprehensive list of common HFE terms was recently developed by Dr Shelly Jeffcott and published by the Clinical Human Factors Group and can be accessed here:

http://chfg.org/learning-resources/human-factors-common-terms/

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