Reducing avoidable mortality
Medical Directors drive improvement

The Case for Change

The case for hospitals to reduce avoidable mortality is clear. Medical Directors should make it a trust wide priority as a catalyst to improve clinical care and increase patient safety:

- Mortality rates are widely available and increasingly used as an indicator of quality of care
- Medical Directors have a key role to:
  - build the local case for change
  - encourage the Chief Executive and Board to lead improvements
  - harness clinicians' enthusiasm for improving the quality of care
  - integrate the skills of service improvement and clinical governance experts to drive up the quality of clinical care
- We know which interventions reduce avoidable mortality, but also:
  - give patients more confidence in their care and clinical outcomes
  - assure staff at all levels of the safety of the care they provide
  - achieve cost savings

Trusts working on reducing mortality have achieved reductions in Hospital Standardised Mortality Rate (HSMR) of up to 20%, even when their starting HSMR was below average. A reduction of just 10% across England would mean 10,000 lives saved per year.

'A key function of hospitals is to save lives, so it's surprising how little attention is paid to hospital mortality. Our work in Bradford shows that a hospital mortality reduction programme can make a big impact by significantly reducing mortality rates. Health professionals are passionate about efforts to save lives. Senior managers want reassurance about clinical governance standards. Patients want to know that their hospital is safe. It's a natural top priority'

John Wright, Clinical Director, Bradford.[1]

Key messages for Medical Directors

Avoidable mortality can be defined as deaths that should not occur given current medical knowledge and technology[2]. There is wide variation in the level of avoidable mortality in NHS Trusts in England[3]. But avoidable deaths are only the tip of an iceberg. Underneath them sit avoidable complications, avoidable pain and suffering, avoidable sense of helplessness. This guidance is not about just reducing avoidable deaths, it is about using avoidable deaths as a focus for tackling systemic problems in the delivery of healthcare

> In twelve trusts working to reduce avoidable mortality, the overall HSMR reduced from 110-114 between 1999 and 2003, to the standardised national average of 100 in 2006. All trusts' individual HSMRs had reduced since the interventions had been introduced. This reduction of 12% is in addition to the underlying improvement of 2% per annum which is accounted for in the calculation.

All 12 hospitals
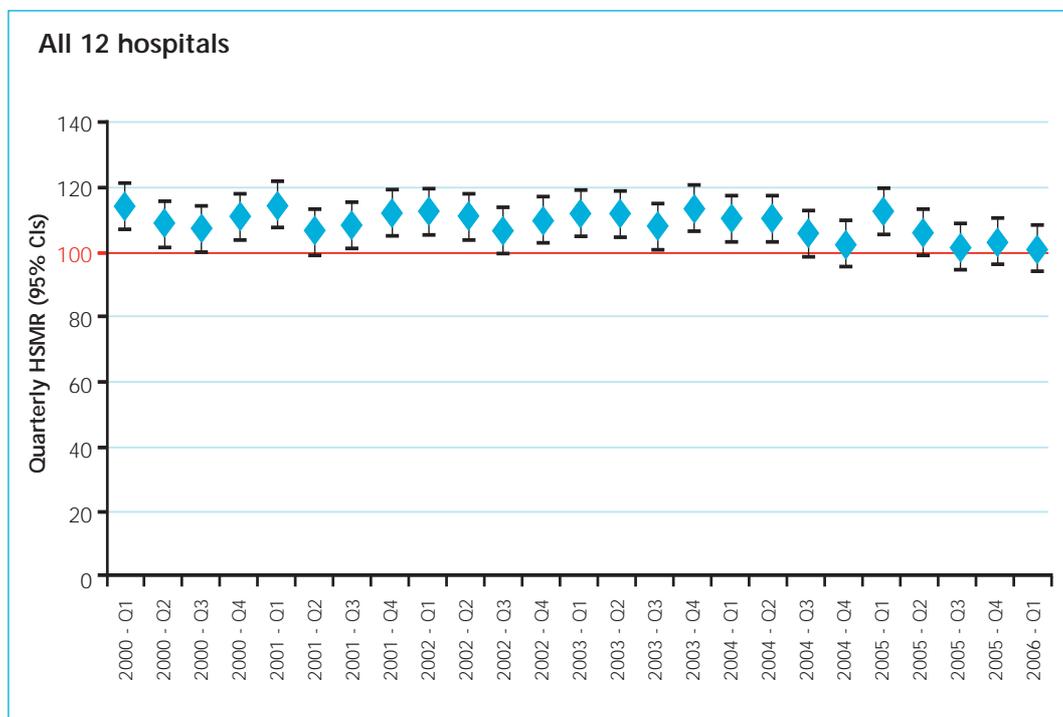
1. Quantify the case for change:

About 10% of patients sustain harm from errors in care,[5–9] but most clinicians find it hard to see what this means in their own organisation until it has been demonstrated locally. Benchmarking and local case notes review are the twin keys to make safety come alive for staff. Critical incident reports pick up only 5% of errors,[8] but the case notes review will expose the real scale of the problem.

Start by using HSMR benchmarking data to show where your performance lies in comparison to others, and find which specialities or clinical conditions have the greatest need for improvement.

Next, a good case notes review will highlight the errors that contribute to mortality in your own organisation, and suggest potential solutions. Review at least 50 consecutive deaths using a 'global trigger tool' - a list of items to look out for to speed up the case notes review. It is crucial that the right person leads the review.*

UK Adverse Event Trigger Tool – some key triggers	
General care	Early warning score requiring response Patient falls. Decubiti. DVT/PE. Shock. Cardiac arrest etc Re-admission within 30 days. Transfer to another unit
Surgical care	Return to theatre. Change in planned procedure Removal/injury or repair of organ
Intensive Care	Readmission to ICU or HDU. Unplanned transfer to ITU or HDU
Medication	Vitamin K. Naloxone. Flumazenil. Glucagon. Medication stop
Lab results	High INR, Urea, Troponin. Drop in Hb. MRSA. C Diff. etc.

Case notes review is likely to find defects in care in 10% of patients or more. Now place the 50 patients into a 2x2 matrix.* This will focus attention on local problems and issues, depending on which boxes of the matrix have significant numbers in them.

2x2 Matrix		
Admission to:	**Critical care or HDU**	**Ward**
Admission for terminal care	Suggests overuse of ICU or HDU beds 1	Focuses attention on community wide end of life policies and care plans 2
Admission for active treatment	Identifies systems issues in intensive care where known improvement techniques such as care bundles can be applied 3	Highlights issues of quality and reliability of ward level care, infection control and prevention, medication safety etc. 4

'We need to connect people to the reality of what is happening rather than assume that policies and guidelines are followed reliably. Having just done our case notes review locally, it reinforces to me how effective this exercise is in raising awareness and building commitment'
Jo Bibby, Calderdale and Huddersfield NHS community.

* For a full account of how to use the trigger tool, including a worksheet for use with each set of notes, see 'UK Adverse Event Trigger Tool'. This and the '2x2 Matrix tool' can both be read or downloaded at: www.institute.nhs.uk

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2. Generate ideas for change:

Common causes of high HSMR	
Inappropriate and/or untimely care	• ineffective systems to identify and rescue the deteriorating patient • delays in the process of care e.g. delays to theatre • delays in transferring patients to high dependency unit
Inappropriate setting of care	• problems accessing critical care • medical outliers on surgical wards • inappropriate admissions from nursing homes, e.g. patients admitted to hospital for end of life care
Poor medicines management	• antibiotic doses missed • errors in establishing the medication history of patients on admission leading to omission of important drugs • complications from high risk medications, e.g. poor control of opiates and Warfarin
Hospital acquired infections	• surgical site infections • central line associated bacteraemia • ventilator associated pneumonia
Non-clinical issues	• inaccurate coding

Now identify interventions
Trusts have found some key interventions that make an impact:
• Senior led ward rounds every day including weekends will identify those who can progress to discharge and those who need extra clinical input
• Standardisation of care through care bundles. See *The Clinicians Guide to Applying the 10 High Impact Changes* on the NHS Institute website
• Improving recognition, reporting and rescue of a patient who is deteriorating*

Deterioration - Recognise, Report, Respond
Building a reliable system to rescue the deteriorating patient may be the most powerful set of interventions to reduce mortality. This system needs to include:
• reliable ward observations at appropriate intervals
• a triggering mechanism such as Early Warning Scores or colour banded charts
• nurse and junior doctor training in managing sicker patients e.g. ALERT
• assertive reporting tools such as 'SBAR': Situation, Background, Assessment, Response. (for more details see the NHS Institute website)[4]
• rapid response by critical care outreach, hospital at night or medical emergency team

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* This has recently been confirmed by analysis of critical incident reports to the National Reporting and Learning System run by the NPSA. They have found a significant number of patients in whom death is associated with '*deterioration not recognised or not responded to*'. The findings are to be published in early summer 2007.

3. Implementation is always a challenge

Most organisations have a service improvement team with skills in implementing change. Harness their knowledge and skill. Integrate your clinical governance staff and service improvement staff into project teams.

Run small scale tests of change when implementing new procedures - that way unintended consequences will be exposed before they derail your project.
PDSA (Plan, Do, Study, Act) cycles enable you to build certainty and agreement about the merits of a particular change.*

4. Maintain Measurement

Data needs to be both easy to gather and to understand. Remember, the perfect can be the enemy of the good. Sometimes crude data plotted in a simple time series is good enough.

Process measures
The reliable use of care bundles can be measured by regular audits of samples of records. Sampling can also show how many ward observations are complete. Concentrate on the processes that contribute most to improving outcomes.

Outcome measures
Plotting weekly deaths is a very effective way to monitor improvement across a hospital. It is too crude for analysing changes within a particular speciality, ward or department, but new sophisticated case adjustment methods such as 'CUSUM' can help. HSMR can be used later to validate changes in crude mortality charts. Other useful outcome measures include crash calls outside ITU, nosocomial infections, re-admission rates etc.

This SPC chart from Blackburn shows a significant change in weekly deaths, equivalent to about 200 deaths per year. It coincided with a dramatic reduction in medical outliers.

Non-elec weekly deaths 2002-06

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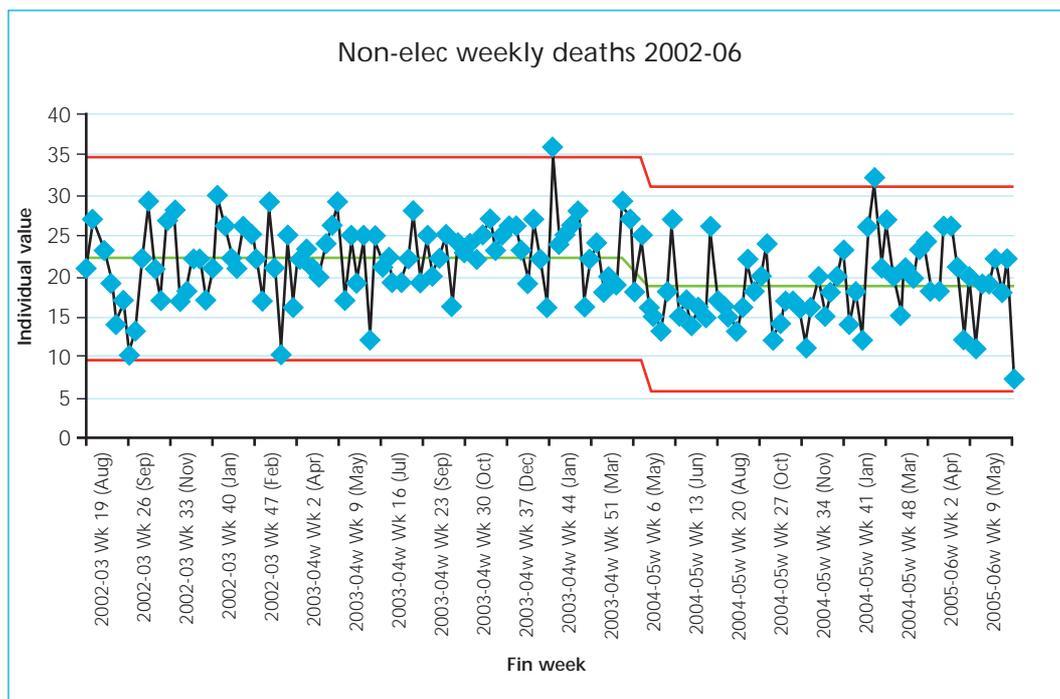
* See Improvement Leaders Guide: *Improvement Knowledge and Skills.* This can be ordered or downloaded
  www.institute.nhs.uk/building_capability/building_improvement_capability/improvement_leaders%27_guides%3a_introduction.html

5. Be tenacious!

Make reliability and safety key priorities for your Chief Executive and executive team and work with your Clinical Directors and nursing colleagues to create a culture of reliability and safety across the organisation. Remember, a change in culture will take time.

- lead clinical staff in designing interventions to improve care and reduce mortality
- establish steering groups to focus on reducing avoidable mortality, or re-focus existing groups
- visit wards and departments regularly to talk to staff about their safety concerns
- enlist the support of credible clinical opinion leaders
- monitor results and reflect them back to staff in a digestible form
- See the IHI White Papers 'Leadership Guide for Patient Safety', 'Reducing Hospital Mortality Rates' parts 1&2 and 'Improving the Reliability of Healthcare' which can be downloaded free.[10]
- See training opportunities in clinical systems improvement and safety in the NHS Institute website www.institute.nhs.uk

Deficiencies of care occur in all hospitals on a regular basis, but only a tiny fraction will be reported through critical incident reporting.[8] The number of patients who receive evidence based care reliably is only 55%.[11] More deaths can be avoided by designing the systems of care delivery to be more reliable than through reducing harmful incidents, though both approaches are clearly important.

'Organisations must move towards active measurement and improvement programmes on a scale commensurate with the human and economic costs of unsafe poor quality care'
Charles Vincent, Professor of Clinical Safety Research, Imperial College, London.[12]

> The NHS Institute for Innovation and Improvement commissioned Matrix Research and Consultancy to conduct a review of interventions to reduce avoidable mortality in 12 English Hospital Trusts, chosen because of their participation in programmes associated with reducing avoidable mortality. The information and ideas presented in this briefing paper are drawn from this review.

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