Mortality Monitoring: Where Are We Now?

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Aim of the Session

• To give an overview of why mortality monitoring is of such great importance
• To examine the limitations of relying solely on hospital wide indices of mortality
• To report on progress in both the academic and practice settings
• To examine key measurement components
• To explore how professionals can be engaged in the process of monitoring quality within their organisation and professional practice
25,000 deaths from venous thromboembolism contracted in hospital
House of Commons Health Committee, 2005

The safety of care

Patients are entitled to care that is safe

Around 5% of the 8.5 million patients admitted to hospitals in England and Wales each year experience an adverse event which may be preventable with the exercise of ordinary standards of care. How many of these events lead to death is not known but it may be as high as 25,000 people a year.

Bristol enquiry report, 2001
13,000 died needlessly at 14 worst NHS trusts

Report reveals how health chiefs missed numerous warning signs at hospitals

EASY DOES IT, ZARA

May’s ‘non’ to an EU prosecutor
Mortality Monitoring: Where Are We Now?

• At the cusp of something significant
• At the national level different approaches are being implemented and learning is being shared and transferred
• There is evidence of emerging differences in the focus of mortality monitoring and it is being used for different purposes
• Clear need for measures that reflect both assurance and improvement and methodology that meets these aims
Hospital Inpatient Mortality

Robert W. Dubois, M.D., Ph.D., William H. Rogers, Ph.D., John H. Moxley, III, M.D., David Draper, Ph.D., and Robert H. Brook, M.D., Sc.D.


Abstract
Various potential measures of quality of care are being used to differentiate hospitals. Last year, on the basis of diagnostic and demographic data, the Health Care Financing Administration identified hospitals in which the actual death rate differed from the predicted rate. We have developed a similar model. To understand why there are high-outlier hospitals (in which the actual death rate is
The Use of Mortality Indicators

• In the UK there are four different standard mortality ratios used to estimate hospital deaths. The SHMI, HSMR, Scottish HSMR and RAMI

• They vary significantly in their methodology at several key points, and therefore they will not give the same value for a given hospital and cannot be compared meaningfully
Concept of Mortality Indices

• All of us will die, and many of us will die in a hospital setting – hospitals manage death!
• Mortality indices seek to detect whether some people are dying in hospital as a result of poor treatment or inadequate care
• Studies which have reviewed deaths in hospitals in great detail suggest that the proportion of all deaths in hospital that may in part be due to quality of care issues is small
Concept of Mortality Indices 2

• Hogan et al (2012) estimated that around 5% of deaths in hospitals in England had a 50% or greater chance of being preventable.

• How can we identify these deaths accurately and quickly in order to learn what went wrong so that future care can be improved?

• Girling et al. (2012) has shown that avoidable mortality would have to run at many more times the likely current rate in order for the mortality index to be good at detecting it.
Factors Affecting Mortality Indices: Place of Death

• Mortality indices value is heavily influenced by the proportion of deaths in a community that occur in hospital

• Across Wales in 2012, 57.4% of deaths occurred in hospital but this ranges considerably by LA and runs between 40-65% in England

• A CHKS Insight report quotes a scenario where a Trust has 78% (compared to an expected of 56%) of its resident population deaths occurring in hospital, increasing its mortality ratio significantly - areas with high proportion of deaths in hospital have high mortality ratios
Data Inconsistencies 1: Comorbidity

- Hospital mortality indices try to take into account the differences between hospital populations in the underlying risk of dying that are NOT the result of differences in the quality of care.

- Disease categories that are used to estimate risk of death in calculating hospital mortality indices may not adequately distinguish the severity of the illness episode within the disease diagnosis nor the severity of underlying or co-existing conditions that will influence the risk of dying.

- Hospitals serving poorer populations are likely to be admitting patients with more complex medical problems than hospitals in richer areas and if the coding systems for co-morbidities do not adequately capture these differences then the hospitals serving poorer populations will look worse than they should.
Data Inconsistencies 1:

• Variation in professional judgment in selection of primary diagnosis
  – E.g. pneumonia of septicemia (with much higher expected mortality)

• Proportion of hospital deaths coded as end of Life care
  - Case note review/recoding in one English Trust changed the HSMR from 105 to 68
  - Similar impact noted in Wales as a result of coding differences
Data Inconsistencies 2

• Do not allow for differences in underlying life expectancy in populations served by different hospitals

• Hospitals serving poorer populations will be treating patients that have a lower basic life expectancy than more affluent populations, a difference not to do with the quality of the health care services but to do with generationally inherited extra risk, and a higher prevalence of unhealthy risk factors such as smoking

• Even when hospital care is optimal the outcomes are going to be worse because the underlying risks of death are greater

• In addition, other primary care related health service factors may exacerbate the risks in hospital; e.g. late or missed diagnosis
The hospital standardized mortality ratio fallacy: a narrative review.
van Gestel YR, Lemmens VE, Lingsma HF, de Hingh IH, Rutten HJ, Coebergh JW.

Abstract
BACKGROUND: Outcome measures, like hospital standardized mortality ratios (HSMRs), are increasingly used to assess quality of care. The validity of HSMRs and their accuracy to reflect quality of care is heavily contested.

OBJECTIVE: We explored apparent and potential shortcomings and adverse effects of the HSMR in the assessment of quality of care.

RESEARCH DESIGN AND METHODS: For this narrative review, relevant articles were collected from Medline databases using the following search terms: "hospital standardized mortality ratio," "standardized mortality ratio," "HSMR," "quality of care," and "in-hospital mortality." In addition, other important articles were subtracted from the reference lists of the primary articles.

RESULTS: The current literature exhibits important shortcomings of the HSMR that in particular affect hospitals providing specialized care of a certain level of complexity. Because of the lack or insufficiency of data concerning case-mix, coding variation between hospitals, disease severity, referral bias, end-of-life care, and place of death, the current HSMR model is not able to adjust adequately for these aspects. This leads to incomparability of HSMRs between hospitals. Instead of separate aspects of continuity of care, all factors contributing to quality of care should be considered.

CONCLUSIONS: Given the several shortcomings, use of the HSMR as an indicator of quality of care can be considered as a fallacy. Publication of the HSMR is not likely to lead to improvement of quality of care and might harm both hospitals and patients.

PMID: 22410410 [PubMed - indexed for MEDLINE]
Mortality and Risk Adjustment 1

• The risk of death during a hospital stay will be related to the patient’s age, gender, type of disease and its stage of progression, as well as any co-existing pathology.

• In order to allow for differences between hospital patient populations in the prevalence of these factors so that differences in death rates due to the quality of treatment can be exposed, mortality indices are calculated using statistical adjustment.
Mortality and Risk Adjustment 2

• The fundamental problem is that there is no agreed gold standard method for doing this

• Each different method has its own weaknesses to the extent that hospitals that come out poorly by one measure can look good by another measure.
Mortality and Risk Adjustment 3

• The differences between the measure used for Welsh hospitals, the CHKS risk adjusted mortality index (RAMI), and the NHS measure used in England, the Summary Hospital-level mortality indicator (SHMI), have been summarised by CHKS5

• A critical difference between the RAMI and the SHMI used by NHS England is the fact that SHMI includes deaths within 30 days of discharge from hospital and RAMI does not

• There are also differences in the way in which the calculations try to take into account the severity of the diagnosing condition of a patient and any underlying health problems
Case-mix adjusted hospital mortality is a poor proxy for preventable mortality: a modelling study

Risk-adjustment schemes are used to monitor hospital performance, on the assumption that excess mortality not explained by case mix is largely attributable to suboptimal care. We have developed a model to estimate the proportion of the variation in standardised mortality ratios (SMRs) that can be accounted for by variation in preventable mortality. The model was populated with values from the literature to estimate a predictive value of the SMR in this context—specifically the proportion of those hospitals with SMRs among the highest 2.5% that fall among the worst 2.5% for preventable mortality. The extent to which SMRs reflect preventable mortality rates is highly sensitive to the proportion of deaths that are preventable. If 6% of hospital deaths are preventable (as suggested by the literature), the predictive value of the SMR can be no greater than 9%. This value could rise to 30%, if 15% of deaths are preventable. The model offers a ‘reality check’ for case mix adjustment schemes designed to isolate the preventable component of any outcome rate.

URI
http://hdl.handle.net/10454/5990

Collections
Health Studies Publications

Citation
Validity Has Not Been Demonstrated:

• Either as a diagnostic tool – are hospital wide ratios a valid indicator of the quality of care in a hospital? How do they relate to other measures of quality of care

• Or as a screening test – do hospital wide mortality ratios predict the quality of care of a hospital? Sensitivity, specificity, PPV, NPV

“Prof Nick Black”
Using hospital standardised mortality ratios to assess quality of care — proceed with extreme caution

Ian A Scott, Caroline A Brand, Grant E Phelps, Anna L Barker and Peter A Cameron

There is growing interest in assessing Australian hospital performance using routinely collected administrative data. The hospital standardised mortality ratio (HSMR) has emerged as a potentially universal system-level indicator for comparing mortality between hospitals both within and across different jurisdictions (Box). It is presently reported in the United Kingdom, Sweden, Netherlands, Canada, United States and Australia,¹² and is being used to gauge success of several large-scale safety campaigns in both the US³ and Canada.⁴ In November 2009, the Australian Health Ministers endorsed the approach recommended by the Australian Commission on Safety and Quality in Health Care for the implementation and reporting of a core set of national indicators of safety and quality that included the HSMR.⁵ Working groups are now studying its implementation.⁶ Researchers from Flinders University in Adelaide have recently argued the case for using the HSMR as a screening tool for safety and quality in Australian hospitals.⁷ In Canada⁸ and the UK,⁹ there is already public reporting of HSMRs for individual hospitals. In Australia, there is similar political commitment to public reporting of comparative hospital quality and safety.

ABSTRACT

- Australian Health Ministers have endorsed the hospital standardised mortality ratio (HSMR) as a key indicator of quality and safety, and efforts are currently underway towards its national implementation.
- In the United Kingdom, Canada, the Netherlands and the United States, the HSMR has been used for several years within organisations to monitor performance and response to various quality and safety programs. In the UK and Canada, the HSMR is also publicly reported and used to compare performance between hospitals.
- The validity and reliability of the HSMR as a screening tool for distinguishing low-quality from high-quality hospitals remain in doubt, and it has not yet been proven that HSMR reporting necessarily leads to worthwhile improvement in quality of care and patient outcomes.
- Institutions may respond to an unfavourable HSMR by “gaming” administrative data and risk-adjustment models or implementing inappropriate changes to care.
Even if They Are Accurate, Does it Matter?

- Damage to reputation of hospital
- Stigma, loss of public confidence, recruitment difficulties
- Lack of compassion to bereaved
- Distracts staff and managers
- Harms clinicians and managers
- Undermines trust

“Prof Nick Black”
Panel decides not to post hospital mortality rates

Rejecting a request from consumer advocates, a state panel decided this week not to publicly post overall patient death rates for individual Massachusetts hospitals, at least for now.

The state's health and human services secretary, Dr. JudyAnn Bigby, who heads the group that made the decision, said current methodology for calculating hospital-wide mortality rates is so flawed that officials do not believe it would be useful to hospitals and patients and could harm public trust in government.

"If the reports that are generated from these methodologies don't give hospitals useful information they can act on, what is the point?" she said.

Two years ago, Health Care for All, a Boston-based consumer advocacy group, asked the state's Health Care Quality and Cost Council to look at making public hospital-wide mortality rates.
So Why is it Used?

- Attractive to politicians, media and others
- Easy, cheap, intuitively appropriate
Sir Bruce Keogh

• “it is clinically meaningless and academically reckless to use such statistical measures [HSMRs & SHMIs] to quantify actual numbers of avoidable deaths.”

• recognition of need for more robust research evidence
Analysis

Using hospital mortality rates to judge hospital performance: a bad idea that just won’t go away

*BMJ* 2010; 340 doi: http://dx.doi.org/10.1136/bmj.c2016 (Published 20 April 2010)
Cite this as: *BMJ* 2010;340:c2016

Richard Lilford, professor of clinical epidemiology¹, Peter Pronovost, anaesthesiologist and critical care physician²

Standardised mortality rates are a poor measure of the quality of hospital care and should not be a trigger for public inquiries such as the investigation at the Mid Staffordshire hospital, say Richard Lilford and Peter Pronovost

Death is the most tractable outcome of care—it is easily measured, of undisputed importance to everyone, and is common in hospital settings. Mortality rates, especially overall hospital mortality rates, have therefore become the natural focus for measurement of clinical quality. In England a high death rate “attracted the attention of the [Healthcare Commission] (HCC) and caused it to launch its investigation” into the Mid Staffordshire NHS Foundation Trust.¹

So what is the problem with measuring clinical performance by comparing hospital mortality rates and what alternatives can we offer?
“A precursor to leading is understanding the distinct differences, yet overlapping associations between QI and service evaluation and research in those 3 important activities.”

(Newhouse, p.435)
Types of data to provide managers and clinicians with an overview of clinical quality and the experience of the patient within the care system

Quantitative

Objective

High-level hard data on a range of metrics, with trends and forecasts

Qualitative

Subjective

Patient-reported outcomes

Patients’ stories

Complaints and serious untoward incidents
The Academic Context

Preventable deaths due to problems in care in English acute hospitals: a retrospective case record review study

Helen Hogan,1 Frances Healey,2 Graham Neale,3 Richard Thomson,4 Charles Vincent,3 Nick Black1

ABSTRACT

Introduction. Monitoring hospital mortality rates is critical.1 However, the contribution of clinical and non-clinical factors is not always clear.

METHODS. We conducted a retrospective case record review of 1000 deaths in English acute hospitals and undertook a primary care survey of 265000 patients with at least one hospital admission in the previous year.

RESULTS. We found that 255 000 NHS patients each year suffer seri
Problem in Care

- Used in place of traditional outcome measure AE
- Defined as patient harm arising from healthcare actions or inactions
- Ensure identification of harm from omissions or harm from multiple small process failures as well as from one major event/act of commission
- To aid decision making reviewers were asked to focus on the processes of care:
  - evidence-based?
  - in accordance with local or national guidance?
  - standard practice?
- Separate poor outcomes as a result of poor processes of care from complications of appropriate care e.g. known side effects of medication or operative complications
Findings 2: Preventable deaths

- Proportion of patients found to have a problem in care contributing to death = 13.1%
- Proportion of preventable deaths = 5.2% (changing thresholds on the Likert scale- 2.3% to 8.5%)
- Mean life expectancy for preventable deaths = 1.7 years
- Higher proportion of preventable deaths amongst surgical patients (11.9% vs 4.4%)
<table>
<thead>
<tr>
<th>Phase of care</th>
<th>N (%)</th>
<th>Types of problems in care</th>
<th>N (%)</th>
<th>Contributory Factor</th>
<th>N(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before admission</td>
<td>13 (15.5%)</td>
<td>Clinical Monitoring</td>
<td>40 (31.3%)</td>
<td>Inadequate supervision</td>
<td>15 (10.9%)</td>
</tr>
<tr>
<td>Early in admission</td>
<td>19 (22.6%)</td>
<td>Diagnosis</td>
<td>38 (29.7%)</td>
<td>Lack of knowledge of individuals</td>
<td>15 (10.9%)</td>
</tr>
<tr>
<td>Care during a procedure</td>
<td>8 (9.5%)</td>
<td>Drug or fluid related</td>
<td>27 (21.1%)</td>
<td>Staff working outside their experience</td>
<td>11 (8.0%)</td>
</tr>
<tr>
<td>Post-operative/procedure care</td>
<td>7 (8.3%)</td>
<td>Technical problem</td>
<td>8 (6.3%)</td>
<td>Poor teamwork</td>
<td>8 (5.8%)</td>
</tr>
<tr>
<td>General ward care</td>
<td>37 (44.0%)</td>
<td>Infection related</td>
<td>9 (7.0%)</td>
<td>Lack of skill of individual</td>
<td>7 (5.1%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>6 (4.7%)</td>
<td>Patient co-morbidity</td>
<td>7 (5.1%)</td>
</tr>
</tbody>
</table>
### Origin of harm identified in cases of preventable death

<table>
<thead>
<tr>
<th>Stage of patient journey</th>
<th>Types of problem identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preadmission</td>
<td>Poor monitoring of warfarin</td>
</tr>
<tr>
<td></td>
<td>Hospital acquired infection</td>
</tr>
<tr>
<td></td>
<td>Previous surgical error</td>
</tr>
<tr>
<td>Early in admission</td>
<td>Failure to diagnose</td>
</tr>
<tr>
<td></td>
<td>Delayed diagnosis</td>
</tr>
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<td></td>
<td>Wrong diagnosis</td>
</tr>
<tr>
<td></td>
<td>Failure to identify the severity of underlying conditions and risks posed by the chosen therapeutic approach</td>
</tr>
<tr>
<td></td>
<td>Failure to optimise preoperative state</td>
</tr>
<tr>
<td>Care during a procedure</td>
<td>Procedure conducted in inappropriate environment</td>
</tr>
<tr>
<td></td>
<td>Technical error</td>
</tr>
<tr>
<td>Post procedure</td>
<td>Inadequate monitoring (fluid balance, infection)</td>
</tr>
<tr>
<td></td>
<td>Poor assessment</td>
</tr>
<tr>
<td>Ward care</td>
<td>Inadequate monitoring of overall condition, fluid balance, laboratory tests, side effects of medications (especially warfarin), pressure areas and infection</td>
</tr>
<tr>
<td></td>
<td>Unsafe mobilisation leading to serious falls</td>
</tr>
<tr>
<td></td>
<td>Hospital acquired infection</td>
</tr>
<tr>
<td></td>
<td>Prescription of contraindicated drug</td>
</tr>
<tr>
<td></td>
<td>Delay in undertaking required procedure</td>
</tr>
</tbody>
</table>
PRISM Conclusions

• 5.2% (11,859 preventable adult deaths across NHS) is fewer than most estimates for England
• Main impact on frail elderly with limited life expectancy
• Similar types of harm to previous AE studies related to clinical management/monitoring, diagnosis and drug and fluid management
• Scope for improvement but reviewing deaths will only identify the “tip of the harm iceberg”
• With only 1 in 20 deaths preventable- what is SHMI/ RAMI measuring?
<table>
<thead>
<tr>
<th><strong>PRISM</strong></th>
<th><strong>Considerations for Practice</strong></th>
</tr>
</thead>
</table>
| External Generalist Consultant reviewers | Internal versus external reviewers  
Single perspective  
Efficient resource use  
Need for specialist perspective |
| No screening phase (average review time 1 hour) | Efficient resource use  
Real time and recurrent reviews  
Ongoing learning and improvement  
Communicating with relatives  
Small proportion of harm burden |
| Reviews of patient deaths in 2009 | Standardisation of review process  
Training  
Clarity of purpose: internal/external measure of preventable deaths +/- wider quality of care issues  
Who is setting the standard |
| Reliability of judgements (K=0.54) | Missing information  
Doesn’t capture non technical human factors well  
Opportunity to interview staff involved  
Triangulation with other sources |
Measurement of Harm

An Adverse Event:
An AE has to fulfill all three criteria
• An unintended injury or complication
• Temporary or permanent disability and/or increased length of stay or death
• Caused by healthcare management
Hospital blunders 'kill 90,000
Daily Telegraph 29.11.07

“Research suggest more than 90,000 patients die and almost one million harmed each year because of hospital errors”.

<table>
<thead>
<tr>
<th>Study</th>
<th>Authors</th>
<th>Date of admissions</th>
<th>Number of hospital admissions</th>
<th>Adverse event rate (% admissions)</th>
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</thead>
<tbody>
<tr>
<td>Utah-Colorado Study</td>
<td>Thomas et al, 2000</td>
<td>1992</td>
<td>14052</td>
<td>2.9</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Vincent et al, 2001</td>
<td>1999</td>
<td>1014</td>
<td>10.8</td>
</tr>
<tr>
<td>Denmark</td>
<td>Schioler et al, 2001</td>
<td>1998</td>
<td>1097</td>
<td>9.0</td>
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<td>New Zealand</td>
<td>Davis et al, 2002</td>
<td>1998</td>
<td>6579</td>
<td>11.2</td>
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<tr>
<td>Canada</td>
<td>Baker et al, 2004</td>
<td>2002</td>
<td>3745</td>
<td>7.5</td>
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<tr>
<td>France</td>
<td>Michel et al, 2007</td>
<td>2004</td>
<td>8754</td>
<td>6.6% *</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Sari et al, 2007</td>
<td>2004</td>
<td>1006</td>
<td>8.7</td>
</tr>
<tr>
<td>Spain</td>
<td>Aranaz et al, 2008</td>
<td>2005</td>
<td>5624</td>
<td>8.4</td>
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<td>The Netherlands</td>
<td>Zegers et al, 2009</td>
<td>2006</td>
<td>7926</td>
<td>5.7</td>
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<td>Sweden</td>
<td>Soop et al, 2009</td>
<td>2006</td>
<td>1967</td>
<td>12.3</td>
</tr>
<tr>
<td></td>
<td>Unplanned admission within the 12mths prior to the index admission as a result of any healthcare management</td>
<td>Development of neurological deficit not present on admission</td>
<td></td>
<td></td>
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<td>---</td>
<td>--------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Unplanned admission to any hospital post this discharge</td>
<td>Unexpected death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Hospital-incurred patient accident or injury</td>
<td>Inappropriate discharge home, inadequate discharge plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Adverse drug reaction/error</td>
<td>Cardiac respiratory arrest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Unplanned transfer from general care to ITU/HDU</td>
<td>Injury or complications relating to labour and delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Unplanned transfer to another acute care hospital</td>
<td>Hospital-acquired infection/sepsis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Unplanned visit/return to theatre</td>
<td>Patient/family dissatisfaction with care documented in the medical record and or evidence of complaint lodged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Unplanned removal, injury or repair of organ or structure during surgery</td>
<td>Documentation or correspondence indicating litigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Other patient complications to include MI, DVT, PE, CVA</td>
<td>Any other undesirable outcome</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Categorisation of harm events

Source: deVries et al. 2008
Potentially preventable adverse events

Langelaan et al., 2010
Issues Around the Assessment of the Preventability of Harm

• May be important in the targeting of resources to improve safety for patients
• Preventability although very consistent across studies may be a moving target
• National programmes (Partnership for Patients in the US) implemented around key areas of harm with the ambitious aim of reducing preventable hospital conditions by 40% by 2013
• Although with a focus on preventable harm, the partnership targets all forms of harm and provides guidance for hospitals to reduce “all cause harm” Parry G, Cline A, Goldman D et al. 2012
For Debate

Research into medical accidents: a case of negligence?
C A Vincent

BMJ Volume 299 4 November 1989

Adverse events in British hospitals: preliminary retrospective record review
Charles Vincent, Graham Neale, Maria Woloshynowycz

BMJ Volume 322 3 March 2001

Is health care getting safer?
Despite numerous initiatives to improve patient safety, we have little idea whether they have worked. Charles Vincent and colleagues argue that we need to develop systematic measures.

BMJ 22 November 2008 Volume 337
Service Led Case-Note Review: The Global Trigger Tool

• Originally implemented in SPI sites for:
  – Organisational learning purposes
  – Monitoring of trends in harm during the implementation and spread of programmes of QI

• Tool developed in the US by IHI and informed by the retrospective review process used in international studies of adverse events

• Key features being the inclusion of triggers to expedite the review process and focus on common categories of harm
The GTT as Viewed from the Literature

• Measures all cause harm building on studies demonstrating that record review can be expedited by screening for triggers

• ‘The GTT has reasonable reliability and is more sensitive that other methods used by hospitals to assess all cause harm (Classen et al. 2011)

• It’s use remains controversial (Parry et al. 2012)
Areas of Criticism

• It may not be appropriate to include harms that are present on admission unless harm occurred as a direct result of hospitalisation in a previous admission
• Hospitals should not be held responsible for non-preventable harms
• May inflate harm rates by including non-severe, temporary harm
• May underestimate the true burden of harm because it does not detect diagnostic errors and errors of omission
• It relies on labour-intensive manual chart review
GTT use in a National Point Prevalence Survey

- Excluded harm present on admission
- Calculated separate rates for higher severity harm
- Estimated rate of preventable harm
- Levinson (2010) sampled 750 Medicare records and reported a 13.5% (95% CI: 10.9 -16.1%) of national all cause harm.
- Concluded - may be appealing because it provides a sensitive method for assessing harm rates while excluding harm considered beyond the immediate control of the hospital and its clinicians.
Comparative Methodologies (Classen et al. 2011)

- 3 hospital sample
- Aimed to calculate the incidence of adverse events using several methods: GTT, Voluntary sentinel surveillance systems, or other reporting systems, screening with AHRQ patient safety indicators, automated screening with the Utah Missouri, adverse event classification.
- Gold standard – Review team assessing all health records as well as clinical, financial and administrative records for each of the patients included in the study in one hospital.
Results

• 795 records reviewed from 3 hospitals
• 393 adverse events detected by all three methods combined
• GTT detected 354 adverse events (90%). High sensitivity and specificity
• Hospital reporting system detected 4 events (1%). Low sensitivity and high specificity
• Patient safety indicators 35 adverse events (9%). Low sensitivity high specificity
Temporal Trends in Rates of Patient Harm in North Carolina

• Among 2341 admissions over a five year period, internal reviewers identified 588 harm events (25.1% 95% CI: 23.1 to 27.2)
• Harm was found in 423 unique patient admission – 18.1 %.
• Multivariate analysis showed no significant changes in the overall rates of harm per 1000 bed days or the rate of preventable harm (Landrigan et al. 2010)
• Conclusion, harm remains common in healthcare with little evidence of widespread improvement.
Conversion of Triggers to Harm in the GTT

G1 lack of early warning score
   12/299 = 4%

G4 Readmission to hospital within 30 days
   63/183 = 34%

G9 Any time spent as outlier
   0/20 = 0%

L2 Blood transfusion
   24/50 = 48%

L4 Rising urea and creatinine
   10/40 = 25%

Total conversion rate in a selection of the common triggers
   161/701 = 23%
• Is the background harm rate in healthcare amenable to healthcare intervention?
• Information may be more meaningful than measurement!
Harm And Mortality: The Big Picture from the Literature

GTT Reviews

Natural progression from ‘Deep Dive’

How big a problem is this in an organisation?

Who may be affected and in which settings?

Identifies more harm than other reporting systems (Classen et al. 2011)

Ongoing monitoring /surveillance of harm events (Landrigan et al. 2010)

Mortality Reviews

How and why did this happen?

GTT may be used to aid in the classification of harm (Lau et al. 2011)

Not a measure of harm in inpatient populations

May inform priorities for improvement

Promotes dialogue with clinical teams around quality of care issues

POPULATION AT RISK FROM HARM

Death 2-6%
Plotting the Dot

Adverse event rate per 1000 patient days

Rate

Values  Average (98.2)
The Aim: Moving The Dot to Improve Patient Outcomes

Source: WHO patient safety programme
Connecting the Frontline to the Agenda

However attractive this concept may appear (RAMI), the interpretation of the ratios is fraught with difficulties. I have found that there are major problems in trying to derive any meaning from RAMI in Wales.

RAMI are often presented and discussed as single numbers without overt recognition of common cause variation.
Palmer Report Conclusions

• I see no advantage in publishing overall RAMI and I see potential harm in diverting attention away from more meaningful measures of outcomes of healthcare.

• In place of RAMI, the public should take assurance about the safety and quality of hospital care from the fact that Wales is already undertaking medical record reviews of all deaths in hospital.

• However, there is still variation in the methods used in different hospitals and in the coverage, completeness and timeliness of the reviews. That is why I am recommending a standardised, systematic and speedy programme is put in place as soon as possible.
The Welsh Approach to Harm and Mortality

• National Harm and Mortality Collaborative
• National Harm and Mortality Steering Group
• Consultation and engagement with all Welsh Health Boards
• Pilot and development of novel tools
• Synergy with the future implementation of the Medical Examiners role
• Multidisciplinary approach
Measuring Harm and Informing Quality Improvement Longitudinally in the Welsh NHS (NIHR)

- Collaborative approach with NHS Wales
- Integrating the process into Clinical Governance/Patient Safety/Healthcare Quality Teams
- Extending the sample to include a sample of deceased patients
- Promoting multidisciplinary review teams
- Merging screening and harm determination in a single one-stage approach
- Aiming for timely feedback (fast analysis, recommendations promptly disseminated)
- Demonstrate the value of ongoing monitoring for both QI purposes and external assurance of the quality of services provided
Case Note Review Methodology

• a. The discharge summary
• b. The medication/prescription chart
• c. Laboratory results for that admission
• d. The operative/theatre documentation
• e. Nursing and medical documentation
• f. Any other part of the case notes
Universal Mortality Review Process

• All deaths occurring in Welsh Hospitals are subjected to a review process
• Organic approach
• Development of systems of processes
• National learning – what works for whom
• Development of national tool
• Development of national protocol for case note review
Experiential Learning in Wales

• Case note review is labour intensive but when focused and asking appropriate questions, generates meaningful information for improvement and assurance
• The length of the tool is of secondary importance, the time investment is in reading the notes on the episode of care
• Different professional groups pick up different events in the same set of case notes
Development of Simplified Tools

• Based on experiential learning followed by analysis of the performance of a few different harm measurement tools
• Aim to measure harm in healthcare as a routine governance function within NHS organisations
• Core measurement structure maintained to,
  • Benchmark
  • Generate information that has the potential to leverage change in clinical practices and processes
Questions that We Aim to Answer in the Literature Within the next 12mths

• Are factors identified in mortality reviews reflective of the quality of care issues/adverse events that are measured in the general inpatient population?

• What is the optimal infrastructure to achieve reliable case note review as part of the clinical governance function within organisations?

• How can data generated from the review process be used to target and improve clinical and organisational processes and outcomes?