The Measurement and Monitoring of Safety

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The measurement and monitoring of safety

Drawing together academic evidence and practical experience to produce a framework for safety measurement and monitoring.

Spotlight
April 2013
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
UK National Reporting & Learning System

Hospital Episode Statistics: 11.8M hospital admissions in England 2004/5
Sensitivity of routine system for reporting patient safety incidents in an NHS hospital: retrospective patient case note review
Ali Bahar-Akhari Sari, Trevor A Sheldon, Alison Cracknell, Alastair Turnbull

Abstract

Objective To evaluate the performance of a routine incident reporting system in identifying patient safety incidents.

Design Two stage retrospective review of patients' case notes and analysis of data submitted to the routine incident reporting system on the same patients.

Setting A large NHS hospital in England.

Population 1006 hospital admissions between January and May 2004: surgery (n = 311), general medicine (n = 251), elderly care (n = 184), orthopaedics (n = 131), urology (n = 61), and three other specialties (n = 68).

Main outcome measures Proportion of admissions with at least one patient safety incident; proportion and type of patient safety incidents missed by routine incident reporting and case note review methods.

Results 324 patient safety incidents were identified in 293/1006 admissions (29.0%; 95% confidence interval 25.1% to 25.5%). 270 (83%) patient safety incidents were identified by case note review only, 21 (7%) by the routine reporting system only, and 33 (10%) by both methods. 110 admissions (10.9%; 9.9% to 12.8%) had at least one patient safety incident resulting in patient harm, all of which were detected by the case note review and six (5%) by the reporting system.

Conclusion The routine incident reporting system may be poor at identifying patient safety incidents, particularly those resulting in harm. Structured case note review may have a useful role in surveillance of routine incident reporting and associated quality improvement programmes.

But incident reporting only detects 5% of harmful events
We do not know whether we are making progress or not
Just tell me - are we safe?
Commissioning. How do we know care is safe?

• Tools and approaches to measuring safety
• Provide a future direction
• Jane Jones, Jonathan Bamber
Methods (1)

- Reviews of research literature and reports from organisations:
  - Safety relevant industries
  - Conceptual approaches and models of systems safety
  - Measurement and monitoring in healthcare
  - The role of patients and families

- Interviews with senior staff in national organisations
Methods (2)

- Case studies in healthcare organisations in the UK and USA
  - Acute & specialist trusts
  - Mental Health
  - Primary care
  - Combined organisations
  - Clinical services: maternity care, care of the elderly, anaesthesia
Safety in NHS

High Risk Industries

Models of Safety

?
The fundamental questions

- Has patient care been safe in the past?
- Are our clinical systems and processes reliable?
- Is care safe today?
- Will care be safe in the future?
- Are we responding and improving?
Safety in NHS

High Risk Industries

Models of Safety

Past harm

Integration and learning

Reliability

Anticipation & preparedness

Sensitivity to operations

Case Studies
Past harm

- Integration and learning
- Reliability
- Anticipation and preparedness
- Sensitivity to operations
What do we mean by harm?

- Treatment specific harm
- Harm due to over treatment
- General harm from healthcare
- Harm due to failure to provide appropriate treatment
- Harm due to failed or inadequate diagnosis
- Psychological harm and feeling unsafe
- *Harm due to neglect and dehumanisation*
Adverse events in older people

- Errors, omissions
- Operative/procedural complications
- Hospital acquired infections
- Adverse drug events

- Falls
- Pressure sores
- Incontinence
- Functional ± mobility decline
- Delirium
- Depression
- Nutritional decline
- Dehydration

Adverse events affecting all age groups

The geriatric syndromes

Should be thought of as adverse events
- Preventable?
- Lead to prolonged hospital stay
- Increased morbidity and mortality
Are our clinical systems and processes reliable?

• Measuring and testing reliability: the WISER study –
  – Clinical information availability at the point of decision making
  – Prescribing for hospital inpatients
  – Equipment in theatres
  – Equipment for inserting IV lines
  – Handover between wards
I’m looking for...

- Past medical history
- Referral letter/other specialty letter
- Discharge summary
- Current medication
- Radiology/imaging results
- Diagnostic test results
- Procedure notes/anaesthetic record
- Electrocardiogram (ECG) report
- Blood results
<table>
<thead>
<tr>
<th>Site</th>
<th>Total number of patients in the sample</th>
<th>Number of patients with missing information (% of all patients in sample)</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>411</td>
<td>18 (4%)</td>
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<tr>
<td>E</td>
<td>423</td>
<td>113 (27%)</td>
</tr>
<tr>
<td>G</td>
<td>327</td>
<td>44 (13%)</td>
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<tr>
<td>TOTAL</td>
<td>1161</td>
<td>175 (15%)</td>
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Reliability of equipment availability in operating theatres
## Missing & faulty equipment

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<th>Number of operations with equipment problems</th>
<th>Number of equipment problems</th>
<th>Percentage operations with one or more equipment problems</th>
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<tbody>
<tr>
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<td>258</td>
<td>50</td>
<td>56</td>
<td>19%</td>
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<tr>
<td>D</td>
<td>67</td>
<td>25</td>
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<td>F</td>
<td>165</td>
<td>19</td>
<td>19</td>
<td>12%</td>
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<tr>
<td>Total</td>
<td>490</td>
<td>94</td>
<td>103</td>
<td>19%</td>
</tr>
</tbody>
</table>
‘We always need a colposcope with that list and time and time again it isn’t there or it’s broken or it isn’t back or nobody knows where it is’

Surgeon 3 Organisation A
Past harm

Integration and learning

Reliability

Anticipation and preparedness

Sensitivity to operations
Sensitivity to operations

- At the coal face, minute by minute, safety may either be eroded by the actions and omissions of individuals or, conversely created by skilful, safety conscious professionals.
- Clinicians monitor their patients, watching for subtle signs of deterioration or improvement, but also have to monitor their teams for signs of discord, fatigue or lapses in standards.
- Managers have to be alert to the impact of staff shortages, equipment breakdowns, sudden increases in patient flow and a host of other potential problems.
Soft intelligence

- Safety walk-rounds
- Using designated patient safety officers
- Operational meetings, handovers and ward rounds
- Briefings and debriefings
- Day to day conversations
- And above all .... the patient voice
Anticipation and preparedness

Integration and learning

Past harm

Reliability

Sensitivity to operations
Anticipation and Preparedness: Will care be safe in the future?

- WHO Surgery Checklist
- Risk assessments
  - (falls, pressure ulcers, self harm)
- Risk registers
- Safety culture assessments
- Safety cases

- Bringing available information in the organisation to anticipate safety in the future
Police embracing tech that predicts crimes

By Heather Kelly, CNN
July 6, 2012 -- Updated 2012 CMT (0459 HKT) / Filed under: Innovations

New technology allows police to predict crime before it happens, but some agencies can't afford the software.

STORY HIGHLIGHTS

- Predictive analytics software� PredPol anticipates future crime based upon past activity.
- The program was adopted from software meant to predict earthquake aftershocks.
- Many police stations still use outdated technology due to small budgets and avarice to change.
- Even so, police depend heavily upon social media to solve crimes.

(CNN) -- For something that predicts the future, the software is deceptively simple looking.

A map of a city is marked up with small red squares, each indicating a 600-by-600-foot zone where crimes are likely to take place next. A heat-map mode shows even more precisely where cars may be stolen, houses robbed, people mugged.

The program is called PredPol, and it calculates its forecasts based on times and locations of previous crimes, combined with sociological information about criminal behavior and patterns. The technology has been beta tested in the Santa Cruz, California police department for the past year, and in an L.A. police precinct for the past six months, with promising results.

Predictive-analytics software is the latest piece of policing technology working its way into law-enforcement stations around the country, although it's going up against tight budgets, bureaucracy and a culture still clinging to its analog ways.

"We had to try something because we were not being offered more cops," said Zach Friend, a crime analyst with the Santa Cruz Police Department. Last year, Friend contacted researchers working on the algorithm -- originally used for predicting earthquake aftershocks -- after reading an article in the LA Times.
Nurse Staffing and Quality of Care

- Hospitals with low nurse staffing levels tend to have higher rates of poor patient outcomes such as pneumonia, shock, cardiac arrest, and urinary tract infections,

Integration & learning. Are we responding and improving?
"Most Health care organisations at present have very little capacity to analyse, monitor, or learn from safety and quality information. This gap is costly and should be closed and that early warning signals can be valued and should be maintained and heeded” (Berwick, 2013, p26)
Great Ormond St: team level

- Number of days since the last serious incident (SI)
  - narrative, lessons learnt and recommendations
- Central venous line, MRSA (MSSA) infection rates
- Hand hygiene compliance rate
- WHO Surgical Safety Checklist compliance rate per clinical unit
- Common themes identified in executive walk-rounds
- Medication errors
- Top three risks from the clinical unit’s risk register.
Intermountain Healthcare

- Online reports portal with 80 quality and patient safety metrics.
- Use of electronic records and data provided by care providers as part of clinical workflow.
- Web-enabled reporting and SPC charts on demand, including:
  - Centres for Medicare and Medicaid Services (CMS).
  - The Joint Commission core measures.
  - Quality Forum (NQF) etc. Intermountain captures patient harm from existing.
Safety measurement and monitoring

- Past harm
- Reliability
- Anticipation and preparedness
- Sensitivity to operations
- Integration and learning