Patient safety today – From identifying problems to implementing solutions

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The Collaboration for Leadership in Applied Health Research and Care (CLAHRC) South London is investigating the best way to make tried and tested treatments and services routinely available. University-based researchers, health professionals, patients and service users are working together to make this happen. The collaborating organisations are Guy’s and St Thomas’ NHS Foundation Trust, Health Innovation Network (the NHS England-funded academic health science network in south London), King’s College Hospital NHS Foundation Trust, King’s College London, King’s Health Partners, St George’s Healthcare NHS Trust, St George’s, University of London and South London and Maudsley NHS Foundation Trust. The work of the CLAHRC South London is funded for five years (from 1 January 2014) by the National Institute for Health Research, collaborating organisations and local charities. It is ‘hosted’ by King’s College Hospital NHS Foundation Trust. The CLAHRC is also working closely with GPs, local authorities (responsible for public health) and commissioners of health services in south London.
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- Chief Editor, BMJ Simulation & Technology Enhanced Learning

- Director, London Safety & Training Solutions Ltd
Pharmacovigilance

- The science and activities relating to the detection, understanding and prevention of adverse drug reactions or any other drug-related problems
Pharmacovigilance & patient safety

• The science and activities relating to the detection, understanding and prevention of adverse drug reactions or any other drug-related problems

• The avoidance, prevention and amelioration of adverse outcomes or injuries stemming from the process of healthcare
Pharmacovigilance, patient safety & implementation science

• The science and activities relating to the detection, understanding and prevention of adverse drug reactions or any other drug-related problems

• The avoidance, prevention and amelioration of adverse outcomes or injuries stemming from the process of healthcare

• The scientific study of methods to promote the uptake of research findings into routine healthcare in clinical, organisational or policy contexts
Challenges for pharmacovigilance (WHO 2002)

1. Globalisation
2. Web-based sales & information
3. Broader safety concerns
4. Public health vs pharma industry growth
5. Monitoring of established products
6. Developing & emerging countries
7. Attitudes & perceptions of risk & benefit
8. Outcomes & impact (incl accountability)
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The subject matter may be different, but many of the above concerns apply to the field of patient safety – including its monitoring and its improvement
They were never in theatre scrubbed ready to go [...] the child would be anaesthetised on the operating table, the case would be started by the Senior Registrar, and the Senior Registrar would then get ready to place the lines to go on to bypass and the operation would then stop, as the nurses madly phoned around to try and find where the Consultant was [...] and we would basically be twiddling our thumbs for quite a long time [...] maybe half an hour.
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There is a practical problem in that the time taken to anaesthetise and place the patient on by-pass was extremely variable, and could range from a little over one hour up to three hours. I was always in the hospital at or immediately after 0800, but did not feel that I could simply spend the time waiting in the theatre suite.
Just another day at work...?
• Public inquiry
• Oct 1998-Jul 2001
• 577 witnesses (238 parents)
• 900,000 pages of documents reviewed
• 1800 patient records
• 200 recommendations
Early study in 2000

- Retrospective patient record review
- Senior doctor and nurse reviewers
- 1014 records
- 2 London hospitals
Early study in 2000

Headline figure:

1 in 10 hospital inpatients suffers an adverse event whilst in hospital
Similar issues in the USA

- Report increased awareness of medical errors
- Conclusion: 44,000 to 98,000 people die each year as a result of preventable medical errors
How do errors & incidents occur?

Person model: Adverse events are product of wayward mental processes: forgetfulness, inattention, carelessness

System model: Healthworkers are human. They will make errors. Adverse events are product of system ‘pathogens’
James Reason: ‘Swiss Cheese’
Charles Vincent: ‘London Protocol’
Systems view: Factors to consider

- **Patient factors**
  - Condition (complexity and seriousness)
  - Language and communication
  - Personality and social factors

- **Task factors**
  - Task design and clarity of process
  - Availability & use of protocols
  - Availability & use of test results

- **Individual staff factors**
  - Knowledge and skills
  - Motivation, physical and mental health

- **Team factors**
  - Verbal and written communication
  - Supervision and seeking help
  - Leadership

- **Work environment**
  - Staffing levels and skill mix
  - Workload and shift patterns
  - Design, availability and maintenance of equipment

- **Organisation and management**
  - Financial resources & constraints
  - Organisational structure
  - Policy standards & goals
  - Safety culture & priorities

- **Institutional context**
  - Economic & regulatory context
  - Social attitudes to risk
  - National Health Service Executive
  - Clinical negligence schemes
Policy environment

• Based on these early scientific developments

• Diagnosis: lack of ‘organisational memory’ and associated capacity to learn

• So similar errors and incidents kept happening across hospitals

• Improving our collective memory would improve learning and thus improve safety
Policy environment

• Based on these early scientific developments

Headline actions:

- Set up National Patient Safety Agency (2001-12)
- Set up National Reporting & Learning System (2003-)

kept happening across hospitals

• Improving our collective memory would improve learning and thus improve safety
National Patient Safety Agency

Seven steps to patient safety
The full reference guide
Second edition August 2004

Step 1: Build a safety culture
Step 2: Lead and support your staff
Step 3: Integrate your risk management activity
Step 4: Promote reporting
Step 5: Involve and communicate with patients and the public
Step 6: Learn and share safety lessons
Step 7: Implement solutions to prevent harm

2004
‘Never Events’ – wholly preventable

- Wrong site surgery
- Retained instrument post-operation
- Wrong route administration of chemotherapy
- Misplaced naso or orogastric tube not detected prior to use
- Inpatient suicide using non-collapsible rails
- Escape from within the secure perimeter of medium or high secure mental health services by patients who are transferred prisoners
- In-hospital maternal death from post-partum haemorrhage after elective caesarean section
- Intravenous administration of mis-selected concentrated potassium chloride
We also fell in love with aviation
This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.
So is healthcare getting safer?
Possibly not – but we do not know for sure

**RATES OF HARM PER 1000 PATIENT DAYS**

- $N=61,523$
- Surgery (27%), acute MI (19%), heart failure (25%), pneumonia (30%)
- Surgery & pneumonia no decline in AEs

Wang et al, NEJM 2014;370:341-51

**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

Landrigan et al, NEJM 2010;363:2124-34

Vincent et al, BMJ 2008;338:a2426
‘Never Events’ – still happening

<table>
<thead>
<tr>
<th>Type of Never Event</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrong site surgery</td>
<td>126</td>
</tr>
<tr>
<td>Retained foreign object post procedure</td>
<td>102</td>
</tr>
<tr>
<td>Wrong implant/ prosthesis</td>
<td>38</td>
</tr>
<tr>
<td>Misplaced naso or oro gastric tubes</td>
<td>15</td>
</tr>
<tr>
<td>Inappropriate administration of daily oral methotrexate</td>
<td>11</td>
</tr>
<tr>
<td>Maladministration of a potassium containing solution</td>
<td>3</td>
</tr>
<tr>
<td>Air embolism</td>
<td>2</td>
</tr>
<tr>
<td>Escape of a transferred prisoner</td>
<td>2</td>
</tr>
<tr>
<td>Maladministration of insulin</td>
<td>2</td>
</tr>
<tr>
<td>Transfusion of ABO incompatible blood components</td>
<td>2</td>
</tr>
<tr>
<td>Wrong gas administered</td>
<td>1</td>
</tr>
<tr>
<td>Failure to monitor and respond to oxygen saturation</td>
<td>1</td>
</tr>
<tr>
<td>Wrongly prepared high risk injectable medication</td>
<td>1</td>
</tr>
<tr>
<td>Wrong route administration of chemotherapy</td>
<td>1</td>
</tr>
<tr>
<td>Wrong route administration of oral/ enteral treatment</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>308</strong></td>
</tr>
</tbody>
</table>
Example: WHO Surgical Safety Checklist
First study, pre/post (2009)

- Major complication rate decreased 36%
- Mortality decreased 47%
- Post-op infection decreased 48%
Within weeks of the publication…

- National policy
- All hospitals were asked to implement the checklist within 12 months
- Rate of implementation to be checked via audits
- Hospitals+specialities urged to adapt it to their needs
Largest study to date (2014)

Pre-checklist (N=109,341)
- 30-day mortality = 0.71%
- Complications risk = 3.86%

Post-checklist (N=106,370)
- 30-day mortality = 0.65%
- Complications risk = 3.82%
Largest study to date (2014)

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“The likely reason for the failure ...is that it was not actually used”
Huge variation in checklist application...

- Length of time-out in seconds: One of 5 Trusts 80 secs, 5 Trust average 64 secs
- % of Checklist items covered: One of 5 Trusts 67%, 5 Trust average 58%
- % cases all team members present: One of 5 Trusts 65%, 5 Trust average 37%
- % cases with introductions: One of 5 Trusts 34%, 5 Trust average 23%
- % cases all team members paused: One of 5 Trusts 30%, 5 Trust average 19%
...implementation strategies

“It just appeared…”

“It was sth they were just doing one day”

“There was no discussion or introduction or anything. Typical.”

“Our chief exec had a bee in their bonnet and it was ‘no you will do this’…”
Have we over-proceduralised safety?

• Search for simple solutions to complex problems?

• Means becoming ends?
  • Reporting at the expense of learning? Over-emphasis on counting?
  • Root causes analyses done – but weak implementation of improvement

• We imported safety mechanisms from other industries – but did we do so mechanically?
‘Push’ or ‘pull’?

External regulation; new procedures; standards

Practice at the coalface of care
‘Push’ or ‘pull’?

External regulation; new procedures; standards

Practice at the coalface of care

Internal motivation; attitudes to safety; professional values; culture
Pressures on human behaviour – risky shift

[Amalberti 2001; Amalberti et al, 2006]
Implementation analyses: how to achieve change?
A few points for reflection

• We are dealing with people and systems → focus on both

• Safety is made up of skills and procedures – and also values and attitudes

• What balance do we need, or desire, between regulation and motivation?
THANKS FOR LISTENING