Safer Healthcare
Strategies for the Real World

Oxford AHSN Patient Safety Conference
April 2016

Charles Vincent
Health Foundation Professorial Fellow
University of Oxford

Rene Amalberti
Haute Autorité de Santé
A new vision is needed

- Harm has been defined too narrowly
- Progress is slower than anticipated
- Only part of the healthcare system has been addressed
- Interventions are idealistic
- Safety and quality improvement equated
- … and healthcare is changing rapidly
Incidents within a patient journey
(Healthcare professionals’ view)

Good care + incidents
Date prior to 1/2/04 Pt contacts hospital to ask if treatment plan can be altered due to work commitments. Consultant agrees to IV & IT procedures on same day.

Pt well known to clinical teams.

No multidisciplinary team discussion about changes to planned treatment.

Date prior to 1/2/04 11.30 Pharmacist rings SpR to query prescription contrary to policy.

Permanent SpR received news of sick parent and had to leave to attend.

Pt rings to say she will be late.

Locum SpR goes to pharmacy to collect Chemo. Returns to ward and gives drug to Sr.

1/2/04 11.30 Pharmacist rings SpR to query prescription contrary to policy.

Ward Sr 1 queries change to treatment plan.

Locum SpR had been recruited to help with already busy workload.

Consultant had signed prescription and SpR over ruled concerns.

Evidence of lack of safety culture

Personality of SpR

Ward Sr 1 had to leave for dental appt

Lack of forman induction for locum sp registrar

Pharmacist issues Methotrexate without proof of the IV Vinoreline having been given.

Pharmacy short staffed over lunchtime

Distraction from phones ringing

1/2/04 11.30 Pharmacist rings SpR to query prescription contrary to policy.

Pt delayed by RTA

Ward Sr 1 had to leave for dental appt

No discussion between admitting nurse and patient about treatment plan.

Pt rings to say she will be late.

Locum SpR goes to pharmacy to collect Chemo. Returns to ward and gives drug to Sr.

14.40 Pt arrives on ward, checked in and taken to bay 8.

14.40 Pt arrives on ward, checked in and taken to bay 8.

A

LEGEND

Even
t

A –

Barrier

Contributory Factor

CDP/SDP

How things go wrong

NPSA (2004)
Frameworks for safety

Incident analysis
Seven levels Framework

Patient
Task
Staff
Team
Working conditions
Organisation
Institutional context

Measurement & monitoring of safety

Vincent et al, 1998; Vincent, Burnett, Carthey, 2013
Targeted at events

Aim is to optimise reliability of basic procedures

---

**Table 2. Patient Safety Strategies Ready for Adoption Now**

**Strongly encouraged**
- Preoperative checklists and anesthesia checklists to prevent operative and postoperative events
- Bundles that include checklists to prevent central line-associated bloodstream infections
- Interventions to reduce urinary catheter use, including catheter reminders, stop orders, or nurse-initiated removal protocols
- Bundles that include head-of-bed elevation, sedation vacations, oral care with chlorhexidine, and subglottic suctioning endotracheal tubes to prevent ventilator-associated pneumonia
- Hand hygiene
- The do-not-use list for hazardous abbreviations
- Multicomponent interventions to reduce pressure ulcers
- Barrier precautions to prevent healthcare-associated infections
- Use of real-time ultrasonography for central line placement
- Interventions to improve prophylaxis for venous thromboembolisms
New directions

- The ideal and the real
- Safety along the patient journey
  - In collaboration with patients and families
- Safety in context
- A menu of safety strategies
- Wider implications
  - Revised objectives and language
  - Greater flexibility in approach to safety
  - Trade offs with other objectives
The ideal and the real

5 levels of care

1. The care envisaged by standards
2. Compliance with standards - ordinary care with imperfections
3. Unreliable care / poor quality - the patient escapes harm
4. Poor care with probable minor harm but overall benefits
5. Care where harm undermines any benefits obtained

Interventions to optimise care
Interventions to manage risk

The same thing?
Patient harm happens in every healthcare setting: at home in convalescence, in an operating room under anaesthesia, at the lab getting blood drawn, in the hospital corridor lying alone on a stretcher ……

Harm may result from missed diagnosis, scheduling delay, poor hygiene, mistaken identity, hostile behaviour, device malfunction, confusing instructions and hazardous surroundings.

The trajectory of harm begins with the unexpected experience of harm arising from or associated with the provision of care ……..

The patient may experience harm during the episode of care when the failure occurred, or later, after some time has passed. Harm as it is first endured may evolve, transform and spread

(Canfield, 2013)
The management of risk over time

Does this look like an incident?
Analysis along the patient journey
Three models of safety
Avoiding risk: ultra safe

- Risk is excluded as far as possible
- Procedures & supervisory systems
- Priority given to prevention
- Strong regulatory control
- Training focused on rigorous procedures and management of workload
Managing risk: high reliability model

- Risk in not sought out but is inherent in the profession
- Group intelligence and adaptation
- Mutual protection of team members.
- Training and safety focused on adaptability and flexibility of procedures
Embracing risk: ultra-adaptive

- Taking risks is the essence of the profession
- Working conditions are unstable and sometimes unforeseeable
- Cult of champions and heroes
- Success analysis more important than accident analysis
- Training is acquisition of expertise, understanding own limitations
Three contrasting approaches to safety

ULTRA ADAPTIVE
Embracing risk

Context: Taking risks is the essence of the profession. Deep-sea fishing, military in war time, drilling industry, rare cancer, treatment of trauma.

Safety model: Power to experts to rely on personal resilience, expertise and technology to survive and thrive in adverse conditions.

Training through peer-to-peer learning, shadowing, acquiring professional experience, knowing one's own limitations.

Priority to adaptation and recovery strategies

ULTRA SAFE
Avoiding risk

Context: Risk is excluded as far as possible. Civil aviation, nuclear industry, public transport, food industry, medical laboratory, blood transfusion.

Safety model: Power to regulators and supervision of the system to avoid exposing front-line actors to unnecessary risks.

Training in teams to apply procedures for both routine operations and emergencies.

Priority to prevention strategies

HIGH RELIABILITY
Managing risk

Context: Risk is not sought out but is inherent in the profession. Marine, shipping, oil industry, fire-fighters, elective surgery.

Safety model: Power to the group to organise itself, provide mutual protection, apply procedures, adapt, and make sense of the environment.

Training in teams to prepare and rehearse flexible routines for the management of hazards.

Priority to procedures and adaptation strategies

Innovative medicine
Trauma centers

- Himalaya mountaineering
- Finance
- Forces, war time
- Professional fishing

Scheduled surgery
Chronic care

- Fire Fighting
- Chartered Flight
- Dicing industry
- Processing Industry

Anaesthesiology ASA1

- Chemical Industry (USA)
- Railways

Radiotherapy
Blood transfusion

- Civil Aviation
- Nuclear Industry

10-2 VERY UNSAFE
10-3 UNSAFE
10-4 SAFE
10-5
10-6 ULTRA SAFE
Families of safety interventions

- Best practice
- Improve the system
- Risk control
- Adapt & respond
- Mitigation

Optimising Strategies

Risk Management Strategies
Shekelle et al, 2013

I Aspire to standards – safety as best practice

- Targeted at specific events
- Aim is to optimise reliability of basic procedures

Annals of Internal Medicine

The Top Patient Safety Strategies That Can Be Encouraged for Adoption Now

Table 2. Patient Safety Strategies Ready for Adoption Now

<table>
<thead>
<tr>
<th>Strongly encouraged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative checklists and anesthesia checklists to prevent operative and postoperative events</td>
</tr>
<tr>
<td>Bundles that include checklists to prevent central line–associated bloodstream infections</td>
</tr>
<tr>
<td>Interventions to reduce urinary catheter use, including catheter reminders, stop orders, or nurse-initiated removal protocols</td>
</tr>
<tr>
<td>Bundles that include head-of-bed elevation, sedation vacations, oral care with chlorhexidine, and subglottic suctioning endotracheal tubes to prevent ventilator-associated pneumonia</td>
</tr>
<tr>
<td>Hand hygiene</td>
</tr>
<tr>
<td>The do-not-use list for hazardous abbreviations</td>
</tr>
<tr>
<td>Multicomponent interventions to reduce pressure ulcers</td>
</tr>
<tr>
<td>Barrier precautions to prevent health care–associated infections</td>
</tr>
<tr>
<td>Use of real-time ultrasonography for central line placement</td>
</tr>
<tr>
<td>Interventions to improve prophylaxis for venous thromboembolisms</td>
</tr>
</tbody>
</table>

Shekelle et al, 2013
II Improvement of processes and systems

- Standardisation and simplification
- Automation and decision support
- Improved equipment design
- Formalising team roles and responsibilities
- Reduce interruptions and distractions
- Improve organisation and level of staffing
III Risk control

- Withdraw services
- Reduce demand
- Place restrictions on services
- Place restrictions on conditions of operation
- Place restrictions on individuals
- Prioritisation of activities
**Potential for risk control in anaesthesia**

**Faulty gas analyser: Go or No Go?**

<table>
<thead>
<tr>
<th><strong>GO</strong></th>
<th><strong>NO-GO</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Use TIVA with propofol (BIS monitored)... I am well aware that a functioning oxygen monitor is present in the guidelines. To cancel would be the counsel of perfection, but this won't get the patient the treatment he needs</td>
<td>Completely elective cases with faulty kit I would not proceed. There is a risk of awareness/hypoxia. Proceeding fails my stand up in court test.</td>
</tr>
<tr>
<td>[Consultant; 25 years’ experience]</td>
<td>[Consultant; 10 years’ experience]</td>
</tr>
</tbody>
</table>

Grieg et al, 2015
IV Monitoring, adaptation and response

- Resilient teamwork at the frontline
- Supportive interventions
  - Briefing and de-briefing
  - Team training for cross checking, monitoring
- Develop planned approaches to adaptation and recovery rather than relying on ad hoc improvisation.
- Executive training in risk scenarios and trade offs between safety and other objectives
Anticipation & Preparedness
Experts are constantly thinking ahead

- Pre-mission planning for fighter pilots often takes longer than the mission.
- Each part of the route is analysed for possible threats, whether from hostile aircraft, personal factors, weather or technical breakdown.
- During the flight pilots devoted over 90% of available time to anticipation.
- Typically they developed a ‘tree’ of events that might occur over the course of the flight.

Amalberti & Deblon, 1992
Box 9.1: Anticipation and preparedness in surgery

‘You need to have a strategy ready when there is bleeding: cold, automatic responses to a hazardous situation ingrained in your mind so that it can be done without stress and strain. What to do if the groin starts to bleed is one of the worst situations. When teaching I give them a list of things they’re going to do. I get them to repeat it to me over and over again so that when it does happen to them, and it will eventually, they don’t need to think, they just go into autopilot.'
V Mitigation

- Support for patients, families and carers
- Support for staff
- Financial and legal planning
- Management of media
- Response to regulators
Mitigation in home haemodialysis

- Established units provide training and prepare patients and carers very carefully for the home dialysis procedures.
- Instilling a culture of safety without unduly alarming the patient,
- Mitigate the risk of adverse events,
- Ensuring the patient is fully briefed in emergency procedures, letter for emergency department
- An explicit and comprehensive set of safety strategies as part of the basic programme.

Pauly et al, 2015
<table>
<thead>
<tr>
<th>Strategy</th>
<th>Interventions</th>
<th>Level of Implementation</th>
<th>Degree of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety as best practice: aspire to standards</td>
<td>Food safety programme to reduce specific harms</td>
<td>Frontline</td>
<td>Used ++</td>
</tr>
<tr>
<td></td>
<td>Staff training, assessment and feedback</td>
<td>Organisation</td>
<td>Used +</td>
</tr>
<tr>
<td></td>
<td>Standardisation and simplification of key processes</td>
<td>System</td>
<td>Underused ++</td>
</tr>
<tr>
<td>Risk control</td>
<td>IT to support decision making</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Automation of processes</td>
<td></td>
<td>Underused +</td>
</tr>
<tr>
<td>Monitoring, adaptation and response</td>
<td>Withdrawal of services</td>
<td></td>
<td>Underused ++</td>
</tr>
<tr>
<td></td>
<td>Reduce demand</td>
<td></td>
<td>Underused ++</td>
</tr>
<tr>
<td></td>
<td>Place restrictions on services</td>
<td></td>
<td>Underused ++</td>
</tr>
<tr>
<td></td>
<td>Place restrictions on individuals</td>
<td></td>
<td>Underused ++</td>
</tr>
<tr>
<td>Mitigation</td>
<td>Place restrictions on conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improve safety culture</td>
<td></td>
<td>Underused +</td>
</tr>
<tr>
<td></td>
<td>Improve detection of deterioration</td>
<td></td>
<td>Underused +</td>
</tr>
<tr>
<td></td>
<td>Develop emergency response systems</td>
<td></td>
<td>Used +</td>
</tr>
<tr>
<td></td>
<td>Policy of explanation, apology and support for injured patients</td>
<td></td>
<td>Used +</td>
</tr>
<tr>
<td></td>
<td>Rapid response to physical harm</td>
<td></td>
<td>Used +</td>
</tr>
<tr>
<td></td>
<td>Psychological support for patients and families</td>
<td></td>
<td>Underused +</td>
</tr>
<tr>
<td></td>
<td>Peer to peer support programmes for staff</td>
<td></td>
<td>Underused ++</td>
</tr>
<tr>
<td></td>
<td>Formal support and mentoring for staff</td>
<td></td>
<td>Underused ++</td>
</tr>
<tr>
<td></td>
<td>Insurance of staff and organisation against claims</td>
<td></td>
<td>Used +</td>
</tr>
<tr>
<td></td>
<td>Proactive response to complaints and claims</td>
<td></td>
<td>Underused ++</td>
</tr>
<tr>
<td></td>
<td>Proactive response to media</td>
<td></td>
<td>Underused ++</td>
</tr>
<tr>
<td></td>
<td>Open dialogue with regulators</td>
<td></td>
<td>Underused ++</td>
</tr>
</tbody>
</table>
# A Compendium of Safety Strategies

## An Incomplete Taxonomy

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Interventions</th>
<th>Level of Implementation</th>
<th>Degree of use</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety as best practice capstone to standards</td>
<td>- Road safety programme to meet specific requirements&lt;br&gt;- Improve visibility of injury processes&lt;br&gt;- Improve continuous professional education in patient safety&lt;br&gt;- Ensure implementation of guidelines for complex patients</td>
<td>Frontline</td>
<td>Used ++</td>
<td>Allocate more time to implementation</td>
</tr>
<tr>
<td>Improvement of systems and processes</td>
<td>- Staff training, assessment and feedback&lt;br&gt;- Standardization and simplification of tasks&lt;br&gt;- Improve documentation of processes&lt;br&gt;- Improved equipment design&lt;br&gt;- Communication and enhancement of handovers&lt;br&gt;- Improve existing conditions</td>
<td>System</td>
<td>Used +</td>
<td>Personalized medicine in progress</td>
</tr>
<tr>
<td>Risk control</td>
<td>- Reduction in the number of patients&lt;br&gt;- Reduction in the number of services&lt;br&gt;- Improves patient care&lt;br&gt;- Patient satisfaction on individuals&lt;br&gt;- Patient satisfaction on conditions of operation&lt;br&gt;- Reduction in the number of hospitalizations&lt;br&gt;</td>
<td>System</td>
<td>Used ++</td>
<td>Not considered as a problem</td>
</tr>
<tr>
<td>Monitoring, adaptation and response</td>
<td>- Improve safety culture&lt;br&gt;- Improve detection of deviations&lt;br&gt;- Develop emergency response plans&lt;br&gt;- Develop team-based procedures for staff&lt;br&gt;- Matching resources to hazards&lt;br&gt;- Improve operational response to ensure that the process is ready&lt;br&gt;- Adaptive response to regulatory processes</td>
<td>System</td>
<td>Used ++</td>
<td>Relevant for all risk levels and positive</td>
</tr>
<tr>
<td>Mitigation</td>
<td>- Policy of expansion, opening, and support for injured patients&lt;br&gt;- Rapid response to physical harm&lt;br&gt;- Psychological support for patients and families&lt;br&gt;- Reinforcement of support mechanisms for staff&lt;br&gt;- Reinforcement of support mechanisms for staff&lt;br&gt;- Incidence of staff and organizational injuries&lt;br&gt;- Proactive response to complaints and claims&lt;br&gt;- Proactive response to hazards&lt;br&gt;- Open dialogue with regulatory</td>
<td>System</td>
<td>Used ++</td>
<td>Some examples of good practice but frequently difficult</td>
</tr>
</tbody>
</table>

### Optimization strategies:
- Staff training, assessment, and feedback
- Standardization and simplification of tasks
- Improve documentation of processes
- Improved equipment design
- Communication and enhancement of handovers
- Improve existing conditions

### Risk management strategies:
- Reduction in the number of patients
- Reduction in the number of services
- Patient satisfaction on individuals
- Patient satisfaction on conditions of operation
- Reduction in the number of hospitalizations
- Improve safety culture
- Improve detection of deviations
- Develop emergency response plans
- Develop team-based procedures for staff
- Matching resources to hazards
- Improve operational response to ensure that the process is ready
- Adaptive response to regulatory processes

### Mitigation strategies:
- Policy of expansion, opening, and support for injured patients
- Rapid response to physical harm
- Psychological support for patients and families
- Reinforcement of support mechanisms for staff
- Reinforcement of support mechanisms for staff
- Incidence of staff and organizational injuries
- Proactive response to complaints and claims
- Proactive response to hazards
- Open dialogue with regulatory
A framework of safety strategies and interventions

- **Best practice**
- **Improve the system**
- **Risk control**
- **Adapt & respond**
- **Mitigation**

**Risk Management Strategies**
- Quality Improvement
- Human factors & ergonomics
- Regulation & governance
- Resilience, team training

**Optimising Strategies**
'We know that these ideas need to be tested in practice and that ultimately the test is whether this approach will lead in a useful direction for patients. We believe very strongly that the proposals we are making can only become effective if a community of people join together to develop the ideas and implications'.