Integrating Patient Safety into Your System's DNA

Frank Federico, Carol Peden, Anthony Staines

Orlando, December 8, 2013
1:00 PM - 4:30 PM

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International Forum on Quality and Safety in Healthcare
How safe is your hospital?

Out of every 100 hospitalization’s in all countries
- 14.2 ADEs in HIC and 12.7 in LMIC
- 43 million injuries worldwide due to medical care per annum
- 23 million DALYs lost as a consequence

- 7 adverse events measured by WHO internationally
  - Adverse drug events (ADEs) (5% -HIC))
  - Catheter associated UTU (CA-UTI)
  - Catheter related blood stream infections (BSI)
  - Nosocomial pneumonia
  - VTE (3.8% -LIC)
  - Falls
  - Decubitus ulcers

UK LEVELS OF HARM

Potentially an Average of 7,300 patients per year per hospital suffer an adverse event.
Double Decker bus seats 73 people
100 bus loads of patients per hospital per year
Almost 2 bus loads/week/hospital
How do you make your organization safer?

- Know your data – where are you and where do you want to go?
- What are your “big dots”?
  - Harm
  - Mortality
  - Waste elimination/Reduce Delays/LOS
  - Improve Patient Experience/Right care for right patient

Taxonomy of Harm

- Medication errors
- Falls
- Pressure ulcers
- Failures to communicate
- Understaffing
- Hosp. Acquired Infection
- Staff awareness of patient safety issues
- Overuse
- Harm due to delays
- Failure to complete linkage or referral
- Unnecessary procedures
- Errors of omission
- Misdiagnosis
- Readmission

Harm = unintended physical injury due to medical care that requires additional monitoring, treatment or hospitalization, or that results in death.
Evolution of A Culture of Safety and Reliability

**PATHOLOGICAL**
Who cares as long as we’re not caught
Chronically Complacent

**REACTIVE**
Safety is important. We do a lot every time we have an accident

**CALCULATIVE**
We have systems in place to manage all hazards

**PROACTIVE**
Anticipating and preventing problems before they occur

**GENERATIVE**
Safety is how we do business around here
Constantly Vigilant

Options for Eliminating Harm/Defects

- **Mitigate**
  - Policies
  - Training
  - Inspection
  - Minimize consequences of errors
  - Make errors visible
  - Make it easy to do the right thing

- **Facilitate**
  - Make it hard to do the wrong thing
  - Eliminate the opportunity for error

- **Eliminate**
  - Standardization & Simplification
A framework for safety:
Vincent et al. The Health Foundation

Has care been safe in the past?
Are our clinical systems and processes reliable?
Is care safe today?
Will care be safe in the future?

Figure: A framework for safety measurement and monitoring
Table Exercise

- Discuss the framework for safety
- What measures do you have for each part of the framework?
- Sensitivity to operations – how safe is your organization today?

Has care been safe in the past?
Are our clinical systems and processes reliable?

- How reliable is your care delivery?
- How do you know?
- Bundles, checklists and system redesign help to reach higher reliability

General ward work – Improved Reliability
Process measure – one ward

Royal United Hospital Bath
GW14: Patients with observations complete - Cardiac Ward (1st spread ward)

Is care safe today?
Will care be safe in the future?

How do you make this happen?
Reliable design of systems and processes
Understand where risk may occur?
Safety Cases
www.health.org

Safety Cases and System Design
www.health.org
Are we responding and improving?

- How do you learn as an organization?
- How quickly do you learn
- How do you disseminate learning?
- Who see’s the learning and how do you know?

“Initial Government response to Francis Report”. April 2013

Royal United Hospital Bath NHS Trust – See it my way
Using patient, carer and staff stories to inspire and motivate staff

“See it my way sessions provide a time to re-connect with why we all work in the NHS – because we really care for people in need. Staff can see into the speaker’s life and hear and feel the person behind the need and they are moved from within themselves to improve the way they interact and work.”

The Royal United Hospital Bath NHS Trust (RUH) has developed a powerful way of using patient stories to inspire and motivate staff. Regular events are held, open to all RUH staff at which patients, carers and staff are supported to talk about their experience of care.

Each event is themed around an area that has been identified as a priority for improving patient experience. Three patients, two carers and one member of staff speak to the audience. Speakers are chosen to be as diverse as possible, and to include stories from people who are often not heard or given a platform to speak, such as people with a learning disability, dementia or a terminal diagnosis. Patients, carers and staff who have spoken say they feel truly heard and valued by the experience.

Staff and patients at the RUH have been moved by the power of real life stories to inspire and motivate. As well as increasing their understanding and connection with the person behind the patient or role, staff have implemented practical changes following what they have heard.
“Reasons for Optimism”

Speech
The silent scandal of patient safety

And in individual Trusts, there have been some even more spectacular successes.

Like at the Royal United Hospital Bath where, through a structured programme of safety improvement, they have halved adverse events in the last two years.

Or in the South West, where a concerted regional effort has seen Hospital Standardised Mortality Rates fall by 20% over the last three and a half years.

http://www.health.org.uk
Leadership for Quality and Safety Improvement

Anthony Staines, Ph.D.
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Professeur associé, IFROSS, University of Lyon 3, France

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Leadership for Quality and Safety

- Preparation
  - Understand where your organization stands
  - Understand the principles, methods, pressures
  - Understand the organization’s experience and readiness

Where you stand
Example

- Measurement of medication harm
  - Adverse Drug Event Trigger Tool: 20 charts per month
  - Initially, 18% of patients with AE
  - 18 month breakthrough collaborative
  - 7% of patients with AE

Examples of Triggers
- Diphenhydramine
- Vitamin K
- Romazicon
- Anitementics
- Naloxone
- Antidiarrheals
- Serum glucose <50
- WBC <3,000
- Platelet <50,000
- Digoxin level > 2
- Rising serum creatinine
- Oversedation / fall / lethargy / hypotension
- Rash
- Abrupt medication stop
- Transfer to higher level of care
- C. difficile positive
- INR >6

All hospitals involved in phase 2
% of patients harmed by at least 1 ADE

- Mean ±2SD

- % patient harmed
- Annual mean of % patient harmed

- Mean ±2SD
- Mean ±2SD

- 76%
- 47%
- 30% roll-out
- 18%
- 14%
- 7%
Leadership for Quality and Safety

- Vision and strategy
  - Create an inspiring vision collaboratively
  - Choose improvements that are strategically important
  - Create an improvement strategy

- Communication, involvement and motivation
  - Show involvement
  - Build consensus within top leadership, sustainability and priority
  - Define a communication strategy


The County Council vision:

For a good life in an attractive
Strategic Improvement Areas

Value for patient increases

Patient Safety Concept

Leadership for Quality and Safety

- Build infrastructure for change and define responsibilities
  - Define top management team responsibilities + all managers
  - Establish quality and safety groups at all levels
  - Ensure experts are available for support
  - Appoint physician and nurse leaders
  - Provide networks to support experts
  - Form project teams
  - Ensure patient safety and error reporting are in all job descriptions

Findings

Factors that can help or hinder QI programs to come to improved patient results

Findings
Factors used by leading QI programs to come to improved patient results

Culture:
- goodwill
- measurement
- evidence-based
- learning organization

Physical symbol of QI program (e.g., institute)

Quality program organization
Education
Leadership development

Program logistics
Measurement systems
Information systems

Priorities maintained during crises
Stability of general management and program management
Choosing tools compatible with strategy and culture


Clinical programs structure

Guidance Council
Global coordination, budget, information systems, goal setting, priorities

Program management

Clinical integration
Executive team
- Cardiovascular
- Neuromusculoskeletal
- Women & Newborn
- Primary Care
- Oncology
- Intensive Medicine

Development team 1
Dev. team 2
Dev. team n

Urban North Region Regional program management

Urban Central Region Regional program management

Urban South Region Regional program management

MD MD MD

MD MD MD MD

MD MD
Leadership for Quality and Safety

- Systems change
  - Create and improve patient feedback systems
  - Create a personnel reporting system for adverse events and near misses
  - Create a system for prioritizing, investigating and preventing events
  - Change reporting systems to include quality and safety indicators along finance and production data
  - Change IT systems to allow collection of data and fast feedback
  - Change appraisal recognition and reward systems to align with strategy


Example
Possible criteria to prioritize patient safety interventions

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Visibility</td>
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<tr>
<td>2</td>
<td>Are an opportunity to show institutional commitment in safety improvement.</td>
</tr>
<tr>
<td>3</td>
<td>Clinical effectiveness</td>
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<tr>
<td>4</td>
<td>Are grounded on scientific evidence (evidence-based)</td>
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<tr>
<td>5</td>
<td>Buy-in</td>
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<tr>
<td>6</td>
<td>Have a potential to create buy-in from the clinicians.</td>
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<tr>
<td>7</td>
<td>Value</td>
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<tr>
<td>8</td>
<td>Can simultaneously improve safety and cut costs or increase revenue</td>
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<td>9</td>
<td>Feasibility</td>
</tr>
<tr>
<td>10</td>
<td>Are easy to implement</td>
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<tr>
<td>11</td>
<td>Results driven</td>
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<tr>
<td>12</td>
<td>Help getting and showing results.</td>
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<tr>
<td>13</td>
<td>System-wide</td>
</tr>
<tr>
<td>14</td>
<td>Involve a spread that is system-wide and leaves no clinical unit out.</td>
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<tr>
<td>15</td>
<td>Cultural impact</td>
</tr>
<tr>
<td>16</td>
<td>Help creating a safety culture within the institution.</td>
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<tr>
<td>17</td>
<td>Cost effectiveness</td>
</tr>
<tr>
<td>18</td>
<td>Can be implemented with little extra cost or can generate more savings or</td>
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<tr>
<td></td>
<td>extra revenue than cost increase.</td>
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<tr>
<td>19</td>
<td>Mandatory</td>
</tr>
<tr>
<td>20</td>
<td>Helps complying with legal or regulatory requirements.</td>
</tr>
<tr>
<td>21</td>
<td>Patient involvement</td>
</tr>
<tr>
<td>22</td>
<td>Allows patient involvement.</td>
</tr>
<tr>
<td>23</td>
<td>Innovative</td>
</tr>
<tr>
<td>24</td>
<td>Gives the institution an image of being innovative, pioneer, and can be</td>
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<tr>
<td></td>
<td>helpful for other institutions.</td>
</tr>
<tr>
<td>25</td>
<td>Volume</td>
</tr>
<tr>
<td>26</td>
<td>Volume of patients that will benefit from the intervention.</td>
</tr>
<tr>
<td>27</td>
<td>Severity of risks</td>
</tr>
<tr>
<td>28</td>
<td>Deal with risks that have the most severe potential consequences for patients</td>
</tr>
<tr>
<td>29</td>
<td>Multi-professional</td>
</tr>
<tr>
<td>30</td>
<td>Promotes interprofessional discussions and consensus.</td>
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</tbody>
</table>
**Prioritization of patient safety projects**

- **Severity x probability**
- **Cost x effectiveness**

**Evaluation des actions d'amélioration de la sécurité des patients**

- **Visibility x effectiveness**
- **Probability x severity**

**Support from Hospital Federation**
Leadership for Quality and Safety

- Human resources, people and team development
  - Include quality and safety in all personnel introduction programs
  - Agree policies with professional groups and unions on reporting
  - Provide quality and safety training to middle managers and leaders
  - Develop top and middle management teams
  - Develop the ability of quality experts to translate and apply methods locally
  - Provide quality methods training and development
  - Ensure managers and experts apply latest knowledge


Leadership for Quality and Safety

- Other actions
  - Use your boundary-spanning or mediating role to identify and overcome boundary problems for patients
  - Identify and support physician enthusiasts for quality and safety
  - Improve relations with physicians through regular contact, discussion about clinical outcomes
  - Talk about patient cases,— not to criticize but to show where there is room for improvement. Tell stories.
  - Regularly visit different units to discuss needs, incidents, safety issues
  - Listen and ask more questions than give instructions: why do we do it this way, do others do it better, is it possible there is a better way, how do we know?!

Leadership Engagement

- Leadership engagement is key to the success of Quality and Safety Improvement Programs
- So what should be the strategy if leadership is not (or not sufficiently) engaged?

Hospital management provides a work climate that promotes patient safety
% of positive replies (“strongly agree” and “agree”) by hierarchical level
Hospital Survey on Patient Safety Culture within a hospital in Switzerland
The actions of hospital management show that patient safety is a top priority
% of positive replies ("strongly agree" and "agree") by hierarchical level
Hospital Survey on Patient Safety Culture within a hospital in Switzerland

Levels of context
What drives leaders? A few hypotheses …

- **Clinical leaders**
  - Patient outcomes
  - Patient satisfaction
  - Clinical ethics
  - Career, influence
  - Money (with large differences between countries and individuals)
  - Fear of potential litigation

- **C-Suite**
  - Value, return on investment
  - Hospital’s image
  - Own image
  - Patient outcomes, patient satisfaction
  - Career, influence
  - Fear of media
  - Money (with large differences between countries and individuals)

- **Board of trustees**
  - Corporate responsibility
  - Business ethics
  - Value, return on investment
  - Hospital’s image
  - Fear of media
  - Patient outcomes, patient satisfaction

Tools, levers and tips to engage your leaders

- Data on clinical quality and harm.
- Potential savings, value, business case.
- Executive safety walkrounds.
- Disclosure policy
- Transparency policy on results, indicators
- Patient stories
- Bring your boss to the International Forum (or similar)
- Bring a delegation of leaders
- Arrange meetings at the Forum with influential leaders
- Get one Board member to influence others
AIDA – Social marketing

Attention
- Attract leader’s attention
- Make the leader aware of the problem
- Target emotions

Interest
- Spark the leader’s interest
- Provide key data
- Show benefits of engagement

Desire
- Convince through a plan, with business case, decreased harm
- Show how the plan leads to better situation for the hospital and the leader

Action
- Structured proposal, support for implementation
- Smaller step ready as plan B (pilot)

AIDA – Example for leadership engagement

Attention
- Leadership walkrounds
- Patient stories

Interest
- Internal dashboard, data
- Published clinical indicators
- Key literature to show potential

Desire
- Business case: investment, return
- Convincing action plan, project
- Peer success, competition

Action
- Project proposal
- Budget: investment and return
Improvement, Spread, Scale-Up and Sustainability

Frank Federico
Executive Director
Institute for Healthcare Improvement
Why Are Processes Not Reliable?

- Individual Autonomy
- Focus on benchmark performance
- Over-reliance on training, vigilance and hard work
- Expecting that having a policy will result in improved reliability

The Reliability Design Strategy

- Prevent initial failure using intent, simplification and standardization
- Identify defects (using redundancy) and mitigate
- Measure and then communicate learning from defects back into the design process
Improvement

- We cannot solve problems with the same thinking that created those problems (Einstein)
- Must have an improvement method
- Solution should get to the cause of the problem
Tools in the Toolkit

- Lean
- Six Sigma
- Model for Improvement
- HRO
- DMAIC
Aim

1° Theory of what drivers will achieve desired results

2° Theory of what actions will achieve desired results

Detailed Aim: how much by when

Outcomes

Primary Drivers
Processes, Rules of Conduct, Structure

1. Provide reliable, timely, care using evidence-based therapies
2. Integrate patient and family into care
3. Develop infrastructure that promotes quality care
4. Create a collaborative team and safety culture

Secondary Drivers
Components, Activities

Reliable Process of Care:
- Prevent ventilator complications
- Prevent CL complications
- Prevent Inf. & cross contamination
- Proper Sepsis Rec. and Rx

Involve Pt./Family into Goal Setting Process
Communications Team & Family
Clarify care wishes and EOL planning
Appropriate Infrastructure to Provide Reliable, Evidence Based Care
Improve ICU throughput
Competent staff with knowledge in QI Work
Reliable planning, communication and collaboration of a multi disciplinary team
Model for Improvement

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes can we make that will result in an improvement?

Act
Plan
Study
Do

The Sequence of Improvement

- Make part of routine operations
- Test under a variety of conditions
- Theory and Prediction
- Implementing a change
- Developing a change
- Testing a change
- Developing a spread plan
- Sustaining improvements and spreading changes to other locations
Spread and Scale-Up: Different?

Spread: implementing a change from one location to another with only local customization
Change: Staff assess VTE risk on admission and physician orders treatment

Scale-Up: implementing the change AT SCALE requires infrastructure changes
Change: A pharmacist now manages VTE assessment and treatment

Is your project/solution scalable?
Spread

- Think of a change you have implemented.
- Have you been able to spread this change everywhere you want?
- Were you able to sustain the initial improvements at all spread locations?

Planning for Spread

- How many areas?
- Who is ready for the change?
- How will the new areas be prepared and taught?
- How much local adaptation will you allow?
The Seven *Spreadly* Sins
(If you do these things, Spread efforts will fail!)

- **Step #1** Start with large pilots
- **Step #2** Find one person willing to do it all *(Annie Effect)*
- **Step #3** Expect vigilance and hard work to solve the problem
- **Step #4** If a pilot works then spread the pilot unchanged
- **Step #5** Require the person and team who drove the pilot to be responsible for system-wide spread
- **Step #6** Look at process and outcome measures on a quarterly basis
- **Step #7** Early on expect marked improvement in outcomes without attention to process reliability
Scale Up

- Providing the infrastructure to ensure that the change will be tested, implemented and sustained

- How much infrastructure will be needed to ensure that the process will work throughout the organization?
- What training will be needed?
- How many staff will be needed?
- How will we know if the changes continue to contribute to improvement or the new desired state?
Sustainability

- The new way of work is how we continue to do our work
- Someone is monitoring if the processes are no longer reliable
- Adjustments are made to the process
- Someone is assigned responsibility for monitoring new advancements in science

Sustainability

- Has the new way been made the ‘way we work here’? 
- What is your sustainability plan? 
- Who will monitor performance? 
- How will you monitor? 
- How will you ensure that the staff do not lose momentum? 
- Who will monitor the latest scientific advancements?
Emergency General Surgery – an Improvement Tale

Death after emergency intra-abdominal surgery

What has been achieved?

Association of Surgeons Report 2007

Emergency Laparotomy network May 2010

NCEPOD report on Elderly November 2010

Ombudsman’s report on Care of the Elderly in Acute Hospitals

RCS Standards for Unscheduled Care April 2011

Anaesthesia

Editorial: Emergency Surgery in the Elderly

Department of Health guidelines September 2011 on the “High Risk Surgical Patient”

RCOA working party to achieve action – ongoing

NCEPOD report December 2011

NELA Network and HQIP

Emergency Laparotomy Network

BJA Saunders et al 2012

1,835 patients from 35 NHS hospitals

Unadjusted 30-day mortalities:

- **14.9 % overall**
- **24.4 % if over 80 yrs**

Compared with:

- Elective colorectal resection 2.7 %
- Oesophagectomy 3.1 %
- Gastrectomy 4.2%
- Liver met. resection 1 %
When is death inevitable after emergency laparotomy?

- NSQIP database
- 37,500 patients
- 30 day mortality 14%
- Variables most associated with death
  - ASA, age, functional status and sepsis

Changing the way we think: understanding the urgency and risk

<table>
<thead>
<tr>
<th>Septic Abdomen/Traditional approach</th>
<th>Septic Abdomen/Active approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic delay</td>
<td>Urgent CT</td>
</tr>
<tr>
<td>Operative delay</td>
<td>ICU for resuscitation</td>
</tr>
<tr>
<td></td>
<td>Volume load/Antibiotics</td>
</tr>
<tr>
<td>Operating Theatre</td>
<td>Operating Theatre</td>
</tr>
<tr>
<td>Vasopressors</td>
<td>Damage control/source control</td>
</tr>
<tr>
<td>Traditional surgery</td>
<td>ICU Admission</td>
</tr>
<tr>
<td>ICU Admission</td>
<td>Ongoing resuscitation</td>
</tr>
<tr>
<td>MOF</td>
<td>Early death</td>
</tr>
</tbody>
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Adapted from Moore et al Am J Surg 2011
Standardise the pathway

**Current** - Variable, lots of autonomy not owned, poor if any feedback for improvement, constantly altered by individual changes, performance stable at low levels

**Desired** - variation based on clinical criteria, no individual autonomy to change the process, process owned from start to finish, can learn from defects before harm occurs, constantly improved by collective wisdom - variation

Terry Borman, MD Mayo Health System
Emergency Laparotomy Pathway Quality Improvement Care Bundle
Royal Surrey County RUH, Bath
Royal Devon and Exeter South Devon

Patients who require Emergency Laparotomy surgery have a 15–20% risk of dying within 30 days

What is ELPQuiC?
- Multi-centre quality improvement project.
- 5 step care-bundle aimed at improving quality and consistency of care from admission to post operative care.
- Evidence based (RCS England, DoH, NICE, Surviving Sepsis Campaign).
- Continuous prospective audit tracking compliance to the bundle elements and individual patient outcomes.

After 1st December 2012 ALL PATIENTS presenting with acute abdominal conditions THAT MAY REQUIRE EMERGENCY MAJOR SURGERY should be started on the pathway.

For more details please refer to the ELPQuiC bundle posters displayed in key clinical areas.

Emergency Laparotomy?
ELPQuiC

ALL PATIENTS presenting with emergency abdominal conditions THAT MAY REQUIRE EMERGENCY LAPAROTOMY are to be started on the Emergency Laparotomy ER Pathway and comply to the care-bundle goals below.

1. Early Assessment and Resuscitation
   - NEWS within 30mins of arrival in hospital
   - Outreach review if NEWS >=3
   - NRCS surgical review within 30 minutes of referral
   - Measure arterial lactate
   - Prompt fluid resuscitation

2. Early Antibiotics
   - Within 1 hour if there is evidence of SIRS/sepsis
   - Within 3 hours if there is a suspicion of intra-peritoneal sepsis

3. Prompt diagnosis and Early surgery
   - CT scan – ‘Code Emergency Laparotomy’ prompts
     - ‘Next S Que’ prioritisation, scan within 2 hours of booking, verbal report within 1 hour of scan
   - ‘Next S Que’ prioritisation on Emergency Theatre List
   - Knife-ready within 6 hours of decision to operate
   - Consultant surgeon and anaesthetist present in theatre

4. Goal Directed Fluid Therapy
   - Goal Directed Fluid Therapy using cardiac output monitoring
   - Intra-operatively and for 6 hours post-operatively

5. Post-operative Intensive Care for all
   - All patients to be cared for on intensive care
   - If no intensive care bed is available – alternative level 2 area
     (e.g. Post Anaesthetic Care Unit)
   - Goal Directed Fluid Therapy for 6 hours post-operatively
Innovate!
How do other industries do this?

“Preparing for a safe flight and ensuring it leaves on time is analogous to adequate resuscitation and a timely trip to theatre. It is, however, only a small preparatory step to a long journey.”

RUH Bath Emergency Surgery Research Group

Intra-op GDFT (%)

<table>
<thead>
<tr>
<th></th>
<th>Pre-ELPQuIC</th>
<th>Post-ELPQuIC</th>
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<tbody>
<tr>
<td>100%</td>
<td>90%</td>
<td>83%</td>
</tr>
<tr>
<td>90%</td>
<td>48%</td>
<td>49%</td>
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<tr>
<td>80%</td>
<td>54%</td>
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<td>70%</td>
<td>16%</td>
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Post-op ITU (%)

ELPQuiC
emergency laparotomy pathway quality improvement care bundle

Pre-ELPQuiC
Post-ELPQuiC

Post-op ITU (%)

RUH Length of Stay (days)

Pre-ELPQuiC LOS (days)
Mean | Median
19.8 | 12.0

Post-ELPQuiC LOS (days)
Mean | Median
13.9 | 9.0
Pre/ELPQuIC LOS (days)

**Pre-ELPQuIC LOS (days)**
- Mean: 25.8
- Median: 14.0

**Post-ELPQuIC LOS (days)**
- Mean: 13.9
- Median: 7.0

Pre/post ELPQUIC RUH only

**No of Pts/deaths**

- **Baseline**
  - No of Pts: 175
  - No of Deaths: 24

- **Pathway**
  - No of Pts: 213
  - No of Deaths: 19
RUH Mortality Current State

Mortality at 30 days

What will improvement look like?

- 50,000 emergency laparotomies per year
  - 15% mortality = 7500 deaths

- Best 25% of Trusts
  - 3750 lives saved

- Best 10% of Trusts
  - 5000 lives saved
Improving patient safety

What we know about how to improve quality and safety in hospitals
Mary Dixon Woods www.health.org

“The Aggregation of Marginal Gains”

“If a mechanic sticks a tyre on, and someone comes along and says it could be done better, it’s not an insult - it’s because we are always striving for improvement, for those 1% gains, in absolutely every single thing we do.”

Sir David Brailsford; Coach British Cycling Team
The names of the patients whose lives we save can never be known. Our contribution will be what did not happen to them. And, though they are unknown, we will know that mothers and fathers are at graduations and weddings they would have missed, and that grandchildren will know grandparents they might never have known, and holidays will be taken, and work completed, and books read, and symphonies heard, and gardens tended that without our work, would never have been.

Thank You

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