A PRACTICAL APPROACH TO AUDIT

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Palm Cove

WHAT IS AUDIT?

RACS

- A systematic critical analysis of the “Quality” of surgical care
- Reviewed by peers
- Compared against explicit criteria or recognised standards, performance indicators and outcome parameters
- Used to improve surgical practice
  - A feedback mechanism to reliably redress problems

August 2017
AUDIT CRITICAL FEATURES

- Definition of quality
- Explicit criteria
  - Recognised standards?
  - Performance indicators?
  - Outcome parameters?
  - Process???
- Feedback Mechanism
  - How to reliably introduce new process (or a change in practice)

QUALITY

- What is it?
- Is it possible to “inspect in” quality?
DOES AUDIT RELIABLY IMPROVE QUALITY?

ASSUMPTIONS

- All (or most) poor quality processes lead to detectable adverse events (outcome)
- The adverse events are reliably tracked to the root cause
- The adverse events cover the domains of quality
- The prescribed standards are agreed and explicit
- Once a defective process is identified it is corrected with a high degree of reliability
- Fixing one part of a defective process will solve the problem
- Non-operative events are recorded with the same rigor as interventional
DOES AUDIT RELIABLY IMPROVE QUALITY?

**ASSUMPTIONS**

- All (or most) poor quality processes lead to detectable adverse events (outcome) X
- The adverse events are reliably tracked to the root cause X
- The adverse events cover the domains of quality X
- The prescribed standards are agreed and explicit X
- Once a defective process is identified it is corrected with a high degree of reliability X
- Fixing one part of a defective process will solve the problem X
- Non-operative events are recorded with the same rigor as interventional X

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DOES AUDIT RELIABLY IMPROVE QUALITY?

**PROBLEMS IDENTIFIED**

- Only looks at outcome not process
- Poor quality agreed standards
- Low frequency of some events with poor process
- No effective method to change practice reliably
- Does not cover the domains of quality
- Rarely measure for appropriateness
- Hard to identify the source of the problem
- Hindsight bias
- An opportunity to denigrate or embarrass colleagues
HINDSIGHT BIAS

• Judgment of the likelihood of an event is estimated as significantly higher when viewed in retrospect.
• Tendency to be unaware of the modifying effect of outcome information.
• The evaluation of a process in retrospect is usually more severe when the outcome is poor
  • this occurs despite caution requested to guard against it.

“...reporting an outcome produces an unjustified increase in its perceived predictability, for it seems to have appeared more likely than it actually was.”

Fischoff B. J Experimental Psychology: Human Perception and Performance, 1975
HINDSIGHT BIAS

• Tendency to overestimate what would have known in foresight
• Overestimate what others would have known in foresight
• Very powerful and compelling
• Misremember what they themselves knew in foresight
  -reconstructive memory: memories can be changed by subsequent information

EFFECT OF OUTCOME ON PHYSICIAN JUDGEMENTS OF APPROPRIATENESS OF CARE

• 112 anaesthetists examined 21 cases involving anaesthetic outcomes
• Original outcome either temporary or permanent
• Generated an alternative scenario identical in all respects except the outcome was reversed
• The original and alternate matching pairs were randomly assigned for review

Caplan, Posner and Cheney, JAMA, 1991
DISTRIBUTION OF REVIEWERS’ RATINGS OF APPROPRIATENESS OF CARE

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of Ratings*</th>
<th>Appropriate</th>
<th>Less Than Appropriate</th>
<th>Impossible to Judge</th>
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<tbody>
<tr>
<td>Original Temporary Outcome</td>
<td>728</td>
<td>67</td>
<td>19</td>
<td>14</td>
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<tr>
<td>Alternate permanent outcome</td>
<td>728</td>
<td>36</td>
<td>33</td>
<td>31</td>
</tr>
<tr>
<td>Magnitude of change, percentage points</td>
<td>...</td>
<td>-31t</td>
<td>+14t</td>
<td>+17t</td>
</tr>
<tr>
<td>Original permanent outcome</td>
<td>448</td>
<td>28</td>
<td>39</td>
<td>33</td>
</tr>
<tr>
<td>Alternate temporary outcome</td>
<td>448</td>
<td>56</td>
<td>27</td>
<td>17</td>
</tr>
<tr>
<td>Magnitude of change, percentage points</td>
<td>...</td>
<td>+28t</td>
<td>-12t</td>
<td>-16t</td>
</tr>
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</table>

IMPLICATIONS OF HINDSIGHT BIAS

- Unperceived hindsight bias can seriously impair our ability to judge the past or learn from it (Fischhoff)
- Medicolegal opinions and litigation
- M & M meetings
- Clinical Review Committees
- RCA
- Interpretation of audits
- Modification of own practices
- Second opinions- diagnostic accuracy compromised by knowledge of previous diagnoses (Arkes et al, 1981)
- Tendency for investigations of poor outcomes in complex environments to conclude that human error was a major factor under-estimating the influence of multiple stimuli incoming during the event
THE QUALITY OF HEALTH CARE DELIVERED TO ADULTS IN THE USA

McGlynn EA et al,
N Engl J Med 2003

USA HEALTH CARE QUALITY STUDY

- Developed 439 quality indicators across 25 conditions
- Assessed health care delivered
  - case note review
  - phone interview
- 6712 participants
- 98,649 events
ADHERENCE TO QUALITY INDICATORS, OVERALL AND ACCORDING TO TYPE OF CARE AND FUNCTION

<table>
<thead>
<tr>
<th>Variable</th>
<th>No of Indicators</th>
<th>Percentage of Recommended Care Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall care</td>
<td>439</td>
<td>54.9</td>
</tr>
<tr>
<td>Type of care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preventive</td>
<td>38</td>
<td>54.9</td>
</tr>
<tr>
<td>Acute</td>
<td>153</td>
<td>53.5</td>
</tr>
<tr>
<td>Chronic</td>
<td>248</td>
<td>56.1</td>
</tr>
<tr>
<td>Function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screening</td>
<td>41</td>
<td>52.2</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>178</td>
<td>55.7</td>
</tr>
<tr>
<td>Treatment</td>
<td>173</td>
<td>57.5</td>
</tr>
<tr>
<td>Follow-up</td>
<td>47</td>
<td>58.5</td>
</tr>
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</table>

USA HEALTH CARE QUALITY STUDY

- Greater proportion errors of omission
  - 46.3% participants did not receive recommended care
  - 11.3% participants received care that was not recommended and potentially harmful
THE QUALITY IN AUSTRALIAN HEALTHCARE STUDY

**Health Care**

The Quality in Australian Health Care Study

Ross McL Wilson, William B Runciman, Robert W Gibbard, Bernadette T Harrison, Liza Newby and John D Hamilton

A review of the medical records of over 14,000 admissions to 28 hospitals in New South Wales and South Australia revealed that 16.6% of these admissions were associated with an “adverse event”, which resulted in disability or a longer hospital stay for the patient and was caused by health care management; 51% of the adverse events were considered preventable. In 77.1% the disability had resolved within 12 months, but in 13.7% the disability was permanent and in 4.8% the patient died. (Med J Aust 1996; 165: 458-471)

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**QAHCS - Error causing AEs**

- **Omission**: 50%
- **Commission**: 20%
- **Unknown**: 10%
CARE TRACK: ASSESSING THE APPROPRIATENESS OF HEALTH CARE DELIVERY IN AUSTRALIA

Runciman et al  MJA 197:100-105, 2012

Appropriate care delivered

• 57% of encounters in the sample received appropriate care

• Levels of appropriate care varied between HCPs with compliance being as high as 80% for some healthcare practices and as low as 32% for others
### High evidence compliance results

<table>
<thead>
<tr>
<th></th>
<th>% compliance</th>
<th>No. of eligible encounters</th>
</tr>
</thead>
<tbody>
<tr>
<td>CareTrack</td>
<td>57% (95% CI 54%-60%)</td>
<td>35,573</td>
</tr>
<tr>
<td>Level 1 or Level 2 evidence</td>
<td>56% (95% CI 43-70%)</td>
<td>4,551</td>
</tr>
<tr>
<td>Grade A or B recommendations</td>
<td>54% (95% CI 49-60%)</td>
<td>6,431</td>
</tr>
</tbody>
</table>

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**IN THE PURSUIT OF QUALITY PROBLEMS NEEDING SOLUTIONS**

- **Safety of Care**
  - First do no harm (audit as safety net)
  - the anti-negative
- **Ensuring all patients receive the appropriate care**
  - Quality beyond safety (the other 5 domains)
  - the positive
- **Build in quality rather than inspect it in**
BUILDING IN QUALITY

- Deliberate design of systems and processes
- Make expectations explicit (both process and outcome)
- Obtain consensus as a unit (powerful culture change agent)
- Collaborate with other providers/staff eg ED, JMS, radiology, anaesthesia, nursing, GP etc
- Checklists and protocols
- Design audit processes to measure according to the agreed standards (in addition to traditional M&M- the safety net)
- Measure for improvement (not judgement)
- Audit then becomes meaningful quality control measuring both process and outcome
- The checklists and protocols become the means to change practice more reliably
FRACTURED NECK OF FEMUR

- Ongoing saga
- Protocol commenced in 2003
  - good process results immediately

CHANGES TO PRACTICE
PRE AND POST PROTOCOL IMPLEMENTATION
NEXT ISSUE – TIME TO THEATRE

- Patients getting to theatre late
  - ~ 40% within 24 hours
  - ~ 70% within 48 hours

INTERVENTIONS IN 2005

- More consistent guidelines for pre-op reviews
- Better management of coagulation issues – active reduction of INR
- Better process for theatre booking
- More theatre time
PERCENTAGE OF NOF# PATIENTS OPERATED WITHIN 24 OR 48 HRS OF THEIR ADMISSION

NEXT ISSUE - MORTALITY

- 2008 CPI project
- Inhospital mortality 6.5%
INTERVENTIONS ADDED IN 2008

Anaesthetist items
• Early review of patient by anaesthetist in ED
• Use of analgesic nerve blocks, instead of parenteral opiates
• Anaesthetist review in recovery before being released to the ward
• Morning review by trauma anaesthetist

INTERVENTIONS ADDED IN 2008

Other items
• Medical review on the ward after 6 hours
• Blood tests 6 hours post-op to pick up any anaemia problems
• Increased multidisciplinary involvement in patient care
• Orthogeriatrics
INTERVENTIONS ADDED IN 2009

• Pre-op
  – IDC insertion
• Intra-operatively
  – Recovery 4hrs
• Post-op
  – Fluid management
  – 1/24 urine measures
  – Close observation
  – Medical review 1/24, 4/24 and at 2000

INTERVENTIONS FOR 2016

• Focus on length of stay……..
Reassurance that increasing use of thromboprophylaxis is not resulting in increased in-hospital bleeding.
BREAST RECONSTRUCTION WITH PROSTHESIS

• Breast reconstruction after mastectomy for cancer
• Standard M&M process identified higher than anticipated complication and infection rate
• Complications 33%
• Infection 7%

BREAST RECONSTRUCTION WITH PROSTHESIS

• Defined Ideal Process
  - Skin prep
  - Antibiotic
  - Glove change before handling prosthesis
  - Method of handling prosthesis
  - Closure
  - Use of drain
  - Dressing

Agreed and implemented by all plastic surgeons
BOWEL RESECTION INTRA-OPERATIVE MANAGEMENT

Preoperative management
Refer to preoperative management protocol for elective patients
Contact stoma therapist to site elective patients as per preoperative protocol
All emergency or delayed emergency patients likely to require bowel resection should be sited for a stoma if a nurse with stoma therapy skills is available

Intraoperative management – anastomosis
- Leak test a rectal anastomosis
- Defunction (loop ileostomy or colostomy) a mid-rectal and/or double stapled rectal anastomosis
- Defunction a rectal anastomosis which requires repair of a defect identified on air/betadine testing
- Excise top of rectal stump during Hartmann's reversal, allowing end to end reanastomosis

Intraoperative management – no anastomosis
All decision making should occur in discussion with the relevant consultant

Patient factors
- Avoid anastomosis if a significant vasculopathy, on steroids, or malnourished
- Avoid anastomosis if ASA IV or returning to ICU on inotropes or intubated

Disease factors
- Avoid anastomosing dilated bowel (or washout & defunction if anastomosing dilated colon)
- Avoid anastomosis in Hinchey III parietal
- Avoid anastomosis in colonic Crohn's
- Avoid anastomosis during emergency surgery for a Crohn's ileocaecal phlegmon (double-barrelled stoma optimal)
- Drainage of rectal stump after emergency sub-total colectomy
Anastomotic leak rate decreased from 6% to 3%

IMPROVING MANAGEMENT OF PATIENTS WITH CHOLECYSTITIS

Aim:
- To standardise management of emergency cholecystitis patients, reducing length of stay and improving the appropriateness of care

Key measures:
- Length of stay
- Antibiotics as per protocol
- Time from admission to theatre
- % treated surgically during admission
- Ultrasound within 24 hours (or prior to admission)

Interventions:
1. Development and implementation of agreed evidence based protocol (June 2006)
4. Emergency theatre for GI surgery implemented (July 2012)
5. Trial of criteria led discharge (Feb 2013)
6. Protocol review (June 2013)
7. Medical student audit (2013)

Improvements made:
- Length of stay has reduced by 20% (median 5 to 4 days)
- A 44% reduction in time from admission to theatre (median 66 to 37 hours)

Next steps:
ACUTE BILIARY PRESENTATION

Patient presents to Emergency Department

Review by ED Registrar and referral to General Surgical Registrar

LFTs - NAD/ minor abnormality
Ultrasound - gallstones

LFTs - abnormal
Jaundice
Ultrasound - dilated ducts / stone

**Amylase**

Glasgow Criteria
CRP

Fever
WCC
Persisting /localizing tenderness RUQ >24 hours

Yes
Cholecystitis

No
Biliary Colic:

Cholecystitis

Start Cholecystitis Clinical Protocol
IV Antibiotics

Cholecystectomy
(During Admission)

Cholecystectomy
(Delayed)

Start Biliary Colic Clinical Protocol

Cholecystectomy

Start Cholangitis Clinical Protocol

ERCP
Successful
Unsuccessful

Cholecystectomy

Cholangitis

Jaundice

Duct stone + jaundice

Yes
Cholangitis

No
Biliary Pancreatitis

Severe
Mild (Settles Quickly)

Early ERCP
(Management Dependent on Outcome + Complications)

Cholecystectomy
(During Admission)

Cholecystectomy
(Delayed)

LAPAROSCOPIC CHOLECYSTECTOMY FOR ACUTE CHOLECYSTITIS
COLLECTED SERIES 4054 PATIENTS - 19 SERIES

Conversion# 15.7%
Bile duct injury 0.42%
Bile leak 1.5%

(#2909 patients)
FMC CHOLECYSTECTOMY 2003-2006 (1102)

<table>
<thead>
<tr>
<th></th>
<th>ELECTIVE</th>
<th>EMERGENCY</th>
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<tbody>
<tr>
<td>Lap</td>
<td>422</td>
<td>468</td>
</tr>
<tr>
<td>Lap-open</td>
<td>17</td>
<td>3.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.9%</td>
</tr>
<tr>
<td>Open</td>
<td>71</td>
<td>13.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.3%</td>
</tr>
<tr>
<td></td>
<td>510</td>
<td>592</td>
</tr>
<tr>
<td>Bile leak</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1%</td>
</tr>
</tbody>
</table>

IMPROVING MANAGEMENT OF PATIENTS WITH CHOLECYSTITIS

- [Graph showing changes in length of stay for emergency and elective cholecystectomy]
- [Graph showing time from admission to theatre for emergency and elective cholecystectomy]
- [Bar graph showing percentage of appropriate care for cholecystitis in 2010 and 2013]
Mortality and Morbidity of patients undergoing Emergency General Surgery at FMC

“An Analysis of Actual versus Predicted according to NSQIP calculator”

DR. AISHA KHALID
Mortality: Actual Vs Predicted

- Actual: 1.42%
- Predicted: 6.60%

Was DVT prophylaxis (LMWH) consistent with the protocol?

- Incidence of DVT/PE in general surgery patients has remained less than 1% for the past 9 years.
DIVISIONAL MORTALITY RATE

IMPROVE AND SUSTAIN ACROSS ALL THE DOMAINS

Accessible
- OPD referral management guidelines
- Preadmission pathways within SALHN
- Surgical review in ED
- Gastroenterology waiting list
- Outpatient walk-in clinic

Multiple domains of quality
- Divisional management structure
- Generalist structure
- SLS reporting and Trends for SAPHORN
- Infection control

Effective
- Early Recovery After Surgery
- NOGIPR introduction for all general surgery emergency cases

Acceptable
- Fractures
- Patient satisfaction
- Aboriginal/Invisible
- Improved management of patients (post cardiac

Safe
- Aseptic technique (seven step)
- Surgical safety checklist (including EPAS auditing)
- High risk peri-operative services
- Mortality review including Advanced care directives
- CRI risk management (ETN, Neuros and Ortho)
- RGH patient deterioration

Appropriate
- Pre-op anaemia management
- Surgical site infection and prophylactic antibiotics
- Malnutrition identification and management
SUMMARY
AUDIT AND QUALITY

- Understanding what quality is
  - For the surgeon
  - For the patient

- “Design” systems for quality

- Make the quality parameters explicit
  - Outcome
  - Process
  - Structure

- Audit is the “Quality Control” not the mechanism to “inspect in” quality

- Measurement – flow charts

- Need systems to implement new steps or change old steps

August 2017