Waste Not: Want Not

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Primum Non Nocere

1. Do the patient no (net) harm
2. Do the staff no harm
3. Do the environment not too much harm
4. Minimise the harm to the budget

In an efficient health care system, resources are used to get the best value for the money spent. The opposite of efficiency is waste, the use of resources without benefit to the patients a system is intended to help. There are at least two ways to improve efficiency:

1. reduce quality waste, and
2. reduce administrative or production costs.

Waste framework - 1

Figure 1.1. Three categories of waste mapped to actors involved and drivers

- **Wasteful clinical care**
  - Ineffective and inappropriate (low value) care
  - Preventable adverse events
  - Duplication of services

- **Operational waste**
  - Paying an excessive price
  - Discarding unused inputs
  - Overusing high cost inputs

- **Governance-related waste**
  - Ineffective administrative expenditure

**Actors**
- Patient
- Clinician
- Manager
- Regulator

**Drivers**
- Errors and sub-optimal decisions
- Poor organisation and co-ordination
- Poor incentives
- Intentional deception

**Unintentional**
- Deliberate

Waste framework - 2

Waste in the Health Care System

- Administrative
  - Transactions - Related
  - Other Waste

- Operational
  - Duplication of Services
  - Inefficient Processes

- Clinical
  - Cost - Ineffective
  - Errors
    - Wages
    - Roles
    - Procurement
    - Rework
    - Adverse Events

- Detrimental to Health
  - Excess Diagnostics
  - Excess Procedures
  - Disinvestment

Waste *action* framework

- Measure appropriately
- Clarify accountability
- Provide data/feedback
- Expect action
- Hold to account
We need to improve the data we have (but we can use it in the meantime)

<table>
<thead>
<tr>
<th>Accurate</th>
<th>Relevant</th>
<th>Accessible</th>
<th>Understandable</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Complete elementary data cleaning before release</td>
<td>● Add diagnostic results to the data sets over time</td>
<td>● Publish reports on complications in both public and private hospitals</td>
<td>● Create and include in the data set grouping variables, such as CHADx, HACs and DRGs</td>
</tr>
<tr>
<td>● Link and analyse admissions (and readmissions) for the same patient</td>
<td>● Link state collections of routine data regularly with PBS and Medicare data (every six months) and death registrations (every month)</td>
<td></td>
<td>● Use data aids to enhance the transparency of reporting for consumers and health professionals</td>
</tr>
<tr>
<td>● Invest in regular, independent and published audits of the quality of routine data</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Most variation analyses look at geographic variation and find large disparities …

-125%  -100%  -75%  -50%  0%  25%  50%  75%  100%  125%  150%

MLA procedure rate: difference from national average

Source: Grattan Institute analysis, 2010-11 data
We combine variation and clinical effectiveness to identify troubling patterns of care

- Unit of analysis is hospitals (not patient geography)
- Compare hospitals that do the procedure and treat the diagnostic group (not all hospitals)
- Compare procedure rates among patients with relevant diagnosis (not all admissions)

1. Procedures w/o diagnosis codes
2. Procedures w. diagnosis codes
3. Do-not-do routinely (some patients)
4. Do-not-do (some patients)
5. Do-not-do (all patients)
There are outliers with troubling patterns of care

Proportion of relevant patients getting do-not-do procedure

Proportion of relevant patients getting do-not-do routinely procedure

- Hyperbaric
- Arthroscopy
- Vertebroplasty
- Ovary removal
- Nerve ablation

- Amniotomy
- Episiotomy
- Fundoplication

Hospital Average
Some of our choices

• How much ‘benefit of doubt’ to give?
  o Is a ‘Do Not Do’ a ‘Never Do’?

• Who should initiate investigation for potentially inappropriate care?

• Is it OK for private hospital to be the focus (vs surgeon)

• When should private insurers be able to deny payment?
  o When ACSQHC makes a determination?
  o When clinical review makes a determination?
  o When hospital fails to respond to external review?
What hospitals might do:

- Table the Grattan report (or like) for discussion with the relevant clinical governance group:
  - Do they think any of the DNDs or DNDRs are an issue in your hospital?
  - There are other issues we didn’t look at which are prominent in the public debate (e.g. diagnostic test use). Are they relevant?

- How robust are your clinical governance processes?
  - Is appropriateness of care being systematically monitored?
  - What are the accountability mechanisms for clinical choices?

- NB: I don’t think there are big savings for hospitals here
- NB: I do think this will be an increasing clinical governance issue
The safety of hospital care is not improving over time

Prevalence of at least one complication categorised by common major CHADx+ categories

- Post-procedural complications
- Gastrointestinal complications
- Metabolic disorders
- Unplanned birth interventions
- Cardiovascular complications
- Childbirth complications
- Other

Jan 2013 | Jan 2014 | Jan 2015
The long and winding road…..

Compensation and Professional Indemnity in Health Care

FINAL REPORT
November 1995

Implementing safety and quality enhancement in health care

National actions to support quality and safety improvement in Australian health care

Australian Government Publishing Service
Canberra

Final Report to Health Ministers from the National Expert Advisory Group on Safety and Quality in Australian Health Care
July 1999

GRATTAN Institute
Different ambitions

<table>
<thead>
<tr>
<th></th>
<th>All admissions</th>
<th>Same day admissions</th>
<th>Multiday admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentinel events</td>
<td>0.0012%</td>
<td>Not published</td>
<td>Not published</td>
</tr>
<tr>
<td>Designated ‘Hospital Acquired Complications’ (HACs)</td>
<td>2%</td>
<td>0.001%</td>
<td>5%</td>
</tr>
<tr>
<td>All complications</td>
<td>11%</td>
<td>3%</td>
<td>27%</td>
</tr>
</tbody>
</table>
What should be our ambition?

- All complications: 10.7
- Eliminating HACs: -0.4
- Reducing all HACs to best quartile performance: -1.7
- Reducing all complications to best decile performance: -0.7
- Remaining prevalence of complications: 7.7

HACs only
HACs and other complications
Other complications only
There is considerable variability in rates of complications across hospitals.
And some hospitals are better than others for some patients

- Hospital A
- Hospital B
- Hospital C

50-64 years old
65-74 years old
75+ years old

Excess risk relative to best hospital
Performance varies within states, and within sectors

Excess risk of a complication for all multiday admissions by hospital (excluding obstetric admissions)

NSW

VIC

QLD

WA

SA

ACT, NT, TAS

Private sector

Excess risk of a complication

0 10 20 30 40
The evolution of safety thinking

Safety as secret doctors’ business
- Individual bad apples
- Individual case review e.g. Mortality & Morbidity meetings
- Protection of quality review processes

Safety is hospital wide issue
- ‘Systems approach’
- Incident reporting systems
- ↑ role of nurses
- Government agencies

Safety is a public issue
- Public reporting
- Epidemiology of outcomes?

Safety is a payer issue
- Financial incentives
- Focus on value
Lake Wobegone effect

Proportion of board members Victorian LHNs, views on own network relative to average Victorian network

Overall quality of health care
Safe and skilled workforce
Responding to health care incidents

Notes: n = 233, 70% response rate, 96% of networks included
Transparency for whom?

- Professionals:
  - Necessary but not sufficient
  - Not enough (in Victoria at least)
  - Will be increasingly expected e.g. as part of revalidation

- Boards and management
  - Necessary but not sufficient
  - Not enough (in Victoria at least)
Transparency for whom?

- Professionals:
  - Necessary but not sufficient
  - Not enough (in Victoria at least)
- Boards and management:
  - Necessary but not sufficient
  - Not enough (in Victoria at least)
- Public

Public reporting is more likely to be associated with changes in health care provider behaviours than with selection of health services providers by patients or families.

Totten, A. M., et al. (2012) ‘Closing the quality gap: revisiting the state of the science (vol. 5: public reporting as a quality improvement strategy)’, Evidence Reports/Technology Assessments(208.5),

- vs GP
### Public reporting works

#### 1.2.1 Included only patients with cardiovascular diseases

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental Events</th>
<th>Experimental Total</th>
<th>Control Events</th>
<th>Control Total</th>
<th>Weight</th>
<th>Risk Ratio M-H, Random, 95% CI</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peterson 1998</td>
<td>325</td>
<td>8120</td>
<td>310</td>
<td>5170</td>
<td>7.4%</td>
<td>0.67 [0.57, 0.78]</td>
<td>1998</td>
</tr>
<tr>
<td>Dranove 2003</td>
<td>122453</td>
<td>376201</td>
<td>101342</td>
<td>307097</td>
<td>11.4%</td>
<td>0.99 [0.98, 0.99]</td>
<td>2003</td>
</tr>
<tr>
<td>Moscucci 2005</td>
<td>573</td>
<td>69048</td>
<td>175</td>
<td>11378</td>
<td>6.8%</td>
<td>0.54 [0.46, 0.64]</td>
<td>2005</td>
</tr>
<tr>
<td>Carey 2006</td>
<td>1861</td>
<td>87777</td>
<td>2032</td>
<td>85645</td>
<td>10.5%</td>
<td>0.89 [0.84, 0.95]</td>
<td>2006</td>
</tr>
<tr>
<td>Guru 2006</td>
<td>455</td>
<td>22730</td>
<td>330</td>
<td>12691</td>
<td>7.8%</td>
<td>0.77 [0.67, 0.89]</td>
<td>2006</td>
</tr>
<tr>
<td>Joynt 2012</td>
<td>9169</td>
<td>21925</td>
<td>3683</td>
<td>8810</td>
<td>11.2%</td>
<td>1.00 [0.97, 1.03]</td>
<td>2012</td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>585811</strong></td>
<td><strong>430791</strong></td>
<td></td>
<td></td>
<td><strong>55.0%</strong></td>
<td><strong>0.83 [0.77, 0.91]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 134836, 107872

Heterogeneity: Tau² = 0.01; Chi² = 97.05, df = 5 (P < 0.00001); I² = 95%

Test for overall effect: Z = 4.31 (P < 0.0001)

#### 1.2.3 Included patients with a wide range of conditions

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental Events</th>
<th>Experimental Total</th>
<th>Control Events</th>
<th>Control Total</th>
<th>Weight</th>
<th>Risk Ratio M-H, Random, 95% CI</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosenthal 1997</td>
<td>4405</td>
<td>65431</td>
<td>2606</td>
<td>35692</td>
<td>10.9%</td>
<td>0.92 [0.88, 0.97]</td>
<td>1997</td>
</tr>
<tr>
<td>Clough 2002</td>
<td>12442</td>
<td>195656</td>
<td>45445</td>
<td>660508</td>
<td>11.3%</td>
<td>0.92 [0.91, 0.94]</td>
<td>2002</td>
</tr>
<tr>
<td>Jha 2012</td>
<td>17683</td>
<td>137287</td>
<td>143357</td>
<td>1069034</td>
<td>11.4%</td>
<td>0.96 [0.95, 0.97]</td>
<td>2012</td>
</tr>
<tr>
<td>Ryan 2012</td>
<td>85956</td>
<td>856216</td>
<td>179352</td>
<td>1474421</td>
<td>11.4%</td>
<td>0.83 [0.82, 0.83]</td>
<td>2012</td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>1254590</strong></td>
<td><strong>3239655</strong></td>
<td></td>
<td></td>
<td><strong>45.0%</strong></td>
<td><strong>0.91 [0.83, 0.99]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 120486, 370760

Heterogeneity: Tau² = 0.01; Chi² = 393.73, df = 3 (P < 0.00001); I² = 99%

Test for overall effect: Z = 2.12 (P = 0.03)

Total (95% CI): 1840401, 3670446, 100.0%

Risk Ratio M-H, Random, 95% CI: 0.86 [0.80, 0.92]

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Campanella, P., ey al. (2016) 'The impact of Public Reporting on clinical outcomes: a systematic review and meta-analysis', *BMC Health Services Research, 16*(296),
### CHADx+ classes with highest incremental cost per episode (Minimum 10 episodes)

<table>
<thead>
<tr>
<th>CHADx+</th>
<th>Description</th>
<th>Average incremental cost per episode</th>
<th>Number of episodes with this CHADx+</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.19</td>
<td>Hospital-acquired abscesses</td>
<td>$33,700</td>
<td>198</td>
</tr>
<tr>
<td>1.13</td>
<td>Complications of transplants</td>
<td>$31,300</td>
<td>490</td>
</tr>
<tr>
<td>4.03</td>
<td>Sepsis due to staph</td>
<td>$24,000</td>
<td>519</td>
</tr>
<tr>
<td>3.01</td>
<td>Falls with fractured femur</td>
<td>$20,400</td>
<td>42</td>
</tr>
<tr>
<td>3.05</td>
<td>Injury due to assault</td>
<td>$20,000</td>
<td>166</td>
</tr>
<tr>
<td>8.02</td>
<td>Pressure injury Stages 3 &amp; 4</td>
<td>$19,200</td>
<td>1,083</td>
</tr>
<tr>
<td>1.08</td>
<td>Disruption of wound</td>
<td>$18,300</td>
<td>2,034</td>
</tr>
<tr>
<td>10.06</td>
<td>Patient self harm</td>
<td>$15,200</td>
<td>868</td>
</tr>
</tbody>
</table>

**Notes:** 2014-15, public hospitals, acute and newborn care, multiday episodes
<table>
<thead>
<tr>
<th></th>
<th>Complication</th>
<th>Cost (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Post-procedural complications</td>
<td>$307m</td>
</tr>
<tr>
<td>2</td>
<td>Adverse drug events</td>
<td>$58m</td>
</tr>
<tr>
<td>3</td>
<td>Accidental injuries</td>
<td>$58m</td>
</tr>
<tr>
<td>4</td>
<td>Specific infections</td>
<td>$140m</td>
</tr>
<tr>
<td>5</td>
<td>Cardiovascular complications</td>
<td>$206m</td>
</tr>
<tr>
<td>6</td>
<td>Respiratory complications</td>
<td>$122m</td>
</tr>
<tr>
<td>7</td>
<td>Gastrointestinal complications</td>
<td>$105m</td>
</tr>
<tr>
<td>8</td>
<td>Skin conditions</td>
<td>$136m</td>
</tr>
<tr>
<td>9</td>
<td>Genitourinary complications</td>
<td>$59m</td>
</tr>
<tr>
<td>10</td>
<td>Hospital-acquired psychiatric states</td>
<td>$63m</td>
</tr>
<tr>
<td>11</td>
<td>Early pregnancy complications</td>
<td>-$2m</td>
</tr>
<tr>
<td>12</td>
<td>Labour, delivery and postpartum complications</td>
<td>$70m</td>
</tr>
<tr>
<td>13</td>
<td>Perinatal complications</td>
<td>$155m</td>
</tr>
<tr>
<td>14</td>
<td>Haematological disorders</td>
<td>$87m</td>
</tr>
<tr>
<td>15</td>
<td>Metabolic disorders</td>
<td>$118m</td>
</tr>
<tr>
<td>16</td>
<td>Nervous system complications</td>
<td>$37m</td>
</tr>
<tr>
<td>17</td>
<td>Other complications</td>
<td>$143m</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>$2.16b</strong></td>
</tr>
</tbody>
</table>

as a share of all costs 13%

Notes: 2014-15, public hospitals, acute and newborn care, multiday episodes
Some prostheses have higher revision rates than others
(Total Conventional Hip Prostheses)

FIGURE 3. Scatter plot of hospitals according to the median values of each included hospital group and postoperative mortality rates. PD indicates pancreaticoduodenectomy.
Using data to examine hospitals doing low volumes (Pancreaticoduodenectomy example)

Figure 4: Many hospitals are performing very low volumes of Whipple procedures

Lowest international ‘high volume’ threshold (10-54)

Of 20 hospitals < 10, 4 rural
Recommendations

• ‘Actionability’ of existing data collections needs to be improved
• Publish comparative data for public and private hospitals
• Give clinical teams the tools to use the data to improve their performance
• Get hospital accreditation to pay some attention to complications
• Put financial incentives on hospital management to pay attention to complication rates

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