Emergency Department- Inpatient Interface
The Power of Data

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This is about patients
Day Job

- emergency physician
- Manage ED that treats 60000 of the sickest and most complicated patients in Queensland every year
- $50 million Budget, 85 doctors, 170 nurses, 30 allied health staff
What was the problem?

• Access block and ED overcrowding
  • You wait for ages when you are at your most vulnerable and distressed
  • Expert clinicians run around making space and answering phone calls instead of looking after you
  • You or your family lie in an ED for up to 2-3 days waiting for a bed
  • People die (more than the road toll)
  • Ambulances are not available to come to you
PAH 2011
What is NEAT?

• National Emergency Access Target
• All patients should be admitted or discharged from an ED within 4hrs
• Set by politicians in the UK in response to patient experience complaints
• Adopted in Australia as National Policy in 2011
• Clinicians worried
  • Would faster be bad for patients?
  • How fast is too fast?
  • Are all NEAT interventions the same for patients?
Brisbane's Princess Alexandra hospital has worst national figures for emergency department admission and discharge

Isabelle Matcher
The Courier-Mail
Dowhill 14, 2012 1 3:58AM

The emergency department at Brisbane's Princess Alexandra Hospital has recorded the worst patient admission and discharge rates in the country. PIC: David Kelly

THE Princess Alexandra Hospital has recorded the nation's worst emergency department figures, in terms of the percentage of patients discharged or admitted to a ward within four hours.

A National Health Performance Authority report shows just 33 per cent of patients left the PA's ED within four hours last financial year, compared with the 54 per cent average among all major metropolitan hospitals.

The report, to be released today, also reveals 10 per cent of ED patients requiring admission to a ward at the Princess Alexandra waited more than 36 hours in 2011/12.

It shows the hospital on Brisbane's southside must improve a lot to make the national target of 90 per cent of patients leaving the ED within four hours.

But it is not alone.

The only Queensland public hospital to reach the 90 per cent target last financial year was Goldie...
Measuring the quality of healthcare

• How to measure the quality of care?

**Process measures** (how quickly you build the car)
-time eg NEAT, NEST, time to antibiotics

**Outcome measures** (how well the car runs)
-patient focussed eg deaths, adverse events
How about clinicians?

• Clinicians not interested in process measures (time)
• Clinicians care about outcome measures (patient outcomes)

Can we combine time and process measures?
Patient outcomes....

• Death
• Deterioration (rapid response calls, cardiac arrest)
Emergency HSMR and Inpatient NEAT: An Even More Powerful Association

Slope = -1.802 ± 0.207
Y-intercept = 116 ± 4.689
X-intercept = 64
R² = 0.873
P<0.0001

Aim

To monitor the safety and timeliness of care of patients admitted to hospital from the ED
## PAH NEAT Safety Dashboard

<table>
<thead>
<tr>
<th>NEAT Dashboard Princess Alexandra Hospital</th>
<th>Pre Implementation</th>
<th>Post Implementation</th>
<th>Post Implementation</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
<td>2012</td>
<td>2012 / 2013</td>
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<tr>
<td>Quality and Clinical Outcome Measures</td>
<td>2011</td>
<td>2012</td>
<td>2012 / 2013</td>
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<tr>
<td>Re-presentation to PAH ED &lt; 48 hrs of discharge from ED</td>
<td>3.4 2.8 2.6 2.8 3.1 3.1 3.2</td>
<td>3.4 2.8 2.6 2.8 3.1 3.1 3.2</td>
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<td>Inpatient mortality for patients admitted from PAH ED (%)</td>
<td>2 2.4 2.5 2.6 2.3 2.3 2 2.3 2 1.6 1.7 1.2 1.1 1</td>
<td>2 2.4 2.5 2.6 2.3 2.3 2 2.3 2 1.6 1.7 1.2 1.1 1</td>
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<tr>
<td>PAH Standardised Hospital Mortality Ratio</td>
<td>80 85 85 74 61</td>
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<td>RRT calls to PAH inpatients admitted &lt; 24 hrs from PAH (rate per 1000 admissions)</td>
<td>4.9 8.1 7.3 6.7 9.4 8.3 9.9 9.9 14 13 13</td>
<td>4.9 8.1 7.3 6.7 9.4 8.3 9.9 9.9 14 13 13</td>
<td></td>
</tr>
<tr>
<td>Cardiac Arrest calls to PAH inpatients admitted &lt; 24 hrs from PAH (rate per 1000 admissions)</td>
<td>1.4 0.9 0.9 1 1.1 0.4 1.1 1.4 1 0.8 1.1 0.5</td>
<td>1.4 0.9 0.9 1 1.1 0.4 1.1 1.4 1 0.8 1.1 0.5</td>
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Data Sources

• Local Data Warehouse containing 1.3 million patient records across Metro South

• Draws data directly from source clinical systems to ensure data integrity

• SQL Database utilizing Kimball Dimensional Modelling Architecture

• Development of web-based Cardiac Arrest & RRT data collection systems to align with data requirements
Data availability

• Edis
• RRT
• Cardiac arrest
• HBCIS
• HSMR

Synthesis of data – **working together** rather than disparate sources and scattered time variance.

Pulled it all together based on a clinical need and evidence.
Developing the Clear Dashboard

- Locally developed by Metro South in-house development team
- Dashboard built with Microsoft Report Builder
- Published to SQL Reports Services Server
- Accessed via intranet
- Users have the ability to subscribe to the report and receive automated/regular updates
- Dashboard de-coupled from Metro South Data Warehouse to improve scalability and integration to other Health Services
Implications

- We now have a way to measure outcome consequences of ED-inpatient interface, and ED access process changes
Accurate, Timely, Clinically relevant data allowed

- Culture change
  - Redefined what it means to do a good job
- Organizational focus on outcomes
  - Changed hospital priorities based on observed outcome changes
- Courage to try process change
  - Because any adverse outcome signals can be detected early, and processes adjusted.
Dashboard Rollout Current State

• Functioning Live (3)
  • PAH, QEII, Redland

• Technically Complete, ready for Clinical Implementation (10)
  • Nambour, Caloundra, Gympie, Kilcoy, TPCH, RBWH, Caboolture, Redcliffe, Kilcoy, Logan

• In progress (1)
  • Cairns

• Initial Interest expressed (3)
Merit Award:
CLEAR ED - Inpatient Dashboard PA Hospital
Power of Collaboration- a little bit of IT expertise goes along way when smartly applied.

• Problem
  • Important to clinicians
  • Defined by clinicians in conjunction with IT experts

• Answer
  • Assisted by expertly presented data
    • reliable, standardised, timely, appropriately displayed
  • Produced by IT experts in conjunction with clinicians

• Solution
  • Derived from the data
  • Implemented by clinicians
    • Must be implementable
    • Track progress