Improving Assessment in Emergency Departments:

Outcomes of the Queensland Accelerated Chest pain Risk Evaluation (ACRE) Project

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Background – the burden of chest pain

- 7.2 million hospital Emergency Department (ED) presentations in 2013-14 to 289 Australian hospitals (AIHW)

- 6-10% for chest pain

- QLD Dept. of Health Statistics 2014:
  - 1.18 million ED presentations to 60 reporting hospitals
  - 77,368 (6.5%) for chest pain
Assessment of Chest pain

- History, examination & ECG
- Biomarker
- Observe
- ECG & biomarker
- High Risk of ACS
- Further management

6-8 hrs
The ED Physician’s Dilemma

- Up to 85% of adult chest pain presentations diagnosed with non-cardiac causes
- Current protocols = Extended ED stays (6-8 hours) or admission for diagnostic workup
- Average time in hospital ~ 20 hours (QLD Health data)
Current Chest pain Risk Stratification

- **Low Risk**: 66%
- **Intermediate Risk**: 33%
- **High Risk**: 1%
## Costs

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>No. of patients</th>
<th>Median Cost per patient</th>
<th>Median LOS (Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>9</td>
<td>$1530</td>
<td>11.5</td>
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<tr>
<td>Intermediate</td>
<td>580</td>
<td>$1849</td>
<td>24.5</td>
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<tr>
<td>High</td>
<td>329</td>
<td>$6452</td>
<td>72.3</td>
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</tbody>
</table>

## Value?

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>No. of patients</th>
<th>Median Cost per patient</th>
<th>No. of ACS events</th>
<th>Cost per ACS event</th>
</tr>
</thead>
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<tr>
<td>Low</td>
<td>9</td>
<td>$1530</td>
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<td>11</td>
<td>$174,191</td>
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<td>329</td>
<td>$6452</td>
<td>92</td>
<td>$31,895</td>
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</table>

2-Hour Accelerated Diagnostic Protocol to Assess Patients With Chest Pain Symptoms Using Contemporary Troponins as the Only Biomarker

The ADAPT Trial

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Christchurch, New Zealand; Brisbane and Melbourne, Australia; Charlotte, North Carolina;
Cleveland, Ohio, San Diego, California; and Singapore
The Accelerated Protocol (ACRE-ADP)

- Risk Stratification to identify suitable patients (approx. 20%): *TIMI score, ECG, Blood test*
- Repeat *ECG and blood tests* at 2 hrs. (vs 6-8 hrs.)
- Can be safely discharged to return for outpatient testing (fewer admissions to await testing)
- No new equipment or tests required
Length of Stay (LOS) Savings

Emergency Department (ED)  Short Stay Unit (SSU) / Ward

4.5 Hrs  20 Hrs

4.3 Hours

ED  SSU / Ward

2.3 Hrs  2.0 Hrs
The ACRE Project: 
**Accelerated Chest pain Risk Evaluation**

- Translate research into practice
- Shorten conventional cycle of: *evidence – guidelines – clinical practice*
- **Stage 1:** Intensive but focused clinical redesign at a pilot site
  - Implement ADP and monitor
    - Clinical outcomes
    - ED Statistics
    - Patient Satisfaction
- Results published 2013

*Short Report*

*Introduction of an accelerated diagnostic protocol in the assessment of emergency department patients with possible acute coronary syndrome: The Nambour Short Low-Intermediate Chest pain project*

Terry George, Sarah Ashover, Louise Cullen, Peter Larsen, Jason Gibson, Jennifer Bilesky, Steven Coverdale and William Parsonage
Nambour General Hospital

- 7 months of data collected
- 27,208 ED attendances
- 6.5% chest pain presentations
- 214 ACRE-ADP (SLIC) suitable (19%)
- No adverse events at 30 days
Median ED LOS

- All chest Pain
- Non-SLIC
- SLIC

Minutes

- June 2012
- July 2012
- August 2012
- September 2012
- October 2012
- November 2012
- December 2012
- January 2013
Patient Satisfaction

‘On a satisfaction scale of 1-10, how would you rate the care you received?’

- 95% rated 7 or above
- 77% rated 9 or above
  - “Couldn’t praise the care more”
  - “They were all over it”
  - “People who work in emergency deserve a medal”
Stage 2: Statewide Roll-out

- Health Innovation Fund
- 21 suitable hospital sites (access to laboratory blood tests)
- 21 target sites = 85% of statewide chest pain presentations
- Stakeholders contacted, meetings and information sessions
- Funding for local project officers
- Statewide data collection and analysis (EDIS project box)
Reach of the ACRE Project

- 21 suitable target sites
  - 16 implemented
  - 3 in advanced planning
  - 2 not implementing

- Including pilot site, 76% of patients presenting to ED with chest pain in QLD will have the opportunity to be assessed under the ACRE Protocol
Uptake of the Protocol

• To June 2015, 5112 patients had been assessed as suitable for ACRE-ADP and undergone fast-tracked assessment
  = 23% of patients presenting with chest pain at participating hospitals
Hospital Length of Stay (LOS)

- 32% reduction from 1238 mins (20.6 hrs) to 837 mins (14 hrs)

- ACRE-ADP patients (24%) LOS = 310 mins (5.1 hrs)

- Non ACRE-ADP LOS = 1208 mins (20 hrs)
Emergency Department LOS

- 11% reduction in total ED LOS
- ACRE-ADP patients LOS = 179 mins
- Non ACRE-ADP patients LOS = 224 mins
- Modest in isolation, but very significant when scaled across sites
Hospital Admissions

- 19% of ACRE-ADP eligible patients admitted
- 69% non ACRE-ADP admitted
Summary

• Chest pain assessment in the ED is a common and costly process.

• Evidence for accelerated, safe assessment strategies exists.

• Translation of research into clinical practice requires resources.
  – Need clinician engagement

• Self-sustaining process with ongoing release capacity
  – ACRE-ADP integrated into usual practice
  – Incorporated into new Statewide Clinical pathways
Thank you for listening

Questions?

Supported by:
- Queensland Department of Health
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