Translation of the ADAPT Accelerated Diagnostic Protocol into clinical practice: Impact on hospital length of stay and admission rates for possible cardiac chest pain

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Introduction

Chest pain is the second most common single complaint in patients presenting to Emergency Departments (EDs) in Australia. In 2014-15 chest pain accounted for 3.4% of ED presentations and 5.1% of hospital admissions. The most common serious cause of chest pain is acute coronary syndrome (ACS), however up to 85% of patients presenting with chest pain do not have ACS.

Several accelerated diagnostic pathways (ADPs) that safely identify patients who are at low risk of ACS have been derived but few have been evaluated in practice. The ADAPT ADP was derived and published by our group in 20121 and identifies low risk patients using a very simple algorithm. The algorithm and the key findings of the ADAPT ADP are detailed in Boxes 1 and 2.

The aims of the study were to test the feasibility of large scale translation of the ADAPT ADP into clinical practice and to measure the impact on health service delivery.

Method

All government hospital EDs responsible for the care of adult patients and having access to laboratory based tests for cardiac troponin I were approached. Clinical pathways incorporating the ADAPT ADP were introduced into eligible hospitals through a structured process of clinical service redesign between May 2013 and September 2015. This was implemented by a small project team in collaboration with local clinicians.

A quasi-experimental observational design was used to evaluate the effect of implementing the ADP on parameters of patient flow. Patients presenting with possible cardiac chest pain were identified from entry of relevant diagnostic codes into the Emergency Department Information System (EDIS, Healthcare Group, CSC). After implementation of the ADP the EDIS prompted staff to identify eligible ‘low risk’ patient using a simple binary query (Yes/No). Where this was incomplete patients were considered to be not ‘low risk’. Primary diagnosis, arrival and discharge date/time and discharge destination were extracted. Data linkage to inpatient hospital records for admitted patients used the unique hospital identifier. Data were extracted for the 12 months immediately prior to and after implementation of the ADP at each site and took place between May 2014 and November 2015.

Analysis

A multilevel regression was used to compare the trends in hospital length of stay across time. Study period (pre/post implementation) was entered as a dichotomous variable to examine for a quantitative change in length of stay after implementation of the ADP. Hospital was entered as a random effects parameter to account for differing baseline length of stay across hospitals.

Table 1 : Effect of implementation of the ADP on patient flow parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before Intervention</th>
<th>After Intervention</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ED Length of Stay (95% CI)</td>
<td>291.0 min (259.1-326.9)</td>
<td>255.3 min (228.3-287.6)</td>
<td>&lt;0.01</td>
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<tr>
<td>Mean Hospital Length of Stay (95% CI)</td>
<td>57.5 hr (50.2-66.8)</td>
<td>44.0 hr (38.8-49.9)</td>
<td>&lt;0.01</td>
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<tr>
<td>Hospital Admission Rate (95% CI)</td>
<td>68.2% (59.2-78.5)</td>
<td>52.2% (42.3-64.7)</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Conclusions

• The ADAPT ADP is clinically feasible and translates well into clinical practice across a diverse range of hospital EDs
• The ADAPT ADP leads to substantial and sustainable improvement in measures of patient flow including length of stay and hospital admission
• Implementation of the ADAPT ADP has the potential for considerable release of clinical capacity

References

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Conflict of Interest: None declared