Integrated Cardiovascular Clinical Network CHSA—improving cardiac care in rural centres

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Background
Cardiovascular disease remains the single largest contributor to mortality in Australia accounting for 34% of all deaths in 2006 with coronary heart disease (CHD) accounting for the 50% of these (1). Although there have been significant reductions in CHD related mortality in the overall Australian population over the last 3 decades, the magnitude of the decrease has been less in rural and remote areas compared with urban areas in Australia. Challenges of dealing with CHD are many including: workforce, lack of specialists, reduced access to invasive cardiac testing and reduced access to timely pathology services. The wide geographical area with large areas of low density population in Australia makes provision of these services challenging and often these services cannot meet demands made on them.

South Australia has a population of approximately 1.6 million people spread over an area of 978,810 kilometres with 407,000 living in regional areas (2). Acute care in the regional areas is provided by 66 hospitals serviced almost entirely by primary care physicians and only 10 of these hospitals have onsite pathology laboratories.

To help address the differential in cardiovascular outcomes between urban and non-urban areas a new model of cardiac care was designed and implemented, the Integrated Cardiac Assessment Regional Network (iCARnet).

iCARnet was initially set up in the south-east of South Australia in 2001 after extensive consultation with rural primary practitioners and nurses in the area. Clinical needs analysis to identify barriers for practising evidenced-based cardiac care revealed difficulties with ECG interpretation, lack of timely access to cardiac marker pathology results and access to specialist advice as predominant barriers.

To enable better access to evidence-based cardiac care, the iCARnet model of care was designed to include the following:

- agreed clinical pathways for chest pain/ACS
  - triage protocols
  - diagnostic/risk stratification protocols
  - treatment protocols

- provision of point of care testing (PoCT) for troponin to support timely risk stratification and decision making regardless of geographic location

- improved accessibility to consultant cardiologist advice
  - 24 hours/7 days a week escalating paging service
  - agreed response time of less than 10 minutes

- streamlined access to tertiary cardiac care for high-risk patients

- provision of comprehensive cardiac continuing medical education for the medical and nursing workforce servicing these areas.

An initial pilot network of 6 sites was established in 2001. This was extended to all sites in the South East Regional Health Service by 2003 with funding provided by a Commonwealth government grant.
April 2006, iCARNet became the first state-wide clinical network to be funded in South Australia under the Health Reform Process by the SA Department of Health. The title of Integrated Cardiovascular Clinical Network SA (iCCnet SA) was officially adopted on 1st July 2006 to reflect the transition from a regional population health and health services research and development program, to a state-wide clinical network fully aligned with the principles and objectives of the Health Reform Process. In 2010 iCCnet was incorporated into Country Health SA, becoming iCCnet CHSA.

iCCnet CHSA provides an integrated solution to ensure patients presenting to rural health facilities receive access to appropriate cardiac care. Solutions include clinical tools, resources and systems designed to support the practice of evidence-based acute cardiac care by practitioners, including remote area nurses from a diverse range of backgrounds and with varying levels of experience and training. Integral to the service is timely access to Cardiologist support, PoCT managed by clinical network scientists and continuing medical education for rural doctors and nurses.

**Method**

To evaluate the effectiveness of the network, we compared Acute Coronary Syndrome (ACS) length of stay, time to angiography, readmissions and in-hospital deaths for the South East of South Australia pre and post adopting the iCCnet CHSA model of care. Primary Diagnosis data was collected from the South Australian Department of Health hospital separations database (ISAAC). All sites were expected to participate in a quality program to ensure PoCT testing meets quality standards required for clinical use. The cardiologist paging service was continually monitored to ensure calls are answered within ten minutes.

**Results**

Adoption of the iCCnet CHSA model of care has seen marked improvements in cardiac outcomes. These included:

- reduced length of stay
- reduced 30 day readmission for ACS
- reduced total length of stay for patients transferred to metropolitan hospital for invasive cardiac testing
- reduced in-hospital ACS deaths making the death rate comparable to metro hospital.

All sites participated in the quality program managed by experienced clinical network scientists. PoCT across CHSA sites was performed meeting recommendations of professional societies. Average Cardiologist paging service response times remained less than the expected 10 minutes.

**Conclusion**

A network approach to cardiac care appears to markedly improve cardiac outcomes. Results indicate that PoCT pathology can be integrated into clinical care to facilitate evidence based cardiac care. Reduced 30 day readmission along with a reduction in ACS in-hospital deaths supports the implementation of cardiac clinical networks to facilitate the practice of evidence-based acute cardiac care in country health facilities. A network approach with an integrated system of care involving all stakeholders has the potential to optimise patient outcomes.

**Recommendation**

The model of care principles designed to address differential in cardiovascular outcome between urban and non-urban areas could be applied to other disease states such as diabetes and stroke to help combat increasing burden of these disease states in rural and remote areas.
References
