



New cardiac models of care reduce patient access to specialist nurses: A Victorian cross-sectional pilot study



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ABSTRACT

Background: Several studies have shown that the acuity and complexity of patients admitted to coronary care units is rising. Advances in medical technology and management of these patients have resulted in shorter lengths of hospital stay. Together, these changing care patterns have led to an emergence of new models of care delivery that differ from traditional coronary care units (CCU). The effect of these new models on workforce and resources in this area is unknown.

Aim: To describe the workforce and workplace resources of adult CCUs in Victoria, Australia.

Method: This pilot study used an investigator-developed survey to audit all adult CCUs operating in Victoria in 2010.

Results: A total of 24 CCUs participated in the audit of which the majority were located in metropolitan public hospitals. In terms of model of care of CCUs: 25% (6) of CCUs were a combination of a CCU/cardiology ward, 17% (4) a combined CCU/ICU or combined CCU/ICU/HDU and 12.5% (3) of CCUs were a dedicated unit. Only 15% (4) of all units met the international standards for a nursing workforce with critical care qualifications. The CCU/day procedure/HDU models had 24% of critical care qualified staff followed by CCU/cardiology ward model with 35% compared to an average of 54–80% of qualified staff in the other models of care of CCU.

Conclusions: This pilot study has highlighted the heterogeneity in models of CCU and a shortage of qualified critical care nurses, particularly in the CCU/cardiology ward model. This may have implications for the quality of care delivered in CCUs.

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Introduction

Coronary care units (CCU) have changed dramatically over half a century. Dedicated CCUs that were developed in the 1960s¹ have been transformed into combined units, such as CCU and cardiology ward, CCU and day procedure unit or CCU and high dependency unit (HDU), with very few dedicated CCUs remaining.² Several

important drivers have contributed to this transformation: advances in medical management, such as the advent of percutaneous coronary interventions, implantable defibrillator, and new valvular interventions appropriate for the elderly, as well as a shorter length of hospital stay. This has placed new stressors on the critical care nursing workforce in their efforts to provide high quality care.

It has been predicted that the workload of the CCU in the next decade will increase,^{3,4} highlighting the need to ensure a qualified critical care nursing workforce. International guidelines recommend that at least 75% of the nursing workforce in CCU should have a postgraduate critical care qualification.^{3,4} Considering the projected shortage of nurses,⁵ recruitment and retention of qualified critical care nurses is vital. However, the effect that combined CCUs have on the critical care nursing workforce is unknown.

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The hospital environment has been shown to play an important role in the recruitment and retention of staff.^{6–9} International guidelines recommend that CCUs are a dedicated or independent ward with their own staff and nurse unit manager.³ The nurse-to-patient ratio should be no higher than 1:2 during the day and 1:3 at night with the flexibility to be 1:1 when patient acuity demands.³ The aim of this pilot study is to describe the current workforce and workplace resources of adult CCUs throughout Victoria.

Methods

This pilot study utilised a cross-sectional survey design to audit all Victorian CCUs operating in 2010. The investigator-developed survey was designed to examine the resources and workforce of Victorian CCUs (Appendix A).

Sample

All adult CCUs operating in Victoria during 2010 were identified from the Victorian Department of Health website.¹⁰ Ninety two adult Victorian hospitals, excluding day and psychiatric hospitals, were contacted by telephone to ascertain if the hospital had an in-patient critical care service for cardiac patients. There were 37 hospitals with critical care facilities to manage hospitalised patients with an acute life-threatening cardiac condition.

The Directors of Nursing from the identified 37 hospitals with CCUs were contacted and sent a letter requesting permission to contact the Nurse Unit Manager (NUM) of their CCU (Fig. 1). Thirty-one Directors of Nursing, responded to the written request to contact the respective NUM. Four Directors of Nursing did not allow us to contact the NUM; two did not respond to the letter despite two reminder telephone calls and a follow-up letter asking them to return the permission form. Of the 31 NUMs that were contacted, 24 consented to participate in the study resulting in a 77% participation rate.

Ethics approval for the study was granted from Monash University. Twenty two hospitals accepted the ethics approval from Monash University. However nine hospitals required ethics approval from their hospital Human Research in Ethics Committee. The NUM in each CCU completed the survey (Appendix A). The CCU roster was used to access staff data. Patient data were abstracted from the CCU admission and discharge register located within each unit.

Statistical analysis

Descriptive statistics was used to describe the sample, and chi-square and Fishers exact test were used for discrete variables. SPSS for Windows version 20.0 was used to analyse the data. The level of significance was accepted at the 0.05 level (two-sided).

Results

Of the 24 CCUs surveyed, 58% (14) were located in metropolitan areas. Overall 25% (6) were in private hospitals. The median hospital bed numbers was 233 beds (interquartile range (IQR) 155–402 beds).

Characteristics of CCUs

Fig. 1 shows the different of models of CCU. The most common (25%, 6) of CCUs was a combination of a CCU/cardiology ward; 17% (4) were a combined CCU/Intensive Care Unit (ICU) or a combined CCU/ICU/HDU and 12.5% (3) of CCUs were a dedicated unit. All the dedicated units were located in the metropolitan area; two units were in tertiary public hospitals.

The level of service provided in each hospital with a CCU was analysed, based on a national definition used in critical care services¹¹ (Fig. 2). The criteria used include the number of critically ill patients and the amount of resources, staffing and support services.¹¹ More than half of the hospitals with a CCU were defined as Level 2. As a Level 2 CCU, the unit must be capable of providing life support for several days.¹¹

Patients admitted to CCU

Over a one week period, 542 patients were admitted to the CCUs (median: 16 patients/week; IQR: 11–40 patients/week). More than one quarter of regional hospitals (39%, 7) performed elective percutaneous coronary interventions (PCIs) ($p=0.001$). More than half of elective and emergency PCIs (72%, 13) were performed in public hospitals ($p=0.009$).

The discharge diagnosis of patients admitted to CCU varied (Fig. 3). The most common discharge diagnoses were: ST elevation myocardial infarction (STEMI), unstable angina, arrhythmias and non-cardiac causes. The patients without a primary cardiac

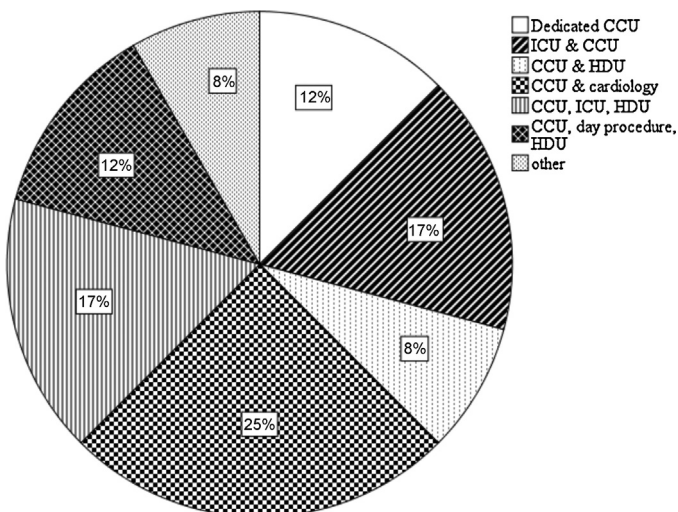


Figure 1. CCU model of care.

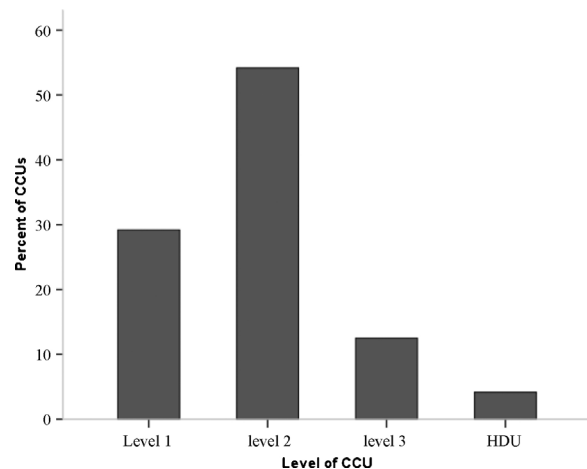


Figure 2. Level of CCUs. Level 3: the Unit must be capable of providing complex, multi-system life support for an indefinite period. It must have extensive back-up laboratory and clinical service facilities. Level 2: the Unit must be capable of providing complex, multi-system life support for several days. Level 1: the Unit must be capable of providing basic, multi-system life support usually for less than a 24 hour period¹⁴.

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