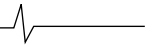


# In-hospital cardiac arrests: events worth monitoring?

Joe McCaffrey, Matthew J Maiden and Cathy Norrish



**TO THE EDITOR:** In-hospital cardiac arrest (IHCA) is reported to have particularly high mortality rates,<sup>1</sup> and its occurrence is an important quality metric of health care.<sup>2</sup> Efforts to prevent IHCA include patient monitoring and rapid response systems, while resuscitation training and credentialing endeavour to optimise treatment of IHCA when it occurs. There is also growing experience initiating extracorporeal life support on patients receiving cardiopulmonary resuscitation (CPR).

However, we have noted that identification of patients receiving CPR in hospital is incomplete. First, the few studies investigating the incidence of IHCA report a wide variation (1.3–6.1 per 1000 admissions) and acknowledge that case identification is likely deficient.<sup>3,4</sup> Second, while cardiac arrests may be identified from the medical emergency team attendance data, we are unaware of how many patients receive CPR in areas of the hospital without the attendance of a medical emergency team. These areas include the emergency department, cardiac procedure suites, operating theatres and even within the intensive care unit (ICU) — locations where IHCA occurs more commonly.<sup>5,6</sup> Third, there is no imperative for hospital coders to reliably identify and record patients who receive CPR. Indeed, the Australian Coding Standard 0042 specifically excludes the coding of CPR: “[procedures such as CPR] are normally not coded where they are routine in nature ... [or] are components of another procedure”. Finally, although the Australian and New Zealand Intensive Care Society (ANZICS) Centre for Outcome and Resource Evaluation (CORE) collects the incidence of deaths among inpatients without a “not-for-resuscitation” (NFR) order, only seven tertiary ICUs (7/45, 16%) in Australia and New Zealand contributed these non-mandatory data in the most recent (2016–2017) ANZICS CORE report.<sup>7</sup>

A research priority regarding IHCA is to understand its epidemiology better. This is also a fundamental measure of hospital safety. Knowledge about IHCA could be improved if a hospital code were applied and recorded to anyone who received CPR (regardless of their underlying disease or hospital location), and if there were routine reporting of non-NFR deaths. Many pre-hospital service providers already

collect this information routinely and it seems incongruous that this does not apply in all hospitals. Implementing changes to routinely collect this information will require support from the critical care community.

## Competing interests

None declared

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**IN REPLY:** We support the message in the letter by McCaffrey and colleagues. Their recommendations are necessary but do not sufficiently address the current deficits in the reporting of this major safety issue.

In 2017, there were over 25 000 patients admitted from a ward to Australian and New Zealand adult intensive care units (ICUs).<sup>1</sup> Of these, almost 15 000 followed some form of emergency response. Over the same time, there were some 5000 patients admitted to an ICU after a cardiac arrest, of whom one in five were admitted from a ward (presumed in-hospital cardiac arrests). Importantly, we have no knowledge about how many patients deteriorated, arrested and died before the opportunity of admission to an ICU.

Most of the 200 hospitals in Australia and New Zealand have some form of medical emergency team (MET) response. However, only 37 hospitals reported routine information about MET calls to the annual Australian and New Zealand Intensive Care Society (ANZICS) Critical Care Registry survey, and of these, a mere seven were able to provide information about deaths in patients who did not have treatment limitation orders. In addition, two tertiary hospitals reported zero ICU admissions from the ward after a cardiac arrest. The current reporting system is unable to determine whether these two hospitals have the best system for responding to patient deterioration so there are no cardiac arrests, or, the worst system so that all the patients who arrest also die before ICU admission, or whether they are just not reporting this information. A new system is urgently needed to answer these questions.

We support the authors' call for more research into in-hospital cardiac arrest, improved coding for this condition and for routine reporting. In addition, we should do more. It is time for coordinated binational collection and reporting of comparative data about patients who acutely deteriorate within hospitals. This should be supported by the intensive care community, local safety and quality organisations, and jurisdictional health departments.

"Recognising and responding to acute deterioration" is a national standard.<sup>2</sup> It is time we knew more about patients who deteriorate in hospital wards. How many are there? How many are reviewed by a MET? How many

have a cardiac arrest? What treatments do they receive? Do outcomes differ between hospitals?

Benchmarking improves outcomes. Until we know the extent of the problem and how outcomes compare, we cannot know how much improvement in care is possible.

It is time for a MET registry.

### Competing interests

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