The diversity of emergency code telephone numbers in Australian hospitals: the feasibility of an Australian standard emergency code

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Abstract

This study explored the diversity of emergency code telephone numbers currently in use in Australian hospitals and examined the feasibility of a standard emergency code telephone number for all Australian hospitals, based on the United Kingdom experience. An email and telephone convenience survey of Australian hospitals from six states and two territories was conducted. Of the 108 hospitals surveyed, seven did not use a telephone number system and used a button/pager system to call an emergency. Of the 101 hospitals surveyed that used a telephone number system, 40 different emergency telephone numbers were in place, and in nine hospitals the telephone number used for Code Blue (medical emergency) was different to the telephone number used for other emergency codes. With increasing mobility of staff across hospitals, uniformity of emergency code telephone numbers is required to reduce confusion, potential danger and improve staff response in emergency situations. A single Australian standard emergency telephone number for all Australian hospitals is advocated.

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What is known about the topic?
Every hospital has an emergency telephone number/button. Most hospitals set their own number and in times of stress staff may forget or confuse the emergency number.

What does this paper add?
A convenience survey of Australian hospitals shows how disparate the emergency code telephone numbers are in Australian hospitals and describes a vision for national consistency.

What are the implications for practitioners?
Work is proceeding to standardise the hospital emergency number to a single national number. Hospitals should consider plans to change their emergency phone number once a national standard has been announced.

MOST COUNTRIES have a standard emergency telephone number for public use. For example, to call the police, fire brigade or ambulance assistance in Australia the caller must dial 000, in the United States the number is 911, in the United Kingdom the number is 999 and in New Zealand the number is 111. Having a standard emergency telephone number for the general public makes practical sense as once memorised it is easier to retrieve, especially in a tense and threatening situation. A similar telephone number, specified to an Australian standard for emergencies, is being advocated for Australian hospitals — that is, a single standard and consistent telephone number for emergency response.[1]

The majority of Australian hospitals have a hospital-specific internal emergency code telephone number that is publicised to staff so that, in the event of an emergency, they can ring the number to request immediate assistance. In some institutions there are two numbers: a medical emergency (Code Blue) number and a

1 Survey results of emergency code telephone numbers used by 108 Australian hospitals

	NSW	VIC	QLD	SA	WA	TAS	ACT	NT	Total
Total hospitals	30	24	19	11	10	6	3	5	108
Public	23	16	14*	8	7*	4	1	4	77
Private	7	8	5	3	3	2	2	1	31
Metropolitan	21	16	12	9	7	2	3	2	72
Regional	9	8	7	2	3	4	–	3	36
No. of different numbers	17	16	13	5	3	6	2	2	–
Most common number	222(5)	222 (3) 555 (3)	222 (3) 666 (3)	33# (7)	55 (7)	–	5 (2)	*** (4)	–
No. of hospitals with different code blue/other code number	2	2	3	0	0	2	0	0	9

NSW = New South Wales. VIC = Victoria. QLD = Queensland. SA = South Australia. WA = Western Australia. TAS = Tasmania. ACT = Australian Capital Territory. NT = Northern Territory. *Both QLD and WA each have one mixed public/ private facility.

separate and different emergency number for all other emergencies, for example Code Red represents fire, Code Purple a bomb threat, and Code Brown an external disaster.

Anecdotally it is known that most hospitals set the emergency telephone number for their hospital many years ago and maintain it to reduce confusion for employees. However, staff often work in different hospitals and the lack of uniformity across institutions creates the potential for confusion or improper response in emergency situations.[2] A single hospital emergency number was recommended in the UK.[3,4] In 1997 the National Health Service (NHS) recommended that hospitals change their emergency numbers to 222 or 2222 for cardiac arrests and 333 or 3333 for all other emergencies. The rationale included greater mobility of staff, a higher reliance on agency staff, and an increase in the number of Trusts or Health Services with more than one number in use due to mergers, such as multi-site hospital Trusts. With a standard number existing for public emergency calls (999), the NHS argued that it would avoid confusion and ensure the number was easily recalled in an urgent situation in hospitals and Trusts.[5]

In December 2002 the National Patient Safety Agency (NPSA) conducted a survey of acute hospitals in England and found that 34% of hospitals used 2222, 18% used 222 and the remaining 48% used one of 25 other numbers. All hospitals providing acute services in Wales were using 222 or 2222 for crash calls, that is, Code Blue emergency calls.[5] On 18 February 2004 the National Patient Safety Agency issued a patient safety alert advising all acute Trusts to standardise the crash call telephone number to 2222.[5] By August 2006 all acute NHS Trusts in England had converted to 2222 for emergency crash calls, and all but one health care organisation in Wales had converted to 2222 with the remaining organisation working towards 2222 (personal communication; Chris Ranger, Head, Safer Practice, National Patient Safety Agency; 13 Aug 2006).

The aims of this study were to quantify the emergency telephone numbers across Australian hospitals and analyse the feasibility of a consistent and standardised hospital emergency code telephone number for the nation's hospitals.

Methods

An audit was undertaken of 108 Australian hospitals from six states and two territories using email and telephone survey methods. An email was sent to a convenience sample of colleagues:

Directors of Nursing and senior nursing personnel at 25 different hospitals. The email contained the following simple survey questions: name of hospital; location of hospital (state, suburb/town); internal emergency number for Code Blue (eg, 333, 555 etc); and internal emergency number for other codes if different (eg, Code Red, Code Purple).

A further 83 hospitals were contacted by telephone, requesting the same information. These hospitals were identified in the Australian Hospitals Directory 2005.[6] Selection was based on an estimated proportional number of hospitals per state with an estimated proportional mix of public, private, metropolitan, regional, large and small. In about 10 hospitals switchboard staff referred the caller to a clinical department manager to provide the required information because they either did not know the answer or believed it was hospital policy for such responses to come

from a higher authority. Details of hospital emergency code telephone numbers were tabulated.

Results

A total of 108 hospitals were surveyed (public, 77; private, 31; metropolitan, 72; regional, 36), representing 11% of all 729 public hospitals and 10% of all 301 private hospitals across Australia[6] (Box 1). Seven (6.5%) used a button/pager system to call an emergency — that is, they did not use a telephone number system. Of the 101 hospitals surveyed that did use a telephone number system, 40 different emergency telephone numbers were in place (Box 2) and in nine hospitals the telephone number used for Code Blue was different to the telephone number used for other emergency codes (Box 3).

Of the 101 hospitals that use an emergency code telephone number, telephone number "222" was the most common, with 11 hospitals choosing this number, followed by telephone number "55" in 10 hospitals and telephone number "#33" in 7 hospitals. The number of digits used in the emergency code telephone number ranged from one digit to five digits. Of the 108 hospitals surveyed 5 (4.6%) hospitals used one digit, 19 (17.6%) hospitals used two digits, 51 (47.2%) hospitals used three digits, 24

2 Emergency code telephone numbers used by a sample of 101 Australian hospitals

No. of digits (variations in use)	Codes in use (no. hospitals)	Total hospitals
1 (3)	2 (1), 5 (3), 8 (1)	5
2 (5)	33 (3), 50 (1), 55 (10), 88 (4), 77 (1)	19
3 (13)	111 (3), 222 (11), 333 (2), 33# (7), 345 (1), 444 (3), 555 (6), 666 (6), 777 (4), 799 (1), 888 (2), ∗77 (1), ∗∗∗ (4)	51
4 (17)	1666 (1), 2200 (1), 2222 (1), 3111 (1), 3333 (4), 4911 (1), 5500 (1), 5555 (1), 6500 (1), 6520 (1), 6666 (2), 7700 (3), 7777 (2), 8222 (1), 8622 (1), 8888 (1), 9222 (1)	24
5 (2)	444-55 (1), 333-55 (1)	2
No phone in use	These hospitals use emergency button/buzzer only	7
Total	40	108

3 Different medical emergency and other emergency code telephone numbers used by nine of the Australian hospitals surveyed

Code Blue telephone number	Other emergency code telephone number
8888	9999
777	666
5555	7777
1666	1555
4911	9
8222	8888
88	1111
444-55	55
333-55	55

(22.2%) hospitals used four digits, 2 (1.9%) hospitals used five digits and 7 (6.5%) hospitals used a button/buzzer system, that is, no digit/ phones (Box 2).

The Northern Territory, Western Australia and South Australia had evidence of attempting to standardise emergency telephone numbers with the NT achieving total public sector hospital consistency using "**✱✱✱**"; WA had the next most homogeneous collection of emergency telephone numbers with "55" most commonly used; and SA had consistency in Adelaide public hospitals using "33#", but less consistency in private and rural hospitals. The other states had very little consistency in hospital emergency telephone numbers. Some health services within New South Wales were attempting to establish consistency within their individual health service, and one source reported that health professionals in Tasmania were working to influence their health department to consider a standard and consistent number in their hospitals (personal communication, Dr Malcolm Anderson, Chair Australian Resuscitation Committee Tasmania Branch, 21 Dec 2006). In Tasmania, the group were considering the number 3022.

Anecdotal information from the survey process revealed that the emergency code telephone number in some hospitals was not immediately known by the switchboard person or contact person telephoned — a pause, hesitation, and/or "Wait and I will check" response occurred in many situations, however these were not recorded or measured. A future study may wish to measure the recall accuracy of staff with respect to knowledge of the emergency code telephone number in their hospital.

Discussion

It is evident from the hospitals surveyed that many NT, WA, and SA hospitals have attempted to use consistent emergency code numbers in their respective jurisdictions, whereas the Australian Capital Territory, NSW, Queensland, Tasmania and Victoria have very little consistency in the hospital emergency code telephone num-

bers used. It is possible that those jurisdictions that have commenced the practice of standardisation may be reluctant to follow a nationally consistent number. Hence, a national approach with inter-jurisdictional cooperation and leadership will be required to ensure political and bureaucratic will is able to influence and, where necessary, direct compliance over a reasonable time frame. This may be appropriately negotiated by the states/territories and the Commonwealth via the Australian Health Ministers' Advisory Council to resolve issues including agreements of funding, consensus policy and the implementation process.

The convenience sample of about 10% of Australia's public and private hospitals predominantly included the larger and more familiar hospitals in the health system while trying to ensure an estimated proportional mix of public, private, metropolitan, regional, large and small. Hospitals familiar to the researchers may have been a bias in the sampling process. A more detailed survey may attempt to contact all hospitals, however for the purposes of this study a total of 108 hospitals were considered adequate to demonstrate the issues being explored.

Of those representatives contacted in the surveyed hospitals, two anecdotal observations were of interest:
- Many believed a standard emergency code number for Australian hospitals to be a good idea;
- Some admitted to not being immediately familiar with the emergency code telephone number in their hospital and needed to seek clarification before confirming the actual emergency code telephone number.

These observations provide further support for the proposal that a single standard emergency code telephone number for Australian hospitals would remove the difficulties with remembering the appropriate emergency telephone number as health professionals move from hospital to hospital.

Two email respondents expressed concern about the technical cost or the risk of having to change their number to suit the national standard. These concerns are valid: the UK's experience highlighted

that some simple directives were required in order to achieve a safe and efficient transition when changing to a standard emergency telephone number in the Trust hospitals. Trusts were required to take action to ensure that risks associated with the transition of their crash call telephone number to 2222 were minimised. Examples were: ensuring documents and signs were changed promptly and that staff were fully informed of the change. In addition, the number used for the crash call team before the change to 2222 was run in parallel with 2222 until the Trust was satisfied that all staff were fully aware that 2222 was to be used. Finally, if the Trust was currently using 2222 for another purpose, this number was changed to an alternative number for a period before changing the crash call number to 2222.

The National Patient Safety Agency survey of NHS hospitals in December 2002 demonstrated that the benefits of providing a standard number for NHS staff outweighed the conversion costs to individual hospitals. Estimates from the Trusts that participated indicated that the average conversion cost was about £5200 per hospital.[5] The costs were mainly for signage, reprinting of policies and stationery, and staff education — the technical costs of changing the phone number in most hospitals with contemporary telephone systems is marginal (personal communication; Chris Ranger, Head, Safer Practice, National Patient Safety Agency; 13 Aug 2006).

In 1992, Standards Australia released "Planning Emergencies — Health Care Facilities — AS 4083" which was refined and updated in 1997.[7] This document set a consistent standard for the naming of various emergency codes across Australian health care facilities. Before 1992, Australia had the same confusion that has been outlined by Kelty[2] and Truesdell[8] in the United States. However, at the time, AS 4083 did not attempt to create a consistent standard for the telephone number to be used by health care facilities in the case of an emergency.

In Australia, having a standard and consistent set of emergency code names through the development of AS 4083 was intended to assist hospital staff to remember and recall the correct code name and colour in emergency situations.[7] The addition to AS 4083 of a single, and therefore nationally consistent, emergency telephone number for use within hospitals is recommended. Based on the UK experiences and the current Australian situation, it is essential that hospital staff and patients are certain that their safety is assured no matter where they work or where they seek treatment. It therefore makes sense to pursue the establishment of a standard and consistent emergency code telephone number for all Australian hospitals.

The auspice body to establish such a standard or agreement will require cooperation from all states and territories, public and private health services and individual hospitals. The Australian Committee for Quality and Safety in Health Care, Standards Australia, health professional organisations, as well as consumer groups, all have an interest in this proposal and have been provided details of the results of the survey and a possible approach to establishing such an outcome based on the UK experience. It is acknowledged that political and bureaucratic considerations will create difficulty, and hence it is necessary to ensure that a credible national auspice agency takes responsibility for this initiative and ensures broad stakeholder input and ownership of the final plan and implementation.

In conclusion, with increasing mobility of staff across hospitals, uniformity of emergency code telephone numbers is required to reduce confusion, potential danger and improve staff response in emergency situations. A single Australian standard emergency telephone number for all Australian hospitals is advocated.

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Competing interests

The authors declare that they have no competing interests.

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