

A cry for help: time to re-think the patient call bell in an ageing population

Historically, the patient call bell has been the mechanism by which patients can alert a health-care worker to provide help. The authors were concerned that, in an increasingly comorbid population, this method of raising help was not fit for purpose. They therefore reviewed every level 3 bed space ($n = 283$) in a district general hospital over a 2-week period and assessed the usability of the call bell at each occupied bed. The call bells were on average 82 cm away from the bed. More worryingly, over one third (38.1%) of all inpatients were unable to understand independently the role of the call bell and how to use it. The authors conclude that, in times of immense inpatient bed pressures, it is critical that there are robust strategies to highlight the significant number of patients who cannot use the call bell and ensure they are given an appropriate ward location.

Following the publication of the Francis Report, high quality care for the elderly has never been more in the public eye. There are ever-increasing concerns about the standards of care and dignity being provided for hospitalized and institutionalized patients. To provide dignified care it is paramount to recognize patient need. Traditionally, in the hospital environment, a patient uses his/her call bell or buzzer to request help. The primary reasons that patients use call bells are toilet assistance, pain medications and intravenous line issues (Tzeng, 2010).

This conventional method of calling for help relies upon some basic assumptions. First, for a call bell to be useful, a patient must have sufficient cognition to be able to operate it. Second, he/she needs sufficient memory to remember the bell or buzzer's use and location. Third, the patient's visual acuity must be good enough for him/her to find the buzzer. Fourth, the call bell must be located within a patient's reach, a particular need for transfer-dependent patients. Finally, there needs to be sufficient staffing to respond promptly and effectively to the call.

There has been some work reviewing interventions aimed at improving response times to patient call bells (Deitrick et al,

2010; Chiappetta, 2011; Digby et al, 2011). However, this does not challenge the basic question of whether, in an ageing and increasingly dependent population, patient call bells remain fit for purpose.

The authors could only find one study which addressed this (Duffy et al, 2005). In this 37 elderly patients were reviewed, of whom only 11 could use the call bell. It also highlighted the importance of call bells being located within the patient's reach.

In response to this paucity of evidence and their concerns about the basic assumptions on which the effectiveness of call bells rely, the authors assessed the usability of patient call bells in every bed ($n=280$) in a south-east London district general hospital.

Methods

Over a 2-week period, the authors reviewed call bell use in every level 3 bed space at a district general hospital. Paediatric and obstetric beds were excluded from assessment as the authors thought these patients would likely have visitors present for most of the time, so the call bell was no longer the primary method of calling for help.

At each occupied bed space, a five-step assessment was performed: first the call bell's location was noted as either visible, on the wall or hidden (this was judged as the inability of the assessor to locate the bell within 10 seconds, or having to follow the bell's wire in order to find it). Second the distance of the call bell to the patient's nearest usable hand was measured. Third the patient's understanding of the call bell was assessed by a two-stage question. Initially the patient was asked 'how would you call for help from a nurse?' Then if the patient was unable to answer this question

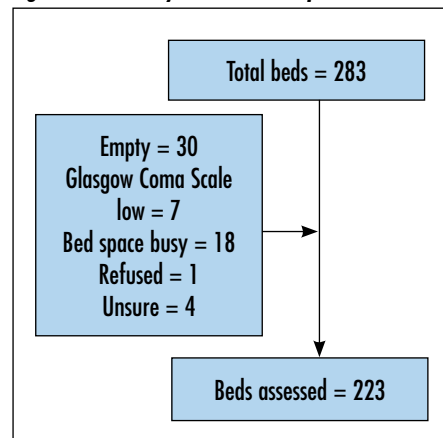
the call bell was held up and he/she was asked 'what is this used for?' Fourth a gross visual test was applied by standing 50 cm from the end of the patient's bed and holding out the tape measure (as a surrogate of similar size and colour to the call bell) and asking the patient to locate it. Finally the bedside and clinical notes were reviewed to clarify the patient's mobility status as bed-bound, aid reliant or independent.

Results

A total of 283 bed spaces were identified. Of these 60 beds were excluded from the study because they were unoccupied or it was not possible to assess the patient at the time of study (Figure 1), leaving a total of 223 beds. The mean distance of the call bell from the patient's nearest usable arm was 82.7 cm (range 0–280 cm, standard deviation 67.6 cm). Furthermore 94 bed spaces (42.2%) had the call bell located over 1 m away. During the reviews (which were performed between 12:15 and 17:00) the majority of patients were located in their beds (146), with 76 patients sitting and 1 patient mobilizing but by the bed space.

Within this population 138 patients (61.2%) were able fully to understand the function of the call bell. This left 85 (38.1%) patients unable to use the call bell independently, of whom 61 (27.4%) were still unable despite verbal prompting. A total of 92 (41.3%) patients were adjudged to be independently mobile with a further 54 patients

Figure 1. Summary of initial bed space review.



Dr Andrew Chadwick is ST4 in Respiratory and Intensive Care Medicine in the Department of Intensive Care Medicine, John Radcliffe Hospital, Oxford OX3 7TH and Dr Andrew Hearn is CT2 in the Department of Neurology, Kings College Hospital, London

Correspondence to: Dr A Chadwick
(achadwick@doctors.net.uk)

(24.2%) able to mobilize with aids. This left 77 people (34.5%) judged as bed-bound; within this group the call bell was located on average 79 cm away. The location of the call bell was assessed for 154 bed spaces, of which 43 call bells were judged to be in a hidden location (27.9%) and 26 (17%) call bells were still located on the wall.

It was postulated that staff might be more attentive about positioning a patient's call bell if a patient was judged to be more dependent. Therefore, a student *t*-test was used to compare the mean distances of the call bells within the groups defined above and between care of the elderly and general wards (Tables 1 and 2). The only significant result this highlighted was that when a patient is confused the call bell is on average significantly closer. However, this figure is still 70 cm from the nearest usable arm, in a population of patients who are unable to easily use the call bell when well. The difference between the call bell distances showed no statistical significance ($P = 0.3698$).

Discussion

This study demonstrates two important results. First, the mean distance of the call bell from a patient's usable arm was 82.7 cm, with over 40% of patients having their call bell situated over 1 m away. Furthermore these data show that even if a patient is bed-bound the call bell is not located significantly closer. To put this into context, the average length of an adult's arm is 82 cm. This means that up to half of all patients in this setting would have been unable easily to reach their call bell.

The second important result is that within the hospital as a whole 38.1% of patients were unable to use the call bell independently, rising to over half of patients on care

of the elderly wards (55.8%). Furthermore, even with direct prompting, over one quarter (27.3%) of patients could still not understand the role of the call bell. This means that the historical method of patients calling for help does not work in a significant proportion of hospital users.

The study's methodology was intentionally simple. The authors decided not to try and correlate understanding of the call bell with formal mental state scores. This was because they wanted to produce real world data to establish in general terms whether the patient call bell was useful in an ever ageing and more dependent population.

As stated, there is a paucity of studies questioning the usability of the patient call bell. In one comparable study looking at elderly patients in the community setting 29.7% of patients ($n = 11$) were unable to use the call bell (Duffy et al, 2005). This is in line with the total hospital findings but much lower than the rates found on care of the elderly wards. This may reflect the inpatient elderly population being more dependent with greater cognitive comorbidity.

Conclusions

Although simple in nature the authors believe that this study has significant implications. Historically, the call bell has always been the tool by which patients obtain help. However, over one quarter of these patients would never be able to use it even if it were clearly explained and well positioned. In hospitals multiple patient risks such as allergies or falls are highlighted, yet it is often assumed that patients are not at risk of

communication failure. The authors suggest that it is important to highlight patients who cannot use call bells and ensure their ward locations are adjusted appropriately. Furthermore, although side rooms are pivotal in combating infection control and are often preferred by younger patients, in designing new hospitals or wards it should always be borne in mind that a third (or half if elderly) of patients will be unable to call for help by this classical route. **BJHM**

Conflict of interest: none.

Chiappetta D (2011) Call bell response times. *Nurs Older People* **23**(9): 8
 Deitrick LM, Bokovoy J, Panik A (2010) The 'dance' continues ... evaluating differences in call bell use between patients in private rooms and patients in double rooms using ethnography. *J Nurs Care Qual* **25**(4): 279–87
 Digby R, Bloomer M, Howard T (2011) Improving call bell response times. *Nurs Older People* **23**(6): 22–7
 Duffy S, Mallery L, Gordon J, Carver D (2005) Ability of hospitalized older adults to use their call bell: a pilot study in a tertiary care teaching hospital. *Aging Clin Exp Res* **17**(5): 390–3
 Tzeng HM (2010) Perspectives of staff nurses of the reasons for and the nature of patient-initiated call lights: an exploratory survey study in four USA hospitals. *BMC Health Serv Res* **10**: 52

LEARNING POINTS

- It is everyone's concern to ensure that the patient's call bell is within easy reach of the patient.
- Even a visible, reachable call bell will not help over one third of patients call for help.
- It is imperative we identify patients who are at risk of communication failure so they can be located in prominent ward locations.

Table 1. Comparison of data between care of the elderly and other wards

	Care of the elderly ward	Other ward
Total beds	103	180
Beds assessed	86 (85%)	137 (76.1%)
Mean length from arm	80.2 cm	83.4 cm
Confused or require prompting	48 (55.8%)	37 (27.0%)
Unable to see	30 (34.9%)	14 (10.2%)
Bed-bound	29 (33.7%)	34 (24.8%)

Table 2. Comparison of call bell distances between independent and dependent groups

		<i>n</i>	Mean distance of buzzer from nearest usable arm (cm)	Significance (two tailed)
Confusion	Yes	138	102.0	0.00031
	No	85	70.0	
In bed	Yes	77	86.0	0.27115
	No	146	80.2	
Able to see call bell	Yes	179	80.3	0.39089
	No	44*	89.6	
Mobility	Independent	92	85.2	0.2855
	Bed-bound	77	79.0	

*This figure falls to 17 if it only includes patients who are unable to see the call bell surrogate but have the cognitive ability to process the question – this group have a mean distance of 91.6 cm ($P = 0.50274$)