

# Call 4 Concern: patient and relative activated critical care outreach

Mandy Odell, Karin Gerber, Melanie Gager

Patients on hospital wards can experience unexpected physiological deterioration that can lead to critical illness, intensive care unit (ICU) admission, cardiac arrest and/or death, which could potentially be prevented if the deterioration is recognized and acted upon earlier.

Much of this deterioration can be anticipated by monitoring the patient's physiological signs, such as pulse, blood pressure and respiratory rate, or symptoms, such as a deteriorating mental state (Schein et al, 1990; Bedell et al, 1991; Franklin and Mathew, 1994).

Studies have reported that ward staff can often miss, misinterpret or mismanage patient deterioration (McQuillan et al, 1998; Smith and Wood, 1998; McGloin et al, 1999; Hodgetts et al, 2002).

To try and address these issues, initiatives such as rapid response systems have been developed and implemented in acute hospital settings. Under these schemes, early warning scoring systems are used to monitor patients, and, when a patient deteriorates, critical care teams, such as critical care outreach (CCO) and medical emergency teams, are called (DeVita et al, 2006).

However, even when rapid response systems are in place, ward staff do not necessarily comply with referral criteria protocols and may still fail to note or manage the patient's deterioration adequately (National Institute for Health and Clinical Excellence, 2007; National Patient Safety Agency, 2007).

One resource in the early detection of deterioration that has been largely overlooked is the contribution that patients and relatives can make. There has been little research carried out on the contribution that patients and relatives can make to rapid response systems.

## Background

The concept of Call for Concern (C4C) was inspired by the Condition H(elp) system at the University of Pittsburgh's Medical Centre (UPMC) in the US.

Condition H(elp) was set up in 2005 (Greenhouse et al, 2006) as a result of the case

**Abstract**

Patients can experience unexpected deterioration in their physiological condition that can lead to critical illness, cardiac arrest, admission to the intensive care unit and death. While ward staff can identify deterioration through monitoring physiological signs, these signs can be missed, interpreted incorrectly or mismanaged. Rapid response systems using early warning scores can fail if staff do not follow protocols or do not notice or manage deterioration adequately. Nurses often notice deterioration intuitively because of their knowledge of individual patients. Patients and their relatives have the greatest knowledge of patients, and can often pick up subtle signs physiological deterioration before this is identified by staff or monitoring systems. However, this ability has been largely overlooked. Call 4 Concern (C4C) is a scheme where patients and relatives can call critical care teams directly if they are concerned about a patient's condition—it is believed to be the first of its kind in the UK. A C4C feasibility project ran for six months, covering patients being transferred from the intensive care unit to general wards. C4C has the potential to prevent clinical deterioration and is valued by patients and relatives. Concerns of ward staff could be managed through project management. Because it is relatively new, this field offers further opportunities for research.

**Key words:** Deteriorating patient ■ Critical care outreach ■ Patient involvement ■ Relatives ■ Patient experience

of an 18-month-old child, Josie King, who died in 2001 due to hospital errors and poor communication ([www.josieking.org](http://www.josieking.org)). The H(elp) system allows patients and their relatives to summon the rapid response team directly, using an in-hospital 911 call when they have concerns about the patient's condition.

Similar tragic cases in the US have prompted vigorous campaigning by affected families ([www.lewisblackman.net](http://www.lewisblackman.net)), resulting in widespread adoption of comparable H(elp) systems, and recognition of their benefits by the Institute of Health Improvement and other patient safety agencies. Some of these cases have led to state legislation (The Lewis Blackman Hospital Patient Safety Act, Massachusetts, 2005) that require hospitals to provide a mechanism that enables patients to access prompt assistance to resolve medical care concerns.

Patients and relatives can make a positive contribution to the care of patients. Relatives see themselves as collaborative partners with nurses, and a valuable resource for knowledge (Wilson, 2005; Lindhardt et al, 2008).

A recent systematic literature review on patient deterioration and the nurses' role (Odell et al, 2009) reported that nurses commonly detected deterioration through intuitive reasoning, and one of the ways that reasoning is mediated is through the nurses' knowledge of the patient. Clearly, the patients themselves and their families have the greatest knowledge about the patient.

Patients and their families can be a vital source of information, and can often pick up subtle cues that herald physiological deterioration long before it may be detected through observation or monitoring by healthcare staff.

It is important to recognise the significant contribution that patients and relatives can

Mandy Odell is Consultant Nurse, Critical Care; Karin Gerber is Clinical Nurse Specialist, Critical Care Outreach; and Melanie Gager is Sister, ICU Follow Up Service; all at Royal Berkshire NHS Foundation Trust, Reading

Accepted for publication: xxxx 2010

make in the prevention of deterioration by early detection of subtle changes. The value of the role that patients and relatives can play in alerting nurses to early deterioration has been recognized (Cioffi, 2000; Minick and Harvey, 2003) and, at a recent rapid response systems consensus conference (DeVita et al, 2010), the inclusion of patients and relatives in the early stages of the rapid response systems process was recommended.

Even though interest in patient and relative activated rapid response is increasing in the US, there is little published evidence on the concept. A search of CINAHL and Medline resulted in five relevant citations: two described the condition H(elp) system at UPMC (HCPPro, 2007; Greenhouse et al, 2006); one was a conference abstract describing the implementation of a family activated rapid response team in Illinois (Bybee, 2008); and the remaining two were descriptions of implementation of a paediatric Condition HELP programme at UPMC (Dean et al, 2008; Ray et al, 2009).

While the use of information from patients and relatives was becoming increasingly recommended and adopted in the US, anecdotal narratives from relatives at conferences and local feedback from patients, relatives and staff involved with the CCO service contributed to the decision of the CCO team to introduce a system of CCO initiated by patients and relatives. The scheme, Call 4 Concern (C4C), is believed to be the first such system in the UK.

### **Aims and objectives**

The aim of the C4C project was to introduce and evaluate a system that allowed patients and relatives to access the CCO team directly.

As the concept of patient and relative-initiated CCO was unprecedented in the UK, it was felt necessary to undertake a feasibility project for the C4C concept before widespread hospital implementation was contemplated.

The purposes of project were to assess:

- The usefulness of the service to patients and relatives
- The impact on the patients' and relatives' overall hospital experience
- Any potential increase in the workloads of the CCO team and on other healthcare staff.

### **Ethical issues**

The hospital research and development team were informed about the project, and supported the planning stages. The C4C project was classified as service development,

so full ethical approval was not deemed necessary. Permission was gained from the trust's chief nurse and chief medical officer.

### **Methods**

The C4C project was a practice development enterprise supported by a grant and assistance from the Foundation of Nursing Studies.

The project took place in an 800-bed district general hospital in the south of England. A CCO team had been established in the hospital since 2001, and a 24-hour, whole-hospital CCO service, with adult, paediatric and maternity early warning scoring has been in place since 2005. The CCO team receive approximately 550 referrals each month.

All patients and relatives included in the project were given information about the C4C service and were given the choice of whether to take part. Permission to use feedback from patients and relatives who took part was obtained by the project team. Any feedback from patients and relatives was anonymized, as were the wards, ward staff and CCO staff involved.

It was anticipated that ward staff would have concerns about C4C. The aims and objectives of the project were widely disseminated before it started, and ward staff were reassured that the project was intended to enhance patient care, not to uncover poor practice. It was expected that the results of the feasibility project would reassure ward staff of the value of C4C in improving communication and patient care, and in identifying patients and their family as a useful resource.

### **Project design**

A project steering group was formed with staff from the CCO team and the intensive care unit (ICU). Stakeholders, including the hospital patients and relatives who had volunteered, were identified and invited to contribute to the key aspects of the study design; they were also integral to the overall communication strategy.

### **Patient and relative participants and project process**

All adult patients (over 18 years of age) transferring out of the ICU to the general hospital wards over a six-month period (September 2009–March 2010) were included in the C4C project.

The CCO team routinely visit all patients before they are transferred to the general wards and again 24 hours after their transfer.

During the pre-transfer visit, a member of the CCO team gave the patient verbal and

written information about the C4C service. Where possible, relatives were included in the information giving. During the post-ICU transfer visit, the CCO team reiterated the C4C information.

A C4C resource pack was given to all patients that included information on how to contact the CCO team, a token to use the phone via the bedside media system and a feedback form with a stamped addressed envelope.

Patients and relatives were informed that they did not have to use the service or participate in any feedback if they did not want to.

C4C calls made to the CCO team were treated in the same way as any other CCO team referral. The patient was visited and assessed, and the assessment and CCO recommendations were discussed with the medical and nursing ward teams. All patient assessments were recorded in the usual way in the patients' medical notes.

### **Project evaluation**

Feedback was sought from the patients and relatives via a standardised form asking them whether they had enough information about C4C, whether they thought it a useful service, if they felt confident about using it and, if they used the C4C service, how satisfied they were.

In addition, details of all the patients and relatives who had been included in the project were given to the intensive care follow-up team. Additional oral feedback was sought from these patients and families when they returned to the follow-up clinic.

All C4C calls received by the CCO team were evaluated using a standardised format. The incidence of C4C calls and demographic information were collected, as well as details of who instigated the call, the reason for the call and the outcome. Verbal feedback was also sought from the CCO team members involved in the call and any other healthcare staff involved.

Midway through the project, the staff on ICU (n=95) were surveyed via a questionnaire, to evaluate their knowledge of C4C and their attitudes towards the concept. The purpose of the survey was to test communication effectiveness and highlight any ongoing staff concerns.

The CCO team (n=8) were identified as key stakeholders and integral to the success of the project, so their views were sought through a context assessment index (CAI) tool (McCormack, et al 2002) and a values clarification exercise (McCormack et al,

2004). The CAI is designed to evaluate the context within which the team work and highlight issues that may enhance or hinder person-centred care, and the receptiveness of the clinical team to change. The values clarification exercise establishes the team's knowledge about the aims of the project and highlights any concerns or issues about C4C. This information can then be used to inform the design of the project plan.

**Results**

During the six-month duration of the project, 147 patients were transferred from ICU to the ward. All the patients received C4C information.

Twenty-six (17.7%) feedback forms were received; 20 were sent by post, and six came via the follow-up clinic. Of the 26 feedback forms, 11 were from patients, 11 from relatives and four not specified. The majority – 21 (80.7%) – felt they had had enough information about the service and 23 (88%) felt reassured that such a service was available.

There were 12 C4C calls to the CCO team during the six-month period. The majority of the calls were made by relatives (n=11). The calls were audited and categorized into types of interventions required by the CCO team. In the majority of cases, the CCO team added value to patient care and relatives concerns. The categories are shown in *Table 1*.

In at least two cases, a concerned relative initiated a C4C referral for patients who had become critically ill.

In one case, the patient was becoming increasingly unwell and his son felt that his concerns were not being acknowledged by the ward nursing staff. The subsequent CCO assessment found that the patient required aggressive fluid resuscitation due to large gastric losses and was developing a chest infection. After a surgical and medical review, the patient was readmitted to the ICU.

In the second case, a C4C referral was made when the patient's wife raised concerns about his restlessness and abnormal breathing. The patient's wife said that the nurses on the ward were not concerned about the patient's condition, and she felt that they were too busy. The CCO assessment found that the early warning score had been calculated incorrectly and was too low, and the patient was septic and in sputum retention. The patient's tracheostomy was cleaned and redressed, investigations were ordered and antibiotics commenced after consultation with the patient's medical team.

**Table 1. Categories of Call 4 Concern referrals by patients and relatives to the critical care outreach team**

	Category	Number of calls
1	Critical clinical intervention, and/or readmission to the intensive care unit	2
2	Clinical intervention such as pain relief	2
3	Investigative intervention, such as ordering or speeding up investigations	3
4	Liaising with medical team to get clarification and communication with family/patient	3
5	Reassurance to patient/family	2

The other 10 C4C referrals involved less critical interventions, such as organizing effective pain relief, arranging and explaining investigations, helping communication between patients, their families and the medical teams, and reassurance and explanation to patients and relatives about care issues.

The impact of the C4C project on hospital ward staff seemed to be minimal. The CCO team was well established and integrated into hospital culture and ward staff had been informed of the C4C project before it started.

There were only two occasions when ward nurses felt concerned that a C4C call had been made, and the CCO nurse involved was able to discuss the issues and reassure the staff members involved. Ward staff concerns about C4C referrals indicated to the CCO team where communication and information regarding C4C could be improved.

There was a 60% response rate for the ICU staff questionnaire (57 out of 95). Of the respondents, 48 (84.2%) had heard about C4C and 9 (15.8%) had been involved in

a C4C call. The main positive aspects of the C4C project for ICU staff were the prevention of deterioration, a reduction in complaints, the empowerment of patients and an improvement in the overall patient experience. Negative views regarding C4C included concerns that the service might be abused with inappropriate calls, that workloads could increase and that ward staff could be undermined and deskilled.

The feedback from the CCO team values clarification exercise showed similar concerns about the C4C project. While it was thought to be a positive step in that it empowered patients and improved their experience, there were concerns about its acceptance by ward staff and the willingness of patients to call.

The CCO team positively evaluated the CAI assessment, which showed that they felt they were implementing the C4C project within an environment that was receptive to change and development, and conducive to person-centred practice.

**Patient and relative feedback**

As well as the written feedback via post and the follow-up clinic, patients and relatives were invited to a C4C stakeholder event midway through the project.

This was an ideal opportunity for patients and their families to provide an insight into healthcare, as recommended by the *Involvement Framework* (NHS Institute for Innovation and Improvement, 2007). It also provided an opportunity to communicate the progress of the project and for patients and relatives to discuss the C4C service and raise any concerns or issues. Some relatives suggested improvements in communication that could reduce concerns. The feedback from patients and relatives was very powerful. Some of their comments are given in *Box 1*.

Some of the comments from relatives showed that they had similar concerns about

**Box 1. Patient and relative feedback comments on Call 4 Concern (C4C)**

- 'It was reassuring to know it [C4C] was there'
- 'You feel so vulnerable when you leave the intensive care unit to go to the ward'
- 'I tried not to be concerned but in my heart I was frightened'
- 'I put all my efforts into worrying rather than concentrating on getting better'
- '... when I raised the issues with her team, they heard but didn't seem to listen ...'
- 'If I hadn't had C4C, I would have had to find another way to voice my concerns: taking time and draining energy when you have little of both'

making a C4C referral as the ICU and CCO staff, in that they were concerned about upsetting ward staff, and did not want to cause any trouble.

## Discussion

The results of this feasibility project have demonstrated that enabling patients and relatives to activate a critical care outreach referral independently is highly valued by them, whether they do this or not.

The 12 C4C calls improved the quality of care for the patients and relatives and, in two cases, prevented critical deterioration of patients. The increase in the CCO's team workload was minimal.

Where ward staff demonstrated negative attitudes to the C4C scheme, the CCO team were able to reassure the staff involved and demonstrate improvements in patient care.

The C4C feasibility project was the first of its kind known in the UK, and there was little evidence on which to base the design and evaluation of the project. As a result, there was a lot to learn about the implementation of such a system.

The plan is to roll out this service to other patient groups in the hospital, with a longer-term aim of providing C4C to all hospital inpatients.

The feasibility study involved small numbers of patients being transferred from ICU to the wards in one hospital setting, so caution should be taken in generalizing the results.

It will therefore will not be possible to predict how workloads will be affected and what the needs of a different patient population will be. In addition, wider adoption of the system may result in larger numbers of calls that may reveal additional, as yet unknown, clinical and organizational issues.

Patient and relative feedback and the prevention of deterioration in at least two patients has highlighted the value of C4C, and there is growing support for this sort of system from national organizations and expert practitioners.

The development and implementation of such systems is a relatively new field and there are many opportunities for further research. Priorities for investigation should include optimizing communication and referral procedures and further investigation into the reason for C4C referrals.

The impact on ward staff has probably not been fully realized and further development of the C4C system may reveal as yet unknown issues.

However, this type of system offers a unique

## KEY POINTS

- Inpatients can experience unexpected deterioration in condition that can lead to critical illness, cardiac arrest, admission to the intensive care unit and death. Deterioration can be missed by ward staff and early warning scoring systems
- Patients and their relatives can spot signs of physiological deterioration before staff or monitoring systems. However, this ability is often overlooked
- The Call 4 Concern (C4C) project enabled patients and their relatives to call critical care outreach teams directly. A feasibility project found it had the potential to prevent clinical deterioration and that patients' and relatives found it useful, reassuring and empowering.
- Workloads were not greatly increased by the scheme, and ward staff concerns could be managed with careful project management
- C4C is believed to be the first of its kind in the UK and the project covered only a small number of patients. This field therefore offers many opportunities for further research

opportunity of engaging with patients and relatives and highlighting where areas of practice can be improved.

## Conclusion

The Call 4 Concern (C4C) project is thought to be the first of its kind in the UK and its initial implementation was used as a feasibility project to test its usefulness and practicability.

Early results have shown that workloads are not greatly increased, ward staff concerns can be managed with careful project management and patients and relatives find the service useful, reassuring and empowering. More importantly, the C4C service has the potential to prevent clinical deterioration and improve the patients' experience. BJN

*There were no conflicts of interest involved in the writing of this article*

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