Call 4 Concern (C4C): Patient and relative initiated critical care outreach (CCO)

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Summary of project

The aim of the project was to introduce and evaluate a Call for Concern (C4C) service that provides patients and relatives with direct access to the Critical Care Outreach (CCO) team, to give patients and relatives more choice about who they can consult with about their care, and facilitate the early recognition of the deteriorating ward patient. C4C was inspired by the Condition H(elp) system at the University of Pittsburgh Medical Centre. What little has been published on the subject is largely descriptive, but supporting literature reports the value of patients and relatives input into early recognition of deterioration. It is thought that this is the first such service introduced in the UK.

The project involved two phases:
- a six month pilot phase to evaluate the C4C service for feasibility, and its effects on patients, relatives and the health care teams
- a three month phase implementing the C4C service onto two surgical wards to test and evaluate the findings of the feasibility phase in preparation for expansion to all hospital wards

Between 1st Sept 2009 and 23rd Sept 2010, the CCO team received 37 C4C referrals representing 0.5% of total CCO activity. Critical deterioration of a patient was prevented in at least two cases, and the service received positive feedback from patients and relatives. In the words of a relative, C4C provided: *'…a better quality of care…and…reduces the risk of death.'*

Introduction
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. Much of this deterioration can be signalled in 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, mis-interpret or mis-manage patient deterioration (McQuillan et al., 1998; Smith and Wood, 1998; McGloin et al., 1999; Hodgetts et al., 2002). In order to try and address these issues, initiatives such as rapid response systems (RRS) that consist of early warning scoring and pre-emptive critical care teams, medical emergency teams and critical care outreach (CCO), have been developed and implemented in acute hospital settings (DeVita et al., 2006). However, even when these RRSs are in place, ward staff do not necessarily comply with the referral criteria protocols and continue to fail to note or adequately manage the patients' deterioration (NICE, 2007; NPSA, 2007). One resource in the early detection of deterioration that has been largely overlooked to date is the contribution that patients and relatives can make. There has been little exploration in research of the usefulness of this contribution to systems of care and outcomes for patients in CCO services.

Background
The concept of 'Call for Concern' (C4C) was inspired by Condition H(elp) system at the University of Pittsburgh's Medical Centre (UPMC) in the United States. Condition H(elp) was set up in 2005 (Greenhouse et al., 2006) as a result of the case of an 18 month old child, Josie King who died in 2001 due to hospital errors and poor communication (www.josieking.org). The H(elp) system allows patients and their relatives to directly summon the rapid response team, using an in-hospital 911 call when they have concerns about the patients' condition. Similar tragic cases in the USA have prompted vigorous campaigning by affected families (www.lewisblackman.net) resulting in widespread adoption of comparable H(elp) systems, recognition by the Institute of Health Improvement and Patient Safety Agencies, and in some cases, 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 for resolution of 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 detect 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 most knowledge about the patient, and it is important to recognise the significant contribution that patients and relatives can 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 recognised (Cioffi, 2000; Minick and Harvey, 2003) and at a recent Rapid Response Systems consensus conferencee (DeVita et al., 2010) the inclusion of the patient and relative in the early stages of the rapid response systems process has been recommended.

Even though there is growing acceptance of patient and relative activated rapid response in the USA, 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 (HCPro, 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 H(elp) program at UPMC (Dean et al., 2008, Ray et al., 2009).

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 health care staff. As well as the growing adoption and recommendations in the USA, anecdotal narratives from relatives at conferences, and local feed back from patients, relatives and staff involved with the CCO service, all contributed to the decision to introduce Call 4 Concern (C4C), a system of patient and relative initiated critical care outreach (CCO). It is believed that this is the first such system in the UK.

Aims and objectives of the project
As the concept of patient and relative initiated CCO was unprecedented in the UK, it was felt necessary to undertake a feasibility pilot for the C4C concept before widespread hospital implementation was contemplated. The overall aim of the C4C project was therefore to introduce and evaluate a system that allowed patients and relatives to directly access the Critical Care Outreach (CCO) team through a process of self-referral. This would involve assessing the:

- usefulness of the service to patients and relatives
- impact on the patients' and relatives' overall hospital experience
- potential workload impact on the CCO team
- effects on other health care 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 Chief Nurse and Chief Medical Officer.

Project outline
The project took place in an 800 bed district general hospital in Southern UK. 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 receive approximately 550 referrals each month. The project was conducted in two phases – a feasibility pilot and ward testing.

A project steering group was formed with staff from the CCO team and the Intensive Care Unit (ICU). Key stakeholders, including volunteer hospital patients and relatives, were identified and invited to contribute to the key aspects of the study design; they were also integral to the overall communication strategy. The steering group consisted of nursing and medical staff, including the chief nurse and chief medical officer. For the ward phase, the Matron for the surgical unit and a Ward Sister were included in the group.

Phase one: feasibility pilot
All adult patients (over 18 years of age) transferred to the general hospital wards from the intensive care unit were included in the six month feasibility phase (September 2009 – March 2010). The CCO team routinely visit each patient prior to their transfer to the ward, 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 re-iterated the C4C information and gave the patients/relatives a C4C resource pack. This pack was developed by members of the CCO team with support from patients and relatives and 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. Permission to use feedback from those patients and relatives who agreed to take part was obtained by the project team. Any feedback was anonymised.

If a C4C call was made to the CCO team, the referral was treated the same 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 as normal in the patients' medical notes.

It was anticipated that ward staff would have concerns about C4C. The aims and objectives of the project were widely disseminated before its commencement, and at ward staff meetings their concerns were addressed and staff were assured that the project was an enhancement to patient care, and not aimed at uncovering poor practice. It was anticipated that the results of the feasibility project would reassure ward staff of the value of C4C in improving communication and the care of the patient, and identifying the patient and their family as a useful resource. As with patients and relatives, permission to use feedback from ward and CCO staff was sought and feedback anonymised.

A C4C stakeholder event was held in January 2010. All the professional stakeholders that had been involved in the process were invited as well as the patients and relatives that had expressed an interest in the project, either in contributing to the design of the project or becoming involved while an in-patient in the intensive care. In addition, some relatives and patients that had expressed an interest during the intensive care unit Follow Up visit had been invited. The purpose of the event was to update the stakeholders on the progress of the project and get any feed back that could contribute to the ongoing project. Information was given in a presentation, after which an open forum was held. Claims, concerns and issues, an approach based on Fourth Generation Evaluation (Guba and Lincoln, 1989), that facilitates the involvement of and understanding between different stakeholder groups was used and stakeholders were encouraged to written down on flip charts at the event. This was an ideal opportunity for patients and their families to provide a unique insight into healthcare, as recommended by the Involvement Framework (NHS Institute for Innovation and Improvement, 2007). Relatives shared how they felt intimidated about having to use C4C and didn't want to be seen to be complaining. In addition, suggestions were made about communication processes such as a relative to medical communication tool at the end of the bed. The feedback from patients and relatives was very powerful and relatives were able to give anecdotal examples of when their concerns were not addressed by ward staff. Some of the comments that were made are in Box 1 below.

Box 1: Patient and relative feedback about the C4C service

- – "It was reassuring to know it (C4C) was there"
- – "You feel so vulnerable when you leave ICU 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"

Evaluating phase one

To evaluate the pilot phase feedback was sought from the patients and relatives via a standardised questionnaire regarding whether they had enough information about C4C, whether they thought it a useful service, if they felt confident about using it and how satisfied they were if they made a C4C referral. 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 specific CCO team member and any other health care staff involved. In addition, details of all the patients and relatives who had been included in the project from ICU were given to the Intensive Care Follow Up Team. Feedback was then sought from relevant patients and families when they returned to the Follow Up Clinic two - three months after discharge from hospital.

During the first six month pilot phase involving intensive care unit patients, 147 patients were transferred from ICU to the ward. All of the patients received C4C information. Thirty (20.4%) feedback forms were received; twenty two via post and eight via the Follow Up Clinic. Of the thirty feedback forms, twelve were from patients, fourteen from relatives and four not specified. The majority (n=25) of the respondents (83%) felt that they had enough information about the C4C service and felt re-assured that such a service was available (90%).

There were twelve C4C calls to CCO during the first six month project phase. The majority of the calls were made by relatives (n = 11). The calls were audited and categorised 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 the Table 1 below.

Table 1: Categories of Call 4 Concern (C4C) referrals to Critical Care Outreach (CCO)

	Category	No. of calls
1	Critical clinical intervention, and/or re-admission to ICU	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	Re-assurance to patient/family	2

In at least two cases a concerned relative initiated a C4C referral for patients who were critically ill. In one case the patient was becoming increasingly unwell and his son felt his concerns were not 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 re-admitted 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 was inaccurately underscored, and the patient was septic and in sputum retention. Tracheostomy care was given, investigations were ordered and antibiotics commenced after consultation with the patient's medical team.

In the other ten C4C referrals, cases involved less critical interventions such as the organisation of effective pain relief, the organisation and explanation of investigations, facilitating communication between patients, their families and the medical teams, and re-assurance and explanation to patients and relatives about care issues.

The impact of the C4C project on hospital ward staff seemed to be minimal, evidenced by only two occasions when ward nurses expressed concern about a C4C call that had been made. In these instances the CCO nurse involved was able to discuss the issues and reassure the staff members involved, by pointing out the enhanced care that patients were able to receive. Ward staff concerns about C4C referrals indicated to the CCO team where communication and information regarding C4C could be improved.

Phase two: ward testing
Once the feasibility phase had shown a positive impact on patient outcome, minimal impact on CCO workload and encouraging feedback from patients and relatives, the service was introduced onto two surgical wards for a three month testing phase (June – September 2010). The surgical wards were chosen due to the high acuity of patients in those two wards and the potential benefit that C4C would make. The service also continued for those patients transferring out of intensive care.

During this ward testing phase, the C4C service was available for all patients regardless of where they had been admitted from. Information about the C4C service was provided on

all bedside lockers and the project team undertook a face to face communication exercise with all ward staff to inform them about the project.

The CCO team (n = 8) and the ward staff on the two surgical wards (n= 50) were identified as key stakeholders and integral to the success of the project, so their views were sought through using the Context Assessment Index (CAI) (McCormack et al., 2008) and a values clarification exercise (Manley, 1997).

The CAI assesses the staff's perspectives of the existing context within which they work and highlights issues that may enhance or hinder person centred care, and the receptiveness of the clinical team to change. The CAI questionnaires were distributed to all staff in the clinical areas outlined above via post. The questionnaire was accompanied by a tea bag and chocolate bar to encourage a response. 42% of the questionnaires were completed and returned. A CCO member of the steering group analysed the CAI responses using the analysis grid in the tool. The findings of the ward staff CAIs were fed back to the ward sister, and the CCO findings were discussed at the team meeting. These suggested that the CCO team felt they were implementing the C4C project within an environment that was receptive to change and development, and conducive for person centred practice.

The values clarification exercise was used to establish the teams' views and perspectives about the aims of the project and to highlight any concerns or issues about C4C. This information can then be used to inform the design of the project plan. The values clarification exercise was conducted with the critical care outreach staff via a paper form and the responses analysed by the outreach team leader. While C4C was thought to be a positive step for the improved empowerment and quality of patients' experience, there were concerns about acceptance by ward staff and the willingness of patients to call

Evaluating phase two
C4C calls were evaluated by analysing the reason for the call, the patient outcome and feedback from the patient or relative. Feedback can be difficult as it can be problematical to meet up with the relatives to discuss the call, but where this was possible, the caller's satisfaction with the outcome of the call, and any other suggestions that could improve the service was sought. This evaluation is ongoing but early analysis has given some valuable feedback about the design of the information leaflets. Patients and relatives were able to input changes to information and wording so that it made more sense to non clinical people, and the inclusion of the hospital's communication team has kept the information leaflets in a corporate style.

Following the six month intensive care phase, a further 27 C4C referrals have been made, 17 of which were from the second phase surgical wards. Ongoing analysis is being done on these calls to find out more about how best to communicate information to patients and relatives. In addition information about the barriers that patients and relatives perceive about getting the help they need from ward staff is being explored.

Staff on both the intensive care unit (n = 95) and the two surgical wards (n=21) were surveyed at the beginning of the project and following information giving, using a questionnaire developed by the steering group, in order to evaluate their knowledge of C4C and their attitudes towards the concept. The purpose of the survey was to test if the information about C4C prior to the implementation of the project was effective and to highlight any ongoing staff concerns. The intention is to repeat the survey once the ward project has been completed.

There was a 60% response rate for the ICU staff questionnaire (57 out of 95). Of the respondents 85.7% had heard about C4C and 18.4% had been involved in explaining C4C to patients and families. The main positive aspects of the C4C project from the perspective of ICU staff was the prevention of deterioration, reduction in complaints, the empowerment of patients and an improvement in the overall patient experience. Negative views regarding C4C included concerns that the service may be abused with inappropriate calls, the possible extra workload incurred and the undermining and deskilling of ward staff.

Feedback on the C4C questionnaire from ward staff (n=21, 42%) showed that half had heard about the C4C service, and only one member of staff had been involved in a call. Positive aspects of the C4C service were the perceived benefit to families, improved communication and earlier detection of the deteriorating patient. Concerns about C4C included ward staff feeling incompetent, extra work for the CCO team and inappropriate use of the service

Discussion
This project has tested the feasibility of implementing a C4C service in an acute hospital setting. It is the first project of its kind known in the UK, and as there was little evidence on which to base the design and evaluation of the project; there has been a lot to learn about the implementation of such a system.

The project has demonstrated that enabling patients and relatives to independently activate a critical care outreach referral is highly valued by them, whether they utilise it or not. Despite the expressed concerns of both ward and ITU staff about the potential increase in workload for the CCO team, the evaluation evidence suggests that the actual increase in workload was minimal, and the C4C referrals resulted in enhanced quality of care for the patients and relatives, in two cases preventing critical deterioration of the patient.

The CCO team did express some concerns about the acceptance of ward staff when they completed the values clarification exercise and some of the comments from relatives (both at the stakeholder event and during calls to the C4C service) showed that they have similar concerns about making a C4C referral as the ICU and CCO staff, in that they were concerned about upsetting ward staff, and didn't want to cause any trouble. However, where ward staff demonstrated negative attitudes to the C4C scheme, the CCO team were able to reassure the staff involved and demonstrate improvements in the care of the patient. This may have been facilitated by the fact that the ward staff had been informed of the C4C project beforehand and the CCO team is well established and integrated into hospital culture, evidenced by increased referral to CCO year on year by both nursing and medical staff. In addition, fears identified in the questionnaire relating to the deskilling of ward staff were not evidenced in the evaluation process.

This project was limited to patients transferring out of ICU to the wards and patients being cared for on two surgical wards; however when C4C is rolled out to the rest of the hospital wards the effect on workload and the needs of a different patient population cannot yet be predicted. Whilst the numbers of C4C referrals was small in this project, wider adoption of the system may result in larger numbers of calls that may reveal additional, as yet unknown, clinical and organisational issues. During the pilot project, staff concerns about inappropriate calls, and highlighting poor practice, were not realised and this may be a reflection on the relationship that hospital staff have with the CCO team. The success of C4C may therefore be dependent on a well established and trusted CCO service. Ward

staff are well used to the CCO team and C4C may be seen as an extension of a service that has been in the hospital for nearly 10 years.

Patient and relative feedback and the prevention of deterioration in at least two patients have highlighted the value of C4C, and there is growing support for this sort of system from national organisations and expert practitioners. The plan is to roll out this service to other patient groups in the hospital, with the longer term aim to provide C4C to all hospital in-patients.

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 optimising communication and referral procedures and further investigation into the reason for C4C referrals. The impact on ward staff has probably not been fully realised and further development of the C4C system may reveal as yet unknown issues, however this type of system offers a unique 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 utility and practicability. Early results have shown that workload is 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.

Future plans
Further funding has been sought to support someone to facilitate the expansion of the service to the rest of the hospital. Further research opportunities regarding patient and relative experience are being considered.

Further evaluation is needed for the ward project and staff will be given a post implementation questionnaire to assess their views about the C4C service.

Patients and relatives on the two wards are being surveyed about their knowledge and understanding of C4C.

Patient and relative stakeholders have been invited to a feedback event on 24th November 2010 in the hospital.

Presentations and publication
- Odell M (2009) Are early warning scores the only way to rapidly detect and manage deterioration. *Nursing Times*. Vol. 106. No. 8. pp 24-26
- NT/HSJ Conference, Birmingham. 17th March 2010. Improving the detection of deterioration through patient and relative initiated critical care outreach
- RRS and METs Annual Symposium, Pittsburgh, USA. May 2010. C4C: Patient and relative initiated CCO (poster presentation)
- Royal Berkshire Hospital Safety Conference. 7th July 2010 (poster presentation)
- N&AHP/ICS Conference, London. 14th July 2010
- Call for Concern: Patient and relative initiated critical care outreach. Paper presented at the national BACCN Conference, Southport. 13th-14th September 2010

- Call for Concern: Patient and relative initiated critical care outreach. Paper presented at the 10 years of critical outreach conference, Southampton. 27th September 2010
- To be presented at the Australian and New Zealand Intensive Care Society conference in Melbourne, October 2010
- HCE conference, London. 1st December 2010
- Article accepted for publication in the British Journal of Nursing, 2010

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