BMJ Open

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Journal:	*BMJ Open*
Manuscript ID	bmjopen-2018-023437
Article Type:	Research
Date Submitted by the Author:	01-Jun-2018
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Keywords:	PAEDIATRICS, situation awareness, Risk assessment, conversation analysis,, ethnomethodology, huddles

Title:

Assessing risks to paediatric patients: Conversation analysis of situation awareness in huddle meetings

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Running title: Conversational Analysis of huddles

Abstract word count: 254 words

Main text word count: 3908 (excluding title page, abstract, tables, acknowledgments, contributions, conflict of interest, and references)

Key Words: situation awareness, risk assessment, huddles, conversation analysis, ethnomethodology, paediatric medicine

Abstract

Objectives: To analyses the language and conversation used in huddles to gain a deeper understanding of exactly how huddles proceed in practice and to examine the methods by which staff members identify at-risk patients.

Setting: Paediatric wards in four English hospitals which were part of a 12 hospital cohort participating in the Situation Awareness for Everyone (SAFE) programme geographical region and type of hospital.

Participants: Paediatric staff on wards in four English hospitals.

Design: Ethnomethodology and Conversation Analysis of recorded safety huddles.

Methods: This study represents the first analysis of huddle discourse. All huddle meetings taking place on four wards across four different hospitals were audio-recorded and transcribed. The research question examined was: how do huddlers identify risks to patients in huddle meetings? The ethnomethodological-conversation analytic method was used to analyse the transcripts.

Results: Huddlers made use of terms and categories that allowed them to efficiently identify patients for each other as needing increased attention. Lexicon included the use of "concerns"/"no concerns", "the one to watch", and "watcher". Furthermore, huddlers used the meetings to go beyond standardised indicators of risk to identify relative risk and movement in patients towards deterioration, relative to the last huddle meeting and to their usual practices. Sequential analysis also highlighted the conversational rights that were held implicitly by staff in different medical roles.

Conclusion: Practical implications and recommendations for huddlers are considered. These included that for increased situation awareness, it is recommended that all staff are active in the huddle conversation and not only the most senior team members.

Keywords: situation awareness, risk assessment, huddles, conversation analysis, ethnomethodology, paediatric medicine

Article summary: Strengths and Limitations of this study

- This study is the first to inductively investigate the methods that staff used in huddles to identify risks to patients.
- Verbatim transcripts were systematically studied in detail to identify precisely how the new intervention progressed in real-life hospital settings rather than in theory or employing a reductionist strategy at data collection.
- The findings are limited to the early stage of implementation of huddles.
- Data consisted of audio recordings which has the advantage of capturing huddles in situ rather than in abstraction. However, some of these recordings were of poorer quality and video recordings capturing non-verbal elements of communication would have enhanced analysis and findings.

Introduction:

The development of real time situation awareness (SA) requires review of a current situation and anticipation of a future state with the creation of solutions before problems happen. Based on processes of other high reliability industries, huddles have been adopted in healthcare [1, 2]. Situation Awareness in healthcare refers to a shared awareness about a patient's health situation in real and future time. This has implications for organisational hierarchies, as staff members are encouraged to speak about risks without deference to authority.

Huddles are rapid, regular meetings attended by all who may have information about patients and are intended to be non-hierarchical so that all are encouraged to speak or challenge decisions. Participants assess the current state and anticipate future risks to patients, so that the risk can be addressed [1, 2, 3, 4]. The implementation of huddles is correlated with improved patient safety [1]. Qualitative work suggests the technique improves organisational efficiency, quality of information sharing, accountability, and team-working culture [2, 3]. Provost et al. [3] conclude that huddles had a decisive impact on improving staff conversation, relationships, and culture. There has not been any analysis of exactly how huddles proceed in practice and this is the focus of this article.

Ethnomethodology and Conversation Analysis (EMCA) studies have examined the practical organisation of meetings at work. This includes topics such as how agendas are managed, employed, and strayed from [5], how roles are invoked in decision-making processes in multidisciplinary teams [6], and how decisions are made in teams [5, 7]. The method has been used in healthcare to highlight important social-interactional moves in the accomplishment of medical tasks [8, 9, 10]. In pulmonary medicine, Chatwin et al. [11]

noted the importance of medical staff providing 'narrative slots' in which patients could provide new information about potentially serious symptoms. In paediatrics, Stivers [12] showed how through silence, questions, and refusal to engage in shared laughter, parents resisted the treatment proposals of doctors who recommended against the use of antibiotics for viral infections. These enquiries demonstrate that what is said or not said at specific moments in medical conversations can influence the treatment that a patient receives.

A systematic review of clinical handovers in hospitals concluded that there exists a pervasive problem of poor communication during handovers, and that this is leading to error [13]. Identified problems also included a lack of formal systems for handovers such as a regular designated time and place or a formal obligation to attend [13]. Eggins and Slade [14] investigated the discourse of shift handovers. They demonstrated the interdependence between the informational and interactional elements of effective handovers. To improve safety, it is not just what is said, but how it is said and how others receive this information that makes a handover effective.

Huddles, in theory, share many features with handovers in that they involve information sharing, aim for continuity of care, and at times, and involve a transfer of accountability when at the end of a shift. The time pressure involved in both situations makes effective communication imperative. However, huddles are theoretically different insofar as they should involve all of those caring for a child (rather than doctors only), focus on at-risk patients and situations rather than all patients, and include anticipation of the future.

The data for this study is taken from a wider evaluation of the SAFE safety improvement collaborative [15]. As part of SAFE, paediatric staff at an initial 12 then a further 16 NHS

hospitals across England trialled several techniques, including huddles, to improve patient care and the anticipation of risks to patients. The aim of this study is to examine the methods by which staff members identify at-risk patients.

Method

Huddle level sampling. Data collection occurred approximately four months after the start of SAFE (January to March 2015). All huddle meetings that took place for two days were audio recorded.

Ward level sampling. A mixed methods approach was taken with quantitative data collected from the 12 hospital sites and qualitative data from four sites chosen for heterogeneity of clinical context, aiming for maximal variation in terms of type of work done on the ward, size of the ward, geographical region and type of hospital. The frequency of the huddles ranged from 1 to 3 per day. The resulting sample of hospital wards and number of huddles observed on each was:

This provided a total of 16 huddles to analyse. Huddles ranged from 1 min 40 secs to 10 mins in length. (Table 1)

Table 1 The sample population

	Type	Number of huddles observed	Transcript data used in analysis
Ward 1	Paediatric ward in a large general hospital	6	Full
Ward 2	Paediatric ward with a high dependency unit (HDU) in a general hospital	4	Full
Ward 3	HDU ward in a specialist children's hospital (SCH)	4	Partial
Ward 4	General ward in a SCH	2	Partial

Patient involvement

The SAFE safety improvement collaborative [15] was a collaborative that included patients representatives on the Project Board to enable planning of the intervention and of the research questions. In this particular part of the study patient clinical information was discussed and all huddles included patient or parent views as part of the huddle process. The research question was to study discourse of the huddles and not the patients per se.

Data collection

The huddles were audio recorded by four non-participant observers, two of whom were present at any one time. The observers recorded the order of speakers to aid transcription.

They completed an observational tool, specifically designed for huddles [16]. Huddles were audio-recorded using two recorders at opposite sides of the huddle space. They were transcribed by observers present on the ward using simplified conversation analytic conventions [17].

Data analysis

Recordings from four sites were analysed. Due to difficulties with audio sound quality, two sites, Wards 1 and 2, provided the core material for analysis. Intelligible sections of transcripts from the other two sites were used. A senior researcher who was not present at data collection analysed this material. The first pass analysis was then analysed with an advisor to the project and another senior researcher, in which analytic disagreements were discussed and resolved.

Analysis was guided by principles of ethnomethodological-conversation analysis (EMCA), [18, 19, 20, 21].

The analytic steps were to:

1. Identify all sections where a patient is identified as a risk
2. Conduct within-case sequential analysis of the process by which at-risk patients are identified, including lexical choices and methods of implicit categorisation
3. Conduct cross-case classification of the methods that staff used to identify at-risk patients

Reflexive statement. Data were analysed by a senior researcher in the independent evaluation of the SAFE programme, not invested in the outcome of individual huddles nor the SAFE programme.

Ethical considerations. The research was approved by the Dulwich Research Ethics Committee (REC reference: 14/LO/0875). Ward staff were informed that researchers would be present on the ward that day to observe and audio record their huddles. They were given the opportunity to opt-out of the huddle, but all participated. Participant and patient information were anonymised at the point of transcription, as well as any potentially identifying features of the hospital or ward.

Results

How are at-risk patients identified in huddles?

There were three key terms used to identify patients. Four extracts are given to illustrate the emerging lexicon, as well as how this was used by the staff present.

1. "No concerns"

Huddlers displayed ways of showing for each other which patients were at-risk. Sometimes identification was by making lexical choices to label patients, and sometimes potentially at-risk patients were identifiable through a lack of categorisation - for patients who were not in need of further attention the nurses used the phrase *"no concerns"*. Extract 1 taken from Ward 1, day 2, in the evening exemplifies one way in which this occurred.

1.	**WARD MANAGER:**	Ok, start again
2.	**NURSE 1:**	( ) no concerns (.) PEWSing one. Heart rate's a bit up.
3.	**DOCTOR:**	ok.
4.		(3.0)
5.		(patient name)?
6.		**(**2.0)
7.	**NURSE 1:**	no concerns
8.	**DOCTOR:**	Ok (.)
9.	**NUMEROUS:**	Six-teen
10.	**WARD MANAGER:**	Sixteen?
11.	**NURSE 2:**	He's had (a) fever since he's been with us (.) he could do with a
12.		review (.) Dad's insisting he wants to be seen (.) so::
13.	**NURSE 1:**	Concerns or no [concerns?]
14.	**NURSE 2:**	[>No concerns] at the moment<
15.	**WARD MANAGER:**	Nineteen?
16.	**NURSE 3:**	No concerns:
17.	**WARD MANAGER:**	Twenty::?
18.	**NURSE 3:**	No concerns
19.	**WARD MAN:**	Twenty-one, no concern (.) twenty-two?
20.	**NURSE 1:**	No concerns

After the ward manager opens the meeting, Nurse 1 self-selects and makes her classification, "no concerns" (line 2), providing a brief report ("Pewsing one…."; line 2) . The doctor shows receipt of this information and then prompts the next turn, using the patient's

name. Nurse 1 offers the categorisation "no concerns" (line 7) in response, without expansion. Many in the room coordinate at lines 8 and 9 to prompt the next speaker. Nurse 2 then does not begin her turn by offering a classification. She instead provides a report on the patient's situation. Nurse 1's closed question at line 12 ("Concerns or no [concerns?]") implies that this lack of classification is potentially problematic. The question suggests both that the most relevant action here is a classification, and that it is Nurse 2 that is best placed to make it (no other medical professionals in the room are asked). After the prompting to categorise by nurse 1 at line 13, Nurse 2's phrasing "*at the moment*" (line 14) highlights the time-bound nature of her concern – in the 'moment' of this huddle, the patient is not deteriorating, but she hints that change is possible. Arguably, it introduces a third category, the *concerns/the no concerns* and those somewhere between the two. If concerns are anticipations of risk or deterioration, then this third category represents an anticipation of concerns – these might be termed 'pre-concerns'. This could be viewed as a super-ordinate level of SA. But whether this level has a place here, is for the huddle to decide. The continuation from line 15 of their previous turn-taking indicates that this is enough discussion of this patient for now.

This brief exchange highlights something important about huddles. In theory, huddles are places where potential risks and concerns are discussed, but in a 'rapid exchange'. There is a necessary tension between looking ahead, and expediency and efficiency – Nurses 1 and 2 personify this tension here. In this huddle nurses took the lead, the doctor only becoming involved when reports were given. Nurses were responsible for bringing the right information to the huddle and classifying patients, but if the classification was ambiguous, this was where the doctor became involved (not seen in this extract).

A second method that huddlers used to identify at-risk patients may be seen in extract 2. In this extract, from ward 2, staff also used the term 'concern' but the process through which patients were identified was quite different. This is demonstrated in the extract from Ward 1, day 2, in the evening:

10.	**Consultant:**	(Shall we do the) board huddle?
11.		(3.0)
12.	**Staff nurse:**	Okay: so:: we've (.) ehm, [we're not]
13.	**Consultant:**	[( )]
14.	**Staff nurse:**	concerned about anybody.
15.	**Consultant:**	Ok=ehr=
16.	**Staff nurse:**	=we've got- one HDU patient, (patient's name) who
17.		is PEWing at four[( )]
18.	**Consultant:**	[So it's now four] okay
19.	**Staff nurse:**	Yeah
20.	**Consultant:**	So we had <u>six</u> in the morning, so it's now <u>four</u> [so it's improving]
21.	**Staff nurse:**	[Hmm yes]

In this huddle, after the consultant opens the meeting (line 10), the staff nurse gives a general gloss: *"we're not concerned about anybody"* (lines 12-14). She then unpacks this. This is different to the method of huddling where each patient is discussed in turn, and where bedside nurses each have a slot to talk. In extract 2, the staff nurse curiously

demonstrates her lack of concern about the 'PEWS[1]' in the 'amber' range. The consultant's addition of *"we had six….it's now four"* (line 18), provides the rationale for this lack of worry, as this indicates improvement.

2. "The one to watch"

The next extract shows a sequence toward the beginning of a huddle, where the senior nurse, who is the assigned huddle leader, is 'interviewing' the consultant about the risks that he perceives. This is demonstrated in the Extract from Ward 2, day 2, in the afternoon:

17. **Senior nurse:** So:: (.) >anyone we're worried about<
18. (0.6)
19. >at the moment?<
20. **Consultant:** At the moment, so the only one which is now in an MRI,
21. yes?, this boy err:: three one.
22. **Senior nurse:** Yes.
23. **(8 lines omitted)**
24. **Consultant:** So this is the one (.)and the other one I mean the er=er
25. girl to watch is the girl wi- on oxygen, yes?=
26. **Senior nurse:** =Yes=
27. **Consultant:** =three

[1] The PEWS, or Paediatric Early Warning System includes a score which aims to be a standardised measure of the clinical state of paediatric patients. Patients are rated on cardiovascular, respiratory and behavioural vital signs and given a score, or alternatively may follow a tracker system. There are several types of PEWS (for a review, see [22]).

28. two.
29. **Senior nurse:** Yeah.
30. **Consultant:** (Said) that she`s well, just the oxygen y::: she was off
31. oxygen but she`s back to oxygen.
32. **Senior nurse:** Gone back=on=it, so she`s not going anywhere today
33. [is she?]
34. **Consultant:** [She`s not], she's not.
35. **Senior nurse:** No
36. **Consultant:** Err:::=but so she`s the one to watch.
37. **Senior nurse:** Ok, cool=

The senior nurse opens with her question about who *"we're worried about?"* (line 17). This frames the risk as a *shared worry,* but it is clear from the ensuing turns that it is the consultant's worries that are relevant; there are two other doctors present as an audience, and this huddle proceeds as an exchange between the senior nurse and the consultant, with no 'slots' provided to other members of the team to relay information. The consultant responds to the senior nurse's opening question by talking about two patients. He marks the first patient as *"the only one"* (line 20) that they are worried about, but then this *"one"* is joined by another patient at line 24. He makes salient that this second patient is *"the girl to watch"*. This phrase, which uses the infinitive form of the verb *"to watch"* (line 36) alongside the subject (*"the one"*) locates this quality of risk within the patient rather than in the feelings (i.e. 'concerns') of the clinician. It also has a plan embedded within it – 'to

watch' them, to be more aware of them. The use of the infinitive form means this could be a general instruction to all at this huddle or for the senior nurse. The senior nurse accepts the consultant's assessment of the situation with the *"ok, cool"* (line 37) but there is no verbal input from the others present.

In this huddle, it was very clear who the 'at-risk' patients are, and the meeting was rapid and tightly focused around them. There was no 'noise' to filter about non-risks. However, this tight focus seemed to be at the expense of collaboration, in the sense that huddles on this ward were organised around one person's perception of risk.

3. "The Watchers"

At Cincinnati Children's Hospital staff use the phrase 'watcher' as a noun, to discuss at-risk patients [3]. We have seen how a variation of this ('the one to watch') is used to categorise patients on Ward 2. The original term, *"watcher"*, was used in huddles on Wards 3 and 4 as indicated in the extract from Ward 4, day 1 in the morning.

26.	**Nurse:**	No cardiac arrests respiratory arrests, PICU admissions. Erm,
27.		.h=watchers, is (patient name) we're keeping an eye out, and
28.		then bed 24

The nurse here uses *"watchers"* (line 26) in a similar way as *"the one to watch"* was used at Ward 2, insofar as it quickly designates a patient as needing extra attention. However, this is more a report for the doctor that she is speaking to (this is a two person huddle) than an instruction, as *"we're keeping an eye out"* (line 27) suggests that the matter is already in hand. The term 'watcher' locates the quality of risk within an individual patient, unlike the terms 'concern' or 'worry', which foreground the feelings of a clinician. However, what all

these terms have in common in terms of their function is that they are quick ways of directing the 'gaze' of the ward.

Discussion

This data was taken from the early implementation phase of the SAFE programme, and it was clear that huddlers had established different methods for identifying risks to their patients. Attention to the language revealed that all wards adopted terms to establish shared concerns under time pressure. The development of similar "reliable flagging processes" was found to be important in alerting a team to where to focus their attention overnight in a study of 'hospital at night handovers' [23]. Huddlers showed adaptation of their terms in situations where the patient resisted simple classification. As with Eggins and Slade [14], analysis showed the sensitivity of huddlers to what Maynard and Heritage [24] termed 'socio-medical' dilemmas, i.e. the interdependence of information sharing with smooth social interaction.

Despite the variety in lexical choice and processes of identifying risk, one common thread was the characteristics of the concerns and risks discussed, in that they were all situations that required measures outside the 'business as usual' practices of the ward. This meant that the huddlers' understandings of risk were in part, locally defined. For example, an ill patient with a certain condition on one ward may have been a concern, yet on another they may have been a typical patient. Moreover, risks to patients were time-bound, so that a high PEW score was not seen as a concern if the score was lower than the previous huddle. There was a necessary element of: 1) Ward-centredness and 2) Patient-centredness, in

definitions of risk, and this shows a need to go beyond standardised tools as standalone indicators of risk. Risks were conversationally negotiated, and this conversation was inherently continuous with previous huddles.

When someone raised a concern, there were various choices that could be made by other huddlers, either to facilitate the speaker to say more, to prompt them to categorise the patient, or to close the topic down and move on. There were also implicit rules in operation about the conversational roles of the different huddlers. These roles varied considerably across the huddles. In some, only bedside nurses raised concerns, and they were 'interviewed' by the other members of the team. Doctors had to agree that a situation was sufficiently concerning to require a plan. In others, the consultant identified the risks.

Huddlers usually do not talk about patients as 'really ill/poorly/sick', and this is because ill patients are not concerning to them if they are stable, and if their needs are within the bounds of current institutional processes. Instead, huddlers needed, and are developing, other terms that can capture not simple static states but changes, and potential changes – labels that index the past, present, and future. The other thing to note is that concerns and risks that are raised by someone in a huddle need to go through a process to become established by the huddle as a shared problem, and that this process may be more, or less collaborative. The speaker firstly needs to be given the floor for long enough to offer all relevant information. Secondly, this information needs to be considered by the senior staff present. Although each huddle was different, there were some general features of organisation that huddlers used to discuss potential risks to patients. (Figure 1)

Insert figure 1 here

Practical implications and recommendations

1. To discuss the non-concerns?

Some huddlers spoke only about situations that concerned them and others used the time to go through each bed. The advantage of this latter method of huddling was that there were 'slots' created for nurses in the huddle to communicate potential changes in patients [11]. Due to the tensions between providing opportunities for collaboration and expediency, huddlers may reflect on the best use of their time.

2. Language

We noted the different terms that huddlers used and as with all language it is not simply what word that is used but also how it is used that is important. One consideration is the meaning and function that these terms had in this sample. *Watchers* was used to speak only of at-risk patients, rather than other problematic situations. This included the sharing of 'gut feelings' - when there were no clinical indicators of risk, but where someone senses something is wrong. *The one to watch* is used similarly but more explicitly contains instruction. *Concerns* were used to talk about patients but also was used to index other problems. There were also situations that resisted simple classification and were termed here 'pre-concerns'. Huddlers may consider having a category that captures the 'pre-concerns' or 'pre-watchers'.

3. Roles

Senior staff members were the most active in channelling the talk in huddles. For example, in asking questions, and using 'continuers' when others provided information. In some huddles, only senior staff shared their knowledge and concerns about patients. *Is this situation desirable*? Huddle theoreticians and practitioners could reflect on whether the most junior members of staff should have a greater role in huddles.

4. Enabling the communication of concerns

Communicating information about a patient is an important element of SA, but equally important is how the listening happens. Analysis showed that the use of various response tokens and questions, channelled speakers to provide information on patients or close the topic. It is recommended that huddlers consider the ways that they encourage others to speak and share concerns, and display that these are taken seriously.

Limitations

The data reported here were derived from the early implementation of huddles and it is possible that over time, the variety of methods that members used in the current analysis may change with growing experience. The quality of the data used was not consistent due to recording problems at two of the sites and this constrained a more detailed sequential analysis. Use of video data was not possible in this project due to the ethical sensitivity of collecting data on an open ward environment. This poses a limitation considering recommendations for multi-modal analysis of meetings. ([5]

Conclusions

The aim of this article was to highlight how healthcare staff members translate huddle theory into practice, and it is the first study to examine the discourse of huddles. It has been

found that specific lexical markers are in use at all wards, and that these allow the expedient identification of patients who are at risk of deterioration. Huddlers also adapted these terms to both upgrade and downgrade risk, suggesting that standardised indicators of risk were not enough alone for defining risks. Sequential analysis has also highlighted the conversational rights held *implicitly* by staff in different roles. This has displayed a potential tension between huddle principles and the fact that the more senior staff in these huddles seemed to be using the greatest variety of conversational moves. Findings may aid huddlers in considering the ways of conversing that best promote huddle principles on their ward.

Author Statement

JH led the ECMA research and drafting of the paper under the supervision of JD and MW, and JH conducted the literature review and developed the paper. JH and PL wrote the final version of the paper. ES provided revision of the paper. J E-C contributed to analyses. All authors contributed to the drafting of the paper.

Acknowledgements

The authors would like to thank Dawid Gondek, Amy Ramsay, Evelyn Sharples and Makeda Gerressu for their role in data collection and transcription. Sincere thanks are also extended to Ivan Leudar, and the Roehampton EMCA group for analytic wisdom; and Sarah Cantwell, John Rae, and Adam Gibson for constructive comments on an earlier draft. We thank our Patient Advisor Emma Francis for her valuable input to the SAFE programme.

Conflicts of Interest

P.L. led the implementation of the SAFE programme and contributed to the literature review and drafting of this manuscript. However P.L. was not involved in the data collection nor data analysis/results reported here.

Funding

Situation Awareness For Everyone (SAFE) is a Health Foundation funded programme; both the implementation of SAFE and the evaluation were funded by the Health Foundation. This work was also supported by funding from WellChild, the funding was specifically to support evaluation work around perspectives of parents and young people and to support patient and parent involvement in the research. This programme of work and evaluation was also supported by the Royal College of Paediatrics and Child Health (RCPCH) which leads on the delivery of the programme. JD was supported by the National Institute for Health Research (NIHR) Collaboration for Leaderships in Applied Health Research and Care (CLAHRC) North Thames at Bart's Health NHS Trust. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR, the Department of Health, or RCPCH.

Data sharing

Supporting data and analyses is available in the appendices. Additional data is available on request to the authors.

Figure Legend

Figure 1 Methods used to establish shared concerns

References

1. Brady PW, Muething S, Kotagal U, Ashby M, Gallagher R, Hall D, et al. Improving situation awareness to reduce unrecognized clinical deterioration and serious safety events. Pediatrics, 2013. 131:e298-308.
2. Goldenhar L, Brady PW, Sutcliffe KM, Muething SE. Huddling for high reliability and situation awareness. BMJ Qual and Safety. 2013 22:899-906.
3. Provost SM, Lanham HJ, Leykum LK, McDaniel RR Jr, Pugh J. Health care huddles: managing complexity to achieve high reliability. Health Care Management Review. 2015. 40:2-12.
4. RCPCH. Situation Awareness for Everyone (S.A.F.E) Programme. http://www.rcpch.ac.uk/safe Accessed 8th November, 2016
5. Deppermann A, Schmitt R, Mondada L. Agenda and emergence: Contingent and planned activities in a meeting. Journal of Pragmatics. 2010. 42(6):1700-1718.
6. Housley W. Role as an interactional device and resource in multidisciplinary team meetings. Sociological Research Online. 1999. 4(3).
7. Huisman M. Decision-making in meetings as talk-in-interaction. International Studies of Management & Organization. 2001. 31(3):69-90.
8. Dooley J, Bailey C, McCabe R. Communication in healthcare interactions in dementia: A systematic review of observational studies. International Psychogeriatrics. 2015. 27:1277-300.
9. Heritage J, Maynard DW. Communication in Medical Care. Cambridge, England: Cambridge University Press. 2006.

10. Heritage J, Robinson JD. The structure of patients' presenting concerns: Physician's opening questions. Health Communication. 2006. 19:89-102.

11. Chatwin J, Kennedy A, Firth A, Povey A, Rogers A, Sanders C. How potentially serious symptom changes are talked about and managed in COPD clinical review consultations: A micro-analysis. Soc Sci & Med. 2014. 113:120-136.

12. Stivers T. Participating in decisions about treatment: overt parent pressure for antibiotic medication in paediatric encounters. Soc Sci & Med. 2002. 54:1111-1130.

13. Raduma-Tomàs MA, Flin R, Yule S, Williams D. Doctors' handovers in hospitals: a literature review. BMJ Qual Saf. 2011. 20(2):128-133.

14. Eggins S, Slade D. Clinical handover as an interactive event: informational and interactional communication strategies in effective shift-change handovers. Communication and Medicine. 2012. 9:215-227.

15. Deighton J, Edbrooke-Childs J, Stapley E, Sevdalis N, Hayes J, Gondek, D, Lachman, P. Realistic evaluation of Situation Awareness for Everyone (SAFE) on paediatric wards: study protocol. BMJ Open. 2016 Dec;6(12):e014014.

16. Edbrooke-Childs J, Hayes J, Sharples E, Gondek D, Stapley E, Sevdalis N, Lachman P, Deighton, J. Development of the Huddle Observation Tool for structured case management discussions to improve situation awareness on inpatient clinical wards. BMJ Qual Saf. 2017 Sep 19:bmjqs-2017-006513.

17. Jefferson G. Glossary of transcript symbols with an introduction. In GH Lerner (Ed.), Conversation Analysis, Studies From the First Generation (pp.13-31). Amsterdam, Netherlands; John Benjamins. 2004.

18. Garfinkel H. Studies in ethnomethodology. Cambridge; Prentice Hall. 1967.

19. Hayes J, Leudar I. Experiences of presence: On the practical consequences of 'hallucinations' in bereavement. Psychology and Psychotherapy: Theory, Research and Practice. 2016. 89:194-210.

20. Heritage J, Watson DR. Formulations as conversational objects. Everyday Language: Studies in Ethnomethodology. 1979. 123-162.

21. Sacks H. Lectures on Conversation. Oxford, England: Blackwell. 1992.

22. Lambert V, Matthews A, MacDonell R, Fitzsimons J. Paediatric early warning systems for detecting and responding to clinical deterioration in children: a systematic review. BMJ Open. 2017;7(3):e014497. doi:10.1136/bmjopen-2016-014497.

23. McQuillan A, Carthey J, Catchpole K, McCulloch P, Ridout DA, Goldman AP. Republished: Creating a safe, reliable hospital at night handover: a case study in implementation science. Postgraduate medical journal. 2014 Sep 1;90(1067):493-501.

24. Maynard DW, Heritage J. Conversation analysis, doctor-patient interaction and medical communication. Medical Education. 2005 39:428-435.

Figure 1

Establishing shared concerns: There are two stages where a potential concern raised by one huddle member may not become a shared huddle concern.

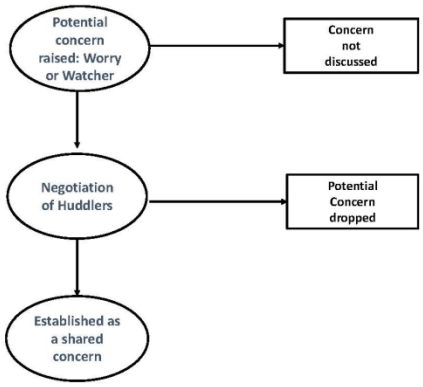

Figure 1 Methods used to establish shared concerns

139x198mm (300 x 300 DPI)

Appendix 1

Supporting analyses

In this section, three more extracts are shown and explicated to demonstrate supporting data for the conclusions of the main article. These include further evidence showing the use of the lexicon, how the staff flexibly upgraded and downgraded this lexicon, and the staff involved in these categorisations.

"No concerns"

The following extract shows a further example of how the lexicon of no-concerns was used to identify patients at risk. In particular, it demonstrates how through the routine use of this category, potentially at-risk patients were in fact identifiable to staff in this huddle through a lack of categorisation.

Extract 5, Ward 1, day 1, morning

1. **NURSE 2:** °11 no concerns, 13 no concerns and 14 no concerns as well.
2. **NURSE 3:** 16 no concerns, 18 no concerns
3. (1.0)
4. (name of Nurse 4)?
5. **NURSE 4:** 19 no concerns
6. (2.0)
7. **BANK NURSE:** And 21 ( ) had a complaint of serious back pain
8. **DOCTOR:** °Ok°
9. **BANK NURSE:** Erm: requested for painkiller which I have given him.
10. **STAFF NURSE:** °Ok°

The extract opens with Nurse 2 providing a series of classifications, referring to each patient by their bed number, and using the phrase *"no concerns"* (Line 1). Nurse 3 then takes the floor, and follows suit by classifying her two patients in a single turn (line 2). There is then a one second silence (line 3). Nurse 3 breaks this by

prompting Nurse 4's turn, saying her name (line 4), to which Nurse 4 replies with the same format, *"no concerns"* (line 5). A two second silence follows before the bank nurse[1] takes her turn, providing a report of her patient without a classification (line 7-9). The doctor responds with a quietly-spoken minimal receipt, *"°Ok°"* at lines 7 and 9. In this particular huddle then, if a patient was not in need of further attention the nurses used the phrase *"no concerns"* with no expansion, and a report was provided about the patient if there was a potential for concern. Therefore concerns were not necessarily stated but were implied with the absence of the *"no concerns"* categorisation.

Resisting the no-concerns/concerns binary

Extract 1 of the main article demonstrated how Nurse 2 resisted classifying her patient as simply "no concerns" by emphasising the time-limited nature of her assessment – but there were other ways that huddlers did this too. These 'gradings' of concern were not solely medical in purpose but also served interactional functions:

Extract 6: Ward 1, day 1, morning

78. **BANK NURSE: <**Err tw-enty-four::::, err:: pad is still (.) itching.(.) because=of
79. er::::ec-ze-ma
80. **?:** (inaudible)
81. ((door creaks, opening and child crying can be loudly heard until door shuts))
82. **BANK NURSE:** So I would say that the Pew is one, I'm waiting to give
83. medicine this morning (inaudible) but if-
84. **DOCTOR:** ->we should just check on:: them in terms of scoring<(.)
85. erm=er::: but >we'll review on the ward round anyway but I don't
86. think we've got any acute concerns<
87. **BANK NURSE:** No, no, no concerns.

[1] A bank nurse is a locum nurse who is working as a short-term replacement in the team and is not a regular team member: though they may be a short term replacement.

At line 78, the bank nurse opens her turn not by saying whether or not she has a concern but by giving details about the patient. By making the itching relevant at this point in the huddle, the implication is that this is a potential 'concern'. The speaker then makes her assessment of the patient and then displays the action that she will take (lines 82-83). At this point, she is cut off by the doctor, who initiates a plan. The language is collaborative - *"we"* (line 84) should check the score and *"we'll review"* (line 85) - though the timing of the interjection is an assertive claim to the floor. The addition of *"anyway"* (line 85) indicates that the plan is a concession and that action is not necessary. The framing of this plan as an extra precaution rather than a necessity, is also indicated in the subsequent assessment *"but I don't think we've got any acute concerns"* (line 85-86). The lexical choice here is careful – the doctor does not say that this situation is not concerning – if he did so this might be dismissive of the bank nurse who has raised the point. This is particularly important in light of the fact that huddles in theory are places where anyone can feel comfortable to raise a worry that they have about a patient. However, the doctor does need to find a way of showing to the others that this is not his priority, and to find a way of limiting deliberation. The use of *"acute concern"* here saves the face of the nurse who has raised this while offering a closing of the discussion. The bank nurse's turn is more like a handover in style (see [14]), and the doctor's turn also gently redefines the conversation as about 'acute concerns' rather than the 'ordinary concerns'/ business of the ward.

The bank nurse shows emphatic agreement in line 87 and uses the original term *"concern"*, confirming that the topic is dealt with. This may of course reflect how a temporary member of the team adopts the team's language, but what this example

highlights is that Ward 1 worked to an implicit rule that only once this categorisation concern/no concern was made explicitly, by the assigned nurse, could the topic shift to another patient (and this was seen in other Ward 1 huddles). The negotiation of concerns was thus a collaborative enterprise in so far as the bedside nurse had the final say on a patient. However, as we have seen, this does not mean that the doctor in the huddle could not 'downgrade' a concern.

The "Watchers"

In extract 4 of the main article we saw how the term "watchers" was used in a Ward 4 huddle by a nurse to report to a doctor the list of patients who were at-risk. The term 'watchers' was in fact used the most in Ward 3 and appeared in three out of the four huddles. It was used in much the same way as Ward 4 but occasionally received an upgrade, as the following example shows:

Extract 7, Ward 3, day 2, evening

1. **NURSE CONSULTANT:** okay are we ready to start
2. **SENIOR NURSE 1:** yeah
3. **NURSE CONSULTANT:** yep okay have we had any incidents today (.) anything
4. **SENIOR NURSE 1:** er:-[the]
5. **NURSE CONSULTANT:** [at all?]
6. **SENIOR NURSE 1:** erm (0.8) (child's name) in we did talk to the [( )]
7. **NURSE CONSULTANT:** [okay]
8. **SENIOR NURSE 1**: erm:, at half five he was in the room wasn't he when he had
9. a quite prof:ound: (.) [desaturation]
10. **SENIOR NURSE 2:** [des:aturation]
11. **NURSE CONSULTANT:** okay
12. **SENIOR NURSE 1:** he's he's the one to
13. **NURSE CONSULTANT:** he's our watcher
14. **SENIOR NURSE 1:** he's our watcher (.) w:- with bells on

There are no doctors present at this huddle. The nurse consultant opens the meeting with the question, *"are we ready to start?"* (line 1). Senior Nurse 1 confirms this, and the nurse consultant follows this with another question, topicalising *"incidents today"* (line 3). This question makes the recent past relevant (rather than being a future orientation). There is an overlap as Senior Nurse 1 begins to answer. She gives information about *"quite a profound desaturation"* (of oxygen) in a patient, the patient's name, and time this happened (lines 7-11). Senior Nurse 2 confirms this report with her *"desaturation"* (line 12), in unison with the end of Senior Nurse 1's turn. Senior Nurse 1 begins to make her assessment that this patient is *"the one to"* (line 14) and the nurse consultant renames the patient *"our watcher"* (line 15), confirming the assessment. The addition of *"our"* by the most senior person in the

room displays his understanding that the situation is serious and emphasises the shared nature of the responsibility to the patient. Senior Nurse 1 uses her turn to repeat this, and then upgrade it- *"with bells on"* (line 16). This produces another category of patient in addition to the watchers - the extreme watchers. We saw a doctor in Extract 6 above using the term *"acute concern"* in downgrading a risk: here, another huddle member emphasises risk by adding, *"with bells on"* (line 14).

BMJ Open

Assessing risks to paediatric patients: Conversation analysis of situation awareness in huddle meetings

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2018-023437.R1
Article Type:	Research
Date Submitted by the Author:	13-Nov-2018
Complete List of Authors:	Hayes, Jacqueline; University of Roehampton, Psychology Lachman, Peter; International Society for Quality in Healthcare (ISQua); Royal College of Paediatrics and Child Health Edbrooke-Childs, Julian; University College London and the Anna Freud Centre, Evidence Based Practice Unit Stapley, Emily; Anna Freud National Centre for Children and Families, Evidence Based Practice Unit; University College London, Department of Clinical, Educational and Health Psychology Wolpert, Miranda; UCL , CAMHS EBPU Deighton, Jessica; UCL and Anna Freud Centre, CAMHS Evidence Based Practice Unit
Primary Subject Heading:	Communication
Secondary Subject Heading:	Paediatrics
Keywords:	PAEDIATRICS, situation awareness, Risk assessment, conversation analysis,, ethnomethodology, huddles

Title:

Assessing risks to paediatric patients: Conversation analysis of situation awareness in huddle meetings

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Running title: Conversation Analysis of huddles

Abstract word count: 254 words

Main text word count: 4033 (excluding title page, abstract, tables, acknowledgments, contributions, conflict of interest, and references)

Key Words: situation awareness, risk assessment, huddles, conversation analysis, ethnomethodology, paediatric medicine

Abstract

Objectives: To analyse the language and conversation used in huddles to gain a deeper understanding of exactly how huddles proceed in practice and to examine the methods by which staff members identify at-risk patients.

Setting: Paediatric wards in four English hospitals, which were part of a 12-hospital cohort participating in the Situation Awareness for Everyone (SAFE) programme. Wards varied by geographical region and type of hospital.

Participants: Paediatric staff on wards in four English hospitals.

Design: Ethnomethodology and Conversation Analysis of recorded safety huddles.

Methods: This study represents the first analysis of huddle discourse. All huddle meetings taking place on four wards across four different hospitals were audio-recorded and transcribed. The research question examined was: how do huddlers identify risks to patients in huddle meetings? The ethnomethodological-conversation analytic method was used to analyse the transcripts.

Results: Huddlers made use of terms and categories that allowed them to efficiently identify patients for each other as needing increased attention. Lexicon included the use of ”no concerns”, “acute concerns”, “the one to watch”, and “watcher”. Huddlers used the meetings to go beyond standardised indicators of risk to identify relative risk and movement in patients towards deterioration, relative to the last huddle meeting and to their usual practices. An implicit category, termed here “pre-concerns”, was used by staff to identify such in-between states. Sequential analysis also highlighted the conversational rights that were held implicitly by staff in different medical roles.

Conclusion: Practical implications and recommendations for huddlers are considered. These included that for increased situation awareness, it is recommended that all staff are active in the huddle conversation and not only the most senior team members.

Keywords: situation awareness, risk assessment, huddles, conversation analysis, ethnomethodology, paediatric medicine

Article summary: Strengths and Limitations of this study

- This study is the first to inductively investigate the methods that staff used in huddles to identify risks to patients.
- Verbatim transcripts were systematically studied in detail to identify precisely how the new intervention progressed in real-life hospital settings rather than in theory or employing a reductionist strategy at data collection.
- The findings are limited to the early stage of implementation of huddles.
- Data consisted of audio recordings which has the advantage of capturing huddles in situ rather than in abstraction. However, some of these recordings were of poorer quality and video recordings capturing non-verbal elements of communication would have enhanced analysis and findings.

Introduction:

The development of real time situation awareness (SA) requires review of a current situation and anticipation of a future state with the creation of solutions before problems happen. Based on processes of other high reliability industries, huddles have been adopted in healthcare [1, 2]. Situation Awareness in healthcare refers to a shared awareness about a patient's health situation in real and future time. This has implications for organisational hierarchies, as staff members are encouraged to speak about risks without deference to authority.

Huddles are rapid, regular meetings attended by all who may have information about patients and are intended to be non-hierarchical so that all are encouraged to speak or challenge decisions. Participants assess the current state and anticipate future risks to patients, so that the risk can be addressed [1, 2, 3, 4]. The implementation of huddles is correlated with improved patient safety [1]. Qualitative work suggests that the technique improves organisational efficiency, quality of information sharing, accountability, and team-working culture [2, 3]. Provost et al. [3] conclude that huddles had a decisive impact on improving staff conversation, relationships, and culture. There has not been any analysis of exactly how huddles proceed in practice and this is the focus of this article.

Ethnomethodology and Conversation Analysis (EMCA) studies have examined the practical organisation of meetings at work. This includes topics such as how agendas are managed, employed, and strayed from [5], how roles are invoked in decision-making processes in multidisciplinary teams [6], how decisions are made in teams [5, 7], and how interprofessional collaboration works in healthcare settings [8, 9]. The method has been used to highlight important social-interactional moves in the accomplishment of medical tasks [10,11,12]. In

pulmonary medicine, Chatwin et al. [13] noted the importance of medical staff providing 'narrative slots' in which patients could provide new information about potentially serious symptoms. In paediatrics, Stivers [14] showed how through silence, questions, and refusal to engage in shared laughter, parents resisted the treatment proposals of doctors who recommended against the use of antibiotics for viral infections. A study of four ICU wards in Italy showed how nurses used detailed and updated information that they had about patients to carefully contribute to medical decision making in morning briefings [8]. These enquiries demonstrate that what is said or not said at specific moments in medical conversations can influence the treatment that a patient receives.

A systematic review of clinical handovers in hospitals concluded that there exists a pervasive problem of poor communication during handovers, and that this is leading to error [15]. Identified problems also included a lack of formal systems for handovers such as a regular designated time and place or a formal obligation to attend [15]. Eggins and Slade [16] investigated the discourse of shift handovers. They demonstrated the interdependence between the informational and interactional elements of effective handovers. To improve safety, it is not just what is said, but how it is said and how others receive this information that makes a handover effective.

Huddles, in theory, share many features with handovers in that they involve information sharing, aim for continuity of care, and may involve a transfer of accountability when at the end of a shift. The time pressure involved in both situations makes effective communication imperative. However, huddles are theoretically different insofar as they should involve all of those caring for a child (rather than doctors only), focus on at-risk patients and situations rather than all patients, and include anticipation of the future.

The data for this study was taken from a wider evaluation of the SAFE safety improvement collaborative [17]. As part of SAFE, paediatric staff at an initial 12 (Wave 1) then a further 16 (Wave 2) NHS hospitals across England trialled several techniques, including huddles, to improve patient care and the anticipation of risks to patients. The aim of this study is to examine the methods by which staff members identify at-risk patients.

Method

1. Sampling

A mixed methods approach was taken to the evaluation of the SAFE programme. [17] Quantitative data were collected from the 12 hospital sites participating in Wave 1 of the SAFE programme and qualitative data (including observations of huddles and interviews with hospital staff about their experiences of implementing SAFE) were collected from four of these sites. The four sites were sampled for their heterogeneity of clinical context, aiming for maximal variation in terms of type of work done on the ward, size of the ward, geographical region and type of hospital. The focus of our study is on audio recordings of huddles conducted during huddle observations at these four sites. Data collection occurred four months after the start of SAFE (January to March 2015). All huddles that took place at the four sites for two days within this period were audio recorded by the evaluation team. While the purpose of a huddle is of sharing information and planning within the staff group in relation to at-risk patients and situations, SAFE sites were encouraged to implement the huddle in a contextually-sensitive manner, such as to fit with their own ward structures and routines. For this reason, there was some variation in the number of huddles across the sites, the times of day at which huddles were held, huddle location, and huddle attendees at each site (both in terms of numbers and staff roles; [18], for further information). The

frequency of the huddles across the four wards at the sites ranged from 1 to 3 per day. This provided a total of 16 huddle recordings to analyse. Huddles ranged from 1 min 40 secs to 10 mins in length. See Table 1 for information about the sample.

Table 1 The sample population

	Type	**Number of huddles observed**	**Transcript data used in analysis**
Ward 1	Paediatric ward in a large general hospital	6	Full
Ward 2	Paediatric ward with a high dependency unit (HDU) in a general hospital	4	Full
Ward 3	HDU ward in a specialist children's hospital (SCH)	4	Partial
Ward 4	General ward in a SCH	2	Partial

2. Patient involvement

The SAFE collaborative [17] included a parent on the planning and oversight committees and Project Board which provided insight and comment on the proposed intervention and on the research undertaken. In this analysis the focus was on staff interaction rather than the patients

3. Data collection

The huddles were audio recorded by four non-participant observers, two of whom were present at any one time. The observers recorded the order of speakers to aid transcription. They completed an observational tool, specifically designed for huddles [19]. Huddles were audio-recorded using two recorders at opposite sides of the huddle space. The audio recordings were transcribed by observers present on the ward using simplified conversation analytic conventions [20].

4. Data analysis

Recordings from four sites were analysed. Due to difficulties with audio sound quality, two sites, Wards 1 and 2, provided the core material for analysis. Intelligible sections of transcripts from the other two sites were used. A researcher who was not present at data collection analysed this material. The first pass analysis was then analysed with an advisor to the project and another researcher, in which analytic disagreements were discussed and resolved.

Analysis was guided by principles of ethnomethodological-conversation analysis (EMCA), [21, 22,].

Analysis began with the broad question of 'how do huddles happen in practice?' and through the process of examining both audio recordings and transcripts a narrower question became pertinent: how are staff identifying at-risk patients in huddles? This question was selected out of several possible phenomena for its clinical relevance and can be further broken down into:

1. What terms are staff using to categorise their patients?
2. How do they coordinate with one another in reviewing their patients?

For reasons of brevity, the focus of this paper is on question 1 but observations will also be made in relation to question 2 in the main analysis as well as in supplementary analyses. There was no fixed format for the huddle and that each team had their own script and process

The analytic steps were then to:

a) Identify all sections where a patient is identified as a risk
b) Conduct within-case sequential analysis of the process by which at-risk patients are identified, including lexical choices and methods of implicit categorisation
c) Conduct cross-case classification of the methods that staff used to identify at-risk patients

5. Reflexive statement

Data were analysed by a researcher in the independent evaluation of the SAFE programme, not invested in the outcome of individual huddles nor the SAFE programme.

Ethical considerations

Ethics approval was granted by the Dulwich Research Ethics Committee (REC reference: 14/LO/0875). All identifying details (including names of participants, patients and places) were disguised or removed in the transcripts of the huddle recordings. Any member of staff who did not wish to be recorded was given the opportunity to opt-out prior to the recording beginning.

Results

How are at-risk patients identified in huddles?

There were three key terms used to identify patients as well as some use of implicit categorisation. Four extracts are given to illustrate the emerging lexicon (with a further three in supplementary analyses, (see the Appendix), as well as how this was used by the staff present. Huddles varied on the different ward in duration and in number of participants in attendance.

1. "No concerns" and "pre-concerns"

Huddlers displayed ways of showing for each other which patients were at-risk. Sometimes identification was by making lexical choices to label patients, and sometimes potentially at-risk patients were identifiable through a lack of categorisation - for patients who were not in need of further attention the nurses used the phrase *"no concerns".* Extract 1 taken from Ward 1, day 2, in the evening exemplifies one way in which this occurred.

1.	**WARD MANAGER:**	Ok, start again
2.	**NURSE 1:**	( ) no concerns (.) PEWSing one. Heart rate's a bit up.
3.	**DOCTOR:**	ok.
4.		(3.0)
5.		(patient name)?
6.		**(**2.0)
7.	**NURSE 1:**	no concerns
8.	**DOCTOR:**	Ok (.)
9.	**NUMEROUS:**	Six-teen
10.	**WARD MANAGER:**	Sixteen?
11.	**NURSE 2:**	He's had (a) fever since he's been with us (.) he could do with a
12.		review (.) Dad's insisting he wants to be seen (.) so::
13.	**NURSE 1:**	Concerns or no [concerns?]
14.	**NURSE 2:**	[>No concerns] at the moment<
15.	**WARD MANAGER:**	Nineteen?
16.	**NURSE 3:**	No concerns:
17.	**WARD MANAGER:**	Twenty::?
18.	**NURSE 3:**	No concerns
19.	**WARD MAN:**	Twenty-one, no concern (.) twenty-two?
20.	**NURSE 1:**	No concerns

After the ward manager opens the meeting, Nurse 1 self-selects and makes her classification, "no concerns" (line 2), providing a brief report ("Pewsing one…."; line 2). The doctor shows receipt of this information and then prompts the next turn, using the patient's name. Nurse

1 offers the categorisation "no concerns" (line 7) in response, without expansion. Many in the room coordinate at lines 9 and 10 to prompt the next speaker. Nurse 2 then does not begin her turn by offering a classification. She instead provides a report on the patient's situation. Nurse 1's closed question at line 13 ("Concerns or no [concerns?]") implies that this lack of classification is problematic. The question suggests both that the most relevant action here is a classification, and that it is Nurse 2 who is best placed to make it (no other medical professionals in the room are asked). After the prompting to categorise by Nurse 1 at line 13, Nurse 2's phrasing "*at the moment*" (line 14) highlights the time-bound nature of her concern – in the 'moment' of this huddle, the patient is not deteriorating, but she hints that change is possible. Arguably, it introduces a third category, *the concerns/the no concerns* and those somewhere between the two. If concerns are anticipations of risk or deterioration, then this third category represents an anticipation of concerns – these might be termed '*pre-concerns*'. This could be viewed as a superordinate level of SA. But whether this level has a place here, is for the huddle to decide. The continuation from line 15 of their previous turn-taking indicates that this is enough discussion of this patient for now.

This brief exchange highlights something important about huddles. In theory, huddles are places where potential risks and concerns are discussed, but in a 'rapid exchange'. There is a necessary tension between looking ahead, and expediency and efficiency – Nurses 1 and 2 personify this tension here. In this huddle, the ward manager and then nurses took the lead, the doctor only becoming involved and then planning based on the clinical information, when reports were given. Nurses were responsible for bringing the right information to the huddle and classifying patients, but if the classification was ambiguous, this was where the doctor became involved (not seen in this extract).

A second method that huddlers used to identify at-risk patients may be seen in extract 2. In this extract, from Ward 2, staff also used the term '*concern*' but the process through which patients were identified was quite different.

This is from Ward 2, day 2, in the evening:

10.	**Consultant:**	(Shall we do the) board huddle?
11.		(3.0)
12.	**Staff nurse:**	Okay: so:: we've (.) ehm, [we're not]
13.	**Consultant:**	[( )]
14.	**Staff nurse:**	concerned about anybody.
15.	**Consultant:**	Ok=ehr=
16.	**Staff nurse:**	=we've got- one HDU patient, (patient's name) who
17.		is PEWing at four[( )]
18.	**Consultant:**	[So it's now four] okay
19.	**Staff nurse:**	Yeah
20.	**Consultant:**	So we had six in the morning, so it's now four [so it's improving]
21.	**Staff nurse:**	[Hmm yes]

In this huddle, after the consultant opens the meeting (line 10), the staff nurse gives a general gloss: *"we're not concerned about anybody"* (lines 12-14). She then unpacks this. This is different to the method of huddling where each patient is discussed in turn, and where bedside nurses each have a slot to talk. In extract 2, the staff nurse curiously demonstrates

her lack of concern about the 'PEWS[1]' in the 'amber' range. The consultant's addition of *"we had six…it's now four"* (line 18), provides the rationale for this lack of worry, as this indicates improvement.

2. "The one to watch"

Extract 3 shows a sequence toward the beginning of a huddle, where the senior nurse, who is the assigned huddle leader, is 'interviewing' the consultant about the risks that he perceives. This is demonstrated in this extract from Ward 3, day 2, in the afternoon:

[1] The PEWS, or Paediatric Early Warning System includes a score which aims to be a standardised measure of the clinical state of paediatric patients. Patients are rated on cardiovascular, respiratory and behavioural vital signs and given a score, or alternatively may follow a tracker system. There are several types of PEWS (for a review, see [23]).

17. **Senior nurse:** So:: (.) >anyone we're worried about<
18. (0.6)
19. >at the moment?<
20. **Consultant:** At the moment, so the only one which is now in an MRI,
21. yes?, this boy err:: three one.
22. **Senior nurse:** Yes.
23. **(8 lines omitted)**
24. **Consultant:** So this is the one (.)and the other one I mean the er=er
25. girl to watch is the girl wi- on oxygen, yes?=
26. **Senior nurse:** =Yes=
27. **Consultant:** =three
28. two.
29. **Senior nurse:** Yeah.
30. **Consultant:** (Said) that she`s well, just the oxygen y::: she was off
31. oxygen but she`s back to oxygen.
32. **Senior nurse:** Gone back=on=it, so she`s not going anywhere today
33. [is she?]
34. **Consultant:** [She`s not], she's not.
35. **Senior nurse:** No
36. **Consultant:** Err:::=but so she`s the one to watch.
37. **Senior nurse:** Ok, cool=

The senior nurse opens with her question about who *"we're worried about?"* (line 17). This frames the risk as a *shared worry,* but it is clear from the ensuing turns that it is the consultant's worries that are relevant; there are two other doctors present as an audience, and this huddle proceeds as an exchange between the senior nurse and the consultant, with no 'slots' provided to other members of the team to relay information. The consultant responds to the senior nurse's opening question by talking about two patients. He marks the first patient as *"the only one"* (line 20) that they are worried about, but then this *"one"* is joined by another patient at line 25. He makes salient that this second patient is *"the girl to watch"*. This phrase, which uses the infinitive form of the verb *"to watch"* (line 36) alongside the subject (*"the one"*) locates this quality of risk within the patient rather than in the feelings (i.e. *'*concerns*')* of the clinician. It also has a plan embedded within it – 'to watch' them, to be more aware of them. The use of the infinitive form means that this could be a general instruction to all at this huddle or for the senior nurse. The senior nurse accepts the consultant's assessment of the situation with the *"ok, cool"* (line 37) but there is no verbal input from the others present.

In this huddle, it was very clear who the 'at-risk' patients are, and the meeting was rapid and tightly focused around them. There was no 'noise' to filter about non-risks. However, this tight focus seemed to be at the expense of collaboration, in the sense that huddles on this ward were organised around one person's perception of risk.

3. "The Watchers"

At Cincinnati Children's Hospital, staff use the phrase 'watcher' as a noun, to discuss at-risk patients [3]. We have seen how a variation of this ('the one to watch') is used to categorise

patients on Ward 2. The original term, *"watcher"*, was used in huddles on Wards 3 and 4 as indicated in the extract 4 from Ward 4, day 1 in the morning.

26.	**Nurse:**	No cardiac arrests respiratory arrests, PICU admissions. Erm,
27.		.h=watchers, is (patient name) we're keeping an eye out, and
28.		then bed 24

The nurse here uses *"watchers"* (line 27) in a similar way as *"the one to watch"* was used at Ward 2, insofar as it quickly designates a patient as needing extra attention. However, this is more a report for the doctor that she is speaking to (this is a two person huddle) than an instruction, as *"we're keeping an eye out"* (line 27) suggests that the matter is already in hand. The term 'watcher' locates the quality of risk within an individual patient, unlike the terms 'concern' or 'worry', which foreground the feelings of a clinician. However, what all these terms have in common in terms of their function is that they are quick ways of directing the 'gaze' of the ward.

Discussion

These data were taken from the early implementation phase of the SAFE programme, and it was clear that huddlers had established different methods for identifying risks to their patients. Attention to the language revealed that all wards had adopted terms to establish shared concerns under time pressure. Teams varied in the way patients were identified. The first method was to identify patients one by one as in excerpt 1. In this method, a senior member of staff (doctor or nurse manager) names the patient, thereby soliciting a categorization, and the nurse procures it (method 1a, excerpt 1). An alternative was for the nurse to name the patient and then categorizes them (method 1b, excerpt 5 in appendix).

The second method was to identify problem patients as in excerpt 2. In this method, a senior member of staff sometimes solicits talk about problematic cases (method 2a, excerpt 3), and sometimes the nurse him/ herself intervenes (method 2b, excerpt 2).

The development of similar "reliable flagging processes" was found to be important in alerting a team to where to focus their attention overnight in a study of 'hospital at night handovers' [24]. Huddlers showed adaptation of their terms in situations where the patient resisted simple classification. As with Eggins and Slade [16], analysis showed the sensitivity of huddlers to what Maynard and Heritage [25] have termed 'socio-medical' dilemmas, in other words the interdependence of information sharing with social interaction that is broadly cooperative.

Despite the variety in lexical choice and processes of identifying risk, one common thread was the characteristics of the concerns and risks discussed, in that they were all situations that required measures outside the 'business as usual' practices of the ward. This meant that the huddlers' understandings of risk were in part, locally defined. For example, an ill patient with a certain condition on one ward may have been a concern, yet on another they may have been a typical patient. Moreover, risks to patients were time-bound, so that a high PEW score was not seen as a concern if the score was lower than the previous huddle. There was a necessary element of: 1) Ward-centredness and 2) Patient-centredness, in definitions of risk, and this shows a need to go beyond standardised tools as standalone indicators of risk. Risks were conversationally negotiated, and this conversation was inherently continuous with previous huddles.

When someone raised a concern, there were various choices that could be made by other huddlers, either to facilitate the speaker to say more, to prompt them to categorise the

patient, or to close the topic down and move on. There were also implicit rules in operation about the conversational roles of huddlers – both in terms of managing the trajectory of the talk, and the epistemic realms that different staff roles exercised. Although this varied considerably across huddles, there was also some stability within wards. For example, in Ward 1, only bedside nurses gave information about patients, and they were 'interviewed' by the other members of the team. This implies that they had the epistemic authority to offer the best information. However, doctors had to agree that a situation was sufficiently concerning to require a plan – therefore doctors made or confirmed the final assessment on a patient and made moves to close topics. In others, Ward 3 for example, the consultant identified the risks by providing information, as well as closing topics and moving to new topics – it was the senior nurse that showed receipt of this information. The consultant exercised a larger range of conversational moves and epistemic realms.

Huddlers usually do not talk about patients as 'really ill/poorly/sick', and this is because ill patients are not concerning to them if they are stable, and if their needs are within the bounds of current institutional processes. Instead, huddlers needed, and are developing, other terms that can capture not simple static states but changes, and potential changes – labels that index the past, present, and future. The other thing to note is that concerns and risks that are raised by someone in a huddle need to go through a process to become established by the huddle as a shared problem, and that this process may be more, or less collaborative. The speaker firstly needs to be given the floor for long enough to offer all relevant information. Secondly, this information needs to be considered by the senior staff present. Although each huddle was different, there were some general features of organisation that huddlers used to discuss potential risks to patients. (Figure 1)

Insert figure 1 here

Practical implications and recommendations

1. To discuss the non-concerns?

Some huddlers spoke only about situations that concerned them and others used the time to speak briefly about each patient bed. The advantage of this latter method of huddling was that there were 'slots' created for nurses in the huddle to communicate potential changes in patients [13]. Due to the tensions between providing opportunities for collaboration and expediency, huddlers may reflect on the best use of their time.

2. Language

We noted the different terms that huddlers used and as with all language it is not simply what word that is used but also how it is used that is important. One consideration is the meaning and function that these terms had in this sample. *Watchers* was used to speak only of at-risk patients, rather than other problematic situations. This included the sharing of 'gut feelings' - when there were no clinical indicators of risk, but where someone senses something is wrong. *The one to watch* is used similarly but more explicitly contains instruction. *Concerns* were used to talk about patients but also were used to index other problems. There were also situations that resisted simple classification and were termed by the authors 'pre-concerns'. Huddlers may consider having a category that captures such 'pre-concerns' or 'pre-watchers'.

3. Roles

Senior staff members were the most active in channelling the talk in huddles. For example, in asking questions, and using 'continuers' when others provided information. In some huddles, only senior staff shared their knowledge and concerns about patients. *Is this situation desirable*? Huddle theoreticians and practitioners could reflect on whether the most junior members of staff should have a greater role in huddles.

4. Enabling the communication of concerns

Communicating information about a patient is an important element of SA, but equally important is how the listening happens. Analysis showed that the use of various response tokens and questions, channelled speakers to provide information on patients or close the topic. It is recommended that huddlers consider the ways that they encourage others to speak and share concerns and display that these are taken seriously.

Limitations

The data reported here were derived from the early implementation of huddles and it is possible that over time, the variety of methods that members used in the current analysis may change with growing experience. The quality of the data used was not consistent due to recording problems at two of the sites and this constrained a more detailed sequential analysis. Use of video data was not possible in this project due to the ethical sensitivity of collecting data on an open ward environment. This poses a limitation considering recommendations for multi-modal analysis of meetings. [5]

Conclusions

The aim of this article was to highlight how healthcare staff members translate huddle theory into practice, and it is the first study to examine the discourse of huddles. It has been found that specific lexical markers are in use at all wards, and that these allow the expedient identification of patients who are at risk of deterioration. Huddlers also adapted these terms to both upgrade and downgrade risk, suggesting that standardised indicators of risk were not enough alone for defining risks. Sequential analysis has also highlighted the conversational rights held *implicitly* by staff in different roles. This has displayed a potential tension between huddle principles and the fact that the more senior staff in these huddles seemed to be using the greatest variety of conversational moves. Findings may aid huddlers in considering the ways of conversing that best promote huddle principles on their ward.

Author Statement

JH led the ECMA research and drafting of the paper under the supervision of JD and MW, and JH conducted the literature review and developed the paper. JH and PL wrote the final version of the paper. ES provided revision of the paper. J E-C contributed to analyses. All authors contributed to the drafting of the paper.

Acknowledgements

The authors would like to thank Dawid Gondek, Amy Ramsay, Evelyn Sharples and Makeda Gerressu for their role in data collection and transcription. Sincere thanks are also extended to Ivan Leudar, and the Roehampton EMCA group for analytic wisdom; and Sarah Cantwell, John Rae, and Adam Gibson for constructive comments on an earlier draft. We thank our Patient Advisor Emma Francis for her valuable input to the SAFE programme.

Conflicts of Interest

P.L. led the implementation of the SAFE programme and contributed to the literature review and drafting of this manuscript. However, P.L. was not involved in the data collection nor data analysis/results reported here.

Funding

Situation Awareness For Everyone (SAFE) is a Health Foundation funded programme; both the implementation of SAFE and the evaluation were funded by the Health Foundation. This work was also supported by funding from WellChild, the funding was specifically to support evaluation work around the perspectives of parents and young people and to support patient and parent involvement in the research. This programme of work and evaluation was also

supported by the Royal College of Paediatrics and Child Health (RCPCH), which leads on the delivery of the programme. JD was supported by the National Institute for Health Research (NIHR) Collaboration for Leaderships in Applied Health Research and Care (CLAHRC) North Thames at Bart's Health NHS Trust. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR, the Department of Health, or RCPCH.

Data sharing

This is part of a larger study and 3 papers have already been published. This paper is a specific analysis and does not compete with other data held. All data is held by the research team at the Anna Freud Centre.

Supporting data and analyses is available in the appendices. Additional data is available on request to the authors.

Figure Legend

Figure 1 Methods used to establish shared concerns

References

1. Brady PW, Muething S, Kotagal U, Ashby M, Gallagher R, Hall D, et al. Improving situation awareness to reduce unrecognized clinical deterioration and serious safety events. Pediatrics, 2013. 131:e298-308.
2. Goldenhar L, Brady PW, Sutcliffe KM, Muething SE. Huddling for high reliability and situation awareness. BMJ Qual and Safety. 2013 22:899-906.
3. Provost SM, Lanham HJ, Leykum LK, McDaniel RR Jr, Pugh J. Health care huddles: managing complexity to achieve high reliability. Health Care Management Review. 2015. 40:2-12.
4. RCPCH. Situation Awareness for Everyone (S.A.F.E) Programme. http://www.rcpch.ac.uk/safe Accessed 8th November, 2016
5. Deppermann A, Schmitt R, Mondada L. Agenda and emergence: Contingent and planned activities in a meeting. Journal of Pragmatics. 2010. 42(6):1700-1718.
6. Housley W. Role as an interactional device and resource in multidisciplinary team meetings. Sociological Research Online. 1999. 4(3).
7. Huisman M. Decision-making in meetings as talk-in-interaction. International Studies of Management & Organization. 2001. 31(3):69-90.
8. Caronia L, Saglietti M. Knowledge and agency in interprofessional care: How nurses contribute to the case-construction in an Intensive Care Unit. Journal of interprofessional care. 2018 Apr 19:1-1.
9. Izumi H. Help-Search Practices in Rehabilitation Team Meetings: A Sacksian Analysis. Human Studies. 2017 Sep 1;40(3):439-68.

10. Albury C, Stokoe E, Ziebland S, Webb H, Aveyard P. GP-delivered brief weight loss interventions: a cohort study of patient responses and subsequent actions, using conversation analysis in UK primary care. Br J Gen Pract. 2018 Sep 1;68(674):e646-53.
11. Heritage J, Maynard DW. Communication in Medical Care. Cambridge, England: Cambridge University Press. 2006.
12. Heritage J, Robinson JD. The structure of patients' presenting concerns: Physician's opening questions. Health Communication. 2006. 19:89-102.
13. Chatwin J, Kennedy A, Firth A, Povey A, Rogers A, Sanders C. How potentially serious symptom changes are talked about and managed in COPD clinical review consultations: A micro-analysis. Soc Sci & Med. 2014. 113:120-136.
14. Stivers T. Participating in decisions about treatment: overt parent pressure for antibiotic medication in paediatric encounters. Soc Sci & Med. 2002. 54:1111-1130.
15. Raduma-Tomàs MA, Flin R, Yule S, Williams D. Doctors' handovers in hospitals: a literature review. BMJ Qual Saf. 2011. 20(2):128-133.
16. Eggins S, Slade D. Clinical handover as an interactive event: informational and interactional communication strategies in effective shift-change handovers. Communication and Medicine. 2012. 9:215-227.
17. Deighton J, Edbrooke-Childs J, Stapley E, Sevdalis N, Hayes J, Gondek, D, Lachman, P. Realistic evaluation of Situation Awareness for Everyone (SAFE) on paediatric wards: study protocol. BMJ Open. 2016 Dec;6(12):e014014.
18. .Stapley E, Sharples E, Lachman P, Lakhanpaul M, Wolpert M, Deighton J; Factors to consider in the introduction of huddles on clinical wards: perceptions of staff

on the SAFE programme, International Journal for Quality in Health Care. 2018;30(1)1, 44–49, https://doi.org/10.1093/intqhc/mzx162

19. Edbrooke-Childs J, Hayes J, Sharples E, Gondek D, Stapley E, Sevdalis N, Lachman P, Deighton, J. Development of the Huddle Observation Tool for structured case management discussions to improve situation awareness on inpatient clinical wards. BMJ Qual Saf. 2017 Sep 19:bmjqs-2017-006513
20. Jefferson G. Glossary of transcript symbols with an introduction. In GH Lerner (Ed.), Conversation Analysis, Studies From the First Generation (pp.13-31). Amsterdam, Netherlands; John Benjamins. 2004.
21. Garfinkel H. Studies in ethnomethodology. Cambridge; Prentice Hall. 1967.
22. Sacks H. Lectures on Conversation. Oxford, England: Blackwell. 1992.
23. Lambert V, Matthews A, MacDonell R, Fitzsimons J. Paediatric early warning systems for detecting and responding to clinical deterioration in children: a systematic review. BMJ Open. 2017;7(3):e014497. doi:10.1136/bmjopen-2016-014497.
24. McQuillan A, Carthey J, Catchpole K, McCulloch P, Ridout DA, Goldman AP. Republlished: Creating a safe, reliable hospital at night handover: a case study in implementation science. Postgraduate medical journal. 2014 Sep 1;90(1067):493-501.
25. Maynard DW, Heritage J. Conversation analysis, doctor-patient interaction and medical communication. Medical Education. 2005 39:428-435.

Figure 1

Establishing shared concerns: There are two stages where a potential concern raised by one huddle member may not become a shared huddle concern.

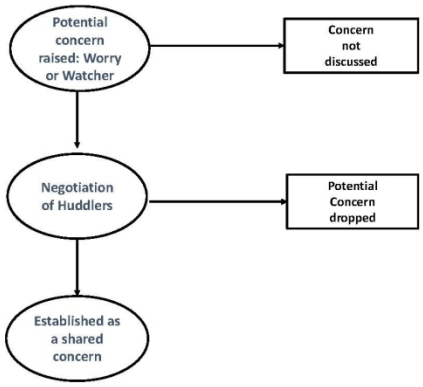

Figure 1 Methods used to establish shared concerns

139x198mm (300 x 300 DPI)

Appendix 1

Supporting analyses

In this section, three more extracts are shown and explicated to demonstrate supporting data for the conclusions of the main article. These include further evidence showing the use of the lexicon, how the staff flexibly upgraded and downgraded this lexicon, and the staff involved in these categorisations.

"No concerns"

The following extract shows a further example of how the lexicon of no-concerns was used to identify patients at risk. In particular, it demonstrates how through the routine use of this category, potentially at-risk patients were in fact identifiable to staff in this huddle through a lack of categorisation.

Extract 5, Ward 1, day 1, morning

1. **NURSE 2:** °11 no concerns, 13 no concerns and 14 no concerns as well.
2. **NURSE 3:** 16 no concerns, 18 no concerns
3. (1.0)
4. (name of Nurse 4)?
5. **NURSE 4:** 19 no concerns
6. (2.0)
7. **BANK NURSE:** And 21 ( ) had a complaint of serious back pain
8. **DOCTOR:** °Ok°
9. **BANK NURSE:** Erm: requested for painkiller which I have given him.
10. **STAFF NURSE:** °Ok°

The extract opens with Nurse 2 providing a series of classifications, referring to each patient by their bed number, and using the phrase *"no concerns"* (Line 1). Nurse 3 then takes the floor, and follows suit by classifying her two patients in a single turn (line 2). There is then a one second silence (line 3). Nurse 3 breaks this by

prompting Nurse 4's turn, saying her name (line 4), to which Nurse 4 replies with the same format, *"no concerns"* (line 5). A two second silence follows before the bank nurse[1] takes her turn, providing a report of her patient without a classification (line 7-9). The doctor responds with a quietly-spoken minimal receipt, *"°Ok°"* at lines 7 and 9. In this particular huddle then, if a patient was not in need of further attention the nurses used the phrase *"no concerns"* with no expansion, and a report was provided about the patient if there was a potential for concern. Therefore concerns were not necessarily stated but were implied with expansions about the patient's situation and the absence of the *"no concerns"* categorisation.

Resisting the no-concerns/concerns binary – "acute concerns"

Extract 1 of the main article demonstrated how Nurse 2 resisted classifying her patient as simply "no concerns" by emphasising the time-limited nature of her assessment – but there were other ways that huddlers did this too. These 'gradings' of concern were not solely medical in purpose but also served interactional functions:

Extract 6: Ward 1, day 1, morning

78. **BANK NURSE: <**Err tw-enty-four::::, err:: pad is still (.) itching.(.) because=of
79. er::::ec-ze-ma
80. **?:** (inaudible)
81. ((door creaks, opening and child crying can be loudly heard until door shuts))
82. **BANK NURSE:** So I would say that the Pew is one, I'm waiting to give
83. medicine this morning (inaudible) but if-
84. **DOCTOR:** ->we should just check on:: them in terms of scoring<(.)
85. erm=er::: but >we'll review on the ward round anyway but I don't
86. think we've got any acute concerns<
87. **BANK NURSE:** No, no, no concerns.

[1] A bank nurse is a locum nurse who is working as a short-term replacement in the team and is not a regular team member:.

At line 78, the bank nurse opens her turn not by saying whether or not she has a concern but by giving details about the patient. By making the itching relevant at this point in the huddle, the implication is that this is a potential 'concern'. The speaker then makes her assessment of the patient and then displays the action that she will take (lines 82-83). At this point, she is cut off by the doctor, who initiates a plan. The language is collaborative - *"we"* (line 84) should check the score and *"we'll review"* (line 85) - though the timing of the interjection is an assertive claim to the floor. The addition of *"anyway"* (line 85) indicates that the plan is a concession and that action is not necessary. The framing of this plan as an extra precaution rather than a necessity, is also indicated in the subsequent assessment *"but I don't think we've got any acute concerns"* (line 85-86). The lexical choice here is careful – the doctor does not say that this situation is not concerning – if he did so this might be dismissive of the bank nurse who has raised the point. This is particularly important in light of the fact that huddles in theory are places where anyone can feel comfortable to raise a worry that they have about a patient. However, the doctor does need to find a way of showing to the others that this is not his priority, and to find a way of limiting deliberation. The use of *"acute concern"* here saves the face of the nurse who has raised this while offering a closing of the discussion. The bank nurse's turn is more like a handover in style (see [14]), and the doctor's turn also gently redefines the conversation as about 'acute concerns' rather than the 'ordinary concerns'/ business of the ward.

The bank nurse shows emphatic agreement in line 87 and uses the original term *"concern"*, confirming that the topic is dealt with. This may of course reflect how a temporary member of the team adopts the team's language, but what this example

highlights is that Ward 1 worked to an implicit rule that only once this categorisation concern/no concern was made explicitly, by the assigned nurse, could the topic shift to another patient (and this was seen in other Ward 1 huddles). The negotiation of concerns was thus a collaborative enterprise in so far as the bedside nurse had the final say on a patient. However, as we have seen, this does not mean that the doctor in the huddle could not 'downgrade' a concern.

The "Watchers" upgraded

In extract 4 of the main article we saw how the term "watchers" was used in a Ward 4 huddle by a nurse to report to a doctor the list of patients who were at-risk. The term 'watchers' was in fact used the most in Ward 3 and appeared in three out of the four huddles. It was used in much the same way as Ward 4 but occasionally received an upgrade, as the following example shows

Extract 7, Ward 3, day 2, evening

1. **NURSE CONSULTANT:** okay are we ready to start
2. **SENIOR NURSE 1:** yeah
3. **NURSE CONSULTANT:** yep okay have we had any incidents today (.) anything
4. **SENIOR NURSE 1:** er:-[the]
5. **NURSE CONSULTANT:** [at all?]
6. **SENIOR NURSE 1:** erm (0.8) (child's name) in we did talk to the [( )]
7. **NURSE CONSULTANT:** [okay]
8. **SENIOR NURSE 1**: erm:, at half five he was in the room wasn't he when he had
9. a quite prof:ound: (.) [desaturation]
10. **SENIOR NURSE 2:** [des:aturation]
11. **NURSE CONSULTANT:** okay
12. **SENIOR NURSE 1:** he's he's the one to
13. **NURSE CONSULTANT:** he's our watcher
14. **SENIOR NURSE 1:** he's our watcher (.) w:- with bells on

There are no doctors present at this huddle. The nurse consultant opens the meeting with the question, *"are we ready to start?"* (line 1). Senior Nurse 1 confirms this, and the nurse consultant follows this with another question, topicalising *"incidents today"* (line 3). This question makes the recent past relevant (rather than being a future orientation). There is an overlap as Senior Nurse 1 begins to answer. She gives

information about *"quite a profound desaturation"* (of oxygen) in a patient, the patient's name, and time this happened (lines 6-10). Senior Nurse 2 confirms this report with her *"desaturation"* (line 10), in unison with the end of Senior Nurse 1's turn. Senior Nurse 1 begins to make her assessment that this patient is *"the one to"* (line 12) and the nurse consultant renames the patient *"our watcher"* (line 13), confirming the assessment. The addition of *"our"* by the most senior person in the room displays his understanding that the situation is serious and emphasises the shared nature of the responsibility to the patient. Senior Nurse 1 uses her turn to repeat this, and then upgrade it- *"with bells on"* (line 14). This produces another category of patient in addition to the watchers - the most/acute? watchers. We saw a doctor in Extract 6 above using the term *"acute concern"* in downgrading a risk: here, another huddle member emphasises risk by adding, *"with bells on"* (line 14).

BMJ Open

Assessing risks to paediatric patients: Conversation analysis of situation awareness in huddle meetings in England

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2018-023437.R2
Article Type:	Research
Date Submitted by the Author:	27-Dec-2018
Complete List of Authors:	Hayes, Jacqueline; University of Roehampton, Psychology Lachman, Peter; International Society for Quality in Healthcare (ISQua); Royal College of Paediatrics and Child Health Edbrooke-Childs, Julian; University College London and the Anna Freud Centre, Evidence Based Practice Unit Stapley, Emily; Anna Freud National Centre for Children and Families, Evidence Based Practice Unit; University College London, Department of Clinical, Educational and Health Psychology Wolpert, Miranda; UCL , CAMHS EBPU Deighton, Jessica; UCL and Anna Freud Centre, CAMHS Evidence Based Practice Unit
Primary Subject Heading:	Communication
Secondary Subject Heading:	Paediatrics
Keywords:	PAEDIATRICS, situation awareness, Risk assessment, conversation analysis,, ethnomethodology, huddles

Title:

Assessing risks to paediatric patients: Conversation analysis of situation awareness in huddle meetings in England

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Running title: Conversation Analysis of huddles

Abstract word count: 254 words

Main text word count: 4033 (excluding title page, abstract, tables, acknowledgments, contributions, conflict of interest, and references)

Key Words: situation awareness, risk assessment, huddles, conversation analysis, ethnomethodology, paediatric medicine

Abstract

Objectives: To analyse the language and conversation used in huddles to gain a deeper understanding of exactly how huddles proceed in practice and to examine the methods by which staff members identify at-risk patients.

Setting: Paediatric wards in four English hospitals, which were part of a 12-hospital cohort participating in the Situation Awareness for Everyone (SAFE) programme. Wards varied by geographical region and type of hospital.

Participants: Paediatric staff on wards in four English hospitals.

Design: Ethnomethodology and Conversation Analysis of recorded safety huddles.

Methods: This study represents the first analysis of huddle interaction. All huddle meetings taking place on four wards across four different hospitals were audio-recorded and transcribed. The research question examined was: how are staff identifying at-risk patients in huddles?? The ethnomethodological-conversation analytic approach was used to analyse the transcripts.

Results: Huddlers made use of categories that allowed them to efficiently identify patients for each other as needing increased attention. Lexicon included the use of ”no concerns”,”, “the one to watch”, “watcher” and “acute concerns”. Huddlers used the meetings to go beyond standardised indicators of risk to identify relative risk and movement in patients towards deterioration, relative to the last huddle meeting and to their usual practices. An implicit category, termed here “pre-concerns”, was used by staff to identify such in-between states. Sequential analysis also highlighted the conversational rights that were held implicitly by staff in different clinical roles.

Conclusion: Practical implications and recommendations for huddlers are considered. These included that for increased situation awareness, it is recommended that all staff are active in the huddle conversation and not only the most senior team members.

Keywords: situation awareness, risk assessment, huddles, conversation analysis, ethnomethodology, paediatric medicine

Article summary: Strengths and Limitations of this study

- This study is the first to inductively investigate the categories and methods that staff used in huddles to identify risks to patients.
- Systematic analysis of verbatim transcripts was undertaken to identify precisely how the new intervention progressed and language changes in real-life hospital settings..
- The study Identification of the evolution of terminology and of interactions between staff
- Data consisted of audio recordings which has the advantage of capturing huddles in situ rather than in abstraction.
- Some of these recordings were of poorer quality and video recordings capturing non-verbal elements of communication would have enhanced analysis and findings.

Introduction:

The development of real time situation awareness (SA) requires review of a current situation and anticipation of a future state with the creation of solutions before problems happen. Based on processes of other high reliability industries e.g. the military, nuclear power, aviation and aerospace, huddles have been adopted in healthcare [1, 2]. Situation Awareness in healthcare refers to a shared awareness about a patient's health situation in real and future time. This has implications for organisational hierarchies, as staff members are encouraged to speak about risks without deference to authority.

Huddles are rapid, regular meetings attended by all who may have information about patients and are intended to be non-hierarchical so that all are encouraged to speak or challenge decisions. Participants assess the current state and anticipate future risks to patients, so that the risk can be addressed [1, 2, 3, 4]. The implementation of huddles is correlated with improved patient safety [1]. Qualitative work suggests that the technique improves organisational efficiency, quality of information sharing, accountability, and team-working culture [2, 3]. Provost et al. [3] conclude that huddles had a decisive impact on improving staff conversation, relationships, and culture. There has not been any analysis of exactly how huddles proceed in practice at identifying patients at high risk of deterioration, and this is the focus of this article.

Ethnomethodology and Conversation Analysis (EMCA) studies have examined the practical organisation of meetings at work. This includes topics such as how agendas are managed, employed, and strayed from [5], how roles are invoked in decision-making processes in multidisciplinary teams [6], how decisions are made in teams [5, 7], and how interprofessional collaboration works in healthcare settings [8, 9]. The method has been used to highlight

important social-interactional moves in the accomplishment of medical tasks [10,11,12]. In pulmonary medicine, Chatwin et al. [13] noted the importance of medical staff providing 'narrative slots' in which patients could provide new information about potentially serious symptoms. In paediatrics, Stivers [14] showed how through silence, questions, and refusal to engage in shared laughter, parents resisted the treatment proposals of doctors who recommended against the use of antibiotics for viral infections. A study of four ICU wards in Italy showed how nurses used detailed and updated information that they had about patients to carefully contribute to medical decision making in morning briefings [8]. These enquiries demonstrate that what is said or not said at specific moments in medical conversations can influence the treatment that a patient receives.

A systematic review of clinical handovers in hospitals concluded that there exists a pervasive problem of poor communication during handovers, and that this is leading to error [15]. Identified problems also included a lack of formal systems for handovers such as a regular designated time and place or a formal obligation to attend [15]. Eggins and Slade [16] investigated the discourse of shift handovers. They demonstrated the interdependence between the informational and interactional elements of effective handovers. To improve safety, it is not just what is said, but how it is said and how others receive this information that makes a handover effective.

Huddles, in theory, share many features with handovers in that they involve information sharing, aim for continuity of care, and may involve a transfer of accountability when at the end of a shift. The time pressure involved in both situations makes effective communication imperative. However, huddles are theoretically different insofar as they should involve all of

those caring for a child (rather than doctors only), focus on at-risk patients and situations rather than all patients, and include anticipation of the future.

The data for this study was taken from a wider evaluation of the SAFE safety improvement collaborative [17]. As part of SAFE, paediatric staff at an initial 12 (Wave 1) then a further 16 (Wave 2) NHS hospitals across England trialled several techniques, including huddles, to improve patient care and the anticipation of risks to patients. The aim of this study is to examine the methods by which staff members identify at-risk patients.

Method

1. Sampling

A mixed methods approach was taken to the evaluation of the SAFE programme. [17] Quantitative data were collected from the 12 hospital sites participating in Wave 1 of the SAFE programme and qualitative data (including observations of huddles and interviews with hospital staff about their experiences of implementing SAFE) were collected from four of these sites. The four sites were sampled for their heterogeneity of clinical context, aiming for maximal variation in terms of type of work done on the ward, size of the ward, geographical region and type of hospital. The focus of our study is on audio recordings of huddles conducted during huddle observations at these four sites. Data collection occurred four months after the start of SAFE (January to March 2015). All huddles that took place at the four sites for two days within this period were audio recorded by the evaluation team. While the purpose of a huddle is of sharing information and planning within the staff group in relation to at-risk patients and situations, SAFE sites were encouraged to implement the huddle in a contextually-sensitive manner, such as to fit with their own ward structures and

routines. For this reason, there was some variation in the number of huddles across the sites, the times of day at which huddles were held, huddle location, and huddle attendees at each site (both in terms of numbers and staff roles; [18], for further information). The frequency of the huddles across the four wards at the sites ranged from 1 to 3 per day. This provided a total of 16 huddle recordings to analyse. Huddles ranged from 1 min 40 secs to 10 mins in length. See Table 1 for information about the sample.

Table 1 The sample population

	Type	**Number of huddles observed**	**Transcript data used in analysis**
Ward 1	Paediatric ward in a large general hospital	6	Full
Ward 2	Paediatric ward with a high dependency unit (HDU) in a general hospital	4	Full
Ward 3	HDU ward in a specialist children's hospital (SCH)	4	Partial
Ward 4	General ward in a SCH	2	Partial

2. Patient involvement

The SAFE collaborative [17] included a parent on the planning and oversight committees and Project Board which provided insight and comment on the proposed intervention and on the research undertaken. In this analysis the focus was on staff interaction rather than the patients

3. Data collection

The huddles were audio recorded by four non-participant observers, two of whom were present at any one time. The observers recorded the order of speakers to aid transcription. They completed an observational tool, specifically designed for huddles [19]. Huddles were audio-recorded using two recorders at opposite sides of the huddle space. The audio recordings were transcribed by observers present on the ward using simplified conversation analytic conventions [20].

4. Data analysis

Recordings from four sites were analysed. Due to difficulties with audio sound quality, two sites, Wards 1 and 2, provided the core material for analysis. Intelligible sections of transcripts from the other two sites were used. A researcher who was not present at data collection analysed this material. The first pass analysis was then analysed with an advisor to the project and another researcher, in which analytic disagreements were discussed and resolved.

Analysis was guided by principles of ethnomethodological-conversation analysis (EMCA), [21, 22,].

Analysis began with the broad question of 'how do huddles happen in practice?' and through the process of examining both audio recordings and transcripts a narrower question became pertinent: how are staff identifying at-risk patients in huddles? This question was selected out of several possible phenomena for its clinical relevance and can be further broken down into:

1. What terms are staff using to categorise their patients?
2. How do they coordinate with one another in reviewing their patients?

For reasons of brevity, the focus of this paper is on question 1 but observations will also be made in relation to question 2 in the main analysis as well as in supplementary analyses. There was no fixed format for the huddle and that each team had their own script and process

The analytic steps were then to:

a) Identify all sections where a patient is identified as a risk
b) Conduct within-case sequential analysis of the process by which at-risk patients are identified, including lexical choices and methods of implicit categorisation
c) Conduct cross-case classification of the methods that staff used to identify at-risk patients

5. Reflexive statement

Data were analysed by a researcher in the independent evaluation of the SAFE programme, not invested in the outcome of individual huddles nor the SAFE programme.

Ethical considerations

Ethics approval was granted by the Dulwich Research Ethics Committee (REC reference: 14/LO/0875). All identifying details (including names of participants, patients and places) were disguised or removed in the transcripts of the huddle recordings. Any member of staff who did not wish to be recorded was given the opportunity to opt-out prior to the recording beginning. There were no opt outs at any recording session.

Results

How are at-risk patients identified in huddles?

There were four key terms used to identify patients as well as some use of implicit categorisation. Four extracts are given to illustrate the emerging lexicon (with a further three in supplementary analyses, (see the Appendix), as well as how this was used by the staff present.

1. "No concerns" and "pre-concerns"

Huddlers displayed ways of showing for each other which patients were at-risk. Sometimes identification was by making lexical choices to label patients, and sometimes potentially at-risk patients were identifiable through a lack of categorisation - for patients who were not in need of further attention the nurses used the phrase *"no concerns".* Extract 1 taken from Ward 1, exemplifies one way in which this occurred.

Extract 1: Ward 1, day 2, evening

1.	**WARD MANAGER:**	Ok, start again
2.	**NURSE 1:**	( ) no concerns (.) PEWSing one. Heart rate's a bit up.
3.	**DOCTOR:**	ok.
4.		(3.0)
5.		(patient name)?
6.		**(**2.0)
7.	**NURSE 1:**	no concerns

8.	**DOCTOR:**	Ok (.)
9.	**NUMEROUS:**	Six-teen
10.	**WARD MANAGER:**	Sixteen?
11.	**NURSE 2:**	He's had (a) fever since he's been with us (.) he could do with a
12.		review (.) Dad's insisting he wants to be seen (.) so::
13.	**NURSE 1:**	Concerns or no [concerns?]
14.	**NURSE 2:**	[>No concerns] at the moment<
15.	**WARD MANAGER:**	Nineteen?
16.	**NURSE 3:**	No concerns:
17.	**WARD MANAGER:**	Twenty::?
18.	**NURSE 3:**	No concerns
19.	**WARD MAN:**	Twenty-one, no concern (.) twenty-two?
20.	**NURSE 1:**	No concerns

After the ward manager opens the meeting, Nurse 1 self-selects and makes her categorisation, "no concerns" (line 2), providing a brief report ("Pewsing one…."; line 2). The doctor shows receipt of this information and then prompts the next turn, using the patient's name. Nurse 1 offers the categorisation "no concerns" (line 7) in response, without expansion. Many in the room coordinate at lines 9 and 10 to prompt the next speaker. Nurse 2 then does not begin her turn by offering a categorisation. She instead provides a report on the patient's situation. Nurse 1's closed question at line 13 ("Concerns or no [concerns?]") implies that this lack of categorisation is problematic. The question suggests both that the most relevant action here is a categorisation, and that it is Nurse 2 who is best placed to make it (no other medical professionals in the room are asked). After the prompting to categorise

by Nurse 1 at line 13, Nurse 2's phrasing "*at the moment*" (line 14) highlights the time-bound nature of her concern – in the 'moment' of this huddle, the patient is not deteriorating, but she hints that change is possible. Arguably, it introduces a third category, *the concerns/the no concerns* and those somewhere between the two. If concerns are anticipations of risk or deterioration, then this third category represents an anticipation of concerns – these might be termed '*pre-concerns*'. This could be viewed as a superordinate level of SA. But whether this level has a place here, is for the huddle to decide. The continuation from line 15 of their previous turn-taking indicates that this is enough discussion of this patient for now.

This brief exchange highlights something important about huddles. In theory, huddles are places where potential risks and concerns are discussed, but in a 'rapid exchange'. There is a necessary tension between looking ahead, and expediency and efficiency – Nurses 1 and 2 personify this tension here. In this huddle, the ward manager and then nurses took the lead, the doctor only becoming involved and then planning based on the clinical information, when reports were given. Nurses were responsible for bringing the right information to the huddle and classifying patients, but if the categorisation was ambiguous, this was where the doctor became involved (not seen in this extract).

A second method that huddlers used to identify at-risk patients may be seen in extract 2. In this extract, from Ward 2, staff also used the term '*concern*' but the process through which patients were identified was quite different.

Extract 2: Ward 2, day 2, evening

10. **CONSULTANT:** (Shall we do the) board huddle?

11. (3.0)

12. **STAFF NURSE:** Okay: so:: we've (.) ehm, [we're not]

13. **CONSULTANT:** [( )]

14. **STAFF NURSE:** concerned about anybody.

15. **CONSULTANT:** Ok=ehr=

16. **STAFF NURSE:** =we've got- one HDU patient, (patient's name) who

17. is PEWing at four[( )]

18. **CONSULTANT:** [So it's now four] okay

19. **STAFF NURSE:** Yeah

20. **CONSULTANT:** So we had six in the morning, so it's now four [so it's improving]

21. **STAFF NURSE:** [Hmm yes]

In this huddle, after the consultant (attending or senior physician) opens the meeting (line 10), the staff nurse gives a general gloss: *"we're not concerned about anybody"* (lines 12-14). She then unpacks this. This is different to the method of huddling where each patient is discussed in turn, and where bedside nurses each have a slot to talk. In extract 2, the staff nurse curiously demonstrates her lack of concern about the 'PEWS[1]' in the 'amber' range. The consultant's addition of *"we had six…it's now four"* (line 20), provides the rationale for this lack of worry, as this indicates improvement.

[1] The PEWS, or Paediatric Early Warning System includes a score which aims to be a standardised measure of the clinical state of paediatric patients. Patients are rated on cardiovascular, respiratory and behavioural vital signs and given a score, or alternatively may follow a tracker system. There are several types of PEWS (for a review, see [23]).

2. "The one to watch"

Extract 3 shows a sequence toward the beginning of a huddle, where the senior nurse, who is the assigned huddle leader, is 'interviewing' the consultant about the risks that he perceives.

Extract 3: Ward 3, day 2, afternoon **SENIOR NURSE:** So:: (.) >anyone we're worried about<

(0.6)

>at the moment?<

CONSULTANT: At the moment, so the only one which is now in an MRI, yes?, this boy err:: three one.

SENIOR NURSE: Yes.

(8 lines omitted)

CONSULTANT: So this is the <u>one</u> (.)and the other one I mean the er=er girl to watch is the girl wi- on oxygen, yes?=

SENIOR NURSE: =Yes=

CONSULTANT: =three two.

SENIOR NURSE: Yeah.

CONSULTANT: (Said) that she`s <u>well</u>, just the oxygen y::: she was off oxygen but she`s back to oxygen.

SENIOR NURSE: Gone back=on=it, so she`s not going anywhere today [is she?]

CONSULTANT: [She`s not], she's not.

34. **SENIOR NURSE:** No

35. **CONSULTANT:** Err:::=but so she`s the one to watch.

36. **SENIOR NURSE:** Ok, cool=

The senior nurse opens with her question about who *"we're worried about?"* (line 17). This frames the risk as a *shared worry,* but it is clear from the ensuing turns that it is the consultant's worries that are relevant; there are two other doctors present as an audience, and this huddle proceeds as an exchange between the senior nurse and the consultant, with no 'slots' provided to other members of the team to relay information. The consultant responds to the senior nurse's opening question by talking about two patients. He marks the first patient as *"the only one"* (line 20) that they are worried about, but then this *"one"* is joined by another patient at line 24-25. He makes salient that this second patient is *"the girl to watch"*. This phrase, which uses the infinitive form of the verb *"to watch"* (line 36) alongside the subject (*"the one"*) locates this quality of risk within the patient rather than in the feelings (i.e. *'*concerns*')* of the clinician. It also has a plan embedded within it – 'to watch' them, to be more aware of them. The use of the infinitive form means that this could be a general instruction to all at this huddle or for the senior nurse. The senior nurse accepts the consultant's assessment of the situation with the *"ok, cool"* (line 37) but there is no verbal input from the others present.

In this huddle, it was very clear who the 'at-risk' patients are, and the meeting was rapid and tightly focused around them. There was no 'noise' to filter about non-risks. However, this tight focus seemed to be at the expense of collaboration, in the sense that huddles on this ward were organised around one person's perception of risk.

3. "The Watchers"

At Cincinnati Children's Hospital, staff use the phrase 'watcher' as a noun, to discuss at-risk patients [3]. We have seen how a variation of this ('the one to watch') is used to categorise patients on Ward 2. The original term, *"watcher"*, was used in huddles on Wards 3 and 4 as indicated in extract 4.

Extract 4: Ward 4, day 1, morning

26. **NURSE:** No cardiac arrests respiratory arrests, PICU admissions. Erm,
27. .h=watchers, is (patient name) we're keeping an eye out, and
28. then bed 24

The nurse here uses *"watchers"* (line 27) in a similar way as *"the one to watch"* was used at Ward 2, insofar as it quickly designates a patient as needing extra attention. However, this is more a report for the doctor that she is speaking to (this is a two person huddle) than an instruction, as *"we're keeping an eye out"* (line 27) suggests that the matter is already in hand. The term 'watcher' locates the quality of risk within an individual patient, unlike the terms 'concern' or 'worry', which foreground the feelings of a clinician. However, what all these terms have in common in terms of their function is that they are quick ways of directing the 'gaze' of the ward.

Discussion

These data were taken from the early implementation phase of the SAFE programme, and it was clear that huddlers had established different methods for identifying risks to their

patients. Attention to the language revealed that all wards had adopted terms to establish shared concerns under time pressure. Teams varied in the way patients were identified. The first method was to identify patients one by one as in excerpt 1. In this method, a senior member of staff (doctor or nurse manager) names the patient, thereby soliciting a categorization, and the nurse procures it (method 1a, excerpt 1). An alternative was for the nurse to name the patient and then categorizes them (method 1b, excerpt 5 in appendix). The second method was to identify problem patients as in excerpt 2. In this method, a senior member of staff sometimes solicits talk about problematic cases (method 2a, excerpt 3), and sometimes the nurse him/ herself intervenes (method 2b, excerpt 2).

The development of similar "reliable flagging processes" was found to be important in alerting a team to where to focus their attention overnight in a study of 'hospital at night handovers' [24]. Huddlers showed adaptation of their terms in situations where the patient resisted simple categorisation. As with Eggins and Slade [16], analysis showed the sensitivity of huddlers to what Maynard and Heritage [25] have termed 'socio-medical' dilemmas, in other words the interdependence of information sharing with social interaction that is broadly cooperative.

Despite the variety in lexical choice and processes of identifying risk, one common thread was the characteristics of the concerns and risks discussed, in that they were all situations that required measures outside the 'business as usual' practices of the ward. This meant that the huddlers' understandings of risk were in part, locally defined. For example, an ill patient with a certain condition on one ward may have been a concern, yet on another they may have been a typical patient. Moreover, risks to patients were time-bound, so that a high PEW score was not seen as a concern if the score was lower than the previous huddle. There was a

necessary element of: 1) Ward-centredness and 2) Patient-centredness, in definitions of risk, and this shows a need to go beyond standardised tools as standalone indicators of risk. Risks were conversationally negotiated, and this conversation was inherently continuous with previous huddles.

When someone raised a concern, there were various choices that could be made by other huddlers, either to facilitate the speaker to say more, to prompt them to categorise the patient, or to close the topic down and move on. There were also implicit rules in operation about the conversational roles of huddlers – both in terms of managing the trajectory of the talk, and the epistemic realms that different staff roles exercised. Although this varied considerably across huddles, there was also some stability within wards. For example, in Ward 1, only bedside nurses gave information about patients, and they were 'interviewed' by the other members of the team. This implies that they had the epistemic authority to offer the best information. However, doctors had to agree that a situation was sufficiently concerning to require a plan – therefore doctors made or confirmed the final assessment on a patient and made moves to close topics. In others, Ward 3 for example, the consultant identified the risks by providing information, as well as closing topics and moving to new topics – it was the senior nurse that showed receipt of this information. The consultant exercised a larger range of conversational moves and epistemic realms.

Huddlers usually do not talk about patients as 'really ill/poorly/sick', and this is because ill patients are not concerning to them if they are stable, and if their needs are within the bounds of current institutional processes. Instead, huddlers needed, and are developing, other terms that can capture not simple static states but changes, and potential changes – labels that index the past, present, and future. The other thing to note is that concerns and risks that are

raised by someone in a huddle need to go through a process to become established by the huddle as a shared problem, and that this process may be more, or less collaborative. The speaker firstly needs to be given the floor for long enough to offer all relevant information. Secondly, this information needs to be considered by the senior staff present. Although each huddle was different, there were some general features of organisation that huddlers used to discuss potential risks to patients. (Figure 1)

Insert figure 1 here

Practical implications and recommendations

1. To discuss the non-concerns?

Some huddlers spoke only about situations that concerned them and others used the time to speak briefly about each patient bed. The advantage of this latter method of huddling was that there were 'slots' created for nurses in the huddle to communicate potential changes in patients [13]. Due to the tensions between providing opportunities for collaboration and expediency, huddlers may reflect on the best use of their time.

2. Language

We noted the different terms that huddlers used and as with all language it is not simply what word that is used but also how it is used that is important. One consideration is the meaning and function that these terms had in this sample. *Watchers* was used to speak only of at-risk patients, rather than other problematic situations. This included the sharing of 'gut feelings'

- when there were no clinical indicators of risk, but where someone senses something is wrong. *The one to watch* is used similarly but more explicitly contains instruction. *Concerns* were used to talk about patients but also were used to index other problems. There were also situations that resisted simple categorisation and were termed by the authors 'pre-concerns'. Huddlers may consider having a category that captures such 'pre-concerns' or 'pre-watchers'.

3. Roles

Senior staff members were the most active in channelling the talk in huddles. For example, in asking questions, and using 'continuers' when others provided information. In some huddles, only senior staff shared their knowledge and concerns about patients. *Is this situation desirable*? Huddle theoreticians and practitioners could reflect on whether the most junior members of staff should have a greater role in huddles.

4. Enabling the communication of concerns

Communicating information about a patient is an important element of SA, but equally important is how the listening happens. Analysis showed that the use of various response tokens and questions, channelled speakers to provide information on patients or close the topic. It is recommended that huddlers consider the ways that they encourage others to speak and share concerns and display that these are taken seriously.

Limitations

The data reported here were derived from the early implementation of huddles and it is possible that over time, the variety of methods that members used in the current analysis may change with growing experience. The quality of the data used was not consistent due to recording problems at two of the sites and this constrained a more detailed sequential analysis. Use of video data was not possible in this project due to the ethical sensitivity of collecting data on an open ward environment. This poses a limitation considering recommendations for multi-modal analysis of meetings. [5]

Conclusions

The aim of this article was to highlight how healthcare staff members translate huddle theory into practice, and it is the first study to examine the discourse of huddles. It has been found that specific lexical markers are in use at all wards, and that these allow the expedient identification of patients who are at risk of deterioration. Huddlers also adapted these terms to both upgrade and downgrade risk, suggesting that standardised indicators of risk were not enough alone for defining risks. Sequential analysis has also highlighted the conversational rights held *implicitly* by staff in different roles. This has displayed a potential tension between huddle principles and the fact that the more senior staff in these huddles seemed to be using the greatest variety of conversational moves. Findings may aid huddlers in considering the ways of conversing that best promote huddle principles on their ward.

Author Statement

JH led the ECMA research and drafting of the paper under the supervision of JD and MW, and JH conducted the literature review and developed the paper. JH and PL wrote the final version of the paper. ES provided revision of the paper. J E-C contributed to analyses. All authors contributed to the drafting of the paper.

Acknowledgements

The authors would like to thank Dawid Gondek, Amy Ramsay, Evelyn Sharples and Makeda Gerressu for their role in data collection and transcription. Sincere thanks are also extended to Ivan Leudar, and the Roehampton EMCA group for analytic wisdom; and Sarah Cantwell, John Rae, and Adam Gibson for constructive comments on an earlier draft. We thank our Patient Advisor Emma Francis for her valuable input to the SAFE programme.

Conflicts of Interest

P.L. led the implementation of the SAFE programme and contributed to the literature review and drafting of this manuscript. However, P.L. was not involved in the data collection nor data analysis/results reported here.

Funding

Situation Awareness For Everyone (SAFE) is a Health Foundation funded programme; both the implementation of SAFE and the evaluation were funded by the Health Foundation. This work was also supported by funding from WellChild, the funding was specifically to support evaluation work around the perspectives of parents and young people and to support patient and parent involvement in the research. This programme of work and evaluation was also

supported by the Royal College of Paediatrics and Child Health (RCPCH), which leads on the delivery of the programme. JD was supported by the National Institute for Health Research (NIHR) Collaboration for Leaderships in Applied Health Research and Care (CLAHRC) North Thames at Bart's Health NHS Trust. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR, the Department of Health, or RCPCH.

Data sharing

This is part of a larger study and 3 papers have already been published. This paper is a specific analysis and does not compete with other data held. All data is held by the research team at the Anna Freud Centre.

Supporting data and analyses is available in the appendices. Additional data is available on request to the authors.

Figure Legend

Figure 1 Methods used to establish shared concerns

References

1. Brady PW, Muething S, Kotagal U, Ashby M, Gallagher R, Hall D, et al. Improving situation awareness to reduce unrecognized clinical deterioration and serious safety events. Pediatrics, 2013. 131:e298-308.
2. Goldenhar L, Brady PW, Sutcliffe KM, Muething SE. Huddling for high reliability and situation awareness. BMJ Qual and Safety. 2013 22:899-906.
3. Provost SM, Lanham HJ, Leykum LK, McDaniel RR Jr, Pugh J. Health care huddles: managing complexity to achieve high reliability. Health Care Management Review. 2015. 40:2-12.
4. RCPCH. Situation Awareness for Everyone (S.A.F.E) Programme. http://www.rcpch.ac.uk/safe Accessed 8th November, 2016
5. Deppermann A, Schmitt R, Mondada L. Agenda and emergence: Contingent and planned activities in a meeting. Journal of Pragmatics. 2010. 42(6):1700-1718.
6. Housley W. Role as an interactional device and resource in multidisciplinary team meetings. Sociological Research Online. 1999. 4(3).
7. Huisman M. Decision-making in meetings as talk-in-interaction. International Studies of Management & Organization. 2001. 31(3):69-90.
8. Caronia L, Saglietti M. Knowledge and agency in interprofessional care: How nurses contribute to the case-construction in an Intensive Care Unit. Journal of interprofessional care. 2018 Apr 19:1-1.
9. Izumi H. Help-Search Practices in Rehabilitation Team Meetings: A Sacksian Analysis. Human Studies. 2017 Sep 1;40(3):439-68.

10. Albury C, Stokoe E, Ziebland S, Webb H, Aveyard P. GP-delivered brief weight loss interventions: a cohort study of patient responses and subsequent actions, using conversation analysis in UK primary care. Br J Gen Pract. 2018 Sep 1;68(674):e646-53.

11. Heritage J, Maynard DW. Communication in Medical Care. Cambridge, England: Cambridge University Press. 2006.

12. Heritage J, Robinson JD. The structure of patients' presenting concerns: Physician's opening questions. Health Communication. 2006. 19:89-102.

13. Chatwin J, Kennedy A, Firth A, Povey A, Rogers A, Sanders C. How potentially serious symptom changes are talked about and managed in COPD clinical review consultations: A micro-analysis. Soc Sci & Med. 2014. 113:120-136.

14. Stivers T. Participating in decisions about treatment: overt parent pressure for antibiotic medication in paediatric encounters. Soc Sci & Med. 2002. 54:1111-1130.

15. Raduma-Tomàs MA, Flin R, Yule S, Williams D. Doctors' handovers in hospitals: a literature review. BMJ Qual Saf. 2011. 20(2):128-133.

16. Eggins S, Slade D. Clinical handover as an interactive event: informational and interactional communication strategies in effective shift-change handovers. Communication and Medicine. 2012. 9:215-227.

17. Deighton J, Edbrooke-Childs J, Stapley E, Sevdalis N, Hayes J, Gondek, D, Lachman, P. Realistic evaluation of Situation Awareness for Everyone (SAFE) on paediatric wards: study protocol. BMJ Open. 2016 Dec;6(12):e014014.

18. .Stapley E, Sharples E, Lachman P, Lakhanpaul M, Wolpert M, Deighton J; Factors to consider in the introduction of huddles on clinical wards: perceptions of staff

on the SAFE programme, International Journal for Quality in Health Care. 2018;30(1)1, 44–49, https://doi.org/10.1093/intqhc/mzx162

19. Edbrooke-Childs J, Hayes J, Sharples E, Gondek D, Stapley E, Sevdalis N, Lachman P, Deighton, J. Development of the Huddle Observation Tool for structured case management discussions to improve situation awareness on inpatient clinical wards. BMJ Qual Saf. 2017 Sep 19:bmjqs-2017-006513
20. Jefferson G. Glossary of transcript symbols with an introduction. In GH Lerner (Ed.), Conversation Analysis, Studies From the First Generation (pp.13-31). Amsterdam, Netherlands; John Benjamins. 2004.
21. Garfinkel H. Studies in ethnomethodology. Cambridge; Prentice Hall. 1967.
22. Sacks H. Lectures on Conversation. Oxford, England: Blackwell. 1992.
23. Lambert V, Matthews A, MacDonell R, Fitzsimons J. Paediatric early warning systems for detecting and responding to clinical deterioration in children: a systematic review. BMJ Open. 2017;7(3):e014497. doi:10.1136/bmjopen-2016-014497.
24. McQuillan A, Carthey J, Catchpole K, McCulloch P, Ridout DA, Goldman AP. Republlished: Creating a safe, reliable hospital at night handover: a case study in implementation science. Postgraduate medical journal. 2014 Sep 1;90(1067):493-501.
25. Maynard DW, Heritage J. Conversation analysis, doctor-patient interaction and medical communication. Medical Education. 2005 39:428-435.

Figure 1

Establishing shared concerns: There are two stages where a potential concern raised by one huddle member may not become a shared huddle concern.

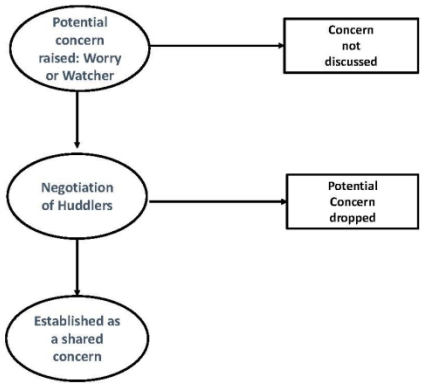

Figure 1 Methods used to establish shared concerns

139x198mm (300 x 300 DPI)

Appendix 1

Supporting analyses

In this section, three more extracts are shown and explicated to demonstrate supporting data for the conclusions of the main article. These include further evidence showing the use of the lexicon, how the staff flexibly upgraded and downgraded this lexicon, and the staff involved in these categorisations.

"No concerns"

The following extract shows a further example of how the lexicon of no-concerns was used to identify patients at risk. In particular, it demonstrates how through the routine use of this category, potentially at-risk patients were in fact identifiable to staff in this huddle through a lack of categorisation.

Extract 5, Ward 1, day 1, morning

1. **NURSE 2:** °11 no concerns, 13 no concerns and 14 no concerns as well.
2. **NURSE 3:** 16 no concerns, 18 no concerns
3. (1.0)
4. (name of Nurse 4)?
5. **NURSE 4:** 19 no concerns
6. (2.0)
7. **BANK NURSE:** And 21 ( ) had a complaint of serious back pain
8. **DOCTOR:** °Ok°
9. **BANK NURSE:** Erm: requested for painkiller which I have given him.
10. **STAFF NURSE:** °Ok°

The extract opens with Nurse 2 providing a series of classifications, referring to each patient by their bed number, and using the phrase *"no concerns"* (Line 1). Nurse 3 then takes the floor, and follows suit by classifying her two patients in a single turn (line 2). There is then a one second silence (line 3). Nurse 3 breaks this by

prompting Nurse 4's turn, saying her name (line 4), to which Nurse 4 replies with the same format, *"no concerns"* (line 5). A two second silence follows before the bank nurse[1] takes her turn, providing a report of her patient without a classification (line 7-9). The doctor responds with quietly-spoken minimal receipts, *"°Ok°"* at lines 8 and 9. In this particular huddle then, if a patient was not in need of further attention the nurses used the phrase *"no concerns"* with no expansion, and a report was provided about the patient if there was a potential for concern. Therefore concerns were not necessarily stated but were implied with expansions about the patient's situation and the absence of the *"no concerns"* categorisation.

Extract 6: Ward 1, day 1, morning

78. **BANK NURSE: <**Err tw-enty-four::::, err:: pad is still (.) itching.(.) because=of
79. er::::ec-ze-ma
80. **?:** (inaudible)
81. *((door creaks, opening and child crying can be loudly heard until door shuts))*
82. **BANK NURSE:** So I would say that the Pew is one, I'm waiting to give
83. medicine this morning (inaudible) but if-
84. **DOCTOR:** ->we should just check on:: them in terms of scoring<(.)
85. erm=er::: but >we'll review on the ward round anyway but I don't
86. think we've got any acute concerns<
87. **BANK NURSE:** No, no, no concerns.

Resisting the no-concerns/concerns binary – "acute concerns"

Extract 1 of the main article demonstrated how Nurse 2 resisted classifying her patient as simply "no concerns" by emphasising the time-limited nature of her assessment – but there were other ways that huddlers did this too. These 'gradings' of concern were not solely medical in purpose but also served interactional functions:

[1] A bank nurse is a locum nurse who is working as a short-term replacement in the team and is not a regular team member:.

At line 78, the bank nurse opens her turn not by saying whether or not she has a concern but by giving details about the patient. By making the itching relevant at this point in the huddle, the implication is that this is a potential 'concern'. The speaker then makes her assessment of the patient and then displays the action that she will take (lines 82-83). At this point, she is cut off by the doctor, who initiates a plan. The language is collaborative - *"we"* (line 84) should check the score and *"we'll review"* (line 85) - though the timing of the interjection is an assertive claim to the floor. The addition of *"anyway"* (line 85) indicates that the plan is a concession and that action is not necessary. The framing of this plan as an extra precaution rather than a necessity, is also indicated in the subsequent assessment *"but I don't think we've got any acute concerns"* (line 85-86). The lexical choice here is careful – the doctor does not say that this situation is not concerning – if he did so this might be dismissive of the bank nurse who has raised the point. This is particularly important in light of the fact that huddles in theory are places where anyone can feel comfortable to raise a worry that they have about a patient. However, the doctor does need to find a way of showing to the others that this is not his priority, and to find a way of limiting deliberation. The use of *"acute concern"* here saves the face of the nurse who has raised this while offering a closing of the discussion. The bank nurse's turn is more like a handover in style (see [14]), and the doctor's turn also gently redefines the conversation as about 'acute concerns' rather than the 'ordinary concerns'/ business of the ward.

The bank nurse shows emphatic agreement in line 87 and uses the original term *"concern"*, confirming that the topic is dealt with. This may of course reflect how a temporary member of the team adopts the team's language, but what this example

highlights is that Ward 1 worked to an implicit rule that only once this categorisation concern/no concern was made explicitly, by the assigned nurse, could the topic shift to another patient (and this was seen in other Ward 1 huddles). The negotiation of concerns was thus a collaborative enterprise in so far as the bedside nurse had the final say on a patient. However, as we have seen, this does not mean that the doctor in the huddle could not 'downgrade' a concern.

The "Watchers" upgraded

In extract 4 of the main article we saw how the term "watchers" was used in a Ward 4 huddle by a nurse to report to a doctor the list of patients who were at-risk. The term 'watchers' was in fact used the most in Ward 3 and appeared in three out of the four huddles. It was used in much the same way as Ward 4 but occasionally received an upgrade, as the following example shows

Extract 7, Ward 3, day 2, evening

1. **NURSE CONSULTANT:** okay are we ready to start
2. **SENIOR NURSE 1:** yeah
3. **NURSE CONSULTANT:** yep okay have we had any incidents today (.) anything
4. **SENIOR NURSE 1:** er:-[the]
5. **NURSE CONSULTANT:** [at all?]
6. **SENIOR NURSE 1:** erm (0.8) (child's name) in we did talk to the [( )]
7. **NURSE CONSULTANT:** [okay]
8. **SENIOR NURSE 1**: erm:, at half five he was in the room wasn't he when he had
9. a quite prof:ound: (.) [desaturation]
10. **SENIOR NURSE 2:** [des:aturation]
11. **NURSE CONSULTANT:** okay
12. **SENIOR NURSE 1:** he's he's the one to
13. **NURSE CONSULTANT:** he's our watcher
14. **SENIOR NURSE 1:** he's our watcher (.) w:- with bells on

There are no doctors present at this huddle. The nurse consultant opens the meeting with the question, *"are we ready to start?"* (line 1). Senior Nurse 1 confirms this, and the nurse consultant follows this with another question, topicalising *"incidents today"* (line 3). This question makes the recent past relevant (rather than being a future orientation). There is an overlap as Senior Nurse 1 begins to answer. She gives information about *"quite a profound desaturation"* (of oxygen) in a patient, the

patient's name, and time this happened (lines 6-9). Senior Nurse 2 confirms this report with her *"desaturation"* (line 10), in unison with the end of Senior Nurse 1's turn. Senior Nurse 1 begins to make her assessment that this patient is *"the one to"* (line 12) and the nurse consultant renames the patient *"our watcher"* (line 13), confirming the assessment. The addition of *"our"* by the most senior person in the room displays his understanding that the situation is serious and emphasises the shared nature of the responsibility to the patient. Senior Nurse 1 uses her turn to repeat this, and then upgrade it- *"with bells on"* (line 14). This produces another category of patient in addition to the watchers - the most/acute? watchers. We saw a doctor in Extract 6 above using the term *"acute concern"* in downgrading a risk: here, another huddle member emphasises risk by adding, *"with bells on"* (line 14).