Nurses' evaluation of a new formalized triage system in the emergency department – a qualitative study

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ORIGINAL ARTICLE

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ABSTRACT

INTRODUCTION: Formalized triage in the emergency department (ED) is not widely used in Denmark; this study explores the effects of introducing a five-level process triage system in a Danish ED.

MATERIAL AND METHODS: Semi-structured qualitative interviews were conducted with 15 emergency nurses. The interviews were preceded by observations of the work of the ED nurses in which focus was on the triage process.

RESULTS: Formalized triage was experienced to improve the overview of patients and resources at the ED, and the nurses described that they felt more assured when prioritizing between patients. Communication and coordination were also improved by the triage system. But more time spent on documentation and re-evaluation may cause the nurses to feel professionally inadequate if adequate resources are not provided. Furthermore, the triage system has reduced the focus on the humanistic and psychosocial aspects of nursing. Difficulties were occasionally experienced when categorizing patients with diffuse symptoms according to the standardized triage symptoms and signs' algorithms.

CONCLUSION: Introducing a formalized triage system in the ED was experienced to give a better overview and more overall control of ED patients. Adequate resources are needed to ensure that a stronger focus on documentation and re-evaluation related to triage does not produce a feeling of professional inadequacy among the staff.

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Triage is an important tool to determine and classify the clinical priority of the patients presenting at emergency departments (ED). The use of formalized triage systems in Danish EDs has just recently started to develop [1]. National and regional guidelines on emergency care organization focus on centralisation of EDs, more effective resource coordination and utilization, as well as a high quality of treatment through introduction of quality standards [2-4]. In an optimal ED, all patients could start the diagnostic process and treatment immediately upon presentation at the ED [5]. However, although ED resources and coordination are currently being improved, this is still not possible, and triage is thus an essential tool in improving patient flow and patient safety.

Hillerød Hospital ED started using Hillerød Acute Process Triage (HAPT) in May 2009, having no previous experience with formalized triage. HAPT is a five-level triage system inspired by the Swedish Adaptive Process Triage (ADAPT) [6] that has been adjusted according to Danish medical guidelines. The patient is assigned a triage level based on vital signs and an emergency symptoms and signs (ESS) algorithm. The most urgent ranking level of the two will determine the final colour-indicated triage level ranging from red (most urgent) through orange, yellow, green and blue (least urgent). Triage levels come with standardized time limits for re-evaluation of the patient.

The effect of introduction of formalized triage in ED settings is a subject that does not lend itself easily to scientific study [7]. Quantitative methods have been the preferred approach. In this study, we have adopted a qualitative approach to the study of ED in a context with no previous experience of triage.

Previous qualitative studies have focused on triage decision-making [e.g. 8-10]. The present study focuses on how working with a formalized triage system was experienced by the nursing staff at the ED and on the nurses' triage practice in the social context in which the formalized triage is embedded; i.e. as proposed by Fry & Burr, an underexplored triage research approach is adopted [11].

The aim of this study is to explore how the nurses experience the introduction of a formalized triage system at the ED and its consequences for their work practice.

MATERIAL AND METHODS

An ethnographic fieldwork-based study was conducted at the ED, Hillerød Hospital during the period from 5 February to 16 April 2010 by a female anthropologist with experience in the use of the methods applied. Both semi-structured qualitative interviews [12] and observations [13] were conducted in order to inform a dual perspective on both work practices and personal experience.

The observations were carried out as place-based

and person-based observations, so-called shadowing, where the researcher follows an employee in her daily work [13]. The observations lasted for as long as it took to assess one patient up to an entire work shift. The observations were primarily conducted prior to the interviews with a view to informing the subsequent interview session and to raise themes to be explored in the interview.

Fourteen registered nurses from the ED were interviewed by the same interviewer. The nurses were registered nurses with an average tenure of 12 years (range: 8 months-32 years) and they had worked with emergency care on average nine years (range: 3 months-32 years). The nurses were selected so that both experienced and relatively inexperienced emergency nurses were represented. None of the nurses declined interview participation. However, one interview was not conducted due to illness and a heavy workload on the scheduled and rescheduled interview times, respectively. A thematically arranged interview guide was used where topics and issues to be covered were specified. The guide left room for other relevant themes to surface and be explored during the interview. The themes to be explored included background information (such as age, work experience and triage experience); questions regarding the relation between experience, personal judgement and instructions of the model (e.g. whether they experienced accordance between previous experience and the triage model); work practice before and after the introduction of triage (e.g. if the model had changed the nurse's decision-making process); the effect of triage on the nurse's pattern of collaboration (e.g. who are your most important collaborators and how do you collaborate). The interviews had a duration of 40-80 minutes and took place at the ED. The interviews were recorded and subsequently transcribed for thematic coding and analysis.

The interviewees were given written information about the research project and gave their written consent to participation and use of the interview material for research purposes. The interviewees were guaranteed confidentiality and anonymity in connection with the researcher's subsequent use of the data material.

Trial registration: not relevant.

RESULTS

Higher level of assurance and control

A recurrent theme in the interviews was that formalized triage resulted in a higher degree of overview and with that more assurance and control compared with the previous practice. Many of the nurses felt more in control of their work and more confident when prioritizing between patients. A reduced risk of misunderstanding the acuity of the patients' conditions and of missing critical signs was reported (**Figure 1**). The standardized assessment upon arrival at the ED was reported as the main reason for the increased level of assurance. According to the nurses, triage had made it easier for them to prioritize between patients, had reduced their fear of overlooking something important in the initial assessment and had caused a shift in their focus from working diagnosis to urgency assessment involving both vital signs and ESS.

Even though a patient was triaged to a non-urgent triage category, some of the nurses still considered the stable patients potentially unstable due to the ascribed characteristics of the acuteness condition: temporary instability and unpredictability. This continuously challenges the control and assurance provided by the triage system, causing nurses to describe these elements as provisional. On further inquiry, the nurses explained the importance of being critical, using their experience and "gut feeling" as a supplement when assessing patients instead of blindly relying on the standardized triage categories.

Categorization according to standards

A recurring interview theme was that the standardized re-evaluation intervals prescribed by the triage level were experienced as a means of legitimacy as far as the determination of the appropriate level of patient care was concerned. The clearly defined re-evaluation intervals increased professional satisfaction because the criteria became very clear and easy to assess (**Figure 2**A). However, the standardized requirements for re-evaluation were also experienced to cause stress and to give rise to an experience of professional inadequacy when requirements could not be met due to a lack of resources at the ED (e.g. staff, physical space or time) (Figure 2B).

Discrepancies between knowledge, experience and triage system

The nurses reported facing uncertainty and difficulties

FIGURE 1

A higher level of assurance and control through initial assessments.

"It [triage] is really good for us as nurses because it makes us more confident in our job, it can make us feel more assured being [working] here, we can feel more in control regarding the patients […] there is no doubt who is to be treated first, it has become much easier to prioritize [my work]".
"It [triage] gives a better overview of who is acutely ill […]. We have experienced that one nurse thinks another nurse has received the patient and then it happens that no one has received the patient, who is forgotten and might be critically ill, it has happened many times. That is where it [triage] is more assuring for us".
"It [triage] gives me some peace of mind since nurses can have this worry, 'Is there something I have overlooked? Is there something I have forgotten? Is the patient really unstable and I haven't noticed it?' In that regard I feel more confident when using it [triage]".

when knowledge, clinical experience and triage system recommendations were not in accordance. In practice, not all patients at the ED were easily triaged. Difficulties were experienced when too much and too little information was given about the patient (**Figure 3**A). Too little information (e.g. diffuse or conflicting symptoms) made it difficult to decide which ESS algorithm to use. Large amounts of information or complex information could be difficult to apply to a standardised triage manual, and created situations where the triage system and situational knowledge/professional experience were in conflict. This could imply that nurses ascribed individual rather than uniform urgency to a patient's condition, and it could imply that actual prioritization between patients conflicted with the well-defined order of priority of the triage categories.

A high degree of uniformity and equity

Certain patient groups (e.g. elderly or intoxicated patients) gained a higher priority with the introduction of a formalized triage system. This was reported as the result of the introduction of a standardised triage assessment instead of the previously used, situational and personal assessment of those who seemed to be in most need of immediate care (Figure 3B).

Patients with highly severe diseases presenting with low acuity symptoms (e.g. cancer patients) were found to be categorized in lower triage categories after the introduction of the triage system which would occasionally result in longer waiting times. Prior to the introduction of formalized triage, the nurses would typically give higher priority to these patients for psychosocial reasons. However, the triage manual was perceived to give less emphasis to psychosocial aspects.

Facilitating collaboration, communication and coordination

Communication was found to be improved by the triage system (**Figure 4**). The triage manual clearly stated the maximum time allowed before a patient was to be seen by a doctor which reduced the amount of discussion between the nurse and the doctor on which patients to see first (Figure 4A). The triage system made it easier to distribute patients to the relevant areas of the ED, and when overcrowding developed to safely transfer patients with lower triage categories to less crowded areas (Figure 4B). Allocating and prioritizing clinical staff to patients was also facilitated by the triage system (Figure 4B). In addition, some of the coordinating nurses perceived the formalized triage level categorizations to be more telling in respect to urgency and thus more relevant as a basis for prioritization than the less situation- and patient-specific (working) diagnoses used before the triage system was introduced.

FIGURE 2

Categories and standards.

A. Legitimizing function

"The fact that you categorise the patient according to vital signs means you get confirmed that it is acceptable only to measure [vital signs] once an hour or how often you need to re-evaluate the patient [according to the standards]".

"When I have a red [triage category] patient, then the coordinating nurse knows that I cannot attend to other patients [...]. You respect that a red patient takes all your time. And if you have a red patient, it is legitimate not to attend to your other patients, then someone else takes over".

B. Stress and professional inadequacy

"It is expected, when you give a certain colour code [triage level] that it gets followed up [...] you can see that this colour [patient] should have been attended to half an hour ago and you haven't come around to it because you have had five other patients needing attendance at the same time. That is why it [triage] can result in constant stress because you can see you aren't following the prescribed requirements [of the triage manual]".

"You constantly experience being inadequate and not having time to do the things you should do. You cannot fulfil the tasks you are supposed to and there are constantly patients waiting who have not even been assessed [triaged]".

FIGURE 3

Nurses' evalution of the new formalized triage system.

A. Discrepancies between knowledge, experience and triage system

"On several occasions, I have experienced that my professional experience and the triage system were not in accordance. For some patient categories, I think 'this is not so dangerous', but it is according to the triage manual, because when I look it up, the patient must be re-evaluated frequently".

B. Uniformity and equity

"It [triage] is really beneficial for a group of patients who were neglected in the past; the ones who had been drinking who were lying in the hallway during the night and also the elderly 75-80-year-olds who would lie in the hallway with a wet diaper for a very, very long time and no one had the time or felt like receiving them. And when they were taken to a ward after six hours of waiting, you found out that they actually had a pulse of 30 and were really, really ill".

"If I receive a patient who comes in having trouble breathing and it turns out that the temperature is 40.1, the breathing frequency is 28, the pulse is high and the blood pressure a bit low – previously you might say 'well, it is just an old lady with pneumonia', now I have many things resulting in an orange score and then that patient will be prioritized because something concrete lies behind it".

FIGURE 4

Collaboration, communication and coordination.

A. Nurse-doctor collaboration

"Now I have a system to relate to, 'the patient is orange [triage category], you *have* to', previously it was more [name of the nurse] who said 'you *have* to'. Now, I have something to refer to that justifies what I say and therefore don't have to go into a personal discussion of what you think".

"It [triage] has also changed the work flow in the sense that it is more legitimate to contact a doctor and say 'I have an orange patient, you have to do something now' [...] I have gotten more power, one could say, and is beginning to be respected".

B. Communication and coordination

"But it [work flow] has also been changed by the fact that you also take competence into account.

Interviewer: How?

If you are expecting an orange patient and you have gotten some idea of why he is orange, then as a coordinating nurse you might not allocate that patient to the youngest or less experienced nurse. You can always re-evaluate later on, when the patient's condition is stable, then it is all right. So in that manner you take competence into account".

"It is a good tool to show that [name of nurse] needs some help because she actually has two orange patients. And it is also a good tool to show that the other nurse has three patients, so it looks as if she is busy. But, well, she has three *green* [triage category] patients, who have been seen, then she can take some more [patients]".

DISCUSSION

The aim of ED triage is to determine and classify the clinical priority of patients to give the clinical staff a tool with which to prioritize departmental resources and treat patients in the order of their clinical urgency. This qualitative study confirms that the majority of the ED nurses found it easier to prioritize their work after the introduction of a formal triage system. The study also found that nurses experienced a higher degree of control and assurance when prioritizing between patients. Formalized triage was reported to improve communication and coordination of resources at the ED. However, although triage is an instrument designed for use when resources do not meet demand, the standardized triage system places more requirements on documentation and re-evaluation and its use may therefore give rise to feelings of professional inadequacy if sufficient resources are not provided.

In some cases, the nurses experienced difficulties in finding an ESS algorithm relevant to the patients' presenting problems. Aligning patients with a standardized process was not always found to be a simple task due to the complexities of the undifferentiated patients' presentations at the ED. Furthermore, previous clinical experience, pattern recognition and "gut feeling" strongly influenced the nurses' decision making processes, and occasionally made the situation even more complex and difficult to simplify according to a standardized process. As shown in previous studies on implementation of standardized protocols, assessment criteria are often made more explicit, but not necessarily more simple to work with [14, 15]. The difficulties experienced in finding a relevant ESS algorithm could to some extent be ascribed to the reduced number of ESS algorithms in the modified triage manual compared with the original ADAPT system. These modifications were made in order to simplify the triage system. However, it seems that the smaller number of ESS algorithms does not match the complexity of the ED patients; something which has, in fact, made the manual more difficult to use.

Formalized triage is performed immediately after the patient's arrival to the emergency department.

Another aim of triage is to ensure clinical justice for the patients [7]. It can be argued that a higher degree of uniformity and equity has resulted from using the triage system, especially regarding the need of treatment and observation. The nurses report that high-risk patients have gained more focus in the initial assessment and observation. However, the triage system focuses on time-critical treatment and the need for observation and does not include psychosocial factors. Thus, the implementation of triage has meant that less time is spent on the humanistic aspects of nursing. This change in practice and departmental culture was criticized by some of the nurses.

The triage systems and the Danish experience with ED triage are continuously developing. The current focus and need are to prioritise patient treatment according to acuity and to improve patient safety through systematic patient re-evaluation. However, improving ED front-end operations (e.g. advanced triage protocols and team triage) [5] and further developing the standardized process initiated by the triage manual (e.g. "fast track" and "fast admission tracks") could also reduce non-value adding waiting times for the lower severity and high-severity/low-acuity patients.

Methodological considerations

Selection of informants

The interviews were conducted during day shifts. Nurses working only evening or night shifts were not included. However, since all interviewed nurses rotate between shifts, this is unlikely to have influenced the main results.

Interview context

The field researcher had no previous ED experience and was not a part of the professional milieu of the ED. Observations preceded the interviews causing the researcher not to be a complete stranger to the interviewees. The role of being a (in this case somewhat familiar) stranger has been considered to be a privileged position in certain situations for gaining access to experience and knowledge [16], which was experienced to be the case in this study.

Inter-observer variation

The inter-observer variation for the HAPT is not known.

A low inter-observer agreement could result in different experiences in a specific triage decision. However, since this study focuses on the nurses' experiences regarding the reorganisation of their work practice and work relations, it is unlikely that a low inter-observer agreement makes the raised issues in the interviews less generalizable to all our ED nurses.

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CONFLICTS OF INTEREST: none

LITERATURE

1. Brabrand M, Folkestad L, Hallas P. Visitation og triage af akut indlagte medicinske patienter. Ugeskr Læger 2010;22:1666-8.
2. National Board of Health. Styrket akutberedskab – planlægningsgrundlag for det regionale sundhedsvæsen. Copenhagen: National Board of Health, 2007.
3. www.ikas.dk/Sygehuse/Akkrediteringsstandarder-for-sygehuse/Generelle-patientforløbsstandarder/Vurdering-og-planlægning/2.7.1-Behandlingsplan-i-somatikken-(1/5).aspx (29 July 2010).
4. Capital Region of Denmark. Anbefalinger om fælles akutmodtagelser i Region Hovedstaden, 2007. Copenhagen: Capital Region of Denmark, 2007.
5. Wiler JL, Gentle C, Halfpenny JM et al. Optimizing emergency department front-end operations. Ann Emerg Med 2010;55:142-60.e1.
6. Göransson KE, von Rosen A. Interrater agreement: a comparison between two emergency department triage scales. Eur J Emerg Med 2011;18:68-72.
7. Fitzgerald G, Jelinek GA, Scott D et al. Emergency department triage revisited. Emerg Med J 2010;27:86-92.
8. Gerdtz M, Bucknall T. Triage nurses' clinical decision making. An observational study of urgency assessment. J Adv Nurs 2001;35:550-61.
9. Chung J. An exploration of accident and emergency nurse experiences of triage decision making in Hong Kong. Accid Emerg Nurs 2005;13:206-13.
10. Andersson A, Omberg M, Svedlund M. Triage in the emergency department – a qualitative study of the factors which nurses consider when making decisions. Nurs Crit Care 2006;11:136-45.
11. Fry M, Burr G. Review of the triage literature: past, present, future? Aus Emerg Nurs J 2002;5:33-8.
12. Kvale S. InterView. En introduktion til det kvalitative forskningsinterview. Copenhagen: Hans Reitzels Forlag, 1997.
13. Czarniawska B. Shadowing and other techniques for doing fieldwork in modern societies. Frederiksberg: Copenhagen Business School Press, 2007.
14. Berg M. Order(s) and disorder(s): of protocols and medical practices. In: Berg M, Mol A, eds. Differences in medicine. Unraveling practices, techniques and bodies. Durham and London: Duke University Press, 1998:226-46.
15. Berg M. Problems and promises of the protocol. Soc Sci Med 1997;44:1081-8.
16. Gammeltoft T. Intimiteten. Forholdet til den anden. In: Hastrup K, ed. Ind i verden. En grundbog i antropologisk metode. Copenhagen: Hans Reitzels Forlag, 2003:273-95.