

Patient safety challenges in a case study hospital – Of relevance for transfusion processes?

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Abstract

The paper reports results from a research project with the objective of studying patient safety, and relates the finding to safety issues within transfusion medicine. The background is an increased focus on undesired events related to diagnosis, medication, and patient treatment in general in the healthcare sector. The study is designed as a case study within a regional Norwegian hospital conducting specialised health care services. The study includes multiple methods such as interviews, document analysis, analysis of error reports, and a questionnaire survey. Results show that the challenges for improved patient safety, based on employees' perceptions, are hospital management support, reporting of accidents/incidents, and collaboration across hospital units. Several of these generic safety challenges are also found to be of relevance for a hospital's transfusion service. Positive patient safety factors are identified as teamwork within hospital units, a non-punitive response to errors, and unit manager's actions promoting safety.

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1. Introduction

Patient safety is currently a matter of both public and professional interest in the health care system. Influential contributions such as “To err is human” and “Crossing the Quality Chasm” [1,2] have set the agenda for an international interest into issues concerning safe patient care such as faulty diagnosis, faulty medication, and insufficient patient treatment in general. International studies show that undesired events related to hospitalisation vary between 2.9% and 16.6% [3,4]. Factors influencing the management of undesired events in a health care organi-

sation are rooted in individual, organisational, and cultural matters [1], indicating that to study patient safety requires several perspectives and a wide array of methods [5–7]. Also the growing complexity of health care services involving sophisticated technology, dangerous medicines, diverse patients, multiple work processes, and various professional disciplines with increased levels of specialization, points to a multi-perspective approach to studying patient safety [8–10].

Within transfusion services, patient safety would be related to the assurance of a high level of protection for recipients and donors of blood, i.e. to prevent infections and secure human blood and blood components. Safe transfusion therapy depends on complex processes requiring integration and coordination among multiple hospital services including

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laboratory medicine, nursing, anaesthesia, surgery, clerical support, and transportation [11]. Due to these organisational interfaces, issues like handoffs and transitions, and collaboration across hospital units would be of relevance for safe patient care within transfusion. In addition, reporting of adverse events in hemovigilance systems should be seen as an important safety component [12]. Typical adverse events within transfusion services are adverse reactions in blood donors and blood recipients, incorrect blood component transfused [13], incorrect specimen labelling, and faults in patient identification and patient monitoring [14]. It is estimated that transfusion-associated errors cause 12–13 deaths per year in US, but since a large degree of underreporting supposedly exists the numbers should be estimated to be higher [11,15].

2. Materials and methods

The research design is a case study approach [16–18] within a regional Norwegian hospital with the objective of gaining in-depth knowledge of the status and influencing factors concerning patient safety. Data has been collected using a combination of qualitative (interviews and document analysis) and quantitative (patient safety questionnaire and statistical analysis of error reports) methods. The case study is conducted in a regional university hospital with approximately 5000 employees offering specialised health care services to a population of 300,000 people. The Norwegian health care system consists mainly of state funded hospitals, where Norwegian citizens are treated without costs. There is no system of additional private health insurance as there is in many other countries.

A total of 91 semi-structured interviews have been conducted with regulatory inspectors, top managers, middle managers, error-reporting administrators, physicians, and nurses within different hospital units. Interview guides covering the topics of risk perception, human and organisational factors, error reporting, learning, power issues, etc. were used. Close to all interviews were tape-recorded. Document analysis included review of inspection reports, annual reports, policy documents, procedures and guidelines. A patient safety survey was carried out at the case hospital using “Hospital Survey on Patient Safety” [19] translated into Norwegian. The survey instrument measures 11 dimensions: supervisor/manager expectations and actions promoting safety (four items), organisa-

tional learning and continuous improvement (three items), teamwork within units (four items), communication and openness (three items), feedback and communication about error (three items), non-punitive response to error (three items), staffing (four items), hospital management support for patient safety (three items), teamwork across hospital units (four items), hospital handoffs and transitions (four items), and reporting of incidents (four items). The instrument satisfies conventional validity criteria [20,21]. 1919 questionnaires were returned, resulting in a response rate of 55%. In addition, 894 written error reports from the hospital were registered and analysed in an excel-database with regard to error type, error severity, error causality, and personnel categories.

3. Results

Results show that there exists a positive attitude towards patient safety in the case hospital, resulting in an overall prioritisation of safety and quality as a strategic area with the objective of promoting patient safety as a future competitive advantage. On the other hand, healthcare reforms have changed the framework conditions for the case study hospital, resulting in changes in hospital financing and demands to reduce waiting lists. The current focus on economy, production, and competition continuously influences decisions affecting medical personnel in all units, resulting in a certain cross pressure where production and safety are perceived as competing goals by many employees [7].

Fig. 1 summarises the results from the questionnaire survey at the case hospital ($n = 1919$). The figure displays mean values for agreement to positive items and disagreement to negative items in percentage for the 11 different patient safety dimensions. Results can be valued as good if 75%, medium if 50%, and poor if 25%.

The figure indicates that respondents perceive hospital management support for patient safety, the reporting of incidents, and collaboration across hospital units as poor in the case hospital. Hospital handoffs and transitions, and feedback and communication about error is valued as relatively poor, while the dimensions of staffing and organisational learning/continuous improvement are valued as medium. Communication and openness, and teamwork within units are valued as relatively good, while respondents perceive non-punitive responses to error and supervisor/manager expectation and

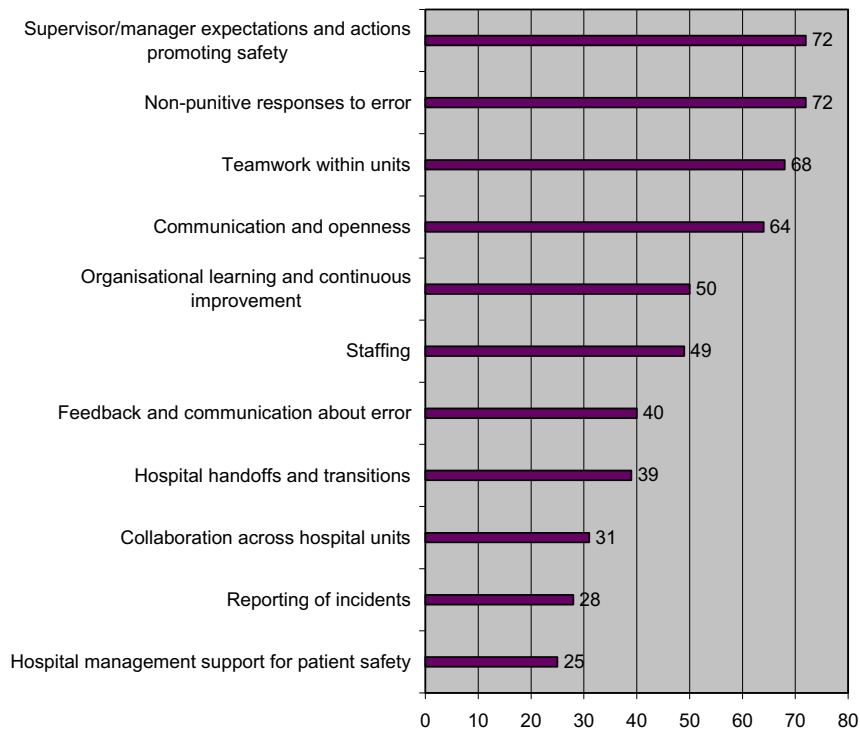


Fig. 1. Patient safety dimensions, mean scores in percentage ($n = 1919$).

actions promoting safety as good. Below, the four dimensions with the lowest scores are described in more detail, using a combination of qualitative and quantitative data.

3.1. Hospital management support for patient safety

Following items are included in the dimension of hospital/top management support for patient safety: “Hospital management provides a work climate that promotes patient safety” (23% of the respondents totally agreed or agreed), “The actions of hospital management show that patient safety is a top priority” (20% totally agreed or agreed), and “Hospital management seems interested in patient safety only after an adverse event happens” (reverse worded, 28% totally disagreed or disagreed). Taken together, the responses to the three items give the lowest score among the 11 different patient safety dimensions (see Fig. 1). The main reasons for the low score are related to the perceived cross pressure between production and safety. Changes in hospital financing and demands to reduce waiting lists have been challenging and caused internal conflicts. The hospital management encourages all divisions to report errors and prioritize patient safety, yet simul-

taneously express the importance of cost savings and budget balance. This compound pressure causes conflicts and limited time to error reporting, follow-up and feedback to the involved medical personnel. Department managers refer to the pressure for budget balance and express feelings of powerlessness and worries about understaffing and “corridor patients” due to lack of space:

“...there is a higher focus on deviation from budget, than on deviation from safety...” (middle manager)

In other words, the hospital organisation has limited resource slack such as time, personnel, and finances [22] and in practice, patient safety loses against budget balance. The hospital is organised to manage normal daily work operations, but has low reserve capacity to manage activities outside the short-term production perspective, such as error reporting, feedback, and training.

3.2. Reporting of incidents

An overall electronic reporting system for accidents and incidents with belonging procedures and routines is established in the case hospital (for

further details, see [23] 2008). Despite this, the reporting rate among health care personnel is low compared to other sectors [24]. In the questionnaire survey, 45% of the respondents had not reported any accident/incident during the last 12 months, while 20% had reported one or two incidents. All informants in the qualitative studies revealed that they had experienced incidents themselves or observed others making mistakes. Underreporting restricts the hospital's ability for learning from errors and designing appropriate preventive measures. Informants refer to time pressure, low degree of feedback on reported incidents, low perceived utility value, and fear of stained reputation as the main reasons for underreporting. Attitudes towards incident reporting can be summarised through following quotations:

"I do not report incidents using the reporting scheme unless it is extremely serious and has consequences for the patient. I rather discuss it informally with my colleagues" (head physician)

"I myself find it of little use with a paper (incident report) in the shelf" (head physician)

"If a near-miss occurs it's an eye-opener for yourself, but it does not get reported" (head physician)

The quotations also reveal that attitudes towards underreporting are more common among physicians. In the analysis of 894 written error reports at two divisions in the case hospital, nurses reported 65% of the errors, bioengineers 9.5%, auxiliary nurses 5.5%, physicians 4.6%, and others 15.4%. Nurses are by far the largest occupational group at the hospital, so based on the numbers one should not conclude that nurses commit errors more often than others. The difference between occupational groups is rather a result of different risk perception, different thresholds to report, and different reporting cultures [7,25]. In the same analysis, error types were identified as patient falls (65%), medication errors (16%), lack of patient identification (9%), and complications (7%). The reason for the high number of reported patient falls was explained by the harmlessness of the error type and the difficulty in preventing this type of incidents.

3.3. Collaboration across hospital units

Collaboration and interaction should be seen as vital to safety processes and learning from errors in a hospital. Results demonstrate that these aspects

need to be improved within the case hospital. In the questionnaire survey, examples of items included in the dimension of collaboration across hospital units were "Hospital units do not coordinate well with each other" (reverse worded, 10% of the respondents totally disagreed or disagreed) and "Hospital units work well together to provide the best care for patients" (32% totally agreed or agreed).

Based on document analysis of inspection reports, results show that the case hospital only to a certain degree applies the reports as basis for improvements across organisational boundaries. The following quotation exemplifies the issue of learning barriers across hospital units:

"The hospital is not a learning organisation and it is quite unbelievable. It's like they're happy that their neighbour departments are caught and not themselves. Instead we want the hospital as a whole to read the inspection reports and correct deviations often current in all departments. Today, we write good reports, but we don't get the hospitals to read them" (regulator manager)

The lack of collaboration and learning across hospital units is also visible in accident/incident reporting, analysis, and development of preventive measures. At best, learning loops related to reported incidents are satisfactorily at a local level, while learning across hospital units is scarce.

3.4. Hospital handoffs and transitions

Results from the different studies at the case hospital show that interfaces between shifts, wards, and divisions represent a challenge concerning the delivery and continuity of patient care. Transition issues arise when work processes are complex involving several professions and hospital units delivering patient treatment and care. The quality of hospital handoffs and transitions is affected by a number of individual and organisational factors such as experience, communication skills, time pressure, and number of patients.

In the questionnaire survey, examples of items included in the dimension of hospital handoffs and transitions are "Things 'fall between the cracks' when transferring patients from one unit to another" (reverse worded, 20% of the respondents totally disagreed or disagreed) and "Problems often occur in the exchange of information across hospital units" (reverse worded, 33% totally disagreed or dis-

agreed). A qualitative study of the transition between shifts at the case hospital [26] found that the quality of shift handover influenced patient safety. The quality enhancing factors were identified as sufficient time, minimum of external interruptions, experience (patient type, diagnosis, and professional), match between patient number and patient capacity, and individual communication skills (clarity, structure, and attention).

4. Discussion

Results from the case study within a regional Norwegian hospital reveal that hospital management support for patient safety, reporting of incidents, collaboration across hospital units, and hospital handoffs and transitions are valued as substantial patient safety challenges by the informants. These findings are supported by both qualitative and quantitative studies. The results represent a generic picture of the patient safety conditions at the case hospital, and no significant differences were reported across hospital units. This indicates that the findings are also representative for the hospital's transfusion services. Several authors emphasise the importance of extending the efforts to improve transfusion safety beyond the blood transfusion laboratory to realise a 'full quality system' [14,27]. In that respect, this study contributes to do so by focusing on an operationalising of patient safety using 11 generic dimensions applicable at any hospital unit or department.

The four dimensions with the lowest scores in the current case study include issues that are also documented in different transfusion research studies. For instance is the ability to identify and report accidents/incidents in transfusion medicine impacted by many of the same obstacles that plague other healthcare processes [14]. Andreu et al. [28] found that underreporting was a key problem due to difficulties in relating clinical complications to transfusion, poor staff education, and fear of disciplinary action. Hospital handoffs, transitions, and collaboration across hospital units are also emphasised in several studies discussing safety in the transfusion services. A study by McClelland et al. [29] has estimated that getting the correct unit of blood to a patient involves more than 60 steps, and crosses several managerial boundaries. A systematic approach to identify defects and weak links in the transfusion chain is called for to simplify and improve the chain

[30]. A key development in the UK has been the establishment of multidisciplinary hospital transfusion committees to act as focus for transfusion matters, including local development of safe blood handling procedures.

By this case study, we argue that many of the patient safety challenges that occur in a hospital also apply for the transfusion services. The focus of future research addressing safety within transfusion should in our opinion be directed towards the process of transfusing blood in the clinical setting (i.e. at the point of care) rather than in the blood laboratory. This is in line with the argument that even though blood supply in the developed world has probably never been safer [30], the interfaces between the blood bank/laboratory and blood transfusion processes occurring outside the laboratory has essentially remained unchanged over the past several decades. These interfaces still rely heavily on human verification and monitoring [14]. Further studies of patient safety in the transfusion chain would therefore be highly relevant.

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