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**Author:** Beuzekom, Martie van

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# 6

## **Perception of patient safety differs by clinical area and disciplines**

M. van Beuzekom <sup>1</sup>, F. Boer <sup>1</sup>, S. Akerboom <sup>2</sup>, A. Dahan <sup>1</sup>

<sup>1</sup> Department of Anaesthesiology, Leiden University Medical Centre, P.O. Box 9600, 2300 RC Leiden, the Netherlands

<sup>2</sup> Department of Psychology, Leiden University, P O Box 95555. Leiden, The Netherlands

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## **Introduction**

Safety in hospitals and complex environments such as the Operating Theatre and the Intensive Care Unit rely on multiple system defences such as the organizational structure, protocols, the training received by the professionals and the quality of equipment or technology. Of particular interest are how medical errors occur, how they can be addressed within the health care system and how the work environment affects medical errors and near misses. There is increasing acceptance of the idea that adverse outcomes are often due to system failures, whereby deficiencies at many different levels create the context in which human error can have a negative impact.<sup>1-3</sup> Organizational factors, which may contribute to errors and to safety, can be grouped together into a limited number of general failure classes or Latent Risk Factors (LRFs). LRFs are error-producing conditions such as poor design, maintenance failures, unworkable procedures, deficiencies in training, equipment design and use as well as poor team coordination.<sup>4</sup> Safety experts argue that proactively reducing such LRFs will result in the delivery of safer care more quickly than taking measures directed, often reactively, at specific providers of care.

Patient safety varies across institutions, within institutions and between disciplines.<sup>5-8 9</sup> One dimension along which it can vary is the clinical area, such as the Operating Theatre (OT) or Intensive Care Unit (ICU). A proactive system approach to patient safety suggests that it is necessary to study all aspects of the system that comprises an operation or ICU hospitalization.<sup>10;11</sup> Most studies focus on the impact of a limited set of factors, for instance either teamwork<sup>6</sup>, work procedures<sup>12</sup> or communication.<sup>13</sup> Consequently, little is known about the relative importance of each of them, if studied simultaneously.

Anaesthetists do not work independently from others. Their performance is embedded in organizational factors. Different disciplines in the Operating Theatre may have different work norms and the pace of their work may vary.<sup>14</sup> Surgeons, anaesthetists and critical care physicians seem more satisfied with physician–nurse collaboration than nurses.<sup>15;16</sup> Nurses are less likely to agree that they were provided with adequate training to do the job than surgeons.<sup>17</sup> Physicians' views of the contribution of guidelines to safety and to clinical practice differ from those of nurses.<sup>17-20</sup> Thus it would be likely that interdisciplinary differences may exist in the perception of patient safety.

The aim of the present study is to test for differences in perceptions of Latent Risk Factors and to explore the contribution of disciplines and clinical area (Operating Theatre and Intensive Care Unit). Identification of differences between clinical area and disciplines allow the measures aimed at LRFs that are below standard to be specifically tailored. Tailoring is necessary because correction of the various LRFs would require entirely different preventive actions.<sup>21</sup> The advantage of identifying these differences would be the ability to address these issues in a safety management program.

## **Methods**

### *Sample and procedure*

The study was approved by the Research Ethics Board. We chose to investigate the clinical area of the Operating Theatre (OT) and Intensive Care Unit (ICU). Both the OT and the ICU are dynamic environments, where there is a wide variety of high-technology equipment, constant change and time stress. There is a considerable risk of error in these departments. The study was performed at four university hospitals in the

Netherlands. We asked hospitals, where another safety program was currently implemented, to participate in a safety program. That is why 2 ICUs were incorporated in the study. The study design is presented in Figure 1. Clinicians, trainees and nursing staff were included in the study, if they had been in their job for more than three months. Disciplines included anaesthetists, anaesthesia nurse-technicians\*, recovery nurses, surgeons, theatre nurses\*, intensivists, intensive care nurses (IC nurses), and trainees anaesthesia nurse-technicians /theatre nurses (Trainees A-T nurses).

Figure 1: design of the study

| Hospital 1                            | Hospital 2 | Hospital 3 | Hospital 4 |
|---------------------------------------|------------|------------|------------|
| <b>Operating Theatre</b>              |            |            |            |
|                                       |            |            |            |
| Anaesthetists                         |            |            |            |
| Anaesthesia nurse - technicians       |            |            |            |
| Recovery nurses                       |            |            |            |
| Surgeons                              |            |            |            |
| Theatre nurses                        |            |            |            |
| Trainees anaesthesia / theatre nurses |            |            |            |
|                                       |            |            |            |
| Hospital 1                            | Hospital 2 |            |            |
| <b>ICU</b>                            |            |            |            |
|                                       |            |            |            |
| Intensivists                          |            |            |            |
| ICU nurses                            |            |            |            |

*Base-line characteristics*

The following four demographic variables were used as control variables: gender (1 = *male*, 2 = *female*), age (in years), working hours (contractual hours per week), and length of service in the job (1 = < 1 *year*, 2 = 1 – 5 *years*, 3 = 6 – 10 *years*, 4 = > 10).

### *Survey instrument*

The approach taken to assessing the state of the individual LRFs is analogous to a health check, which measures a limited number of well-chosen diagnostic vital signs. Items, presented as statements, can be indicators of either potential problems or good practice.

In the current study, LRFs were measured using the Leiden Operating Theatre & Intensive Care Safety (LOTICS) scale, which has been validated with respect to factorial structure and reliability of the scales, as well as its content and discriminative validity.<sup>22</sup> It measures 12 LRFs with a total of 55 indicator questions: training, task related communication, planning & coordination, design, maintenance, equipment resources, teamwork, team instruction, housekeeping, situational awareness, hierarchy and procedures. Items, presented as statements, were indicators of either potential problems or good practice (Appendix 1). Respondents indicated the extent to which they agreed with each statement on a 4-point scale (*1=disagree completely, 4=agree completely*). Higher scores indicated more favourable perceptions about working conditions.

### *Statistical analyses*

The returned questionnaires were analysed using SPSS® version 17 (Chicago, Illinois, USA). For all LRFs, negatively formulated items were recoded so that a higher score always indicates more favourable perceptions on that LRF. Scale scores were generated by averaging the ratings of all items that were part of the scale. To calculate the percentage frequency of responses to each item, responses on *agree completely* and *agree* were combined, as were those on *disagree completely* and *disagree*.

The study sample was divided according to clinical area: OT vs. ICU and according to disciplines. One-way analyses of variance (ANOVAs) were used to compare mean scores and base-line characteristics (age, working hours and current years in the job). Chi-squared tests were used to compare mean scores across discipline for gender.

To test for differences in perceptions of LRFs by clinical area and discipline, we used ANOVA, as there were differences in age, working hours, and length of service in the job, they were used as covariates. Pearson correlation coefficients were calculated to examine the pattern of direct relationships between LRFs and clinical area and discipline.

## **Results**

The overall response rate was 64% (768 out of 1260 questionnaires).

The response rate ranged by hospital (62%- 65%) by clinical area (62 % - 68%) and by disciplines (62-69%). Respondents were predominantly female 71% with a mean age of 40.32 ( $F_{(3,760)} = 8.71$   $p = .000$ ).

Respondents had been in their job an average for more than 8 years (mean 2.77,  $F_{(3,760)} = 2.97$   $p = .019$ ). Respondents worked on average 33.14 hours a week ( $F_{(3,760)} = 8.97$   $p = .000$ ). Significant differences between disciplines were found in age, working hours, length of service in the job and gender (Table 1).

**Table 1:** Descriptive statistics: demographics by disciplines mean and percentage (%)

|                               | Response Rate % | N   | Age mean | Working hours mean | Length in the job * mean | Male % | Female % |
|-------------------------------|-----------------|-----|----------|--------------------|--------------------------|--------|----------|
| Anaesthetists                 | 66%             | 121 | 41.40    | 43.50              | 2.66                     | 63     | 27       |
| Anaesthesia nurse-technicians | 64%             | 114 | 40.23    | 32.00              | 2.82                     | 35     | 65       |
| Recovery nurses               | 66%             | 99  | 46.06    | 26.99              | 2.78                     | 19     | 81       |
| Intensivists                  | 69%             | 26  | 41.81    | 42.88              | 2.23                     | 62     | 28       |
| I.C. nurses                   | 62%             | 111 | 41.10    | 30.73              | 2.84                     | 27     | 73       |
| Surgeons                      | 62%             | 26  | 46.08    | 44.38              | 3.36                     | 80     | 20       |
| Theatre nurses                | 66%             | 216 | 40.20    | 28.90              | 2.97                     | 1      | 99       |
| Trainees AT nurses            | 65%             | 56  | 23.71    | 35.53              | 1.89                     | 1      | 99       |

\* length of service in the job 1 < 1 year, 2 = 1 – 5 years, 3 = 6 – 10 years, 4 > 10 years

### *Demographics and LRFs*

We compared demographic variables with LRFs. There was a significant differences for age with design of equipment ( $F_{(3,760)} = 7.60$   $p = .04$ ).

Younger staff had a somewhat more favourable perception of design. In the 18-25 age group the mean was 3.09 (sd.36) compared with the age group > 55 mean 2.95 (sd. 41).

Staff with more working hours had also more favourable perceptions of design ( $F_{3, 761} = 6.08$ ,  $p = . < 001$ ) and material resources ( $F_{3, 761} = 7.19$   $p = < .001$ ). Staff who have worked in the hospital for 5-10 years have less favourable perception of communication ( $F_{3, 761} = 4.75$   $p = .003$ ).



### *Clinical area: OT and ICU and LRFs*

Over 40-50% of the staff of the OT and ICU rated communication as poor. The ICU also rated equipment and housekeeping as poor (Table 2). Comparing OT and ICU, significant differences were found on training ( $F_{(1,750)} = 8.96$   $p = .003$ ), communication ( $F_{(1,749)} = 5.37$   $p = .021$ ), teamwork ( $F_{(1,750)} = 6.33$   $p = .012$ ), team instruction ( $F_{(1,750)} = 7.88$   $p = .005$ ) and hierarchy ( $F_{(1,750)} = 16.10$   $p = .000$ ). The OT had more favourable perception of design ( $F_{(1,750)} = 4.60$   $p = .032$ ) and equipment ( $F_{(1,750)} = 22.05$   $p = .000$ ).

**Table 2:** Descriptive statistics of LRFs between clinical areas: Percentage (%) agreement and mean (sd)

| LRFs                    | OT |            | IC |            |
|-------------------------|----|------------|----|------------|
|                         | %  | mean (sd)  | %  | mean (sd)  |
| Training                | 70 | 2.75 (.38) | 88 | 2.86 (.33) |
| Communication           | 44 | 2.76 (.33) | 53 | 2.97 (.32) |
| Planning & Coordination | 76 | 2.48 (.43) | 87 | 2.58 (.38) |
| Design                  | 91 | 3.00 (.38) | 85 | 2.93 (.39) |
| Equipment               | 75 | 2.86 (.42) | 53 | 2.61 (.44) |
| Maintenance             | 83 | 2.96 (.42) | 83 | 2.92 (.34) |
| Teamwork                | 90 | 2.99 (.36) | 91 | 3.05 (.35) |
| Team instruction        | 68 | 2.75 (.39) | 75 | 2.83 (.34) |
| Housekeeping            | 60 | 2.61 (.45) | 56 | 2.60 (.33) |
| Sit. awareness          | 84 | 2.85 (.40) | 87 | 2.85 (.37) |
| Hierarchy               | 79 | 2.75 (.42) | 93 | 2.90 (.32) |
| Procedures              | 72 | 2.73 (.35) | 68 | 2.70 (.32) |

Mean score on a 1–4 scale, where 4 means agree strongly

### *Disciplines and LRFs*

Anaesthetists, intensivists and surgeons had more favourable perceptions of all LRFs, with exception of the anaesthetists for team instruction (49%

of agreement) and communication (54% of agreement). Over 70% of the anaesthesia technicians rated communication and housekeeping as poor (Table 3).

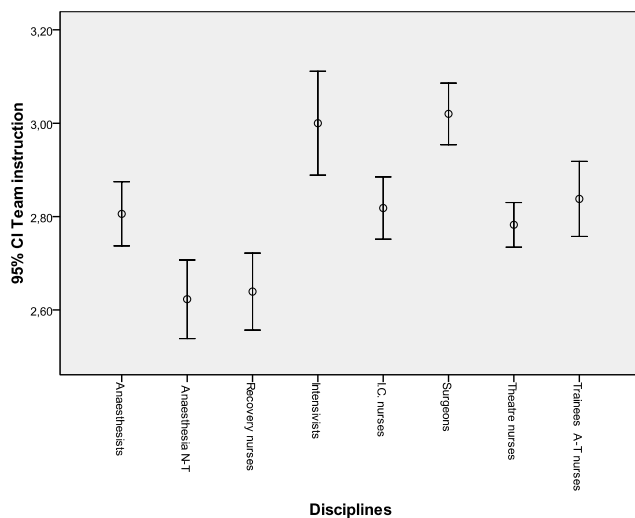
**Table 3:** Descriptive statistics: percentage (%) agreement on LRFs between disciplines

| LRFs           | Anaes<br>thetist<br>N-T | Anaes<br>thesia<br>N-T | Reco<br>very<br>nurses | Inten<br>sivists | IC<br>nurses | Surgeons | Theatre<br>nurses | Trainees<br>A-T<br>nurses |
|----------------|-------------------------|------------------------|------------------------|------------------|--------------|----------|-------------------|---------------------------|
| Training       | 72                      | 54                     | 72                     | 92               | 83           | 92       | 64                | 82                        |
| Communication  | 49                      | 30                     | 46                     | 92               | 46           | 68       | 37                | 49                        |
| Planning & Co. | 74                      | 67                     | 67                     | 81               | 67           | 96       | 80                | 70                        |
| Design         | 91                      | 82                     | 88                     | 88               | 88           | 98       | 90                | 95                        |
| Equipment      | 86                      | 69                     | 69                     | 98               | 69           | 72       | 72                | 82                        |
| Maintenance    | 93                      | 82                     | 81                     | 98               | 80           | 68       | 81                | 81                        |
| Housekeeping   | 79                      | 33                     | 61                     | 75               | 61           | 92       | 59                | 68                        |
| Teamwork       | 93                      | 80                     | 78                     | 92               | 87           | 98       | 95                | 91                        |
| Team instruct. | 54                      | 54                     | 59                     | 96               | 78           | 98       | 71                | 79                        |
| Sit. awareness | 79                      | 71                     | 72                     | 77               | 72           | 75       | 95                | 80                        |
| Hierarchy      | 76                      | 74                     | 64                     | 92               | 64           | 96       | 85                | 67                        |
| Procedures     | 90                      | 72                     | 66                     | 69               | 66           | 84       | 78                | 79                        |

Significant differences on all LRFs were found for all disciplines. Surgeons, intensivists had more favourable perceptions than anaesthesia technicians and recovery nurses on instructions ( $F_{(7,757)} = 7.93$   $p = .000$ , Figure 1a).

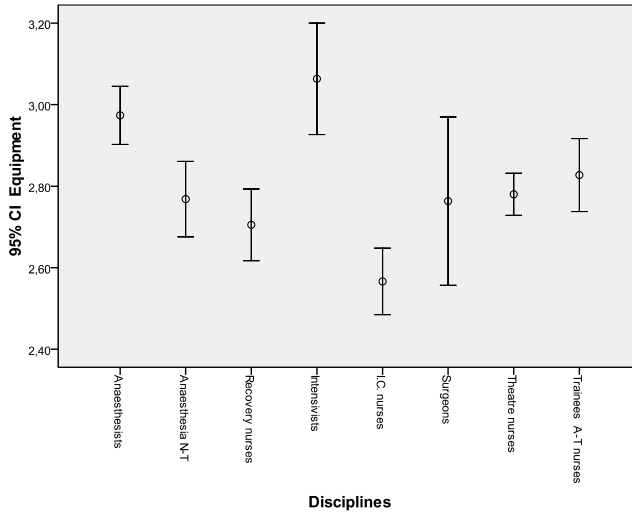
The same pattern was found for communication ( $F_{(7,756)} = 11.03$   $p = .000$ ), planning & organisation ( $F_{(7,756)} = 9.72$   $p = .000$ ), teamwork ( $F_{(7,757)} = 8.46$   $p = .000$ ) and hierarchy ( $F_{(7,756)} = 9.28$   $p = .000$ ).

**Figure 1a:** Mean values and 95 CI of disciplines for: Team instruction



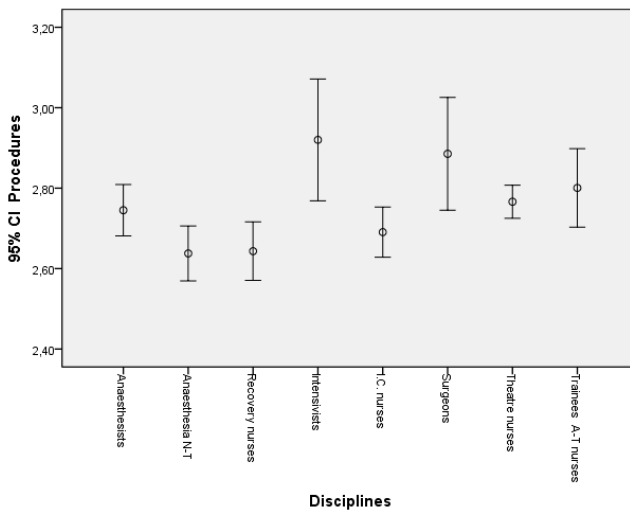
Intensivists and anaesthetists had more favorable perceptions than IC nurses of equipment ( $F_{(7,749)} = 10.04$   $p = .000$ , Figure 1b) design ( $F_{(7,756)} = 3.54$   $p = .001$ ) and maintenance of equipment ( $F_{(7,756)} = 7.76$   $p = .000$ )

**Figure 1b:** Mean values and 95 CI of disciplines for: Equipment



Intensivists and surgeons had more favourable perceptions than nurses of procedures ( $F_{(7,756)} = 4.86$   $p=.000$  figure 1c). The same pattern was seen for situational awareness ( $F_{(7,756)} = 8.24$   $p=.000$ ) and housekeeping ( $F_{(7,756)} = 14.39$   $p=.000$ ).

**Figure 1c:** Mean values and 95 CI of disciplines for: Procedures



### *Correlations*

Bivariate correlations were calculated to examine the pattern of relationships between clinical area, disciplines and LRFs.

Correlations between clinical area and LRFs were significant and positive for material resources, design and situational awareness (Table 5). The strongest association was found with design (.148  $p < .01$ ), hierarchy (.146  $p < .01$ ) and equipment (.133  $p < .05$ ).

For disciplines, significant correlations were found for communication, planning & coordination, housekeeping, teamwork and team instruction. The strongest associations with disciplines were found for communication (.148  $p < .01$ ) and housekeeping (.145  $p < .01$ ).

**Table 4:** Correlations Latent Risk Factors between clinical are and disciplines

| LRFs                    | Clinical area | Disciplines |
|-------------------------|---------------|-------------|
| Training                | .074*         | .144**      |
| Communication           | .037          | .148**      |
| Planning & Coordination | -.001         | .132**      |
| Design                  | .148**        | .001        |
| Maintenance             | .094*         | -.035       |
| Equipment               | .133**        | -.047       |
| Teamwork                | .028          | .097**      |
| Team instruction        | .110          | .135**      |
| Housekeeping            | .017          | .145**      |
| Situational awareness   | .113**        | .034        |
| Hierarchy               | .146**        | .078        |
| Procedures              | .010          | .057        |

\*  $p < .05$ ; \*\*  $p < .01$  (2-tailed).

## **Discussion**

In this study we focused on the influence of the clinical area (OT vs. ICU) and disciplines on reported scores in an inquiry on patient safety. We examined the clinical areas of OT and ICU because these are areas where adverse events frequently occur. We observed that the ICU staff reported fewer problems for training, communication, team instruction and hierarchy. This could be the result of the process, which is entirely different to OT or ward work. The OT had more favourable perceptions of design and equipment. Poor equipment places high demands on the performance of staff in high-performance working environments. For instance, good design reduces the need for extensive training in the use of equipment, whereas poor design may be only partially compensated for by extensive training. One way to facilitate equipment resources is to minimize the amount of variation in equipment. An explanation could be that the OT is a more standardized environment than the ICU.

We found differences between disciplines on all Latent Risk Factors, which shed some light on differences between disciplines in their perception of patient safety. We speculate that this is the result of differences in work organization, content and professional training. One might expect that the perceptions of physicians and nurses are different because of their different expertise and work responsibilities.

Three profiles between disciplines and LRFs were found. The 1<sup>st</sup> profile: Anaesthetists, anaesthesia nurse-technicians and recovery nurses had lower perceptions of communication, team instruction, teamwork and planning & organisation and hierarchy (non-technical skills). Teamwork issues generally cluster around issues of miscommunication, lack of

coordination, failures in monitoring, and lack of team familiarity.<sup>23</sup> Communication and interaction between members of the anaesthesia team specifically have received less attention than communication in the Operating Theatre during surgery. In the Netherlands an anaesthesia team consists of an anaesthetist, frequently a trainee anaesthetist and an anaesthesia technician.<sup>24</sup> In general, it is a challenge within the Operating Theatre to build functional teams.<sup>25</sup> Usually these teams are just coincidentally formed, similar to airline crews. The teams consist of members of several different disciplines that work together for that particular operation or the whole operating day. This task-oriented team model with high levels of specialization has historically focused on technical expertise and performance of members with little emphasis on interpersonal behaviour and teamwork. In this model, communication is informally learned and developed with experience.<sup>26</sup> This places a substantial demand on the non-clinical skills of the team members, especially in high-demand situations like crises.

The 2<sup>nd</sup> profile: We found that anaesthetists and intensivists had more favourable perceptions than surgeons of the technical LRFs (equipment, design and maintenance). IC nurses had the lowest perception of these LRFs. A low rate of equipment problems was found during anaesthesia, indicating that their procedures for checking and maintenance of equipment was adequate.<sup>27</sup> Human error and lack of familiarity with equipment have been shown to be more common than 'true' equipment failure.<sup>28</sup> Anaesthetists and intensivists work more with equipment, design and maintenance, which would explain why they are more familiar with these issues. In their training they are therefore more exposed to deficiencies, which may be an explanation of why they perceived the technical skills more favourably. The low perception of IC nurses has to do with performance obstacles related to misplacement of equipment

related to inadequate workspace. Also the current devices at the ICU bedside do not adequately support a nurse's information-gathering activities.<sup>29</sup> The performance obstacles related to misplacement of equipment may be eliminated by creating and reinforcing a protocol or by establishing a tracking system, the performance obstacle of inadequate workspace may require a major redesign of the physical layout of the ICU.<sup>30</sup>

The 3<sup>rd</sup> profile: We found that nurses, especially anaesthesia nurse-technicians and recovery nurses are more sensitive to procedures, housekeeping and situation awareness. Physicians and nurses hold divergent views regarding adherence to rules and clinical guidelines.<sup>18-20</sup> Nurses appear to hold more systematized and less individualistic conceptions of clinical work than physicians and appear to be more fastidious in adhering to documented procedures.<sup>17</sup> Anaesthesia nurse-technicians often serve as controllers for the anaesthesia team by getting supplies and equipment ready for the anaesthetic procedure. They are confronted with non-availability of equipment, what explains why they perceived housekeeping as poor.

The attitudes of healthcare disciplines towards the working conditions are a component of an organization's safety culture. An important and perhaps glaring gap in our knowledge of cultural assessment of safety relates to the sources of variation in the safety culture. We do not understand whether the variation in culture is explained by the clinical area or staff.

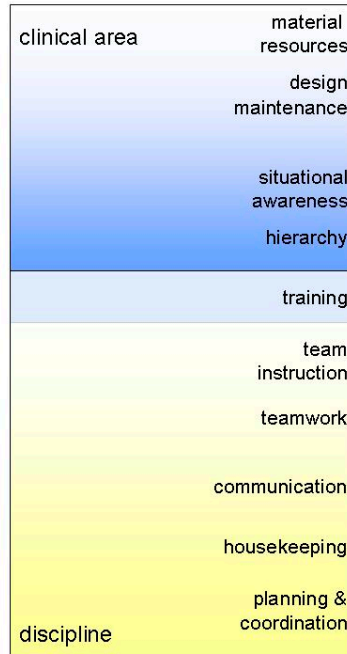
We found a correlation between clinical areas, hierarchy and situation awareness (Figure 2). Hierarchy is more prevalent in high-intensity areas



as the theatre room, intensive care and emergency department.<sup>31</sup> This may explain why hierarchy plays a role at the clinical level.

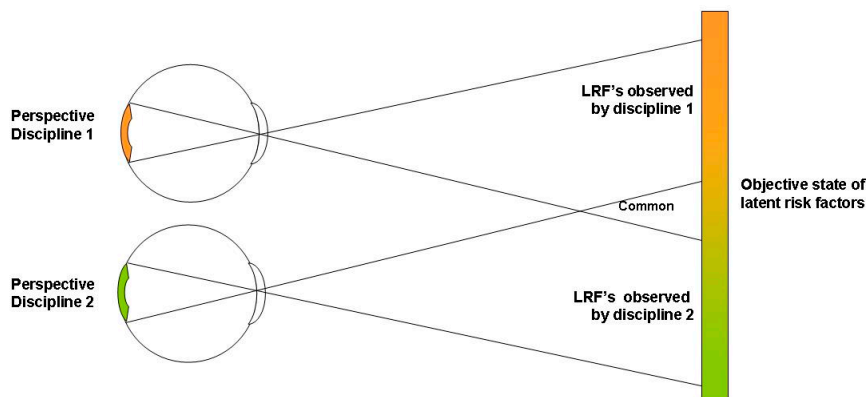
Within hospitals technology use is steadily. In our study we found a correlation between the quality and availability of equipment and the clinical area. While technology has the potential to improve care, it is not without risks. It can cause significant harm if not adequately designed, regulated and maintained. Technology has been described as both part of the problem and part of the solution for safer health care. Organization of workflow around equipment and process is also vital. Given our findings it would be advisable that hospital procurement services apply a risk assessment and a risk management analysis prior to decisions involving new equipment in order to tailor measures to be taken for individual groups to minimize the risks of latent errors. Correlations with disciplines and LRFs were found on non- technical skills (Figure 2). Our study supports the current view as to why much attention is paid to non-technical skills training.<sup>32;33</sup>

**Figure 2:** Overview of the significant correlations presented by clinical area, discipline and Latent Risk Factors



Division of labour among multiple professions can provoke different views on safety. In our study we not only found differences between physicians and nurses but also differences within clinician and nursing specialties. Compared with other disciplines, the anaesthesia team also feels the safety deficiencies in the organizational infrastructure more acutely. The different tasks performed by the various disciplines could be an explanation of why they see only a certain aspect but not the whole picture (Figure 3). We therefore recommend that in the context of safety programs, all disciplines should be involved, not just single disciplines. Identification of differences between disciplines would allow the measures to be tailored. Identification of separate underperforming latent factors is warranted, because their correction requires entirely different preventive actions.

**Figure 3:** Perspective of different disciplines on Latent Risk Factors



#### *Practical application of the findings*

The results of this study led to specific interventions on the OT and ICU. Anaesthetists, anaesthesia nurse-technician and recovery nurses had significant different results on communication and team instructions. Interviews with staff revealed that the results on these LRFs were based on a lack of information causing ambiguity in responsibility. One OT started with an intervention based on the introduction of a standardized handover protocol through the perioperative process and other OT started an intervention to promote the availability of procedures. The ICU had less favourable perception on equipment and design. Interviews with staff revealed that this was based on the different prototypes of equipment. Therefore, one ICU started an intervention to standardize equipment and supplies for all equipment development of manuals with a uniform design.

There are limitations to our study. All data were cross-sectional, however a sampling bias remains possible, and some caution must be exercised in generalizing our study findings. Nurses comprise 79% of the study population, as they are the bulk of an ICU's and OR's staff. Thus it is likely that nurses' perceptions of LRFs contribute most. Moreover, we have attributed differences in LRFs by disciplines, when they could also be explained by gender, age or length of service. That was the reason for including the demographics as covariate in the analyses. Another point of concern is that the sample only included staff working in university hospitals in the Netherlands. The experience of participants in these hospitals may differ from those in other hospitals or indeed in other countries. Future research needs to test the hypotheses across a wider sample, including peripheral hospitals, to see if the present findings can be confirmed.

As health care has focused its safety efforts toward the system rather than towards the individual provider of care, organizational factors have emerged, known as Latent Risk Factors. Understanding how LRFs affect safety should enable us to design more effective control measures that will impact on the overall safety condition. We would argue that systematic analyses and step-by-step improvements are feasible and can impact directly on the culture. Strategies for improving patient safety should be tailored specifically for clinical areas and disciplines.

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\*In the Netherlands anaesthesia technicians and theatre nurses train for three years; a nursing degree is not a prerequisite.

## Appendix 1: LOTICS scale

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|                         |  |
|-------------------------|--|
| Training                | <p>Adequate coaching of new personnel</p> <p>Keeping employees informed about new medical / technological developments</p> <p>Training employees in the operation of new equipment</p> <p>Adequate supervision of trainees in their practical period</p> <p>Co-workers on my department have the necessary qualifications</p> <p>In OR combination of staff junior / junior are avoided / on the ICU an adequate mix of seniority is applied</p>                                   |
| Communication           | <p>Information about changes in OR program / planned procedure timely provided</p> <p>Information about changes in OR program / planned procedure are communicated through the right channels</p> <p>Adequate communication about patients with other disciplines</p> <p>Information to perform procedure available at the time when it is needed</p> <p>Adequate communication about patients between teams</p> <p>Information to perform procedure not properly communicated</p> |
| Planning & Coordination | <p>Organizational changes not adequately supported within the department</p> <p>Lack of advance planning within the department</p> <p>Sufficiency of planning</p>  |
| Design                  | <p>Equipment operation is difficult</p> <p>Controls or displays are hard to read</p> <p>Controls of displays are unclear and / or lacking</p> <p>Too much information on controls or display</p>   |
| Equipment               | <p>Following new technologies when procuring new equipment</p> <p>Availability of materials &amp; equipment at the time it is needed</p> <p>Insufficient quality of materials &amp; equipment</p> <p>Worn-out or faulty equipment replaced in a timely way</p> <p>Equipment frequently repaired</p> <p>Instruments often incomplete</p>  |
| Maintenance             | <p>Maintenance carried out on a regular basis</p> <p>Maintenance inspection performed timely</p> <p>OR / ICU equipment badly maintained</p> <p>Maintenance schedule is lagging</p>   |



|                     |   |
|---------------------|---|
| Teamwork            | <p>I really feel I am a part of my team</p> <p>Team's ability to deal with unexpected events</p> <p>Members of my team work together as a well coordinated team</p>   |
| Team Instructions   | <p>Clear view of who is doing what and when</p> <p>Team members debriefed on what they can expect during operation / shift</p> <p>Team members sufficiently instructed during operation / shift</p>   |
| Situation Awareness | <p>I have confidence in my other team members</p> <p>Team members alert each other to problems</p> <p>Members of my team know what one another is doing</p> <p>Members of my team monitor each others performance</p> <p>Adequate exchange of information during the operation / shift</p>  |
| Housekeeping        | <p>Materials are often stored haphazardly</p> <p>The working environment is always clean</p> <p>An optimal arrangement of equipment is often not possible</p>   |
| Hierarchy           | <p>In my department we listen to each others' opinion</p> <p>In my department, you can freely blessing that you disagree with anything</p> <p>In my department will be open to criticism that the work is concerned</p> <p>In my department employees do not always dare to ask for explanations</p> <p>In my department can openly something is not right to raise</p>             |
| Procedures          | <p>Accessibility of procedures / regulations / rules</p> <p>Violations of procedures / regulations / rules</p> <p>Procedures / regulations / rules frequently not clear</p> <p>Procedures / regulations / rules frequently not applicable in practice</p> <p>Procedures / regulations / rules applied correctly</p> <p>Procedures taken a bit less seriously to do a better job</p> |

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