Patient safety in medical residency training

Article

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Patient safety in medical residency training: Balancing bravery and checklists

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Abstract

Distributing responsibility for patient safety between individual professionals and organisational systems is a pressing issue in contemporary healthcare. This article draws on Habermas' distinction between 'lifeworld' and 'system' to explore patient-safety culture in medical residency training. Sociological accounts of medical training have indicated that applying systemic solutions in patient-safety training and practice may conflict with residents' needs. Residents would navigate safety systems to get their work done and safeguard learning opportunities, acting 'in between' the system and traditional processes of socialisation and learning on the job. Our ethnographic study reveals how residents seek to connect system and professional-based learning, and do them together in situated manners that evolve in the course of medical training. We reveal three themes that closely align with the residents' developmental process of maturing during training and on the job to become 'real' physicians: (1) coming to grips with the job; (2) working around safety procedures; and (3) moving on to

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independence. A more explicit focus on learning to deal with uncertainty may enable residents to become more skilled in balancing safety systems.

Keywords
anaesthesiology, emergency medicine, ethnography, hospital, lifeworld, medical residency training, patient safety, patient-safety culture, system, The Netherlands

Introduction

> *Bravery is not the absence of fear. Bravery is feeling the fear, the doubt, the insecurity, and deciding that something else is more important.* (Mansen, 2014)

Despite the attention directed to patient safety in recent decades, patient safety remains an important subject of debate among healthcare professionals, patients and society as a whole (Aveling et al., 2016; Flexner, 1910; Mesman, 2009; Moniz et al., 2017). A pressing issue in contemporary healthcare systems is the distribution of responsibility between the individual professionals and organisational safety systems (Aveling et al., 2016). In the recent past, responsibility for patient safety was primarily situated in the work of (individual) medical doctors and incorporated during a long socialisation process (the 'hidden curriculum') of learning by doing, and gradually integrated into the sociocultural world of medical professionalism (Becker, 1961; Bosk, 2003; Brooks and Bosk, 2012). However, the report 'To Err is Human: Building a Safer Health System', published in the United States in the early 2000s, drew attention to the role of organisations and organisational systems in combatting clinical errors and enhancing patient safety – introducing an organisational or 'system' approach to patient safety, which (at least partly) replaced society's sole reliance on the healthcare professionals' expertise (Beck, 2004; Cooke et al., 2006; Donaldson et al., 2000; Hanna et al., 2005; Mitchell et al., 2016).

This shift was bolstered by declining societal trust in the medical profession due to critical incidents (e.g. the English Shipman case and the Bristol heart scandal, in which both people died due to medical (mis)behaviour; Blendon et al., 2014) and broader demands for more transparency, accountability and measurable outcomes (Brooks and Bosk, 2012). In response, the medical profession has imposed and implemented working hour regulations, performance measurements and other regulatory interventions that have affected the organisation and delivery of medical work (Brooks and Bosk, 2012). These regulatory measures imply a shift from an individual a 'system view' on patient safety and medical practice (Aveling et al., 2016; Bosk, 2006). What this system view tends to ignore, however, is that patient safety is defined not only by the absence of errors but is also an active and often rather implicit accomplishment of healthcare professionals in everyday clinical work (Mesman, 2009). Scholars in the field of patient safety have recently stressed the enduring complexity and uncertainty of clinical work and the ability of healthcare professionals to navigate this complexity – underscoring the medical professional's ability to deal with clinical risks (i.e. complex and uncertain patient cases that nevertheless require immediate action) instead of highlighting unsafety (Aveling et al.,

2016; Hollnagel et al., 2013). Dealing with clinical risks and safety issues becomes particularly apparent during medical residency training when residents are confronted with patient safety. In this article, we present an ethnographic account of how medical residents encounter safety issues and how they learn to deal with patient safety in the course of their training.

Contemporary medical residency training, like medicine in general, is increasingly aimed at formalising and standardising clinical practice. This is illustrated by the rise of competency-based education, defined in frameworks such as CanMEDS (Scheele et al., 2008). The focus on assessing competencies (instead of solely workplace-based learning in the traditional master-apprentice system) indicates the shift to an outcome-based system approach to medical training (Brosnan and Turner, 2009; Lurie et al., 2009). However, medical sociologists have identified side-effects of the system approach, elucidating how 'system solutions' can conflict with patient safety and residents' needs (Brooks and Bosk, 2013; Zuiderent-Jerak and Berg, 2010). These scholars point out that residents have to learn how to master clinical skills to become a physician and how to work in a complex health care system, both of which require flexibility and (creative) situated solutions to emerging clinical issues instead of working to standard solutions (Stephenson et al., 2001; Szymczak and Bosk, 2012). Moreover, residents often feel overwhelmed by their workload and find 'the system' working against instead of for them, adding complexity to the multifaceted training process they are in (Moniz et al., 2017; Szymczak and Bosk, 2012). Sociological accounts of medical training reveal how residents create workarounds to enhance patient safety and meet their training requirements (Stephenson et al., 2001; Szymczak and Bosk, 2012; Wallenburg et al., 2013). Workarounds are strategies residents use to deal with (and bring together) their complex and demanding learning and working environments (Smith and Kleinman, 1989). Workarounds – for instance, not signing up for surgery when a resident has reached the maximum number of working hours – are flexible in nature and depend on the individual resident's abilities to 'play with' their working environment (e.g. Smith and Kleinman, 1989). Through employing workarounds, a resident seeks to circumvent the organisational procedures or obligations that hamper a more natural or fluid way of working and organising. Although workarounds have been criticised by the standardisation or 'system' approach of 'good' medical practice and resident training, they are also increasingly recognised as effective mechanisms to overcome system barriers and to meet learning objectives (Debono et al., 2012; Dixon-Woods, 2010; Waring, 2007). According to Szymczak and Bosk (2012), workarounds should not be seen as shortcuts but rather as teachable moments about responsibility, professional identity, and dealing with uncertainty and conflicting requirements in everyday clinical practice, taking a lifeworld approach to decision making (Szymczak and Bosk, 2012).

Using Habermas' (1987) distinction between system and lifeworld, this article examines how medical residents learn to deal with the tensions between a system and lifeworld approach of 'doing' patient safety in the course of medical residency training. In this article, we draw on data from a larger ethnographic study of medical residency training (2014–2021) in the Netherlands to theorise how patient safety is enacted by future physicians.

In the Netherlands, as in most countries, residency training has traditionally been characterised by a master-apprentice model, in which residents learn by imitating their supervisors and gradually move into the core of independent medical practice (Wallenburg et al., 2015). Since 2010, driven by an international wave of formalising residency training, the Netherlands has reformed its curriculum by introducing the CanMEDS 2000 model, which is a competency-based system with assessable evaluation criteria (Teunissen, 2008; Wallenburg, 2012). Medical associations have revised their residency training programmes according to the CanMEDS 2000 model, specifying the various roles a 'modern doctor' should fulfil (e.g. communicator, collaborator, professional; Wallenburg, 2012). As a result, the training model has shifted from practice-based to outcome-based, measuring the performance of medical residents (Wallenburg et al., 2015).

Our research intends to do what Mesman (2008) calls *exnovate*: foregrounding that which is already present in practice and making the implicit explicit. Our study concerns the methods and strategies of residents in dealing with patient safety, and the role of safety systems herein (Mesman, 2008). We aim to understand how patient safety is enacted among medical doctors (residents and medical specialists alike, as well as in their interactions) in daily practice, and how they deal with safety issues. In doing so, we aim to contribute to the broader discussion on patient-safety culture. Our central research question guiding the article is as follows: *How is patient safety modelled and practised during medical residency training?*

Theoretical framework: system and lifeworld in medical residency training

This article uses Habermas' (1987) theory of communicative action as a lens to investigate patient safety in the working and learning environments of medical residents. The critical theorist Jürgen Habermas contends that interpreting and understanding the meaning of human action should be done from 'the inside', from the standpoint of experience. Habermas argues that social life is built from two different worlds: lifeworld and system (Finlayson, 2005; Habermas, 1987). Both are distinct spheres of social life, each with its own rules, instruments, institutions and patterns of behaviour (Barry et al., 2001; Habermas, 1987). System consists of administrative, economic and political responsibilities and focuses on rules that structure our world (Habermas, 1987). Lifeworld is the everyday world we share with others. Lifeworld consists of the informal domains of social life: social order, individual identity, family, culture and so on. While system is about formal regulation, lifeworld is the unregulated sphere of society and provides a depot for shared or embodied meanings and understandings, for instance, in the everyday encounters between or with other people. Here is where communicative action takes place. Lifeworld, Habermas contends, provides the context for shared knowledge and action. It is a force of social integration while also providing a platform for critical reflection and possible disagreement, offering a preventive for possible social disintegration and eruption of conflicts (Finlayson, 2005; Habermas, 1987).

System, Habermas argues, depends on and provides structure to the lifeworld. However, system can become parasitic as it tends to colonise the lifeworld, leading to social instability since it may lead people to miss the significance or meaning of administrative rules (Habermas, 1987). Habermas states that a single focus on system could lead to a situation in which people cannot or need not take responsibility for their actions. At the same time, however, system is essential for providing stability and security to the lifeworld. Habermas hence stresses the fragile balance between system and lifeworld (Habermas, 1987).

Habermas' work offers an interesting lens to examine contemporary changes in medical residency training, particularly the shifting focus on patient safety as a system-based endeavour and the quality issues (and solutions) that emerge from this (Barry et al., 2001). The current debate on patient safety is steering towards an approach that considers both the individual professional and the system (often presented as an organisational structure) in a complex clinical setting, searching for a balance between the two (Aveling et al., 2016; Brooks and Bosk, 2012; Szymczak and Bosk, 2012).

With regard to medical training, one could argue that the residents' traditional 'learning by doing' approach exemplifies the lifeworld par excellence. Lifeworld provides the context for shared knowledge and action; it passes on traditions and provides a platform for critical reflection and possible disagreement (Becker, 1961; Bosk, 2003). Therefore, the concept of lifeworld is more in line with the traditional understanding of autonomy and individual responsibility of residents in their social training context of embodied learning. Residents, for instance, are taught not only verbally but with physical cues as well: a supervisor might guide the residents' hand to help them manoeuvre in the correct direction during a clinical procedure (Prentice, 2007). This example of embodied training mirrors the lifeworld approach in which residents gradually become part of the professional community of physicians (Prentice, 2007; Wallenburg et al., 2013). While residency training has long been dominated by lifeworld learning, now 'system' finds its way into medical training, driven by broader attempts to regulate medical care further and reduce uncertainty (e.g. the implementation of electronic patient records, treatment protocols and the use of safety checklists). These instruments are introduced not only as a way of organising medical work but also to hold the medical profession accountable for their work to patients and external regulators (Haynes et al., 2009). Moreover, system developments are often conceived as the solution to such (medical) problems as clinical errors (Mesman, 2009). With better tools, it is argued, doctors are able to combat complexity and counter the uncertainty that may cause medical failure (Mesman, 2009). Furthermore, using safety systems to bridge safety gaps resonates with the biomedicalisation idea that residents should be trained for certainty instead of learning to accept and deal with uncertainty (Foucault, 1977; Light, 1979; Mesman, 2008). Sociological accounts of medical training have, however, demonstrated how residents seek to navigate safety systems to get their work done and create interesting learning opportunities, for example, by juggling (registered) working hours or prescribing routine medicine to a patient, thus postponing the formal approval of an attending physician as a workaround strategy to get the work done (Smith and Kleinman, 1989; Stephenson et al., 2001; Szymczak and Bosk, 2012). These insights illustrate how residents act in the 'in between zone' of lifeworld and system. In this article, we seek to push the discussion a step further

by showing that medical residents move through residency training using varying approaches that attempt to keep system and lifeworld together in rather situated manners.

Background

Before presenting our findings, we first discuss our research design, including the background of residency training (reform) in the Netherlands.

Medical residency training reform

Medical training comprises both undergraduate and postgraduate ('residency') training. The duration of both levels of training is determined nationally and thus may differ between countries, although recently attempts have been made to align residency training programmes in Europe (Van der Aa et al., 2016, 2017) – underscoring the increasing formal regulation of medical training. In the Netherlands, after 6 years of undergraduate training, physicians receive a basic qualification to practice medicine. Those interested in clinical medicine enter a period of supervised 'in hospital' training to become a medical specialist. In this period, they follow several internships in both academic and non-academic teaching hospitals. Obtaining a training position is highly competitive, given the limited number of positions available each year, causing severe competition for selection among applicants (Teunissen, 2008). Depending on the medical specialty, residency training lasts 3 to 6 years, during which residents work towards independent practice under the supervision of attending physicians (Yardley et al., 2018). After graduation, junior physicians often start working as hospital consultants in an academic or general (teaching) hospital (Westerman et al., 2013). As stated above, in recent years, residency training has moved from a classic master-apprentice system of learning in practice to a formalised competency-based system, in which competencies are assessed and residents are obliged to reflect on their learning process. Training for certain surgical specialties has become more skills-lab based, as residents must prove their competence before being allowed to 'practicing' on real patients, something that used to be far more common and accepted in the past (Johnson, 2008).

Method

Fieldwork

This article draws from a larger ethnographic study on patient safety and residency training in the Netherlands. Here, we build on observations (including informal interviews) that took place in the Anaesthesiology Department (AD) and Emergency Medicine Department (ED) of one academic hospital. These two departments were selected based on their teaching status, patient-safety practices and complex, multidisciplinary and high-risk environments (Lingard et al., 2004; O'Leary et al., 2012). Important to note in this respect is that Emergency Medicine is a relatively new specialty in the Netherlands and has not yet achieved the same status as established specialties like Anaesthesiology.

Approximately 200 hours of fieldwork over 27 visits to the medical wards were conducted by the first author (G.B.) over a period of 1 year (2015–2016). Data were collected through non-participant observation, informal conversations, informal interviews and document review. Observation took place in all areas and situations, where residents work in close proximity with their supervisor and fellow residents (the operation theatre, the emergency room, in meeting rooms during hand overs, dressing rooms, clinical rounds, etc.). The focus of observation shifted between attending physicians (acting as supervisors; 10 shifts in total, 8 AD and 2 ED) and residents (17 shifts in total, 7 AD and 10 ED). Field notes were taken during observations. Informal conversations and informal interviews where included in the fieldnotes and made part of the analysis. Field notes were worked up into detailed reports within 24 hours.

Furthermore, a document analysis (safety reports, protocols, written ward routines and electronic patient records) was used to establish empirical links between observed behaviours, interactions and 'rules'. Relevant information was incorporated in the fieldnotes to understand participants' making use of and/or referring to those documents.

Observations occurred in three phases. First, 2 days of pilot observations were conducted to test our purpose of observing patient safety in a clinical training setting. These data are not included in this article. In the second phase, covering 11 shifts, we conducted general observations, uncovering situations in which patient safety was at stake and discovering how we could discern a lifeworld approach from a system approach. After this phase, we conducted a first round of coding (see below), also to prepare for the third phase of specific or focused observations. This final phase of observation, in 16 shifts, used the codes listed below as a focus for more detailed observations.

Data analysis

After the first two rounds of observation, we began coding the data inductively as well as deductively, comparing our initial codes (i.e. patient safety, learning opportunities, implicit and explicit rules, safety guidelines, safety systems, care, safety organisation, courage, exemplary (safety) behaviour) with the concepts of system and lifeworld as described above. This interactive and iterative manner of defining codes can best be described as abductive analysis (Timmermans and Tavory, 2012), in which empirical findings are understood through the lens of theory and may also contribute to theory (Stoopendaal and Bal, 2013). Out of this, three main themes emerged: (1) coming to grips with the job; (2) working around safety procedures; and (3) moving on to independence. Initially, the first two authors discussed the codes, after which the whole team participated in the discussion. Subsequently, the codes were used to analyse all data and distinguish the main themes of dealing with patient safety in medical residency training. Analysis was facilitated by a word processor (Windows 7).

Ethical considerations

Prior to the observation period, participants were informed about the study by email and had a personal explanatory meeting with G.B. Written informed consent was obtained from all shadowed participants. Patients and other healthcare professionals were made

aware of the role of the researcher. As a trained medical anthropologist and sociologist, G.B. was aware of her position in the research environment. To minimise the potential observer effect, G.B. made sure she had good relationships with the participants (Paradis and Sutkin, 2017). Furthermore, she wore scrubs and a lab coat during observations because of the hygienic codes in the operation theatre and at the emergency room. This also helped to become part of the clinical environment instead of presenting herself as an outsider (Paradis and Sutkin, 2017).

Verbal informed consent was obtained from all others present in the research environment: both verbal and written consent, including the right to opt out without disclosure to superiors or colleagues. No one chose to opt out. The academic training centre gave ethical clearance in January 2016 (its identity is not disclosed due to anonymity and ethical considerations) as did the Netherlands Society of Medical Education (NVMO-ERB dossier no. 619). Pseudonyms are used for all the participants.

Results

Our findings reveal three themes that closely align with the residents' developmental process of maturing on the job and becoming a 'real' physician. Findings show that as residents move through training, they also move through different approaches of understanding and 'doing' patient safety, including combining a system and lifeworld approach. Three main themes emerged from the data analysis: (1) coming to grips with the job; (2) working around safety procedures; and (3) moving on to independence.

Coming to grips with the job

As documented in numerous sociological accounts of residency training, junior residents or 'freshmen' (Becker, 1961) must learn to navigate the dynamics, complexity and uncertainties of medical work (Mesman, 2009). In our study, juniors described residency as a matter of 'sink or swim'. In the first phase, the focus is primarily on learning to understand the procedures of daily practice rather than any other aspect of clinical work.

The ED adopted a classic training approach, in which learning by doing is still key. Juniors entering the department have to 'find out for themselves' the local procedures and clinical routines. Here, residents depend heavily on peers to come to grips with the job, because peers are safer to consult than supervisors who assess their work (and may judge on their further training trajectory and, ultimately, career). We observed junior residents often lacking access to crucial yet mundane work systems such as the electronic patient record or email, as this was not formally organised for them. Junior residents had to 'find their way' informally:

> *It is Eric's first day as an ED resident. He wanders round the ward looking somewhat lost. Alexa, a second-year ED resident, notices. In the changing room Alexa approaches Eric, offering to take him under her wing for this shift. She introduces Eric to colleagues on the ward, explaining that they have to work according to the quality indicators of the organisation, which performs quality accreditation for hospitals. She insists that following these rules is vital and gives an example: 'You need to change needles between drawing the medicine and injecting it'.*

Alexa stresses how inefficient the procedure is: 'It takes longer and you use more needles'. Eric just shrugs. (Field notes, first-year ED resident, 13 September 2016)

In this excerpt, a more senior nurse introduces a junior to the department. It shows how she informs the junior about the ward's safety procedures and instructs him to obey the safety protocol. Becoming part of a new and unknown clinical environment, the junior needs to be taught the ward's procedures, clinical routines and (un)written rules to be able to do his job. This 'lifeworld way' of coming to grips, hence, also includes the system of obeying protocols and guidelines – efficient or not.

This contrasts with the training culture in the AD, where they take a more systematic approach to residency training. Here, juniors follow an extensive introductory ('boot camp') programme and are subjected to strict supervision in their first year. During the introduction, they learn the patient-safety regulations, including protocols and procedures. This approach mirrors the strong emphasis on standardised patient safety in the operation theatre. Although AD residents did not seem as lost as many ED residents, they did mention the side-effects of the strict approach:

During an operation, a fourth-year AD resident and an anaesthesiology nurse chat about residency training. According to the nurse, supervision of residents in training has declined in the past 20 years. The resident disagrees, saying that there is too much supervision at the start of training. It's almost uncomfortable, he argues, particularly after the first year when residents are 'set free'. He would have liked to do stuff independently of the supervisor to become more familiar with procedures earlier on. He says that this would have enhanced his learning process. Now they only start doing things on their own in the second year when they move on to their peripheral internship, where residents are expected to work independently. There, residents are told: 'You know how to do this, right?' and 'Just get on with it'. The resident contends that after completing the peripheral internship, when they return to the academic hospital, they can work autonomously. (Field notes, fourth-year resident AD, 7 July 2016)

This excerpt illustrates a systematic approach to training that contrasts with the lifeworld approach at the ED pointed out above. Supervised practice is underlined as safe practice when training commences. However, this cautious way of doing patient safety may conflict with the residents' later needs, when they are expected to act autonomously.

While AD embeds patient safety in strict supervision, ED residents work independently early in training and learn about safety issues 'along the way', informed mainly by seniors and nurses. The juniors' dependence on others to come to grips with their job is illustrated by the following excerpt from our fieldwork:

Paula, a second-year ED resident, takes the lead in resuscitating an elderly woman. The attempt fails and the woman dies. Afterwards Paula receives a phone call from the cardiology resident (Mark) who had joined in the resuscitation. Mark is angry because he has been caught up in the administration related to the patient's death. Since he did not play a major role in the resuscitation, he says that Paula should do the paperwork. Paula argues that, following protocol, Mark should be in charge of filling in the forms. However, Mark insists. They look up the protocol and it turns out not to define who is responsible for the paperwork. Paula decides

to do the paperwork herself in order to protect their fragile working relationship. But she has never done it before. Ellie, a nurse, notices Paula struggling and volunteers to help her complete the forms. (Field notes, second-year resident ED, 7 October 2016)

Although this excerpt does not directly deal with patient-safety issues, it nicely illustrates how administrative ('system') work has become a key concern in medical work, and that residents may struggle with mastering administrative obligations that are seen as confusing and time-consuming. It also illustrates the role of seasoned nurses in guiding inexperienced residents through formal ward routines. Furthermore, it highlights the uncertainty residents' experience in their daily work; this is only one of many protocols and routines they must learn. As this excerpt shows, the issue of taking responsibility for administrative work seems to be an implicit rule rather than a protocol – yet, something that has to be done. The nurse's experience 'saves' the inexperienced resident.

In both of the above excerpts, 'others' (in the first, an experienced resident and in the second, an experienced nurse) take on the role of informant, helping the junior resident coming to grips with the job. In this training phase, residents must continuously prove their competency to their superiors to move on. Relying on nurses and non-superior colleagues is then a guarded way of becoming acquainted with hospital procedures. This 'learning by doing' resonates with the traditional lifeworld approach to medical practice. Consequently, it influences the residents' value of patient safety, leaving room for confusion about, for example, implicit rules. Residents need the guidance of supervisor and experienced colleagues (nurses). However, constant supervision could hinder residents in working independently on providing safe care, including a lack of opportunity to prove to faculty their readiness for independent practice. Whichever approach is taken, patient safety (like many other clinical issues and procedures) in the first stage of residency is an abstract concept. In this phase, patient safety is ingrained in (sometimes implicit) rules and systems. Coming to grips with the job is foregrounded during this stage, with others in the work environment taking responsibility rather than the residents themselves, thus making patient safety foremost a practice taken care of by others and through systems.

Working around safety procedures

Throughout the course of medical training, safety issues become more integrated and prominent in daily practice. This second theme, which corresponds with the middle stage of residency training, is a phase in which residents gradually become accustomed to the workplace, accumulating knowledge to not only learn procedures but also gain experience in dealing with work routines and safety systems. As a result, residents become better at extrapolating their own decisions on the use of safety systems and develop moral qualities that underlie patient-safety decisions, which may also imply that they sometimes decide not to follow prescribed organisational procedures and protocols.

Each supervisor has a unique repertoire of providing supervision on patient safety, which moreover depends on the training phase (and observed competencies) of a particular resident (see Wallenburg et al., 2013). Some prefer to discuss patient situations immediately, for instance, while others prefer to encourage residents to act independently first

and discuss their actions afterwards. We noticed how residents had to become familiar with their supervisors' preferences and act accordingly to gain their trust. Hence, residents have to learn how to deal with differences between supervisors. As one resident put it, anecdotally, 'In my peripheral internship, there was a [written] guide explaining the OT practices, [which changed] depending on which supervisor was present' (field notes, third-year AD resident, 7 October 2016).

During our observations of AD and ED residents, supervisors were a regular topic of conversation and, specifically, the differences between them and how residents dealt with this. A second-year ED resident chatting with peers said, 'I find it so hard to work with [supervisor]. There's no overview . . . under her supervision. How do you deal with it?' It turned out that in the past couple of weeks, a few residents were in tears because of the same situation. A fellow resident advised her to 'just avoid her as much as possible' (field notes, second- and third-year ED residents, 7 October 2016).

Residents, who are still in the process of keeping up with their supervisors' wishes and habits, exchange information on the supervisors' varying expectations and may 'avoid' a supervisor as is indicated in the excerpt above. Although they might disagree with a supervisor's method of practising medicine, residents will not openly go against the supervisor due to the hierarchical system and fear of retribution. However, they seek to make things work as well as possible by taking a lifeworld approach, deviating from the rules, while still using part of the system by way of creating workarounds such as informing a supervisor only after something has taken place. This is also relevant to working with peers.

Workarounds are not always concerned with patient safety; they can also have to do with managing the environment. Residents aim to become full members of the professional community. To that end, they may mimic a supervisor's behaviour even if they disagree with it. Other research confirms that acting in accordance with the norms of the professional community increases the alliance with this community (Aveling et al., 2016). Hence, residents must be careful in creating workarounds without risking deviating from supervisors' standards because 'failing to comply with the supervising physician's personal preference' is marked as a resident's failure (Bosk, 2003).

Safety procedures differ in how strictly they are applied, however. A striking example of this is the time-out procedure which checks all steps in a surgical process, from the ward to the patient's arrival in the OT. Time-out should happen before every operation, when the patient is on the operating table and still awake. The surgeon leads and the whole operating team must be present. The surgeon asks for (and hence double-checks) the patient's name, date of birth, allergies and type of operation, and on which side of the body will they be operated (e.g. left or right leg). Then, the team discusses other details of the procedure. The goal of a time-out is to enhance patient safety by minimising the risk of error. How this is executed, however, differs greatly. Sometimes the procedure is followed strictly, at other times only summarily. Such differences, however not made explicit, create both uncertainty and learning opportunities. The next excerpt illustrates a difference in the enactment of a time-out:

A patient with a huge aneurism on the right ventricle arrives in the OT for open-heart surgery. According to the surgeon anyone with an aneurism that big usually won't live long enough to

get surgery. The surgeon goes through the time-out procedure step by step, taking the team members with him. Afterwards, everyone in the OT seems relaxed. During the operation, other colleagues (surgeons, staff and residents) come and go, wanting to see the operation because it is so rare. There are some critical moments. At one point, the supervising anaesthesiologist steps out, leaving the resident in charge. Just before a critical moment, the surgeon asks the resident if the anaesthesiologist is coming back soon, and if not, would he call her. The surgeon says he would feel safer if she were present. Later, the resident explains that this increased his own sense of security and trust in honest communication with the surgeon. (Field notes, second-year resident AD, 8 June 2016)

This excerpt demonstrates a strict follow-up to the safety protocol to ensure the patient's safety during a complex and high-risk surgery. The time-out procedure (and with that, the surgery that is about to start) is done to the letter. Furthermore, through the shared focus on the patient and the operation, a kind of togetherness (and excitement) is created that keeps the professionals focused and render the surgery into a collective achievement – also revealing how 'system' and 'lifeworld' may create a kind of synergy that enhances patient safety. Yet, the excerpt reveals some tension as well: patient-safety regulations prescribe that the number of people present, and the times the OT door may open and close, should be limited to an absolute minimum. This patient case, however, attracts physicians who are not involved but are curious to see and maybe learn from this rare clinical 'event'. These seemingly contradictory practices demonstrate to residents that it is vital to follow system protocols like the time-out in such a complex case, but that it also leaves some leeway to serve other professional goals. Revealing to the residents that it is possible to make one's own deliberate considerations regarding patient safety. However, the question when or why one can deviate from the system is left unspoken.

During this stage of residency training, patient safety increasingly becomes a normative concept comprising different 'goods' (Willems, 2010), raising the question 'what is good care in this particular situation?' What 'good' entails can be justified from various perspectives. In the first excerpt, it becomes evident that residents are finding ways to work around the supervisors' differences while still becoming members of the profession. In the second excerpt, the severity of the operation creates a mood that takes both the patient and the procedures very seriously. The best care for a patient depends on what is doable, considering a busy schedule: what is important to the supervisor and which procedures are more important than others. Residents learn to work both *around* and *with* system expectations, obligations and possibilities.

Moving on to independence

In this final stage of residency, residents move on to independence and full autonomy. In this progression, another meaning (and related practice) is added to patient safety. Residents have accumulated the knowledge, skills and moral attributes that enable them to make decisions concerning patient safety in daily practice. Not only are they equipped to practice medicine without supervision, they also start prioritising patient safety from a patient perspective in their work. This goes hand in hand with their personal view of

safety systems, which in this phase not only functions as a means of doing the work but also as a control agent, holding physicians (residents and supervisors alike) accountable for providing the best possible patient care.

In the previous themes, 'coming to grips with the job' and 'working around safety procedures', we showed that residents first are taught about rules and second need to learn to decide when to follow or deviate from safety procedures. Deviating from a system can be an act of bravery, especially when a resident goes against cultural standards, hereby exhibiting mastery in working with safety procedures and taking charge in ensuring patient safety. Such bravery is revealed in the following excerpt:

> *During the time-out procedure, the ear, nose and throat (ENT) specialist, Rob, and the anaesthesiology resident, Mike, disagree on the necessity of inserting a urinary catheter. ENT specialists spend little time in the OT and are not always fully aware of the protocols. After the patient is put asleep Mike refuses to start the operation because the protocol states that for all procedures that take three hours or longer, the patient must have a urinary catheter. Rob says angrily: 'We never do that, it's not necessary'. After some debate, Rob reluctantly agrees*. (Field notes, fifth-year resident AD, 9 June 2016)

Here, Mike stands up to someone higher in the hierarchy, going against cultural norms. However, he seems strengthened by the system, wanting to use OT protocol and thus making patient safety the priority. The operation continues:

> *Now the catheter has to be placed but it seems that no one knows how to do it. Normally it would be the surgeon's job. However, Rob and his team are not trained to do it as they spend only a little time in the OT. Mike volunteers to put in the catheter, assisted by the nurses, who have come across the procedure in training*. (Field notes, fifth-year resident AD, 9 June 2016)

In this example, Mike goes completely off-book, making a professional (experience- and knowledge-based) decision. Later, he explains that he only did it because the patient was a woman, which made it (technically) a bit easier:

> *'But I would've stopped at the slightest resistance, and then I would've called someone'. When asked why he did not call for help in the first place he said that he hadn't because the preceding discussion had made everyone so tense. He did not want to add to that because it is his job to keep a calm and constructive atmosphere in the OT. Mike did not call his supervisor or deliberate with others; he felt confident of his decision and proceeded accordingly. At the end of the procedure, Rob said to Mike, 'You were right', validating Mike's judgement call*. (Field notes, fifth-year resident AD, 9 June 2016)

This excerpt makes clear that residents, particularly those more senior, do not always blindly follow systems or seniors but can also make up their own minds. Where systems might have been a lifeline earlier, this is less so when residents start to oversee the complexity of their work environment (and feel more self-confident) and can make decisions based on the available contextual information. They may go off protocol if they value it to be best for their patient(s). This example reveals how 'lifeworld' and 'system' coexist in this final stage of residency. Procedures and guidelines are central, but may be

deliberately deviated from if the situation asks for it. This 'asking', as our field work shows, requires knowledge (both clinical and system knowledge) and the (tacit) skills to understand what is going on and what is needed in the particular situation. Moreover, it requires bravery to go against the opinion of the medical specialist. This bravery concerns both the developing clinical autonomy of the (senior) resident and the ability to align elements of system and lifeworld. In this final phase of residency training, patient safety has been incorporated in practice. What is best for the patient has become pivotal, and the opinion of senior colleagues, for example, comes second to the patient's needs.

Discussion and conclusion

The aim of this article was to understand how patient safety is enacted and practised in everyday residency training and the consequences hereof for our understanding of contemporary patient-safety culture in clinical work. The research shows how residents gain knowledge, develop clinical skills as well as tacit knowledge and learn to make their own decisions incorporating both system requirements and lifeworld experiences. Habermas' system and lifeworld approach enabled us to provide an alternate view on residents' dealing with organisational systems. While sociological accounts have highlighted residents' tendency (as well as competencies) to navigate system requirements and professional traditions and convictions of 'good' residency training (i.e. including working long hours, focusing on a clinical rather than an organisational approach to care), our study reveals how residents learn to deliberately hold these two approaches together, reconfiguring traditional views on safe patient care.

This article has demonstrated how medical residents learn to do so in the course of their training trajectory. At the beginning, patient safety is a fairly abstract concept that is ingrained in (sometimes implicit) rules and systems that residents seek to come to grips with. Then, patient safety turns into a normative concept containing various levels of care, such that not every patient or every condition gets the same level of treatment or attention. In the final training phase, patient safety is an inherent part of clinical practice, with residents giving priority to 'doing the best for this particular patient'. It shows that patient safety is a relatively situated endeavour that cannot be controlled solely by safety systems or individual professionals.

Other research shows growing attention for the counterproductive aspects of systems, protocols and technological fixes in delivering safe patient care and the pressures these systems put on both physicians and residents (Aveling et al., 2016). Residency training becomes more intricate when externally imposed regulations or systems threaten the process of forming a professional identity (Brooks and Bosk, 2012). In residency training, and medicine in general, the system's suppression or colonisation of lifeworld could lead to distorted communication, erratic diagnoses or inappropriate treatment plans (Barry et al., 2001). It has been argued that without the cultural elements of lifeworld that help to foster patient safety, medicine's 'system' approach has an unwanted effect on safety practices and individual responsibility (Aveling et al., 2016). This study, however, shows how system and lifeworld intertwine during the course of residency training, teaching medical residents how to bring (and keep) those two together in a situated manner. This, we have shown, requires bravery to maintain the balance between practices as

dictated by system or lifeworld. One might argue that bravery is an implicit yet crucial attribute for physicians (in training).

Like other studies, this study shows that systems can create new uncertainties, with more risks and new decision-making moments (Mesman, 2008). Part of the work of physicians is to make sense of risks, systems, patient safety and responsibilities, whether they be organisational and/or individual, as illustrated by the resident's considerations in the example of the time-out procedure. Safety systems alone cannot achieve patient safety, but they can be helpful tools in providing safe care. This highlights the importance of making systems situational and not imperative. Instead of adding systems or forcing professionals to adjust to a system, the system should work for healthcare providers (Brooks and Bosk, 2012, 2013). This research has shown that the responsibility for patient safety lies in the balance between the individual physician and the organisational safety systems. This is how the formal system approach coexists with the implicit individual approach. We found the theoretical framework of system and lifeworld elucidating in gaining these insights (Habermas, 1987). Our research indicates that residency training should embrace uncertainty in clinical work in a more explicit and varied manner, including teaching that patient safety is not about blindly following the system but about balancing system requirements and individual patient care.

Patient care takes place in a complex environment fraught with uncertainty. This not only holds for residents but also for fully trained specialists. Other sociological accounts have shown that uncertainty is continuously present in the work of physicians (Light, 1979; Mesman, 2008). Although systems have brought improvement in patient safety, other research has demonstrated that implementing systems does not provide a sufficient answer to uncertainty and may even contribute to uncertainty (Aveling et al., 2016). It has been argued that with the rapid change of healthcare systems, the subsequent uncertainties have created a grey area in which conventional knowledge from textbooks no longer applies (Mesman, 2008). Upon transitioning into independent medical practice, residents who have been trained to accept uncertainty should reach a state of *metis* – an array of practical skills and intelligence in responding to a constantly changing natural and human environment (Scott, 1998). In other words, a physician needs an overarching kind of knowledge, a certain practical knowledge in dealing with uncertainty. Therefore, residents need supervisor guidance in knowing when to invoke learnings from lifeworld experience and when to follow standardised practices.

Our results should be considered within certain limitations. Data collection took place in only one hospital and two departments. This could be considered a small sample and could limit transferability of our findings. Further research should include more in-depth interviews and multiple research sites located in different settings (and countries) to gain a broader understanding of the concepts discussed in this study. Furthermore, for anonymity purposes, we had to exclude information that could have aided transferability. However, approaching the data collection in this manner did grant us the opportunity to gain complete access and develop a thorough understanding of the wards, hospital and people involved.

To conclude, our research reveals the friction between socialisation and formal training of residents as far as patient-safety practices are concerned. There should be more guidance by supervisors to achieve the state of *metis* (Scott, 1998), but even so, residents

are expected to progress towards independent practice while providing safe patient care in a standardised, safety-conscious working environment (Szymczak and Bosk, 2012). It is a challenge to train professionals in a culture that emphasises competency and safety rather than expertise and values (Scheele et al., 2008). Broadening the focus of training and practice presents an opportunity to evolve patient-safety practice, not just for residents but for the medical profession as a whole. Supervisors need to be explicit about their considerations when to follow and when to deviate from standardised practice in teaching residents about patient safety. This would enable residents to become more skilled in balancing safety systems with the uncertainties surrounding patient safety. When it comes to patient safety, we realise that bravery is a field filled with tension. Clearly, this article does not make a plea for carelessness, overconfidence and unsafe practices in consequence. Instead, we argue for more research on bravery, patient safety and the residents' complex working and learning environment.

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