

ORIGINAL RESEARCH ARTICLE

Managing Medical Errors in a University Hospital: How to Handle the Internal Learning–External Protection Paradox?

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Abstract

Hospitals are looking to strengthen their safety culture by learning internally from medical errors that occur to prevent them from happening again. This implies creating an atmosphere of psychological safety that encourages errors to be reported. Only open communication from teams can help to improve practices. Also, many establishments have implemented no-punishment charters, creating a policy of tolerance of errors. However, a medical error can become a legal issue. The fact that a court of law can use anything hospital staff have said or written after an adverse event has occurred encourages defensive communication to protect oneself from outside stakeholders. To date, the literature on medical errors has not studied how hospitals overcome this contradiction. In this qualitative research, we use paradox theory in the case of a single university hospital to understand how a hospital confronted with medical errors can effectively manage the internal learning–external protection paradox. A deeper study of this specific context also allows us to supplement the literature on organizational paradoxes. We demonstrate how the interactions between different levels of analysis contribute to operationalizing paradox management in a dynamic and characteristic way, on the one hand, and what makes it effective, on the other hand.

Keywords: *Medical error; Paradox; Learning; Protection; Open/defensive communication*

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In recent years, hospitals have sought to reinforce their quality-safety policy (Vogus et al., 2010). One of the keys to optimizing the healthcare system is to learn from errors to prevent them from happening again (Latil et al., 2008). This implies creating an internal atmosphere of psychological safety that encourages medical errors to be reported (Gronewold et al., 2013). Indeed, only open communication (Cwiek et al., 2018) can reveal dysfunction and help improve practices (Pellerin, 2008). In this case, communication is considered 'open' when teams quickly and honestly reveal adverse events (AEs) that occur during care as well as the damage caused to the patient (Cwiek et al., 2018).¹ By extension, here, we consider that it indicates a transparent attitude following a medical

error. This perspective has led many establishments to implement no-punishment charters (Kalra et al., 2013; Vrbnjak et al., 2016), creating a policy of tolerance of error.

However, a serious AE (SAE) can result in legal action (Barbot & Fillion, 2006; Latil et al., 2008). Since anything that hospital staff say or write could be used in a court of law, the institution's concern for protecting itself (and its staff) from such external threats encourages defensive mechanisms (Argyris, 1986), resulting in the least open communication possible following an AE (Rathert & Phillips, 2010). Some speak of 'defensive medicine' (Barbot & Fillion, 2006) to describe healthcare professionals' concerned with protecting themselves from the risk of legal action.

Ultimately, the objectives of internal learning and external protection after a medical error appear as two opposite poles (Cameron & Quinn, 1998). Additionally, what may be considered internally as a medical error could very well be understood by outside stakeholders (i.e., family, lawyers, courts, and media) as a criminal offence. We can also note that an error is usually characterized by its involuntary character (Dahlin et al.,

¹ According to the French health authority HAS, an adverse event (AE) is an event related to care – and not to the normal evolution of the illness – that could have or did cause damage to the patient. HAS refers to a serious AE when the consequences for the person are death, life-threatening complications or the likely occurrence of a permanent functional disability. In this perspective, a medical error occurs when the AE was avoidable, and not related to a complication or a therapeutic hazard. This is how AE is to be understood in this article.

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2018; Frese & Keith, 2015). This is the case, for example, of a lack of attention when carrying out a task (Zhao & Olivera, 2006). However, after examination, judges could consider, from a criminal standpoint, that an offence (and not an error) was committed, even if it was not intentional. Given this, we could ask ourselves how a hospital can work – transparently – on resolving (internal) dysfunctions if identifying and analyzing them could weaken it (externally).

The management literature on individual error has, of course, studied the medical sector quite extensively (Dahlin et al., 2018), but it has not studied the means that allow hospitals to overcome this tension between internal learning and external protection in the case of a medical error. However, this is a key challenge to the continued improvement in the quality and safety of care in hospitals. Thus, we use the paradox theory (Schad et al., 2016; Smith & Lewis, 2011) to understand how a hospital can manage the persistent paradox between the requirement of open communication (so that the organization can learn from errors, internally), on the one hand, and the requirement of defensive communication (so that the organization can best protect its own interests and those of its staff against outside stakeholders), on the other hand. Furthermore, studying this paradox in close relation to the context in which it emerges helps to overcome the tendency to simplify things, which is sometimes criticized in the literature (Andriopoulos & Gotsi, 2017; Schad et al., 2016). In this case, our article helps to operationalize paradox management. By adopting a dynamic perspective and combining various levels of analysis – both points considered lacking in the literature – we identify the conditions for an effective response to the internal learning–external protection paradox.

To this end, we qualitatively study the single case of a university hospital. First, the analysis carried out allows us to better understand how medical errors are managed by applying and developing the dynamic equilibrium model of Smith and Lewis (2011). The effective benefit of this model is that it combines the two forms of response to the paradoxes traditionally identified in the literature, for example, the separation of the elements of the paradox on the one hand and their integration (through acceptance, confrontation, or transcendence) on the other hand. In this case, three forms of paradox separation (emotional, temporal, and spatial) combine with an approach based on transcendence in four distinct ways (traceability of AEs, maintaining trust, capitalization, and objectification). Furthermore, we bring new insights to the literature on organizational paradoxes. Beyond identifying and characterizing a new performance paradox, we shed light on what effective management of this paradox actually is by underscoring the role of management tools as levers for reframing the paradox and governing practices. We also demonstrate that the positive effects of paradox management can be delayed over time.

A review of the literature

The nature and impact of medical errors

In the literature, errors are defined as an involuntary deviation from what was planned and which cannot be attributed to chance (Dahlin et al., 2018; Frese & Keith, 2015). They can refer to errors in the execution of a task, as well as errors related to a lack of knowledge or a poor application of a rule (Zhao & Olivera, 2006). For example, Goodman et al. (2011) give the example of not verifying a medication before administering it to the patient. Also, we observe that most research into individual errors has been conducted on the medical sector (Dahlin et al., 2018).

Medical errors are very common given the complexity of healthcare professions (Kalra et al., 2013; Vogus et al., 2010). An investigation by DREES (2011) estimated the number of SAEs at between 350,000 and 450,000 per year in French hospitals and clinics, out of a total of 450 million clinical procedures. This frequency is similar to that observed in countries such as Australia, Spain, and the United States (Pellerin, 2008).

Beyond the obvious trauma to the patient and their loved ones, the healthcare professionals who caused the medical errors are considered as ‘second victims’ (Dekker, 2013) since they are often psychologically impacted by the SAE that they caused (Kalra et al., 2013; Rathert & Phillips, 2010).

Medical errors: The tension between internal learning and external protection

Medical errors: An internal learning opportunity

The literature highlights two different stances of organizations toward individual errors. In the first approach (error-prevention culture), errors are considered intolerable. They are seen as a sign of incompetence and damage the careers of the persons concerned. Conversely, in a second approach (error-management culture), errors are forgiven. They are seen as inevitable and as sources of learning for the organization within a continuous improvement philosophy (Dimitrova et al., 2017; Frese & Keith, 2015).

In the case at hand, healthcare institutions have long been marked by a culture of blame (Khatri et al., 2009). However, such an atmosphere of psychological insecurity (Gronewold et al., 2013) does not encourage open communication from healthcare professionals (Cwiek et al., 2018). The World Health Organization (2011, p. 152) underscored that the healthcare field is characterized by a ‘culture of infallibility that denies the prevalence of error’. Increasingly, hospitals are looking to create a no-punishment culture, which has materialized in charters

signed by the managing director (Kalra et al., 2013; Rathert & Phillips, 2010; Vrbnjak et al., 2016).

More generally, the culture of safety (Pellerin, 2008; Vogus et al., 2010) in healthcare institutions translates into the following risk-management measures (Saintoyant et al., 2012): identifying and reporting medical errors, analyzing the AEs to identify the causes, designing and implementing risk reduction measures, and, finally, tracking these measures and their results to ensure the system works. Medical errors result in in-depth discussions in multidisciplinary meetings (Latil et al., 2008). However, this feedback is only fruitful when participants are not defensive and communicate openly (Cwiek et al., 2018; Kalra et al., 2013).

Medical errors: An external legal and reputational threat

In practice, healthcare professionals still tend to under-report medical errors, which hinders improvements to care quality (Vogus et al., 2010; Vrbnjak et al., 2016). This 'disclosure gap'² (Kalra et al., 2013, p. 1166) can be explained by their concern about the reactions of the victim and their family. Medical staff may worry that admitting the error – by openly apologizing – increases the risk of legal action (Saintoyant et al., 2012; Vrbnjak et al., 2016). Furthermore, some lawyers consider that it is more difficult to defend oneself if a medical error has been recognized (Rathert & Phillips, 2010). Out of fear of litigation, therefore, open communication (Cwiek et al., 2018) with the patient and their loved ones is not the most common practice; healthcare professionals choose their words carefully (Kalra et al., 2013; Rathert & Phillips, 2010; Vrbnjak et al., 2016). Among French hospitals, there is a particular sense that medical activity has become litigious (Latil et al., 2008). Laude (2013, p. 4) suggests, however, that France is 'far from drifting into an American-style situation' (the number of claims before the courts is stable, the number of convictions is stabilizing, and out-of-court settlements are increasing).

However, under the Article 221-6 of the French Criminal Code, 'the fact of causing the death of another person through clumsiness, imprudence, inattention, negligence or failure to comply with an obligation of safety or prudence imposed by the law or regulations constitutes involuntary manslaughter punishable by 3 years' imprisonment and a fine of €45,000'. In other words, an honestly reported lapse of concentration could be considered as a medical error – not punishable, because not intentional – in a hospital environment, but a criminal offence in the eyes of the law. Thus, the no-punishment culture stops at the hospital doors and raises the question of an external tolerance of errors in addition to internal

tolerance as manifested by the no-punishment charters. Indeed, media and the wider public do not hesitate to blame healthcare professionals when they make mistakes (Weinberg, 2002). French patients have little tolerance for medical errors (Amalberti et al., 2009). Saintoyant et al. (2012, p. 36) speak of the 'tyranny of the zero-risk requirement'. An idea effectively entrenched in public opinion is that organizations that are highly exposed to risk are not allowed to make mistakes, even though zero risk is an illusion (Journé, 2003).

Ultimately, healthcare professionals find themselves confronted with tensions between the internal and external realities. On the one hand, open communication on AEs (Cwiek et al., 2018) fosters learning opportunities and improves the quality of care (Vogus et al., 2010). On the other hand, it gives the organization a bad image (Rathert & Phillips, 2010) and increases the risk of litigation (Kalra et al., 2013; Vrbnjak et al., 2016). To date, however, the literature on medical errors does not help us understand how a hospital can effectively face such a contradiction. To avoid this pitfall, we adopt a paradoxical perspective (Lewis, 2000; Schad et al., 2016).

The contributions of paradox management

Paradoxes refer to the need to satisfy contradictory but interdependent requirements over time. Taken in isolation, each requirement seems logical, but they prove absurd and irrational when they are considered together (Lewis, 2000; Smith & Lewis, 2011). These tensions can be emotionally disturbing for the individuals involved (Giordano, 2003; Lewis, 2000), given that the paradox is not an objective fact in itself, but a representation of reality (Grimand et al., 2014; Perret & Jossierand, 2003). Additionally, the paradox often remains dormant, only becoming evident under certain environmental conditions (Schad et al., 2016; Smith & Lewis, 2011). Unlike a dilemma, which can be summarized by 'either/or'-type decisions, paradoxical thinking follows a 'both/and' logic (Cameron & Quinn, 1988; Miron-Spektor et al., 2018).

The literature on organizational paradoxes relies heavily on the typology proposed by Smith and Lewis (2011). Here, the authors distinguish between learning paradoxes (e.g., tension between exploitation and exploration), paradoxes of belonging (e.g., tension between homogeneity and diversity), paradoxes of execution (e.g., tension between autonomy and control), and paradoxes of performance (e.g., contradictory interests given the many stakeholders). In the case we are interested in here, hospitals must improve the quality of care by learning, internally, from their medical errors and protecting their external economic (e.g., insurance premiums and financial compensation) and reputational interests. This is what we will refer to here as the internal learning–external protection paradox. This falls within the scope of performance paradoxes since it is the result of contradictory demands between internal and external stakeholders.

² 'The disclosure gap is the mismatch between recommendations that all harmful errors be disclosed (for ethical and practical reasons) and the evidence that disclosure is actually an uncommon practice'. (Kalra et al., 2013)

Much attention has been paid in the literature to how organizations respond to paradoxes (Jarzabkowski & Lê, 2017), contrasting two approaches. The first approach recommends resolving the paradox by separating the elements of the paradox in a spatial (e.g., splitting contradictory tasks between different operational units) and/or temporal way (e.g., focusing on one of the demands causing the tension and then on the other at a later time) (Poole & Van de Ven, 1989). This approach is considered a defensive response in the literature since it avoids facing the contradiction. In this case, the paradox is suppressed by defining the tension as a dilemma (Schad et al., 2016). In the short term, the anxiety related to the paradox's existence is reduced, but the results prove to be counter-productive over time because tension intensifies. Such a separation, thus, leads to a vicious circle (Lewis, 2000).

On the contrary, the second approach consists in adopting integrative thinking by finding synergies between elements of the paradox (Lewis, 2000). In this case, the individuals accept that there are simultaneous competing demands and undertake to manage the paradox in a way that is considered effective, even though the notion of effectiveness is never defined in the literature. This approach triggers a positive dynamic through virtuous circles (Schad et al., 2016). Lewis (2000) discusses three possible ways of managing the paradox in this case. As Valette et al. (2018, p. 118) summarized, 'acceptance refers to the fact of accepting living with the paradox and acting through the paradoxes. Confrontation refers to the activity of discussing tensions with a view to a more accommodating understanding of practices (...). Finally, transcendence refers to an individual's activity of transformation to make tensions initially considered as contradictory into entities ultimately considered as complementary or interrelated'. Transcendence is the very illustration of 'paradoxical thinking'. It reflects a capacity for reframing (Giordano, 2003; Jarzabkowski & Lê, 2017; Lewis, 2000) – called Janusian³ thinking by Rothenberg (1979) – in other words, a change in the individual's mental model in the face of the opposing poles to which they are exposed (Miron-Spektor et al., 2018).

The dynamic equilibrium theoretical model of Smith and Lewis (2011) proposes combining these two approaches and opting for iterative responses of separation and integration. The authors use the metaphor of dynamic equilibrium to highlight the main characteristics of their holistic theoretical model, that is, the persistence of forces going in opposite directions on the one hand and, on the other, intentional cyclical responses that allow the organizational system to not just survive in the long term but also to continuously improve.

In this research, we use this framework to understand how a hospital can manage the persistent paradox between the imperative of open communication (so that the organization

can learn from errors, internally) on the one hand, and the imperative of defensive communication (so that the organization can best protect its own interests and those of its staff against outside stakeholders) on the other hand. By doing this, we clarify the contours of what the literature alludes to as *effective management* of the paradox in the specific context of the internal learning–external protection tension. Such an approach allows us to test whether the paradoxical perspective applies (Smith & Lewis, 2011). Indeed, beyond a lack of conceptual clarity underscored by these two authors, this literature is sometimes criticized for tending toward simplification (Putnam et al., 2016; Schad et al., 2016). In particular, the selected approaches are often considered to be decontextualized, insufficiently operational, static, not very integrative (e.g., by separating the individual and organizational levels of analysis), and too prescriptive (by obscuring the limiting conditions for responding to the paradox effectively) (Andriopoulos & Gotsi, 2017; Jarzabkowski & Lê, 2017; Waldman et al., 2019).

Methodology

Most studies on paradox management are conceptual or qualitative, using deep case studies or anthropological surveys (Lewis, 2000; Lüscher & Lewis, 2008), and thus, fall within an interpretive paradigm (Jarzabkowski & Lê, 2017). In the same vein, here, we analyze the single case of a university hospital.

Presentation of the case

CHU-X is made up of three hospitals with significant activity (+3,000 beds and +14,000 employees). It is well ranked among French hospitals. The origin of its tolerance of error policy comes from the 2010 introduction of a no-punishment charter to encourage staff to report their errors. Meanwhile, CHU-X implemented software (KaliWeb) that sought to facilitate AE reports to the Quality and Risk Management Division (DQGR). Some of them were serious enough to impact public opinion: the death of a patient by strangulation after being restrained with a sheet (2008), the amputation of a woman's four limbs after contracting a nosocomial infection during an abortion (2011), the removal of a patient's uterus following vaginal delivery (against the couple's wishes) of a stillborn baby (2018), etc.

Data collection and analysis

Between October 2018 and April 2019, we interviewed 26 people from a variety of backgrounds (see Table 1), alternating between intentional sampling and the snowball technique (Patton, 2002). First, CHU-X's Quality and Risk Management Director put us into contact with three colleagues from the

³ The god Janus has two faces looking in opposite directions.

Table 1. Detail of 26 semi-directed interviews

<ul style="list-style-type: none"> • Quality and Performance Unit One Quality and Performance Director; one Quality and Risk Management Director; one Quality and Risk Management Engineer; one Senior Healthcare Executive • Care, Social Service, and Patient Relations Unit Two Care Directors • Human Resources Unit One Human Resources Director • Public Health Cluster One Doctor (reference point for Morbidity and Mortality Reviews); one Occupational Health Psychologist • Radiotherapy and IRT Unit One Healthcare Executive; one Doctor; two Radiotherapy Technicians • Hematology and Cell Therapy Unit One Healthcare Executive; one Quality Nurse; two Nurses • Internal Medicine and Infectious Diseases Unit One Healthcare Executive; one Nurse • Medical Pediatrics Unit One Healthcare Executive; two Nurses • Medical Intensive Care Unit One Healthcare Executive • Digestive and Endocrine Surgery Unit One Healthcare Executive • Oversight bodies One Advising Doctor – Quality and Safety of Care and Support Cluster (ARS); one Technical Advisor – Improvement of Quality and Safety of Care Department (HAS)

Quality and Performance Department and the Public Health Cluster, as well as with two care directors. Then, we asked these people to guide us to as many CHU-X units as possible, taking care to contrast the units studied. Once we met them, certain healthcare managers from the six selected departments put us in touch with people working within their care units. Finally, we directly contacted several people to whom respondents spontaneously referred during our interviews (e.g., occupational psychologist, quality engineer, and HR director). In particular, given that Agence Régionale de Santé (ARS) and Haute Autorité de Santé (HAS) were regularly mentioned, we included them in our sample to better understand CHU-X's environment.

These semi-directed interviews, lasting 1 h on average, were structured around three aspects: the tolerance-of-errors approach at CHU-X, the tools used internally, and the management of the tension with risks of litigation. We invited the respondents to give concrete examples of medical errors within their units to illustrate their statements. We also encouraged them to explain what happened after critical AEs occurred within CHU-X (relayed in the media or by our respondents). Finally, we asked them to react to SAEs involving other hospital establishments in a logic of projection.

All these meetings were transcribed and form a 353-page body of primary data. Additionally, to triangulate the data, we collected 760 pages of secondary data (see Table 2). These allowed us to gather accounts from victims and/or their families.

To process our empirical data in a comprehensive way, we have used the dictionary of topics presented in Table 3. The first-order codes emerged from the field, while the second-order codes allowed us to progressively transition to theoretical concepts by grouping the various items identified. Once we established this data structure, we coded our entire empirical material with the Nvivo qualitative data analysis software.

Second-order codes, derived from our iterative abstraction approach, reveal four key moments in paradox management (error reporting, announcement to the families, feedback and legal action) as well as two cross-cutting contextual factors (internal and external tolerance of error).

In a qualitative research, researchers generally work on the basis that paradoxes, and the responses to them can be recognized through rhetoric and content of participants' accounts (Lewis, 2000; Putnam et al., 2016). However, the locus of the paradox (Andriopoulos & Gotsi, 2017) can vary from one study to another. In this case, we have adopted a projected approach that consists in observing the contradictory and interdependent nature of competing demands, which are not necessarily expressed spontaneously by all the participants to the situation.

We were able to confirm and characterize the internal learning-external protection paradox by identifying 'multiple voices' (Putnam et al., 2016, p. 82) and, more generally, the opposed elements (Andriopoulos & Gotsi, 2017) within CHU-X for each of the four key moments of our research. For example, we contrasted ways of expressing open and defensive communication in the error reporting stage, such as 'If the error is reported, it can be analyzed to make sure it doesn't happen again' or 'If I report an error, it's also to learn lessons and find ways to improve' versus 'Errors are still widely under-reported' or 'When we report, we expose ourselves to litigation'. In addition to the statement itself, we also paid attention to what it represents (Putnam et al., 2016). For example, a press release from CHU-X following an SAE demonstrated defensive communication toward a situation considered threatening.

The ways of addressing an organizational paradox were identified by relying on the two categories identified by Smith and Lewis (2011): separation and transcendence. These responses were identified using a similar logic to the one described previously. For example, time separation was identified by expressions such as 'different times', 'much later', 'the time between (...) and (...)', 'at least 15 days, sometimes one or 2 months had passed', etc.

Our analysis of the content of the primary and secondary data ultimately allowed us to amass a file of accounts (549

Table 2. Details of secondary data**Institutional documents and practical guides (12)**

- CHU-X certification records, HAS, 2018 (9 pages)
- Patient Safety Curriculum Guide, WHO, 2011 (274 pages)
- Announcement of damage related to care, CHU-X internal document, May 2017 (6 pages)
- Announcement of damage related to care, HAS, January 2011 (2 pages) and March 2011 (4 pages)
- Guide of best practices in passive physical restraints of adult patients, CHU-X internal document, September 2013 (11 pages)
- Patients' rights and compensation for medical accidents, *Office National d'Indemnisation des Accidents Médicaux*, June 2015 (5 pages)
- Improving care practices and safety, HAS, March 2012 (64 pages)
- Both actor and victim. Constructive management of errors in healthcare establishments. Recommendations for managers, colleagues, and persons concerned, *Fondation pour la sécurité des patients*, March 2011 (72 pages)
- Carers as the 'second victim': how to support a professional after an accident or error in anesthetics-intensive care *Collège Français des Anesthésistes Réanimateurs*, February 2016 (3 pages)
- AE form (1 page)
- Model of the AE system (1 page)

Reports (2)

- 'Opening the door to change NHS safety culture and the need for transformation', Care Quality Commission, December 2018 (58 pages)
- National survey on SAEs associated with care: description of 2009 results, September 2011 (206 pages)

Press articles (12)⁴

- *A quel moment une erreur médicale devient-elle une faute pénale?* www.liberation.fr; 14 November 2014 (3 pages)
- *Erreurs médicales : les victimes ont désormais la possibilité de se défendre.* www.bfmtv.com, 12 April 2016 (3 pages)
- *Erreurs médicales : à quand une vraie transparence?* www.leparisien.fr; 23 November 2017 (5 pages)
- *Décès d'un patient suite à une erreur d'injection : six mois de prison avec sursis pour une IDE et une ESI.* www.actusoins.com, 08 December 2016 (1 page)
- *Surirradiés d'Epinal: l'un des plus grands scandales de santé publique rejugé en appel.* www.atlantico.fr; 10 November 2014 (4 pages)
- *26.000 fiches d'incidents au CHU de Toulouse : la direction contre-attaque.* www.ladepeche.fr; 13 April 2018 (1 page)⁵
- *La fermeture de la maternité d'Oloron saluée par les médecins libéraux de Nouvelle Aquitaine.* www.medioffice.com, 03 November 2017 (1 page)
- Five press articles on the three SAE cases mentioned previously (e.g., account of events, victims' accounts, convictions, etc.) (7 pages)

Videos (2)

- *Que reste-t-il de nos erreurs?* Documentary by Nils Tavernier, Espace Ethique/Ile de France – Accounts from 3 doctors, 1 professor, 1 nurse, and 5 parents of victims about three cases of medical error (42 min. transcribed – 12 pages), <https://www.youtube.com/watch?v=dVsdCAg4XVg>
- Doctors make mistakes. Can we talk about that? Dr Brian Goldman, TED conference (33 min. partially transcribed – 2 pages), <https://www.youtube.com/watch?v=iUbfRzxNy20>

External communication between CHU-X and another university hospital cited by our respondents (4)

- CHU-X organization chart (1 page)
- CHU-X press release following an AE, 12 September 2012 (1 page)
- Email exchange with the Legal and Ethical Affairs Department (DAJE), November 2018 (2 pages)
- Press release – *Les « fiches de signalement d'évènements indésirables », au coeur de la démarche qualité et sécurité des soins du CHU de Toulouse*, www.chu-toulouse.fr; 06 April 2018 (1 page)

pages) categorized according to the grid presented in Table 3. The empirical results were then structured and drafted from this document. The words appearing in italics in the text are all quotes from our respondents. Similarly, our model (see Figure 1) – built at the same time as the data structure, that is, iteratively – reuses the six second-order codes.

⁴ We searched for as many articles as possible that included the terms 'erreur médicale' or 'événement indésirable (grave)', cross-referencing them with terms such as 'CHU-X', 'hôpital', 'faute pénale', 'punition', 'déclarer', etc. On this basis, we selected five articles that reported the three SAEs that occurred at CHU-X as well as three articles that were directly related to the subject of our research. Additionally, we searched for articles on cases that had an impact on our respondents, such as the over-irradiated patients at Epinal hospital, the death caused by an injection error at the Bergonié Institute, the leak to the press of 26,000 reports at Toulouse university hospital, and the closure of the Oloron maternity ward after several SAEs.

Empirical results

We present our empirical results using the four key moments identified earlier. The contextual factors (internal and external tolerance of error) are handled in a cross-cutting way in our results by being attached to one of the stages (see Figure 1). Generally, the presentation of the results, through the light shed on empirical data, helps us to understand how the variables in our model interact.

First, for each of the four stages, we draw out the contradictory tensions that give rise to a paradox between the demands of internal learning and external protection following a medical error. This is analyzed mainly according to the desired degree of openness in communication (see Table 4).

⁵ The Toulouse university hospital is not the one studied in this research.

Table 3. Data structure

First-order codes	Second-order codes
- The time-consuming nature of error reporting	Error reporting [194 accounts]
- Past and present error-reporting behavior	
- Differences between units in reporting behavior	
- Differences in reporting behavior depending on the extent of the error	
- Legal obligations in terms of error reporting	
- Staff's fear of reporting (career, legal action, and department reputation)	Announcement to the families [224 accounts]
- Legal and ethical obligations of the announcement	
- Internal instructions regarding announcements of damages related to care	
- Desire to maintain the relationship of trust with the family	
- Link between behavior during the announcement and future legal action	
- Pre-analysis before announcing the damage	
- A factual, non-emotional approach during the announcement	
- A desire to protect the staff member involved by not involving them in the announcement	
- The creation of a close relationship throughout the healthcare relationship	
- A cold analysis of AEs	
- Anonymity and lack of stigmatization during the analysis of practices	
- Learning made possible by analyzing AEs	
- Staff's ability to reassess themselves during the analyses	
- Collective responsibility highlighted during analyses of practices	
- Feedback from the staff involved in the error during the analysis of practices	Legal action [164 accounts]
- Comments from the DQGR in terms of improving practices following feedback	
- Complaints, requests for compensation, and claims following an error	
- Support from the DAJE in case of legal action	
- Option of taking out individual insurance	
- The formalism around the error as a factor of legal protection	
- The management of the complaint and the analysis of practices are kept strictly separate	
- The justice system's power to subpoena the victim's medical file	
- The hospital's external communication in case of legal action on a medical error	
- Creation of a charter to encourage reporting (no-punishment charter)	
- A no-punishment culture within the institution	
- A culture of safety and continuous improvement within the institution	
- Management's role in how errors are perceived within the units	
- The role of peers in how errors are perceived within the units	
- Staff's feeling of tolerance of errors internally	External tolerance of error [125 accounts]
- Families' degree of tolerance toward the error	
- A desire for the error to be recognized	
- Families' desire to discuss with the staff responsible for the error	
- Families' incomprehension in the face of errors	
- Families' desire for the AE to not happen again	
- The maturity of the media and public opinion toward medical errors	
- The attitude of the external medical environment (e.g., ARS) toward errors	

This sort of paradox is latent at CHU-X. In fact, it was only spontaneously expressed by two of our respondents. Similarly, the paradox has never been expressed in an official way, much less debated within the establishment. However, at each stage, CHU-X implemented effective responses to the paradox

combining separation (spatial, temporal, and emotional) and transcendence in different ways (traceability of AEs, maintaining trust, capitalization, and objectification) that produced effects on external stakeholders at a later time (see arrows T1–T4 in Figure 1).

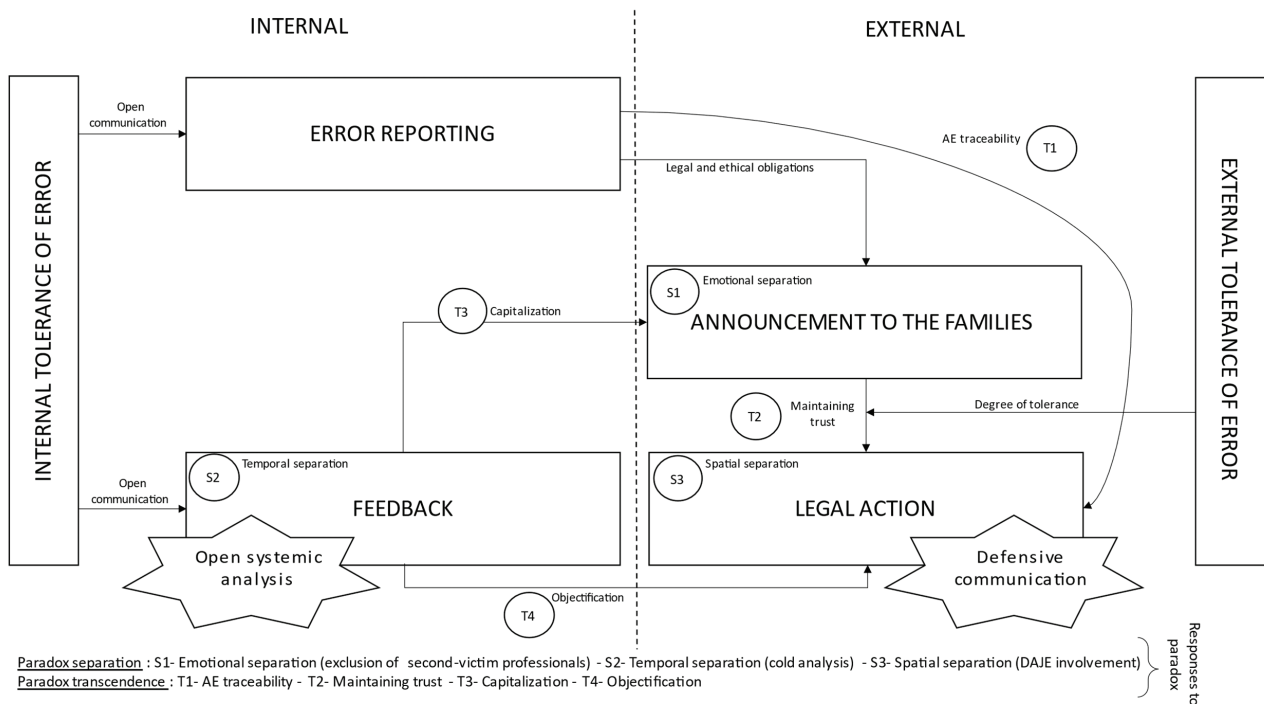


Figure 1. Managing the internal learning–external protection paradox after a medical error

Table 4. Characterizing the internal learning–external protection paradox at each stage

1. Error reporting		
Open communication helps to identify the AEs to be analyzed to improve the safety of care [Internal learning +].	versus	Open communication reveals the number and frequency of AEs that occur in the unit/hospital [External protection –].
2. Announcement to the families		
Open communication with families contributes to the overall process of self-examination [Internal learning +].	versus	Open communication attracts families' attention to the medical errors that were committed [External protection –].
3. Feedback		
Open communication encourages an in-depth analysis of what happened and finding solutions [Internal learning +].	versus	Open communication reveals flaws in staff and/or the university hospital at the origin of the AE [External protection –].
4. Legal action		
Open communication allows for contradictions from external stakeholders in an attempt to improve [Internal learning +].	versus	Open communication increases the risk in terms of financial compensation, reputation, insurance premiums, etc. [External protection –].

As a sign of effective management of the paradox, the ARS considers CHU-X as the reference in reporting errors and announcements to families.

CHU-X is one of the institutions that makes the most reports. Many institutions are completely silent (...). Certain people still think that it is a bad thing if an institute reports a lot of AEs. When, in fact, it is just the opposite! (...) (When you have made a mistake), you have to be as transparent as possible with patients and families (...). (You must) see people and explain to them (...). I know that they do this at CHU-X. They are quite clear on this. And even with very difficult things, they will meet families to say, 'here is what happened'. There are institutions that do just the opposite, trying to minimize things.

And that makes patients uncomfortable. That is where trust breaks down and the legal aspect starts. (Medical Advisor – ARS).

Error reporting

In the 2010 no-punishment charter, CHU-X undertakes not to inflict disciplinary procedures on an employee who reports breaching a safety rule, whatever their level of involvement. Additionally, a decision-making tree was implemented in 2017 to harmonize how AEs are handled by healthcare executives (i.e., the distinction between error and fault).

The no-punishment charter seeks to change how errors are seen and to encourage staff to report them spontaneously without fear of 'being blamed', as might have been the case in the past. Even though this document has not been displayed by all unit heads and is not widely known in the field, staff have noticed the cultural change that has taken place over the past 10 years and now feel 'comfortable' when reporting their errors. The implementation of reporting software in 2010 was accompanied by an effort to 'explain' that this tool was not there to 'judge' staff but to avoid errors happening again.

As a healthcare professional, I can feel this tolerance of error in concrete terms. This was less true ten years ago. The fact that it has been formalized may have made it easier for me to report any errors that I may have made (...). I think that made us more aware of reporting (...). The point in reporting errors is to make sure they don't happen again or do not result in a more serious error. (Radiotherapy technician) [1.1]⁶

In one year, CHU-X – which monitors more than 1.05 million patients per year – reports around 10,000 to 11,000 AEs. As a sign that the 'perception' of errors is changing, some look at reporting as a way of protecting the unit and the institution should families take legal action later by 'tracing' all the AEs that occurred during care. The establishment of a synergy between reporting and protection reflects an initial form of paradox transcendence (see T1 – Figure 1). Indeed, in case of litigation, the Legal and Ethical Affairs Department (DAJE) will need a precise 'timeline of the facts' since a trial could take place several years after the incident (e.g., 7 and 6 years for a patient strangled by a sheet and the patient with four limbs amputated).

Today, reporting is part of our daily activity, and when there is an error, we report it and we do not worry about the legal implications (...). However, the legal implications require people to be as specific as possible about the facts of what occurred. I ask staff and management to write down exactly what happened – within hours of the event – and make very specific reports (which we may or may not use) (...). Truly, note everything as soon as possible after it happened. It gives us information. It's part of our job: we know that there could be legal implications. (Director of care) [1.2]

Nevertheless, reporting behavior varies between units.⁷ It especially depends on management's 'attitude' toward AEs. Medical errors remain 'taboo' for certain care managers and unit heads who, out of fear of harming the 'unit's reputation', prefer to resolve issues 'within the family' instead of communicating transparently. These managers choose protecting the unit over collective learning. Consequently, staff working in these units where error is seen as a threat are 'afraid' of reporting AEs.

⁶ For each box, we propose a second verbatim quotation in the Appendix. The number (e.g., 1.1) allows you to find it in the corresponding table.

⁷ Some make 300 reports per year, while others only make a few over the same period.

Management has a role to play in promoting a quality-safety culture. How we communicate on the fact that we are aware – as managers – that there is a risk of error and that it is an integral part of our activities (...) contributes greatly to creating a favorable environment for reports from staff. (...) This communication that we can have locally with a team, by showing how we see things in terms of the error management policy, can encourage reports. Where there is no communication, it can be an obstacle. Not knowing how it will be handled, not knowing what stance to take, clearly, that can be an obstacle. When staff don't know, they are more hesitant to report errors. (Senior health executive) [1.3]

Furthermore, certain staff tend to 'hide' AEs that are not serious, since they are considered 'inconsequential' for the patient, easier to 'keep silent', and are 'covered' between colleagues. Also, reporting all the 'minor' incidents is seen as time-consuming by healthcare professionals.

When there are small errors in the flow, or things like that, we change them without the patients and their families knowing. Sometimes, I see flows that should have been at 20 that are at 40. So I go into the room, I bring it down, I don't say anything, and it goes practically unnoticed (...). We all make small mistakes, so we all correct each other: that's what keeps the unit together (...). But we don't necessarily report all that. Honestly, I don't even know that we should (...). Obviously, if there's something very serious, we report it (...). But if we had to report all these little things, it would take us an enormous amount of time. And we already rarely finish on time... (Nurse) [1.4]

On the other hand, our respondents consider that SAEs are harder to 'hide' and are generally reported. Since 2016,⁸ the number of external reports of SAEs by CHU-X has increased consistently.

We've had injection errors, for example potassium, which can have a serious impact on patient care. That's reported. It gets reported to care management; it gets reported to the DQGR. I'm sure that significant events, for CHU-X, they get reported. It's the more 'minor' events that we still need to work on. They are reported, but maybe not all (...). For us, serious event reports are made by the Quality and Performance Director to the ARS (...). There can be a medical obstacle: not reporting, handling the issue within the unit, covering up the issue with words like 'we're protecting you' and 'we're handling it internally'. I think that happens less and less (...). It must still happen for minor errors. But major errors, no. (...) For me, major errors get reported today. They don't fall through the net. (Director of care) [1.5]

Announcement to the families

Announcing damages following a medical error is a legal requirement (Article L. 1142-4 of the French Public Health Code), but CHU-X sees it as an 'ethical issue' first. The goal is

⁸ Decree no 2016-1606 of 25 November 2016 requires SAEs to be reported to ARS.

to be 'transparent' about the 'factual information' that the hospital has about the AE while avoiding medical and technical 'jargon' and taking care not to hide information about what happened and the patient's health.

Our instructions are to be totally transparent. With the right words so that people can understand. But we have not been instructed to hide or sugar-coat things. There is true transparency about the factual information that we have and that can explain things (...). When there is a mistake and it is shared with the patient or their family, well, there is nothing behind the scenes that we can or should hide, and that we would benefit from hiding, especially. People have access to their medical files; they are increasingly well informed. On the contrary, I think we have everything to gain from owning up to our mistakes. (Senior health executive) [2.1.]

However, certain CHU-X professions feel it is better to remain 'concise' so as not to 'open themselves up to accusations'. If an error is proven, the point is to 'express your regret' (especially by making an 'apology') and 'explaining' what happened without 'accusing yourself or others'. To make sure this process is followed as much as possible, a working group at CHU-X – involving the DAJE, in particular – drafted a practical guide in 2017 to help professionals announce an AE. According to HAS, this type of document helps to change how healthcare professionals are represented in terms of the information due to patients. In the same vein, training courses have also emerged, although few take them.

We have seen training sessions for doctors to teach them how to share the information well. Because doctors can make mistakes that could harm us. Because they start saying to patients, 'Sorry, this is entirely our fault: we did this or that!' And sometimes there are also patients who want to make money off it (...). We have to explain what happened, but in a very factual way. We must never say 'this our fault' or 'this is my fault'. We must be transparent while remaining rather anonymous. We must not focus on any given professional but explain the facts. (Quality and Risk Management Engineer) [2.2.]

Furthermore, ahead of the announcement, the medical team must meet quickly to establish the 'facts'. Sharing 'good-quality information' to victims of a medical error while preserving CHU-X's interests implies a 'pre-analysis'.

We were confronted with a very serious error this winter (...). When children are born, they have an umbilical venous catheter (...). When they removed it, it was cut, so there was 6 cm that went into the heart. So, very serious! But it's OK. The child was operated. It was a long journey. It was a very premature baby (...). We really went in-depth in the analysis before meeting the family. We reported it to the family. We explained to them the process that we follow. We must not hide things from families. But, however, before meeting them and explaining everything, we have to get together and truly understand what happened. To be able to respond and to also know how to say 'I don't know' (...). The very next morning, we brought the medical team together. That evening, we told the family that we met and that we have a process to follow when

there is an AE like that. And that we met the next morning, that we did it to explain to them why (...). The same evening, the unit doctor saw them to tell them and to try to respond ... And with myself ... So, we had a lot of anger – rightfully so – from the family. We apologized. It was the right thing to do. And that is part of our process towards families. And we got back in touch with them the next day. (Healthcare executive) [2.3.]

Very often, CHU-X 'excludes' the staff members who caused the medical error from announcing the damage, which reflects a form of (emotional) separation under paradox theory (see SI – Figure 1). The unit head 'takes on' the 'confrontation' with the family. Sometimes, CHU-X even goes against the family's 'wishes' to meet the staff involved in the AE, especially if management feels that they are trying to find who is 'guilty'.⁹ In the case of an SAE, staff are, indeed, 'devastated' by the idea that their actions (or inaction) could have caused irreversible consequences for the patient and are cared for by an occupational psychologist. In addition to protecting the 'second-victim healthcare professional', CHU-X also avoids the risk that the professional may not handle their emotions appropriately. The communication must absolutely be 'under control' given the risk of potential legal action.

We leave a doctor/executive pair to negotiate the situation locally, but we encourage the professional who committed the error to not be the one to announce it (...). Most of the time, we tend to arrange it so that it is not the professional who made the mistake. Because that would put them in a difficult situation (...). I had a staff member who made a mistake while configuring an electric syringe. It's a device that administers morphine. She set it to 10 times the dose that it should have been (...). Since the patient weighed 34 kg, she fell into a coma. Very quickly, the nurse alerted the doctor (...). I was notified immediately. We organized the transfer to intensive care. We administered antidotes to the patient, she was monitored for 48 hours, she returned to the unit. It ended very well (...). Two days later, when the patient came back to the unit, the nurse absolutely wanted to see the patient and tell them what happened. She wanted to apologize for her mistake. The doctor and I convinced her that it did not seem appropriate to us. The doctor and I went to tell the patient what happened (...). In this case, we excluded the nurse. (Senior health executive) [2.4.]

In these moments, 'sincere' communication helps maintain the relationship of 'trust' with the patient and/or their family. And the latter are generally 'satisfied' with having been informed, according to CHU-X professionals. While we were not able to interview the victims of the medical errors identified in this study, our secondary data lend credence to our respondents' claim. For example, here is what the father of a child who was the victim of several medical errors said in the documentary 'Que reste-t-il de nos erreurs?': 'Saying that a

⁹ In certain cases, the professionals directly concerned by the medical error are, despite it all, present during discussions with the family, but they will be accompanied by a mediator.

mistake was made is rather necessary – in my opinion – to maintain trust, paradoxically, I think that honesty is an important element'. Such statements lend credence to the idea, defended by CHU-X, that families 'appreciate it' when medical staff show 'candor', and they are then more 'understanding' of mistakes.

You must be totally transparent. There is no point in minimizing things and sweeping half the issue under the rug. Because if the patient ever decides to escalate things and there is a conciliation commission and an evaluation and we are required to go into detail, then the relationship of trust is destroyed! (...) What is the worst is giving the patient the impression that we are hiding things from them. That really makes them upset! And if you happen to get a guy who goes to civil court, he's not going to let it go. And the lawyer is not going to let it go. And why did we hide things? (...) So, it's best to say it. There was a mistake, no doubt about it! (...) The relationship between the doctor and the patient is based on trust (...). If you make a mistake and you hide things, the guy is going to blame you, because he will have understood that he cannot trust you. (Doctor) [2.5]

Furthermore, for our respondents, an open attitude during the announcement 'defuses' conflict with families and reduces the risk of litigation after the AE. On the contrary for them, the 'suicide hypothesis' made by the CHU-X doctor to explain the death of the patient by strangulation encouraged the husband to later file a report. It was similar in the case of the removal of the cervix when the doctor spoke of 'positive things' to the couple (i.e., no more periods, no more contraception, and no cervical cancer) when the wife felt 'mutilated' (local press, 12 September 2019). By reconciling open communication and protection, an announcement based on transparency reflects a second form of paradox transcendence (see T2 – Figure 1).

To avoid any complaints, the biggest advantage at the first sign of difficulty is good communication with a reported error. And the doctor and management going to see the patient or the family is already a good step towards avoiding any future litigation. I'm certain of it! (...) There was a mistake about the restraint. The patient died after a restraint made by a nurse and an orderly on a surgical ward. These two members of staff, the manager and the manager on call were indicted. The doctor's communication with the family had been very bad. Here, we can say that it went to court because the communication with the husband was not at all appropriate (...). Communication doesn't solve everything, but it is key! Having the courage to go see the families and the patients straight away to tell them what happened is important. (Director of care) [2.6]

Feedback

CHU-X has a method for analyzing the causes of SAEs through morbidity and mortality reviews (MMRs), an

approach that is now widespread in hospitals. Such 'feedback' is given 'cold' within 3 months, as required by ARS, to give the medical team the time to gather all the necessary information. Since the purpose is to have the staff involved in the AE take part in the collective reflection, this also allows them to 'put distance' in an emotional sense between themselves and the incident. This is a second form of separation (temporal, in this case) under paradox theory (see S2 – Figure 1).

We try to make sure the times are different (...). We don't try to analyze straight away, especially when the consequences were serious. There are a lot of emotions, and it's not the best time to analyze things calmly and work on what didn't go well (...). Immediate analysis would be counter-productive because that is when you're scared, when you're going to try to (justify yourself). All the defense mechanisms will fall into place. We must avoid coming to conclusions straight away because, oftentimes, they will not be the right ones. (Doctor) [3.1]

The anonymity of case elements (e.g., the patient and the healthcare professionals concerned) and the lack of 'stigmatization' of the hospital staff who caused the error create a climate of trust. This fosters open communication and 'self-examination' by healthcare professions, given that, for an AE, responsibility is often collective rather than purely individual (the errors are called 'systemic').

'When the meeting starts, we explain the objectives, that we aren't there to blame or judge (...) and that we just want to understand how and why it happened. Even for errors where we have said 'how could that have even happened?', well, we always find incredible things that explain how these errors occurred. For professionals, it is very important for them to understand what happened. And I don't recall having people who acted in bad faith or who hid things. Because it's not an individual analysis; it's not like a police investigation'. (Doctor) [3.2]

Ultimately, analyzing practices allows the institution to 'correct its dysfunctions'. New procedures can be put in place to reduce the risk of medical errors (e.g., certain nurses wear a high-visibility vest when they are calculating doses of medicines, so that they are not interrupted during their task, or using a red label for potassium syringes to avoid confusing them with other medicines). Based on the lessons learned from the MMR, CHU-X can then inform the patient and/or their family and explain what the institution has done to avoid repeating the AE in the future. Explaining the 'capitalization' measures helps to 'calm' the victims somewhat. By combining collective learning with healing the relationship, this approach demonstrates a third form of paradox transcendence (see T3 – Figure 1).

Initially, the families are more focused on the results of the mistakes. (People) are not able to hear what else is said. When you announce that someone died unexpectedly due to an error; then and there, you can hardly go further. However, when there is distance, many need to be able to say that it wasn't for nothing. And that it will at least serve so that it won't happen again'. (Senior health executive) [3.3.]

Furthermore, even if the MMR – the conclusions of which can be 'subpoenaed' in court – reveals 'points of weakness' for the institution, above all it 'objectifies' what happens and sends a positive signal as to CHU-X's ability to change in case of future litigation (e.g., the facts were not hidden, they were analyzed in-depth, and they resulted in changes to practices). Thus, the MMR embraces the challenges of learning and protection. Consequently, this is a fourth form of paradox transcendence (see T4 – Figure 1).

Initially, the units said, 'no, we're not going to do an MMR because there is certain to be legal action. Then, we'll hand the judge, the insurer, the assessor everything that went wrong on a silver plate'. But the legislation has changed a lot. We are required to announce the damages to the patient and to work on what happened. Now, if there is court action, judges can request the MMR. They can subpoena it (...). And if there hasn't been an analysis, it can be very damaging to the team. Because that will mean that no one evaluated what happened. (Doctor) [3.4.]

Litigation

Families' likelihood of taking legal action over an AE depends on their ability to accept the idea that a university hospital can make mistakes. However, for our respondents, the 'wider public' is not aware of the 'complexity' of hospital care. The case of the university hospital leaks¹⁰ made an impact internally, and our respondents regularly referred to them to illustrate public opinion's lack of 'maturity' on the issue of medical errors.

People say, 'We are working on people, so we cannot make a mistake'. We're in a society that wants to control everything, master everything. I come to the hospital to get cured. The result is that I am cured, not that I leave with another problem or that I am not cured in the end. These mentalities are not necessarily evolving in the right direction. The culture that we have in the unit, I don't see how we can impose it on patients (...). All these standards, safety culture, they come from problems that occurred, health crises, contaminated blood. All these crises that were widely reported in the media. We want to reassure patients, which is normal, but there is no such thing as zero risk (...). We work on people, but we are human! (Healthcare executive) [4.1.]

¹⁰ In 2017, the media revealed 26,000 AE reports made by Toulouse's university hospital. Public opinion saw it as a sign of worsening care, while for the professionals interviewed, reporting dysfunctions showed the hospital's desire to improve the quality of care.

Families' degree of 'tolerance' for medical errors also depends on the type of error made, according to the 'idea' that individuals may have of the 'difficulty of the clinical procedure' (e.g., operating on the wrong side during surgery will be hard to accept). Finally, any tolerance of error granted by patients depends on the 'degree of severity' of the medical error and the 'damage' caused to the patient.

I think that, for certain patients, there is the tolerance of error. Some of them have this perspective, but it also depends on the seriousness of the event. If you are announcing that there was a death directly related to care that didn't meet the standards that it should have, I doubt the person will say that you are human like anyone else and that you have the right to make an error (...). I found myself in a situation, for example, where there was an error in administering medicine which ultimately had no serious consequences, but it could have. It was for a chronic patient, and we explained everything. She agreed that things like that could happen. It's really on a case-by-case basis (...). I think that patients and families are focused on results. So, if the result is rather favorable, where things were scary but ended well, it will be completely different than if it resulted in serious damage. (Senior health executive) [4.2.]

When families go to court, the case is immediately taken over by the DAJE instead of the DQGR. The 'incriminated' medical teams will be legally 'supported' by virtue of the 'functional protection' of civil servants.¹¹ This is a third form of separation (of the departments involved, i.e., spatial) under paradox theory (see S3 – Figure 1).

(The internal communication around errors in order to analyze and communicate against external accusations), these are two different time frames. First, these are two different departments. There are departments that take care of all the legal and insurance aspects. They do not have access to the files. They are not involved in the risk management processes. So, they have very specific points of contact, which are the lawyers, the family, the insurer. And they fulfil a specific demand. Afterwards, in any case, even if there is a demand for compensation, there will be experts appointed. Independent experts who have access to the files and who will come to their own view, their own diagnosis. These are two completely different things. (Doctor) [4.3.]

The separation is such that staff can feel that they are not kept sufficiently informed of the 'legal consequences' of the case in case of 'litigation' related to an AE. For these healthcare professionals, the subject can even suddenly become 'taboo' within the unit.

¹¹ Protection is offered should legal action be taken in the performance of duties. The member of staff receives legal assistance and coverage for conviction. However, this protection does not come into play if the staff member committed a personal offence while carrying out their duties (<https://www.fonction-publique.gouv.fr/>, link in French).

Table 5. A summary of the results on managing the internal learning–external protection paradox following a medical mistake

PARADOX: INTERNAL LEARNING– EXTERNAL PROTECTION	Emotional separation	Staff concerned by AEs with specific knowledge of the facts that are useful for learning are not involved in announcing the news to the victims, which protects them psychologically and protects the institution from clumsy communication due to the emotional load [S1].
	Temporal separation	Immediately, the institution protects itself by controlling communication to the victims, especially by avoiding references to any medical-legal responsibility. After some time, freer speech during the MMR by the staff involved in the error fosters learning [S2].
	Spatial separation	The DQGR supervises the learning-by-error process, while the DAJE legally supports the institution to protect it to the best possible extent [S3].
	Transcendence	<p>Through AE traceability. AE traceability facilitates <i>learning</i> through an in-depth analysis of the error while creating a specific timeline of the facts to <i>protect</i> itself against any baseless accusation during a lawsuit [T1].</p> <p>By maintaining trust. Transparency towards the patient and/or their family remains consistent with the open-communication approach that fosters <i>learning</i> while protecting the relationship of trust, which will limit litigation and <i>protect</i> the institution [T2].</p> <p>Through capitalization. Capitalizing on MMRs encourages collective <i>learning</i> within the institution while reassuring victims as to the hospital's desire to keep this type of error from happening again, <i>protecting</i> the institution from any litigation [T3].</p> <p>Through objectification. The posture of self-examination, objectified in formal documents, contributes to <i>learning</i> after the error while sending a positive signal to the justice system should there be a trial, <i>protecting</i> the institution [T4].</p>

(I know a nurse who was legally concerned by a mistake). One of our colleagues. I'm not too sure where it's at, because it's become a bit taboo in the unit. We don't talk about it much. But I think she had to go to court, because the family filed a complaint. (Nurse) [4.4]

In case of a 'dispute', the communication seeks to 'defend' the interests of CHU-X by 'clearing' themselves. For example, in the case of the patient who died by strangulation in 2008 after a restraint that went wrong, the director of CHU-X stated in 2015 that the patient's care process had 'complied with the state of the art'. Similarly, during the trial, the institution's lawyer defended CHU-X, arguing as follows: 'CHU-X did not have a (restraint jacket). Using a sheet was a traditional practice. But statistics show this. Certain deaths by strangulation are also due to specific materials. They don't prevent anything, especially if the patient's desire to end it all is affirmed' (local press, 02 December 2015). However, CHU-X was fined €4,000 for manslaughter due to a lack of supervision and information of staff and the lack of a protocol. Similarly, in the case of the patient whose four limbs were amputated, CHU-X contested having committed the slightest offence. The position defended by CHU-X was that the pathology was extremely difficult to detect, especially if the signs of infection are absent. However, this analysis was contested by the panel of experts responsible for coming to a decision. CHU-X was, therefore, ordered to pay €300,000 in compensation for inadequate care (national media, 03 January 2017). Finally, in the case of the patient whose uterus was removed following the stillbirth of her baby, CHU-X management explained in a release: 'As soon as we became aware of the difficulties linked to this treatment, an analysis carried out by the unit's head doctor showed that the medical choices were based on recognized professional

recommendations, each decision having been subject to a benefit/risk analysis for the patient' (local press, 12 December 2018). Moreover, CHU-X's external communication is even less open, given that hospitals are required to respect 'medical secrecy'.

The victims who decide to speak out about their situation in the media will be able to say anything they want. They are free to say whatever they feel was bad or unsuccessful in their care. We, however, have to respect medical secrecy. And, often, we cannot respond to a certain number of arguments put forward by the victims themselves on blogs or on the internet. Because if we respond, we breach medical secrecy. So that puts us in a difficult spot. (Quality and Performance Director) [4.5.]

Table 5 summarizes all our results about how the internal learning–external protection paradox is managed.

Discussion

Using the paradox perspective helps us understand how a hospital can overcome the internal learning–external protection paradox in the case of a medical error. Studying this context in-depth also sheds new light on paradox theory.

How the paradox theory helps us to understand medical error management

Our research demonstrates how to apply the dynamic equilibrium model of Smith and Lewis (2011). In this case, the framework helps us to understand a hospital's adaptation strategies when confronted with the internal learning–external

protection tension following the implementation of a policy of tolerance of error. The various coping mechanisms that have emerged from our analysis have, of course, revealed new categories strictly in terms of paradox management, but they also show how to manage medical errors in a university hospital.

Managing the paradox through emotional, temporal, and spatial separation

The separation approach that the hospital uses takes three distinct forms. First, the second-victim professional (Dekker, 2013) is excluded from announcing the damage to the families, so that their very intense emotions do not distort the transfer of information. In this way, the hospital seeks to control what is said (or not) to patients. This is what we choose to call here 'emotional separation'.

Furthermore, it seems that the time for analysis is disconnected from the time of the announcement, since the feedback comes in much later. This not only reduces the emotional load during the discussion but also allows for a much more open and in-depth discussion of the AE. According to this perspective, it is not the patient's place to know all the details that have resulted from these practice analysis meetings. Thus, while the announcement is deliberately concise and simplified (without implying any medical or legal responsibility), the feedback is exhaustive and medical-technical (in order to update the hospital's faulty processes). Echoing the literature, we qualify this phenomenon as temporal separation (Poole & Van de Ven, 1989).

Finally, when the error results in legal action, another department in the organization, the DAJE, comes into play and adopts a stance to defend the hospital's economic and reputational interests. The literature qualifies this as spatial separation (Poole & Van de Ven, 1989).

Ultimately, beyond the spatial and temporal separations already identified by Poole and Van de Ven (1989), this research reveals a new, emotional form of separation. In other words, managing emotions (protecting the second-victim professional by excluding them from the announcement and having them gain some distance from the AE before holding the analysis) emerges as a key to managing medical errors in a hospital environment. In this regard, where the literature generally studies error management solely through the lens of the hierarchical relationship (Dimitrova et al., 2017; Gronewold et al., 2013), our research, on the other hand, underscores the importance of a third party (in this case, an occupational psychologist) in helping the individual who caused an SAE to absorb the resulting psychological shock. What emerges from this observation is that medical error management cannot be limited to the manager/employee pair.

The first form of paradox management highlighted in this research – through separation – is centered on an internal perspective, that of the organization. However, it is combined with an approach based on transcendence, which this time seeks to influence external stakeholders' perceptions by highlighting organizational practices.

Four methods of paradox management exclusively by transcendence

We demonstrate that paradox transcendence (Lewis, 2000) manifests in four ways: AE traceability, maintaining trust, capitalization, and objectification, whereas the literature pays little attention to the concrete ways in which Janusian thinking (Rothenberg, 1979) is applied.

First, an exhaustive and detailed notification of the facts that led to a medical error is considered as a way of controlling the entire context of the incident in case of legal action and of being able to argue a defense in a court of law. Furthermore, greater immediate transparency when announcing damages to the families reduces the risk of litigation by preserving the relationship of trust. Also, communicating with families after some time about improvements to practices (after the feedback review) to avoid medical errors being repeated is shown to be positive in managing the healthcare professional/patient relationship. Finally, the care taken in carefully analyzing the timeline of facts – to objectify what happened – is seen as sending a positive signal to the justice system and to healthcare authorities, reflecting a logic of continuous improvement by looking for systemic flaws (Saintoyant et al., 2012).

These four methods of paradox transcendence correspond to four key moments in managing a medical error (reporting the error; announcement to the families, feedback, and legal action). In this vein, one of the contributions of this research is to propose a temporal breakdown of AE management that differs from the medical literature. In this case, Saintoyant et al. (2012) identified the four following steps in medical risk management systems: error reporting, AE analysis, improvement measures, and tracking. In this research, we identify two micro-practices (Jarzabkowski & Lê, 2017) that supplement these milestones: the announcement of the damage (excluding second-victim staff) and the feedback loop (following the systemic analysis of the incident) with the patient and/or their family. In doing this, we show that the micro-interactions (Jarzabkowski & Lê, 2017) between medical staff and patients can be seen, from an organizational standpoint, as opportunities to make internal learning a driver for external protection from the patient and their family (by creating a climate of trust).

Furthermore, another of the contributions of this research consists in highlighting that paradox transcendence is the sole integrative approach observed in the case studied, excluding other approaches such as acceptance and confrontation (Jarzabkowski & Lê, 2017; Lewis, 2000). Indeed, confrontation

implies bringing the tension to the fore and discussing it in a critical way between the various people concerned (Jarzabkowski & Lê, 2017). However, the paradox is rarely mentioned by hospital staff and is never the subject of internal debate. Therefore, an organization can, indeed, regulate the paradox without officially saying it; it simply remains latent (Schad et al., 2016; Smith & Lewis, 2011). An explicit statement of the paradox internally – followed, for example, by a collective study of the resources implemented to overcome it – does not emerge from this resource as a necessary condition for managing it. In other words, managing the internal learning–external protection paradox does not necessarily follow a logical, Cartesian approach; on the contrary, it sometimes fits the garbage can model (Cohen et al., 1972). Similarly, accepting the paradox as a natural condition of work (Jarzabkowski & Lê, 2017) is not observed in our case since it supposes leaving a certain degree of freedom to the actors involved in the paradox (Dittrich et al., 2006). So, while a degree of autonomy exists (e.g., in announcing the damage), it is controlled. The hospital's desire is to manage practices as much as possible using extremely specific management tools (see below), limiting the room of maneuver for staff on the field.

The contributions of paradox theory

In addition to identifying and characterizing a new paradoxical organizational phenomenon, our research – through a multilevel (individual/organization and internal/external) approach – offers an answer to the tendency to simplify which is sometimes criticized in the literature (Andriopoulos & Gotsi, 2017; Schad et al., 2016). A more operational approach allows us to understand concretely what effective paradox management is while highlighting the specific role of management tools in this approach as well as the delayed nature of the resulting positive effects.

Identifying and characterizing a new performance paradox

In this article, we identify a new example of a duality that gives rise to a persistent contradiction (Bernard-Weil, 2003): internal learning vs external protection. These two elements are not only opposed (by creating an environment that fosters learning from errors, hospitals encourage the dissemination of information that could be used against staff and/or the hospital in litigation) but also influenced each other positively (learning from errors helps prevent future incidents and protects oneself in case of litigation). However, this performance paradox has the particularity of not being a source of 'emotional disorder' (Giordano, 2003, p. 116) for healthcare professionals. Indeed, medical errors seem more traumatic for hospital staff than the subsequent paradox, especially for second-victim staff (Dekker, 2013), thus highlighting the role of contextual factors

(Andriopoulos & Gotsi, 2017; Putnam et al., 2016) in the individual perception of the paradox.

Our study underscores the existence of a tension between the internal atmosphere of psychological safety (Gronewold et al., 2013) that encourages a transparent attitude from staff, on the one hand, and an external atmosphere of legal insecurity that encourages defensive behavior (Argyris, 1986) from individuals on the other. In this regard, our article allows us to consider a new aspect of 'defensive medicine' (Barbot & Fillion, 2006) through an eventual refusal to communicate openly (Cwiek et al., 2018) in case of an AE. We can connect this to another contribution of this research: the organizational definition of medical error as an involuntary act (Dahlin et al., 2018; Frese & Keith, 2015) diverges from the societal definition, which can very well interpret an unintended action as an offence (and no longer an error) that can result in criminal punishment. This different framing (Jarzabkowski & Lê, 2017; Lewis, 2000; Miron-Spektor et al., 2018) of medical error that depends on whether one is inside or outside the organization is the focal point of the paradox that we put forward in our research, since hospitals, through their tolerance-of-error policy, opt for an approach that clearly goes against the *doxa*¹² (Bernard-Weil, 2003; Perret & Josserand, 2003; Schad et al., 2016).

However, categorizing new managerial situations as organizational paradoxes is only useful from a scientific standpoint if they are not separated from the context from which they emerge (Andriopoulos & Gotsi, 2017). In this work, we have taken care to tightly integrate the context in our analysis (Andriopoulos & Gotsi, 2017; Putnam et al., 2016), which allows us to overcome the tendency to simplify that exists within this literature (Putnam et al., 2016; Schad et al., 2016).

Definition and limiting conditions for effective paradox management

Smith and Lewis (2011) underscored a lack of conceptual clarity in the literature on organizational paradoxes. In particular, it often refers to the 'effective' management of the paradox (Lüscher & Lewis, 2008; Miron-Spektor et al., 2018; Schad et al., 2016), without ever defining this adjective in an operational way. Similarly, the limiting conditions (Waldman et al., 2019) for such effective management are never made clear; the works on the subject opting for a simplistic opposition between responses considered negative, on the one hand, and responses considered positive on the other (Jarzabkowski & Lê, 2017).

Another contribution of this article consists in overcoming this normative vision and concretely defining what effective paradox management is by identifying the limiting conditions. In this specific context of a university hospital, the response to the paradox can be considered effective if it constitutes a 'driver of action' (Perret & Josserand, 2003, p. 11) in terms of

¹² The word paradox comes from the Greek paradoxos: 'contrary to common opinion' (para meaning 'counter' and doxa 'opinion').

care quality and safety (Pellerin, 2008; Saintoyant et al., 2012). In other words, effective paradox management results in an improvement to practices – seeking to prevent future medical errors – and reflects a positive way of overcoming the paradox. The creative virtues of tension exceed its harmful effects for the organization. Furthermore, the organization demonstrates that it is able to understand the problem ‘from both sides’ (Bernard-Weil, 2003, p. 32) by strengthening itself both in terms of internal learning and external protections. The initial problem is, thus, reframed (Giordano, 2003; Jarzabkowski & Lê, 2017; Lewis, 2000), with learning now considered as a source of protection (by reducing the legal risks related to the medical errors that occurred as well as reoccurrences of the AE) in a logic of paradox transcendence (Lewis, 2000). Ultimately, in this article, we propose defining the concept of effective management as a reframing of the paradox that results in individuals being driven to action (e.g., through the implementation of new management tools), which improves the organization’s practices and encourages overcoming conflicts between varying logics, the effects of which are not necessarily immediate.

The role and limits of management tools in effective paradox management

Furthermore, our article sheds light on the operationalization of such a reframing in a hospital. First, through the many examples such as the no-punishment charter, the error reporting software, the decision-making tree that seeks to distinguish an error from an offence, the best practice guide for announcing damages, and the various training courses offered, we confirm the importance of implementing management tools in regulating organizational paradoxes (Grimand et al., 2018).

In this respect, our research underscores the importance of their level of detail in defining the limiting conditions under Waldman et al. (2019). The management tools analyzed go as far as including individual micro-interactions, which end up being formalized in the care units (e.g., excluding second-victim professionals from the announcement through the best practice guide, helping healthcare executives categorize medical errors with the decision-making tree, anonymizing the parts of the file that will be under discussion during MMRs). The management tools’ extremely strict formalization suggests that management’s deliberate strategy of reframing the medical error – which seeks to create an atmosphere of psychological safety (Gronewold et al., 2013) – is inseparable from the desire to control the uncertainty that comes from managing AEs, which are considered potentially threatening, as much as possible. Of course, this approach reduces the degree of individual freedom (Dittrich et al., 2006), but ultimately helps to reconcile internal psychological safety and external legal security.

Thus, management tools appear to be a way to fashion and manage individual practices in the face of the paradox. While this rationalist view of management tools, seen as vectors of behavioral control, has sometimes been criticized (Grimand et al., 2018), it helps to better understand why individuals act as they do when faced with a paradox, which is a point often ignored in the literature (Putnam et al., 2016). In this case, to use the words of Grimand et al. (2018), management tools can be both enabling (by guiding behavior in a situation that is hard to manage) and constraining (by formalizing practices to be respected through the creation of a reference framework).

Nevertheless, it seems that management tools do not constitute performative statements in terms of managing the internal learning–external protection paradox. In particular, drafting and distributing a no-punishment charter does not result in the *de facto* emergence of a psychologically reassuring work environment (Gronewold et al., 2013). In fact, there is high variance in the response to the paradox from one care unit to another. This is explained by different mindsets toward the paradox (Miron-Spektor et al., 2018) depending on the unit heads. Given this, psychological safety appears to be a local concept that depends heavily on the management style. In practice, management tools such as the no-punishment charter prove to be of little contribution to structuring the thinking of medical professionals and non-carers when compared to the role played by direct management. Echoing the idea according to which organizational paradoxes are related to the idea that individuals can have of given situation (Grimand et al., 2014; Perret & Josserand, 2003), here we can see that certain healthcare executives can see a dilemma – and not a paradox – (Miron-Spektor et al., 2018) in the learning-protection tension by opposing the two issues, instead of finding a way to reconcile the internal and external perspectives. When necessary, they will choose to protect the unit and the employee(s) concerned, which harms the learning process. In this regard, effective paradox management is inseparable from a change in how healthcare executives interpret medical errors when they occur, which we could call a change in ‘mindset’ toward paradox.

Ultimately, it seems that the framing of the medical error is influenced both by the management tools and by management. In practice, these two forces can work together (e.g., healthcare executives encouraging error reporting via the dedicated software) as much as work against each other (e.g., healthcare executives who do not distribute the no-punishment charter in their units), making the response to the paradox either effective or ineffective. In this sense, our research shows how the individual and organizational levels of analysis in paradox management combine, where the literature is often criticized for a lack of an integrative perspective (Andriopoulos & Gotsi, 2017; Putnam et al., 2016; Schad et al., 2016).

Highlighting the delayed effects of effective paradox management

Finally, our approach seeks to be more operational by taking the time factor into account in the analysis. Indeed, most works published until now treat paradoxical organizational phenomena as static and fixed (Andriopoulos & Gotsi, 2017; Schad et al., 2016; Waldman et al., 2019). Another contribution of this article is to use a dynamic perspective. Our research revealed four empirical key sequences during which the hospital manages the internal learning–external protection paradox: error reporting, the announcement of damages, feedback, and legal action. Contrary to what is suggested in the literature (Jarzabkowski & Lê, 2017; Putnam et al., 2016; Schad et al., 2016), we demonstrate that paradox management can very well be a discontinuous process through the management of emotionally charged events.

Our article is also original in another way. In the literature, the effects of the responses to paradoxes are often felt immediately. This is the case, for example, during the sparring sessions of Lüscher and Lewis (2008). Here, we establish that the phenomenon of transcendence can sometimes materialize over time. Indeed, the four methods of transcendence observed had positive effects that were delayed over time (e.g., by reducing the risk of litigation), and not just at the same time as when the participants were confronted with the paradoxical situation. The result is that effective paradox management can only be understood over time. In other words, if a paradox as such can be latent within an organization (Schad et al., 2016; Smith & Lewis, 2011), our research establishes that the positive effects of paradox management can also be latent for a certain time and only manifest during specific situations (e.g., trials).

This transcendence with a delayed effect must not be confused with temporal separation (Poole & Van de Ven, 1989), which consists in prioritizing such an element of tension (to the detriment of the other) depending on the period. Thus, in the case of temporal separation, the times are distinct and perfectly separate, whereas they interact in the case of a transcendence with a delayed effect (resolving one element of the paradox allows the other aspect to be resolved).

Conclusion

Our article helps to understand how a hospital confronted with a medical error, by alternating mechanisms of separation and transcendence structured around four key moments (reporting, the announcement, feedback, and litigation), can overcome the internal learning–external protection paradox over time. We also offer an operational understanding of paradox theory.

This research could be usefully extended by including a contextual factor, which was not considered in this study, that is,

the weight of national culture. We could imagine that the attitude of French hospitals toward AEs is influenced by how error is generally considered as negative in France. On this point, we must keep in mind that tolerance of error has become a significant national issue in our country since the 2018 adoption of the law for a state that builds a society of trust, which seeks to modernize public services. At this stage, it is just a tolerance from the tax administration toward good-faith errors by taxpayers. However, the strong influence of prevailing public opinion (*doxa*) on the hospital staff's behavior in case of medical error shows the benefit that would come from raising awareness among the public of the culture of safety in hospitals to change how they see AEs and open the way for an external tolerance of error.

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Appendices