
ANESTHESIA SAFETY NETWORK

QUARTERLY PERIOPERATIVE INCIDENTS REPORT
Newsletter #009 - september 2018



**TOWARD EXCELLENCE
IN HEALTHCARE**



ANESTHESIA SAFETY NETWORK



INTRODUCTION

Anesthesia Safety Network
Newsletter #009 - september 2018

Hello,

Why participate in a feedback process?

Incident Reporting Systems (IRS) are used to analyse and share different kinds of hazardous events and sometimes successes to continuously improve quality. The search for the root causes of an incident using, for example, the ALARM process recommended by the HAS (London protocol I recommendations) is essential. Another interest is to highlight and share the positive points and areas for improvement. To achieve this goal, it requires humility.

Beyond incidents, for Peter Pronovost, near-misses or near-misses or «lucky break» should be considered as invitations to improve and not as proof that barriers are effective to prevent disasters. It is therefore essential to declare them because they are a source of teaching and reflection on human errors. Success stories should also be reported ².

NOT REPORTING AN EVENT
 MEANS DEPRIVING OTHER
 CAREGIVERS OF THIS EXPERIENCE AND THE RESULTING
 ANALYSIS. IT IS EXPOSING
 ANOTHER CAREGIVER AND
 PATIENT TO A SIMILAR EVENT
 THAT COULD LEAD
 TO DAMAGE.

The health system is becoming more and more complex. This complexity is due to the interaction between different actors - including patients and patient's relatives - towards a clearly defined objective. For example, the discharge from hospital of an elderly patient after femoral neck surgery is an objective that cannot be achieved by a single individual.

Many events occur during the care journey (breakdown, errors, procedural deviation...) without leading to an accident thanks to the recovery process. In other words, the accident is the visible part when all control, recovery and mitigation mechanisms have failed³.

Technological advances, standardisation of procedures, accumulation of rules and recommendations alone cannot guarantee the reliability claimed by patients and caregivers. Each new component of the system adds new hazards.

In this newsletter, you will find various reported cases where medical devices have not been able to act as a recovery system or have even contributed to an event. These devices are all sophisticated and reliable. They are designed by highly qualified engineers who sometimes are not aware of the gap between the work imagined or prescribed and the work as it is done or reported (Steven Shorrock).

Our constant vigilance is crucial for safer anaesthesia practice otherwise it can lead to a loss of situational awareness (arterial oxygen desaturation, multiple and monotonous alarm signals).

We're very pleased that Steven Shorrock has accepted to share with us his expertise and vision on man-machine interface issues in this editorial. He is the editor-in-chief of Hindsight⁴ (a review of the European organisation Eurocontrol, aimed at air traffic controllers and pilots, on topics such as skills, cooperation between different units, etc.).

Thanks must go to "The Human Tree group" and especially Florence-Marie Jégoux for connecting and her active participation in the review of this newsletter.

If you like this newsletter and want to participate, don't hesitate to share it on social networks or anywhere else!

Enjoy it

Frédéric MARTIN

EDITORIAL

Dr Steven Shorrock works in the EUROCONTROL Network Manager Safety Unit, where he leads the European safety culture programme and is Editor in Chief of HindSight. He is a Chartered Psychologist and Chartered Ergonomist & Human Factors Specialist with experience in various safety-critical industries. Steven is Adjunct Associate Professor at The University of the Sunshine Coast, Centre for Human Factors & Sociotechnical Systems. He recently co-edited *Human Factors & Ergonomics in Practice*⁵.



In transportation, much effort goes into the design of equipment. Not just individual items, but the set-up as a whole. In a cockpit or control room, for instance, there has to be consistency in how items of equipment work. Human factors/ergonomics principles, processes and methods are used as part of an iterative human-centred design process. An example is ISO 9241-210:2010 – Ergonomics of human-system interaction – Part 210: Human-centred design for interactive systems, which seeks iteratively to understand stakeholders and context, identify user needs, specify design requirements, produce prototypes, and test them. Sadly, this is not true for healthcare, which is blighted by bad design as well as inconsistent design. Those on the front line of healthcare have to sort out this design mess at the sharp end.

When accidents happen, they are often (and unhelpfully) branded 'human error'. In context, we can see that they often stem from differences between work-as-imagined and work-as-done, especially relating to design and management. Differences between design and operational contexts and activities contribute to gaps between how designers intend and imagine that an artefact or technology be perceived, understood and used, and how users actually perceive, understand and use the artefact or technology. In design, work-as-imagined tends to be incorrect and incomplete with reference to work-as-done, especially for complex work. In operation, users' mental models of technology tend to be incorrect and incomplete, especially for very complicated technology. Even seemingly small gaps may have very large implications for operation, including interaction patterns not-as-designed and compensatory trade-offs and compromises in operation. This is illustrated in Figure 1, which hopefully serves as a tool for thinking and talking about the design of equipment in healthcare.

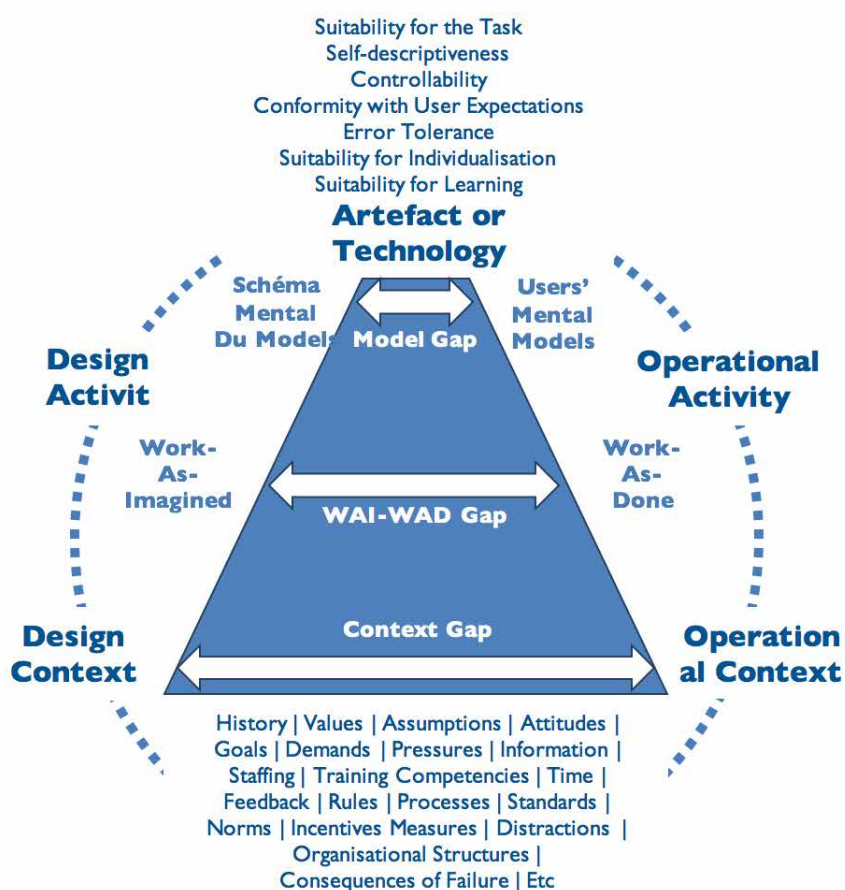
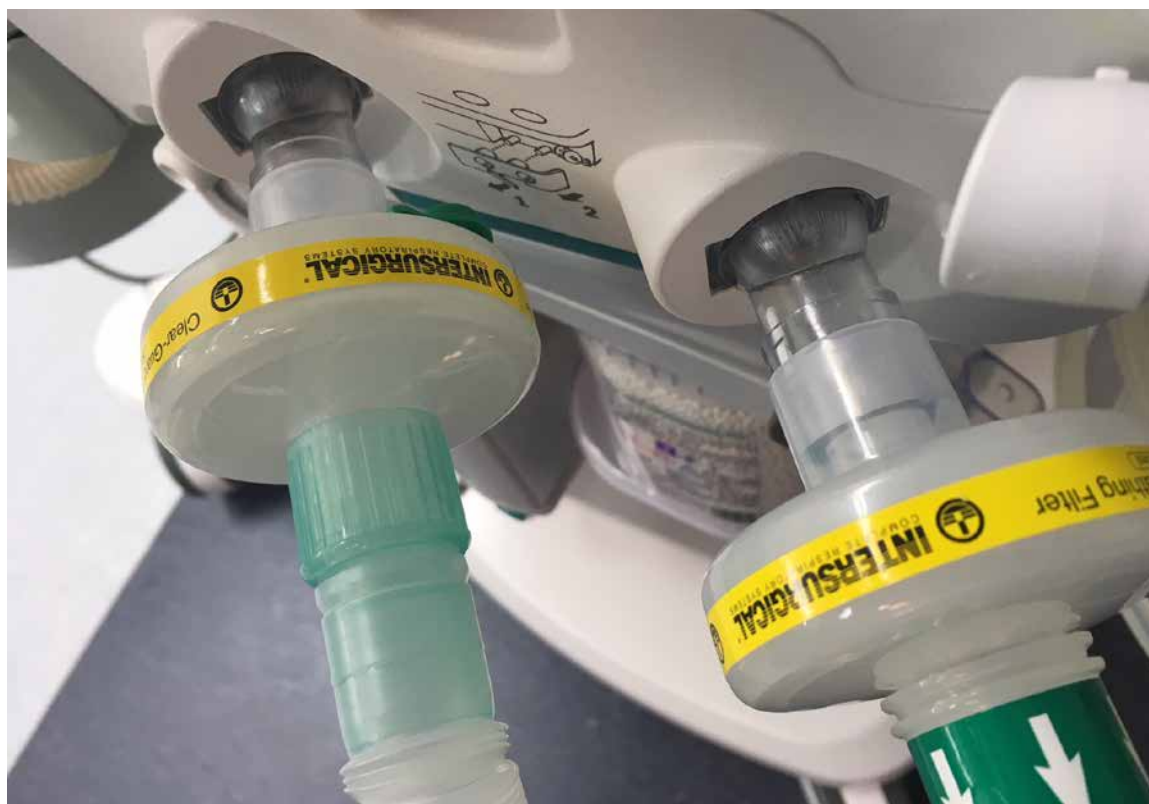


Figure 1: Design-operation gaps with regard to artefacts and technologies
 (From Shorrock, S. (2017). A Plot Twist at The Oscars. HindSight Magazine Issue 25. Brussels: EUROCONTROL).



ACUTE HYPOXEMIA DURING ANESTHESIA INDUCTION

A young patient had to have an inguinal hernia operation under general anaesthesia. The interim CRNA in the operating room performs anaesthetic induction without problems and a normal capnography signal. Tracheal intubation is carried out without any problems but very quickly an arterial oxygen desaturation occurred. The room was small and cluttered with equipment for a laparoscopy. She called for help early and set up of FiO_2 to 1.0. When the anaesthetist arrived, he immediately checked the tracheal intubation by laryngoscopy, confirming its correct position. The oxygen saturation was continuing to go down faster despite the use of manual ventilation through the machine breathing circuit. He thought that it could be due to a cuff tracheal tube default, so he changed it using an Eschmann introducer. No anomaly was found but while he checked the tracheal tube placed on the anaesthesia machine he discovered that there was a disconnection of the inspiratory circuit (explaining the persistence at the beginning of a capnography but with a probably FiO_2 close to 21%). After this problem was fixed, the hypoxemia disappeared very quickly.

Positive points: *call for help /debriefing*

Ways for improvement: *consciousness of the difficulty of an analysis in a stressful situation / cognitive assistance / use of the accessory circuit or emergency oxygen tank bypassing machine failure allowing stressless analysis / cognitive trap due to situation point leading to the maintenance of the fixing error / Consider the safety issue of setting correctly the FiO_2 alarm / luer-lock respiratory circuit*

KEY WORDS: hypoxia / stress / cognitive aid





LOSS OF CAPNOGRAPHY IN SITTING POSITION

It was the beginning of afternoon and I'd been on duty for 7 hours without eating or drinking. A patient was operated on, in a seated position under general anaesthesia for a shoulder surgery. The anaesthesia procedure was simple without any difficulty. After the orotracheal intubation, the surgeon arrived and began to «play» with the table. He asked for the anaesthesia machine to be moved, which was initially on the right side of the patient. The anaesthesia machine brake was disengaged and then reset. Once everything was installed, the operating nurse started the skin detersion and the assistant prepared the equipment. I noticed that the capnography curve had disappeared. Maybe it was due to a sudden drop-in blood pressure after putting the patient in a seated position. I injected intravenous ephedrine (9 mg). The measurement of blood pressure was 110/70 mm Hg and then increased to 160/90 mm Hg after IV ephedrine bolus. The airway pressure curve was normal as pulmonary auscultation. I looked for a sealing of the capnography line and read the message on anaesthesia station monitor «sample line occlusion». As I walked around the anaesthesia machine, I noticed that one of the many power cables had bent the capnography line at the D-fend connection. After moving the cables, everything returned to normal.

Positive points : *no crisis code allowing analytical reasoning*

Ways for improvement : *"silent" anaesthesia station alarm - simple red text on a black background / OR ergonomics / major information should not be lost so stupidly / place «sensitive» measuring devices on the front of the machine.*

KEY WORDS: ergonomics / human factor / alarm

CAPNOGRAPHY DYSFONCTION

This case took place at 6:00 pm on a weekend shift. I had begun my work shift at 8:00 am and I was called to attend a hospitalised patient who had severe abdominal pain three days after a hemicolectomy under laparoscopy. The woman was in extreme pain with marbling and moderate dyspnoea. I called her surgeon to perform an urgent surgery and decided to admit this patient in the PACU for active fluid therapy and pain treatment whilst waiting for the team (crystalloid filling and 2nd large-calibre venous catheter).

I turned on the anaesthesia machine and selected the self-test while I checked the equipment and prepared anaesthesia drugs with the nurse. Before the patient was admitted I had planned with the CRNA what we should have to perform in case of aspiration or difficult intubation or critical arterial hypotension. Five minutes later the patient was admitted into the OR and was quickly put to sleep on her bed (pain ++++). The CRNA placed the oxygen mask on the patient face with FiO2 1.0. The crush induction was simple, and no incident was reported. I started the mechanical ventilation and looked at the monitor for checking the capnography curve. No curve showed but an error message indicating dysfunction of the device appeared. I quickly checked the connection of the capnography module and solved the problem. I was frustrated thinking of what could have happened if there was difficult airway management.

Positive points : *good outcome*

Ways for improvement : *"green light" authorising induction after recording FeCO2 curve / cross control of capnography functionality or any other vital signals monitored before induction.*

KEY WORDS: crush induction / emergency / capnography



FORCING FUNCTION AND ELECTRIC SCALPEL

In the middle of the morning, a young child was operated on for a circumcision under general anaesthesia. Once the child was asleep, the operating assistant asked to connect the electric scalpel (bipolar scalpel usually used). The plugs are supposed to be far enough apart to avoid mismatching between the monopolar and the bipolar scalpel. A dispersive pad was placed on the child's body. The interim nurse wasn't familiar with this electrosurgery device. He decided to insert tightly the bipolar scalpel on a monopolar female plug. He finally succeeded. No hazardous event occurred but at the end of the procedure the surgical team noticed the error. The interim nurse wasn't aware for the need of a specific adaptor. He did not dare to admit his ignorance and didn't speak up. He preferred to «take a chance». No harm was reported.

Positive points : *good outcome*

Ways for improvement: *acknowledge your ignorance / promote goodwill and speak up culture / briefing at the beginning of the shift (especially when interim workers are on duty with open-ended questions) / monitor interim workers or newcomers / create a climate of trust for individual contractors to express their doubts.*

KEY WORDS: *electric scalpel / burn / ignorance*

When man is at the service of machines

Advances in technology have made life easier for front-line operators, while increasing the level of safety for those who trust them. In aviation for example, the autopilot increases the availability of pilots, and recent systems prevent potential collisions with other aircrafts or with terrain. In healthcare, the respirator controls the volume and pressure of gas administered to the patient and electrosurgical units prevent significant bleeding.

While it is undeniable that these technological outbreaks are positive, it is important to keep in mind that automation also has some dangers. Here are a few.

First of all, there are few industries in which users are systematically associated with the development of new technologies. Who better than the operators can help define their own needs? Too often, development engineers make the decisions, and users simply have to adapt their work habits to the new equipment.

Furthermore, due to competition, different manufacturers of the same product do not agree, in order to harmonise the standards and ergonomics of the equipment. In some institutions, several models coexist, and the use of each is different. Some switches and dials are even reversed from one brand to another, which represents a risk that the legislator seems to tolerate.

In order not to appear silly in the eyes of our colleagues, we are often reluctant to share our doubt or expose our ignorance about the operation of a piece of equipment. Remember the story of the nurse who had cut off the general power supply to the operating room when attempting to open the door of the room, door that then had to be forced open because it had become stuck due to the power loss.

Some healthcare facilities make use of simulation when new units are built. Frontline users are involved in the process, alongside engineers and architects, to develop the optimal working tool.

For a practical case, please refer to the work of Dr. Andrew Petrosniak from St. Michael's Hospital in Toronto. Finally, technology today is extremely reliable, failures are rare, and as a consequence operators tend to develop blind trust in automation. For example, the flight envelope in which the autopilot of a modern aircraft is able to fly it is very wide. But in some cases, the pilot must take over controls because of a failure or due to exceptional conditions. It is thus necessary that he has to maintain satisfactory manual flying skills. Are we all able to compensate for any malfunction of an automatic system?

Good practices:

- If in doubt about the functioning of a piece of equipment, I rely on my colleagues.
- Before operating a switch or dial, I take a moment to check that it's the right one.
- After operating a switch or dial, I check that my action has had the desired effect.
- I maintain a sufficient level of proficiency by sometimes working «the old way».

Written by Guillaume Tirtiaux, Airline Pilot, Training Director at REPORT'in



WHO TURNED OFF THE LIGHT ?

This case took place during the afternoon while I was working with a urologist. The first patient was a 5-year-old boy who needed a circumcision. The usual team was present except for an interim nurse (1st shift in our hospital). The child's anaesthetic induction through a facial mask was performed with Sevoflurane gas inhalation. The venous catheter was inserted and then a laryngeal mask was introduced. His equipment was available on the table and he asked to proceed faster and to turn on the shadowless lamp. There were two in this room. The stressed nurse looked for the switches and believed she recognised them. She pushed on two big red buttons. Immediately, the power supply to the room was cut off and the room was plunged into complete darkness. The vital signs monitor was immediately shut down but not the anaesthesia station as it was using battery power. That was a nightmare! I heard the child breathe through the laryngeal mask without any information about his oxygenation. After a few seconds that seemed endless, the light was restored. The procedure was completed without any difficulties.

Positive points : *organisation in an unusual situation without panic*

Ways for improvement: *acknowledge your ignorance / promote speak up culture / briefing at the beginning of the shift (especially when interim workers are on duty with open questions) / check the effectiveness of the monitoring device battery and the anaesthesia station at the beginning of your workshift, removing electrical cable from the plug / report this event to your incident reporting system and propose corrective actions / room ergonomics with clear identification of the vital switches*

KEY WORDS: *power failure / ergonomics / staff management*

PHOTO AND IDENTITY MONITORING

We were at the end of the day and it was between 3pm and 7pm. I was working with a surgeon that I didn't like and I was tired. The next patient who was 83 years old had come down. He had to be operated on for a trans ureteral prostatic resection. He had a significant cardiovascular history. I checked the patient's documents and the blood test (IAR and blood group card). There was a photo on the blood group card. I thought I had validated it carefully. I realised after opening the card that it was his photo but not his details. My brain didn't want to believe it. There had been probably a mistake made when the group card was given out at the laboratory. A new blood group card was urgently requested. Thirty-five minutes later the patient was admitted into the OR with the right blood group card. The surgery was longer than expected and a major blood loss occurred (minus 4 g/dl Hb). The patient received a blood transfusion the next day for persistent bladder bleeding (Hb at 9 g/dl).

Positive points : *strict control of the patient's identity*

Ways for improvement: *document control in preoperative anaesthesia consultation / patient education to raise awareness of document self-control / ineffective control at the out-of-hospital laboratory / remove the photo frame from group cards / suppression of blood group cards⁶.*

KEY WORDS: *identity vigilance / transfusion / photography*



REMOVE YOUR MITTENS IN THE OPERATING ROOM !

In the morning a 6-year-old child was operated on by an ENT surgeon. The planned surgery was a tonsillectomy. This child didn't have any relevant past medical history except snoring and significant airway obstruction. The induction was performed with a mask and the insertion of a venous catheter. Everything was under control, so I decided to restart blood pressure measurement while I was activating mechanical ventilation. In the rush, my finger pressed the switch thus turning off the monitoring instead of pushing on the green button. Immediately I turned it on again and after a few long seconds the vital parameters appeared at last, except for capnography (message: «parameter setting in progress»). It took almost 3 minutes to recover to a normal state. No consequences.

Positive points : no impact on the patient

Ways for improvement: set major switch in safe location / use confirmation message to be validated before final switch-off of the devices.

KEY WORDS: power failure / stress / ergonomy



DRUG ERROR

During this particular morning we had to take care of a patient who required an oro-tracheal intubation due to active gastro-oesophageal reflux. The CRNA prepared a syringe of rocuronium bromide correctly identified by a red label mentioning «Rocuronium». We carried out the prejob-briefing (which means the anaesthetist and the CRNA). Finally, we chose to intubate with succinylcholine (Celocurine) so the CRNA prepared another syringe while the anaesthetist was anticipating post-operative prescriptions on the room computer. The CRNA told him: «I put the red label on the syringe». The medical doctor proceeded with the IV induction sequence administrating fentanyl, propofol, then took a 5 ml syringe labelled red from the tray. In this ward, celocurine is usually diluted in a 10 ml syringe. The anaesthetist noticed and suspected that the CRNA had diluted succinylcholine to 20 mg/ml. Consequently, the entire dose of rocuronium was injected without checking what was written on the label. The anaesthetist told the CRNA «did you dilute celocurine in 5 ml?». The error was discovered but fortunately this roughly corresponded to the injection of a dose of 1mg/kg of rocuronium allowing fast acceptable intubation conditions (normally 1.2 mg/kg). In this context, the anaesthetist decided to perform the intubation. There was no sugammadex available in the room to antagonise curarisation, in case of an impossible intubation.

Positive points : *identification of the problem*

Ways for improvement: *short briefing immediately before induction (during pre-oxygenation for example) with validation of the anaesthetic protocol and selected drugs / doubt must be explicitly communicated / crosscheck of prepared drugs before injection.*

KEY WORDS: *error / cross-checking / communication*

DISAGREEMENT ON PROCEDURE AND HIERARCHICAL GRADIENT

An elderly patient was brought to the emergency room by the fire brigade. She had hyperthermia associated with a poor general condition. We were in the middle of night shift. After a short evaluation, we determined she had hyperthermia with a temperature of 40°C, associated with severe dyspnoea, mottling and altered consciousness (Glasgow score assessed at 9). The patient was immediately admitted into the intensive care room of the ward and treatment was provided. The doctor decided to intubate the patient because he was concerned about the expected outcome. The nurse suggested supplying a high concentration of oxygen on the patient's face during the 2-3 minutes before anaesthesia. The senior ignored twice this suggestion and asked for some anaesthesia drugs to be prepared quickly (syringe of etomidate (hypnotic agent) and celocurine (depolarizing curare of rapid action)). He administered the drugs and used a normal laryngoscope. He was surprised to be faced with a difficult intubation. The patient was in apnoea. He tried one more time. Then he used a video laryngoscope and succeeded in tracheal intubation. Nevertheless, deep arterial desaturation occurred during this endless period (SaO₂ < 35%). During the entire procedure the doctor refused to interrupt it and didn't listen to the team denying manual ventilation. The patient was then transferred to the intensive care unit.

Positive points : *verbalisation of discomfort / good situation awareness of the nurse*

Ways for improvement: *Consider all available information or suggestion even from followers / Avoid conflicts during crisis code / significant events must be reported as major adverse events / team debriefing / follow the procedure / fixation error*

KEY WORDS: *anaesthesia / hypoxia / emergency*



INAPPROPRIATE BEHAVIOUR IN THE OPERATING ROOM

I was working during my first shift in this hospital and I encountered a difficulty during the anaesthetic induction (several months ago). The problem was solved but this had caused a slight delay in the surgical program and acute stress for the surgeon. During the rest of the day, the surgeon regularly reviewed elements of anaesthetic management. I felt like he was spying on me and he was sceptical about my skills. It had disturbed me and made me feel like I was being evaluated all the time.

Several months later, I worked with him again. The first patient of the day had no difficult tracheal intubation criteria. When I tried to proceed with the intubation he had Cormack III. I asked for the Eschmann introducer to be brought and tried a second time to intubate him. I failed! I called the anaesthetist and he was there in a few seconds. He intubated the patient using a video laryngoscope. He also validated the difficulty to have easy access to the airway.

When the surgeon arrived, he said «Did you have any problems with the induction?». I answered that the patient was difficult to intubate. Everything was fine and under control. He told me «You often seem to have many problems, don't you?»

The sentence itself was not relevant. I knew it, but it still unsettles me the same feelings of stress and judgment from the first day. I didn't have to blame myself (call for help early, procedure respected in this context). The rest of the day was very complicated, considering the communication and the lack of goodwill. All my decisions were questioned explicitly or implicitly, generating intense frustration and a sense of failure.

Positive points: *keep calm / no verbal overbidding*

Ways for improvement: *team debriefing with anaesthetist in charge and surgical team / awareness of the impact of the aggressive attitude on the cognitive skills of the interveners as well as the quality and safety of care / reporting of adverse events*

KEY WORDS: *relationship / stress / leadership*

Inappropriate communications at work...

Researchers have cleverly managed to demonstrate objectively what those little sentences that upset us all can do, to the person who is subjected to them, to the people who witness them, and to patient safety. Rhona Flin gives us a very good example of this in the latest issue of Hindsight: "Social psychologists, Porath and Erez looked at the incidence of rudeness between employees in the workplace (...). They began to examine the impact of rudeness on cognitive skills such as memory, by running psychological experiments with students (...). The results showed that the students who had been the victims of rudeness performed worse on the tests than those in the control group (...) students who simply witnessed a rude exchange between a staff member and a student also showed lower cognitive performance (...). So there is evidence that behaviours such as rudeness, which can be committed thoughtlessly as well as deliberately, can have an impact on critical cognitive tasks and thus on safety" (Rhona Flin, "The dark side", Hindsight 27, August 2018).

These destructive little remarks inflame our emotions: irritation, frustration... These emotions monopolise a large part of our mental resources, of our available brain, and so can easily cause errors, memory lapses, shortcuts. In the short term, they therefore have not insignificant consequences for patient safety.

In the long term, they are also harmful: they contribute to a souring of the working atmosphere, to distrust between colleagues and at worst, to withholding information in order to harm another... Of course, in this kind of working atmosphere, it is difficult to have all our mental resources dedicated to patients and their safety.

Yet, just as we don't have the right to abuse patients, whatever our position, nor should we abuse our co-workers. Intimidating behaviours should belong to the past: "The Joint Commission, accreditation authority for more than twenty thousand health organisations in the US, published in 2008 an alert on intimidating and disruptive behaviours: "Such behaviors include reluctance or refusal to answer questions, return phone calls or respond to messages; condescending language or voice intonation; and impatience with questions. Overt and passive behaviors undermine team effectiveness and can compromise the safety of patients. All intimidating and disruptive behaviors are unprofessional and should not be tolerated." " (Christian Morel, "Absurd decisions 3, the hell of rules and relationship traps", 2018 / The Joint Commission, "Behaviors that undermine a culture of safety", Sentinel Event Alert, 9 July 2008, n°40).

Patient safety cannot be assured, without everyone's good manners and interpersonal skills. Inappropriate utterances, rude, intimidating or disruptive behaviours in a health service are harmful not only for the victims, but also for the witnesses, and ultimately, the patients.

So, long live politeness, consideration and attention to others!

Florence-Marie Jégoux
Specialist in Organisational and Human Factors
Former nurse, private pilot and air traffic controller
www.developpement-systemique-humain.com

TAKE HOME MESSAGES

- **If I have any doubts about how a piece of equipment works, I call on my team.**
- **Before activating a switch or a rotator, I take a moment to check that it is the right one.**
- **After activating a switch or a rotator, I check that my action has had the desired effect.**
- **I maintain a sufficient level of competence by sometimes working « the old-fashioned way».**
- **I put myself in cognitive safety to analyse the situation (stress reduction, bias research,...).**

BIBLIOGRAPHY

- (1) Taylor-Adams S, Vincent C: Systems analysis of clinical incidents: the London protocol. Clin Risk 2004; 10:211-220
- (2) Hollnagel E: Safety-I and Safety-II: The Past and Future of Safety Management, New edition. Farnham, Surrey, UK England ; Burlington, VT, USA, CRC Press, 2014
- (3) Pariès J, Rome F, Pibarot M-L, Tassaux D: Événements indésirables en médecine
- (4) HindSight - EUROCONTROL - SKYbrary Aviation Safety at <https://www.skybrary.aero/index.php/HindSight_-_EUROCONTROL>
- (5) Shorrock S, Williams C: Human Factors and Ergonomics in Practice: Improving System Performance and Human Well-Being in the Real World, Reprint. Boca Raton, CRC Press, 2016
- (6) Arrêté du 15 mai 2018 fixant les conditions de réalisation des examens de biologie médicale d'immuno-hématologie érythrocytaire.
- (7) Morel C: Les décisions absurdes III: L'enfer des règles - Les pièges relationnels. Gallimard, 2018
- (8) Sentinel Event Alert, Issue 40: Behaviors that undermine a culture of safety at <http://www.jointcommission.org/sentinel_event_alert_issue_40_behaviors_that_undermine_a_culture_of_safety/>

PRESENTATION OF THE PLATFORM IN THE FOLLOWING UPCOMING EVENTS:

Congress of the FAQSS (French Federation of Associations «Quality and Safety in Health») - October 4, 2018 - Paris - France - Presentation of the platform http://www.faqss.eu/Edition-2018_93.html

Congress of SOTUGERES (Société Tunisienne de Gestion des risques en établissement de santé) - October 19-20, 2018 - Tunis - Tunisia
<http://sotugeres.org/quatrieme-edition-des-joqssep/> - Intervention on authoritarian leadership - RMM / CREX workshop

APHP Hospital Group Quality and Risk Management Seminar (Saint Antoine - Rothschild - Tenon - Trousseau) - November 30, 2018 - Paris - Presentation of the platform and implementation of risk management tools through gamification.

WEARe Congress - The future of intensive care anaesthesia organised by AJAR, SNJAR and the young SFAR group - December 7-8, 2018 - Paris - France - Co-chair of a session about stupid errors and how to avoid them ? with Guillaume Tirtiaux (REPORT'in - Airline pilot) - <https://www.weare2018.fr/>

7th Annual World Patient Safety, Science & Technology Summit co-organized with ESA and ASA - January 18-19, 2019 - Huntington Beach - California - USA - <https://patientsafetymovement.org/events/summit/world-patient-safety-science-and-technology-summit-2019/#overview>