
ANESTHESIA SAFETY NETWORK

QUARTERLY PERIOPERATIVE INCIDENTS REPORT
Newsletter #007 - march 2018



**TOWARD EXCELLENCE
IN HEALTHCARE**

INTRODUCTION

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Here's the first 2018 newsletter! The network is still growing and the 1200-subscribers step has been achieved. There're more than 2000 reports but unfortunately many of them are incomplete due to the lack of important information. The quality of the report and self-debriefing are the cornerstones of Patient Safety improvement.

The Anesthesia Safety Network model is changing from a pipeline model with data collection sent by subscribers to a platform model with more involvement of subscribers, interactivity between stakeholders and also recognition.

Using this new network, you'll be able to share and recommend to other members some interesting information, tools or outstanding websites or articles. Whatever your professional status is, your expertise is unique and has to be spread.



- ▶ We wish to upgrade our platform in June 2018 with the 2.0 version. The previous incident reporting system will still be opened. Furthermore, the quarterly newsletters will be published without any access code. Some of them will focus on specific topics such as communication, handoffs, and situation awareness.

Recently, a study has been published in JAMA¹, studying the association between "complete handovers" among anesthesiologists and deleterious patient outcomes. The limiting factor for high reliability is the human, so we must standardise and also train stakeholders for improving safety during handoffs². Communication is one of the milestones. The loss of important information on which to base patient care decisions is critical. Many factors can lead to ineffective communication, such as misleading information, lack of time, poor timing distractions and inadequate feedback between sender and receiver³⁻⁵. The use of the WHO surgical checklist has demonstrated its reliability to reduce postoperative morbidity by strengthening communication in the operating room⁶.

Once again, I'd like to thank for their commitment and help in this project Claude Valot, Sébastien Follet and Ludovic Mieusset (THE HUMAN TREE) and last but not least Guillaume Tirtiaux (REPORT'in). Thanks a lot to all the subscribers for their reports.

If you like this concept and this newsletter, don't hesitate to share it using social networks or any other ways!

Kind regards

Frédéric MARTIN

« WHATEVER YOUR PROFESSIONAL
STATUS IS, YOUR EXPERTISE IS
UNIQUE AND HAS TO BE SPREAD ! »



EDITORIAL

Healthcare givers have to deal with many challenges during their work shifts. All these constraints can lead to poor quality and safety for patients. The last safety gates are, in any circumstances, the staff, their technical and non-technical skills. However, all these skills aren't highly reliable in every day work and in every situations. The decision making process can be ineffective due to distraction, stress, or routines. It will lead to a mismatch between the goal and reality. All these unintentional deviations can be defined as errors, in terms of human functioning.

Using this way of thinking, let's have a look at all these reports. Mechanisms involved in mistakes are astonishing:

- Someone is concerned about a procedure. The awareness is effective but immediately deleted and the action will continue.
- There's a doubt about some medical equipment: It doesn't matter, just proceed!
- An action is performed without planification or evaluation of consequences.
- The pressure to proceed leads to lapse of memory.
- The situation awareness (planification for example) has been switched off due to stress and distraction.
- A medical device is out-of-order but the previous user didn't care about consequences in the future.

The avoidance measures are as simple to set up than the mechanisms that produce these errors:

- To listen to people who speak up. Their advice is probably useful and you'll have to take it into account.
- Proceed with a time-out period to think and plan before action.
- If you're concerned about something, call for help with discussion before action that could lead to a harmful event.
- Self-confidence is important but sometimes needs contradiction to be safe.
- Checking critical items and safety procedures before beginning a case.



- ▶ Efficient teams use all these skills. Frequently, these points haven't been used in many sentinel events and teamwork hasn't been effective.

Have a look one more time at these reports. Try to find out errors and test the countermeasures. Is it difficult to implement?

If you're not convinced about these strategies because they represent a slowing process or an evaluation of your knowledge, don't be afraid. In fact, it's quite the opposite. Each procedure that increases patient safety underlines professional expertise. As nobody is 100% reliable in every circumstance and at any time, a good team will recover the little percentage that could lead to errors. Important side benefit: the implementation of these strategies reduces stress and improves teamwork.

Enjoy your reading and apply new strategies

Claude VALOT

Claude Valot is a Senior Human Factors Consultant who works for DEDALE company. He's a former researcher at IRBA (Institut de Recherche Biomédicale des Armées - France).

« AS NOBODY IS 100% RELIABLE IN EVERY
CIRCUMSTANCE AND AT ANY TIME, A GOOD TEAM WILL
RECOVER THE LITTLE PERCENTAGE THAT COULD
LEAD TO ERRORS »



AT RISK EXTUBATION IN PACU

I was on duty during a holiday. I was exhausted. At 7:00 pm I transferred a patient into the PACU. The patient had a severe appendicular abscess and was still intubated. The intubation was really difficult and needed the use of a videolaryngoscope with an Eschmann introducer. The myorelaxant pharmacological antagonisation was injected 15 minutes before the end of surgery and effective in the PACU. The PACU nurse was nervous and tired. She had a difficult relationship with me. When I arrived the patient was restless and agitated. The oxygen saturation was below 85 % but it was interpreted as a signal default due to his agitation. After the patient removed by himself the Guedel cannula, he bit the tracheal tube. This situation was stressful so I called for help and ordered to inject quickly an IV bolus of propofol for a safer extubation. While the nurse was preparing the propofol syringe she said: "Thank you! Now I'll have to stay later!". Hearing that, I became very upset. Finally, I decided to extubate the patient because IV sedation wasn't available. At this moment, the oxygen saturation was about 88 %. Despite the use of an oxygen mask during the next five minutes, the oxygen saturation remained below 90 %. Moreover an operating nurse and the surgeon assistant arrived in the PACU and began to talk loudly. I was really angry and frustrated but unable to speak up and asked for quiet. After several minutes, the situation improved and the patient was transferred back to his room.

Good points : anesthesiologist keep calm / awareness of the situation

Ways for improvement: team debriefing // sterile cockpit (avoid distraction and noise) // Reduce impact of environment on decision making process

KEY WORDS: extubation // distraction // hypoxia

What do the following situations have in common?

- a light-plane pilot who continues his flight despite the increasingly intense snow storm he gets into, threatening the plane's safety;
- a pedestrian who goes through a closed railway crossing because he sees his train on the opposite platform, ignoring that a train could possibly arrive on the other track;
- an obstetrician who persists in continuing a natural baby delivery even though the mother's and baby's parameters are worsening.

Apart from the hazard of these situations, they all illustrate the risks related to focusing on a goal regardless of the situation. These cases are not caused by externally-imposed objectives, but rather internal and individual ones. The light aircraft pilot is flying for tourism. Why continue the flight in such adverse weather, if it's not to impress a passenger or to reach a place to meet some friends? This pressure to join the destination, or «destinationitis», is self-imposed. This obsession with arriving at the destination despite any and all adversities makes us deaf and blind to all the alarms that indicate a decreasing safety level. «Parameters are bad... but no, it's okay, everything is gonna be fine... I'm gonna do it, I feel the baby is coming.» Every excuse is good to corroborate the strategy and continue towards the goal. This is a "headlong" rush. The pressure of getting to the destination incurs "tunnel effect", maximising the risks.

Nevertheless, these three dangerous, or even desperate, situations have all good endings. Why? Chance. By chance, the pilot had a moment of lucidity, and chose to turn back, just before getting irremediably lost. The pedestrian went through the railway crossing safely, as no train came down the other track. The doctor came back with more accurate situational awareness, thanks to a colleague being present who could, by chance, shake him up and still had time to perform a c-section. Even though we did not experience these situations first hand, they all happened in real life. They are lessons we use every day in our personal and professional lives as safety actors. This is why it is essential to share and support extensive experience feedback. This philosophy is crucial to improve risk awareness and prevention. When you have a chance like this, seize it!

Sébastien FOLLET & Ludovic MIEUSSET, Human Factor Facilitators





PRESSURED INSTALLATION OF A PATIENT

A patient was operated on with a laparoscopic promonto-fixation for a urogenital prolapsus. This procedure needed an important trendelenburg positioning. The patient was admitted to the OR by the surgeon and the anesthesiologist. The OR nurse was not ready and very busy. While the team was asking for the patient to lie down on the operating table, the surgeon assistant reported that the anti-slip equipment was missing. The anesthesiologist answered that it didn't matter: "don't worry, that's ok". Then he proceeded with the general anesthesia. The laparoscopic procedure began and the surgeon asked for the patient to be put in the trendelenburg position. Twenty minutes after the skin incision, surgical trocars were placed and suddenly the team discovered that the patient was slipping from the table (about 30 cm). Laparoscopic insufflation stopped and the trendelenburg position was changed. The OR team checked the patient's placement. After a short debriefing of the incident, these contributing factors were noted:

- Pressure to proceed
- Overwork of the OR nurse
- OR nurse didn't speak up
- Surgeon assistant reported the problem without any corrective actions
- Anesthesiologist was in a hurry
- Overconfidence of the anesthesiologist who didn't want to stop and think.

Good points : team debriefing

Ways for improvement: Every concern has to be heard // resist to pressure // installation with the whole team // subject placement = critical period

KEY WORDS: pressure to proceed // trendelenburg // positioning

Debrief

Before addressing the main topic, let us point out the fact that this team took the time to debrief the event. This excellent practice has two main virtues. Firstly, it allows all the people implied to express themselves and get rid of any feeling of frustration. Secondly, it allows everyone to learn, hence to act better in the future.

Hurry Up Syndrome

For an airline crew, the safety of the passengers is the top priority. For example, when approaching the destination, we sometimes have to resign ourselves not to land because the weather conditions are not suitable. It is a decision that is not easy to make. Indeed, it can be accompanied by a feeling of failure. The mission, that is to bring the passengers to where they have paid to get to, will not be fulfilled. In addition, it is a decision that often significantly complicates the rest of the day of the crew. But the only question that must guide us in this kind of situation is «What is the right decision to ensure the safety of the flight?»

The idea of departing on time is also one that influences our decisions. Whether for our own satisfaction, or for that of the airline or of the passengers, the «DO» target (Departure with zero minutes delay) sometimes tends to be too pushy in our minds. When faced with a last minute hazard, the temptation is great to think that «It will be OK» and ignore the obvious. We call this the «Hurry Up Syndrome».

We must be able to resist this temptation, resist internal and external pressures and say «Stop! What is the best decision for the safety of the flight ?»

When we are subject to the "Hurry Up Syndrome", we are victims of a kind of tunnel thinking. We focus our attention on the unique idea of departing on time. As a consequence, we tend to take shortcuts that consequences are minimised. « It will be OK». And we easily forget to perform some tasks, even the most routine ones.

As for any tunnel effect, it is very difficult to detect it for oneself. We must be able to rely on the team. This means that our colleagues must feel the freedom and even the duty to alert us, to say : «Stop! We need to take a step back and to recover our ability to ask ourselves the right questions.»

Remember that the briefing is a great way to invite all team members to speak up at any time should they feel the need and whatever the reason. For example, in order to warn us that the pressure put by colleagues is too large, or to warn us against a false good idea. To say « Stop!» so that everyone can come to their senses and focus on the right questions.»

Guillaume TIRTIAUX





IATROGENIC INTRAOPERATIVE HYPOTENSION

During a heart surgery case, the anesthesiologist asked the CRNA to move the norepinephrine syringe pump because the CEC technician needed a place in this area. A student decided to help the CRNA and removed the norepinephrine syringe from the pump. Immediately, the arterial blood pressure dropped down. Discovering the mistake, the CRNA was petrified. At the same time, the anesthesiologist arrived in the OR and yelled at the nurse. She kept calm and fixed the problem within the next few minutes.

Good points : *CRNA self-control*

Ways for improvement: *establish role clarity // team debriefing // communicate effectively without violence // OR ergonomics and organisation*

KEY WORDS: *hypotension // norepinephrine / syringe pump*

PATIENT IN A COMA AT THE END OF A NIGHT SHIFT

AT 6:00 am, I was called to help because a patient was unconscious in the otorhinolaryngology ward. When I arrived the patient was unconscious and had bradypnea and an oxygen saturation close to 82 %. The Glasgow Coma Score was 3 with myosis pupils. The blood pressure and heart rhythm were normal. The glycemia was normal too.

An oxygen mask was placed on the patient. According to the nurse no medication had been given during the night (no opioid prescription or other hypnotic drugs). I came back in the nurse office in order to call the family and transfer this patient in the intensive care unit. I discovered that a fentanyl patch prescription was written on the Velleda board for him. When I returned to the patient's room, the opioid patch was found and removed. Intravenous bolus of naloxone was injected and he regained consciousness and a normal oxygenation level. He was admitted into the PACU for IV continuous infusion of naloxone and vital monitoring.

The day before, a colleague had been called because the patient pain killer treatment was ineffective.

The anesthesiologist had forgotten to prescribe it. Furthermore, the handoff between nurses hadn't been complete due to a heavy workload.

Good points : *diagnosis*

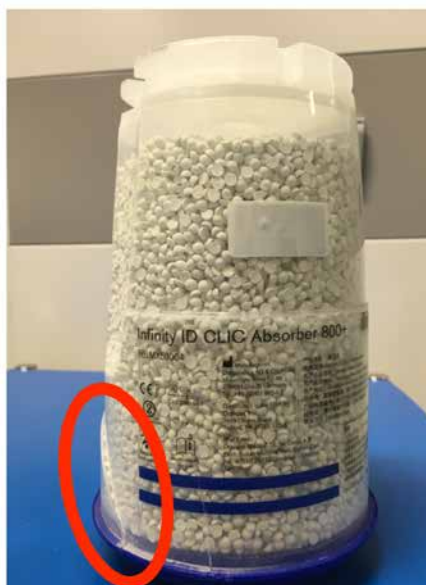
Ways for improvement: *opioid delivery without prescription // partial handoff // poor monitoring during nightshift*

KEY WORDS: *coma / opioid / prescription*

Vue avant



Vue arrière



UNEXPLAINED PEROPERATIVE HYPOXEMIA

I was working in the spine surgery operating room. I checked the different anesthesia devices in the OR including the anesthesia station. No dysfunction was reported. At the beginning of the afternoon, an ASA 3-patient needed a spine surgery due to a metastatic spine compression. This procedure wasn't unusual in our hospital. No abnormal blood loss was noted. While the surgeon was operating, the alarm rang due to abnormal FiCO_2 . The CO_2 absorber had to be changed so I replaced it with a new one. Then a few

minutes later, the low-level SaO_2 alarm warned me about a slow increase of blood pressure. The FiO_2 was set at 50 % but measured at 30 %. I corrected this gap using the oxygen bypass button. Several times I opened the respiratory circuit with more gas. The same problem occurred with the sevoflurane gas concentration that was falling slowly. I tried to find the reason (no leak despite the warning message « low fresh gas »). I phoned my colleague who said that he had the same kind of trouble the day before (gap between gas set and delivered). So I decided to finish this procedure opening the respiratory breath circuit until the end of anesthesia. When the patient got out the OR, I performed a new testing procedure of the anesthesia station. A warning message noted that there was some water into the breath circuit. There was also a gas leak. I tried to figure out what was going wrong. The whole team waited impatiently outside the OR. Finally, I asked for a new anesthesia station and, in a last attempt to fix the problem, I remembered that an action had been followed by hypoxemia: replacement of the CO_2 absorber. I removed the new absorber and put it on the table. After that, I saw some white dust leaking from the absorber. That was the reason (see picture above)! At the end, I checked the system one more time and everything was fine.

Good points: *Avoidance of tunnelisation (increase gas supply and think after the surgery) / diagnosis / resistance to production pressure*

Ways for improvement: *always check integrity of an equipment before use / Too fast insertion of the absorber / being aware of confirmation bias (dysfunction of the anesthesia machine according to a colleague).*

KEY WORDS: CO_2 absorber / gas leak / hypoxemia

Analysis of the incident (adapted from Systems Analysis of Clinical Incidents: London protocol ⁷⁾)

CONTRIBUTORY FACTOR TYPE	FACTEURS CONTRIBUTIFS
Patient Factors	ASA 3 physical status;
Individual (Staff) Factors	He called for help on his phone (discussion with a colleague) but nobody came
Task and Technology Factors	Usual procedure to replace CO ₂ absorber. Tired in the evening
Team Factors	Confirmation bias fostered by colleague
Work Environmental Factors	Doubt about quality and efficiency of biomedical team. CO ₂ absorber broken but at its back so invisible)
Organisational & Management Factors	Lack of uniformity among medical equipment
Institutional Context factors	



ACUTE RESPIRATORY FAILURE IN PACU

A patient had had a spine surgery on a Friday evening. She was admitted into the PACU and was quickly extubated without any problem (TOF 4/4 ratio 92 % - no specific antagonisation). She reported no pain. The PACU nurse changed the empty bag of saline serum with a glucose 5 % solution. The IV line seemed to be clogged so she flushed it with 5 ml of saline serum. In the next few seconds an acute respiratory failure (SaO₂ 17 %) occurred with a loss of consciousness. The nurse was warned by the alarm system and she called for help. One of the anesthetists was performing a loco regional anesthesia on another patient and when he arrived he began to oxygenate the patient using a facial mask. A check of the TOF confirmed the myorelaxation of the patient. After the injection of IV propofol she was intubated and ventilated until a complete recovery of neuromuscular function occurred.

After this incident the anesthetist in charge of this patient in the OR explained the incident and apologised for this event. The patient said that it was awful to be unable to breathe then speak with complete alertness.

Good points: *Avoidance of tunnelisation (increase gas supply and think after the surgery) / diagnosis / resistance to production pressure*

Ways for improvement: *flush IV line after anesthetic drug administration and before end of anesthesia / item to add in the sign-out checklist*

KEY WORDS: *myorelaxant drug / apnea / flush*



SEVERE ASTHMA IN PEDIATRIC EMERGENCY ROOM

At 4:00 am, an emergency prehospital team was called to help colleagues in the pediatric emergency department. When they arrived, they discovered an unconscious six-year-old child with severe asthma. The father was in the room and I recognised him immediately because I had already treated his son in an intensive care unit a few days before. The asthma episode was less worrisome than the week before. The emergency physician decided to proceed with orotracheal intubation. The trouble was that some of our medical equipment was designed for young adults and others for children because this boy had an older physical aspect (weight and height). This trouble led to some discomfort and misunderstanding during the procedure. Everybody was stressed due to the age of the child and the crisis code. Moreover I was also very concerned because the son's father remembered me as a potential interlocutor. After the tracheal intubation we noted that the $P_e\text{CO}_2$ was above 100 mm Hg and decreased to 60 mm Hg after 20 minutes. During the transfer in a pediatric ICU, a collapsus began requiring a continuous IV norepinephrine administration. While I did my self-debriefing, I realised that I was anxious and maybe frustrated due to a night call that had occurred with a stressful situation. There were many stakeholders working without any leader clearly identified. Any planification had been performed after the orotracheal intubation and there was a risk of severe arterial hypotension.

Good points : *outcome*

Ways for improvement: *situation point / designate leadership / distribute the workload / No debriefing / know the environment*

KEY WORDS: *severe asthma / crisis resource management / team*



CRITICAL BRADYCARDIA DURING A LAPAROSCOPIC CHOLECYSTECTOMY

An ASA2-woman was anesthetised for a laparoscopic cholecystectomy in the morning. She was treated for an arterial hypertension with angiotensin-converting enzyme inhibitors. This treatment was stopped the day before surgery.

After the skin incision under general anesthesia, a critical bradycardia occurred just after the gas insufflation for pneumoperitoneum. Straight after the team began the cardio-pulmonary resuscitation and IV atropine 1 mg was injected during preparation of an epinephrine syringe. The gas insufflation was interrupted.

FiO₂ set to 1.0. The proclive position inverted and some colleagues were called to help.

In a few seconds, the situation returned to a steady state. After 15 minutes, everything was under control.

The surgical team discovered that the liver presented some superficial injuries due to trocars and CPR.

The rest of the surgery was routine. She was discharged from the hospital after being informed about the incident.

Good points : No flow / fast reaction / Call for help /communication

Ways for improvement: prevention of dramatically crash of cardiac input (low flow during gas insufflation / being aware about patient position and modification) / situation point before gas insufflation

KEY WORDS: bradycardia / laparoscopy / No flow

THE SWITCH OF DEATH

After lunch, I returned to the OR for working with a urologic surgeon. It was my third day in this hospital. I was also in charge of the room beside me (with a CRNA). The first case was an obese patient with a severe ischemic cardiopathy. The surgeon had to perform a prostatic biopsy under general anesthesia. I put the oxygen mask on the patient face with a supply of 10 l/min of oxygen. I proceeded carefully with the IV propofol induction. My goal was to keep spontaneous ventilation effective. In a few seconds the oxygen saturation crashed without any explanation. I decided to ventilate the patient using a facial mask but even with the bypass, the bag remained empty. I checked the external breathing circuit looking for a leak. No leak. Then I realised than the switch was set on the wrong circuit and not delivering oxygen to the patient. I fixed this mistake and the patient recovered without any complications.

Good points : *diagnosis and corrective actions*

Ways for improvement: *check FiO₂ delivered in the breathing circuit before induction // medical equipment ergonomy //*

KEY WORDS: *external breathing circuit // oxygen supply // design*

PAINFUL PROPOFOL INFUSION

This case took place in the endoscopic room. In this hospital, the venous catheters were placed then sealed by the ambulatory nurses. When the patient arrived in the endoscopic room the anesthesiologist placed the oxygen supply on the patient's face and then injected some millilitres of propofol into the venous catheter located in the antecubital fossa. The patient yelled because it was like his forearm was burning. Propofol infusion was stopped and a new venous catheter was inserted. Intravenous Lidocaine was added to propofol and midazolam without any problems. Then the anesthesiologist removed the first catheter and noted that it was inserted into the artery. No further complications

Good points : *uncommon situation = stop*

Ways for improvement: *double check // test before injection // debriefing with the nurse // patient disclosure*

KEY WORDS: *propofol / venous catheter / artery*

TAKE HOME MESSAGE

Strategies for safe and effective postoperative handovers consistently identified in the literature

- Prepare monitor, alarms before patient arrival
- Complete urgent care tasks before handover
- Set aside time for handover communication
- Use the “sterile cockpit”
- All relevant members should be present
- Only one care provider should speak at a time
- Provide opportunity to ask questions

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OUTSTANDING WEBSITES AND PODCASTS :

· Strange Daze is a bi-weekly podcast from the creators of Straight Talk MD, hosted by anesthesiologist Frank Sweeny. Each episode fuses narrative storytelling with science as our host examines a real case of a surgery or a procedure that went terribly wrong and then dissects out why. Even the best doctors practicing at the best medical institutions make mistakes, and sometimes those mistakes have serious consequences. Even when you do everything right, things can still go terribly wrong. The most cynical surgeons depict anesthesiology as 99% boredom and 1% sheer terror. Strange Daze is about the 1%.
<https://itunes.apple.com/us/podcast/strange-daze/id133547717?mt=2>

· Newsletter published in 2018 by the Anesthesia Patient Safety Foundation traitant de la dépression respiratoire induite par les opioïdes en périopératoire
<https://www.apsf.org/newsletters/html/2018/Feb/pdf/Feb2018.pdf>

UPCOMING EVENTS :

- International Forum on Patient Safety and Quality – Copenhagen – Denmark – June 1, 2018
- Euroanaesthesia 2018 – Copenhagen – Denmark – 02-04 June 2018