ANESTHESIA SAFETY NETWORK

QUARTERLY PERIOPERATIVE INCIDENTS REPORT

Newsletter #012 - july 2019

TOWARD EXCELLENCE IN HEALTHCARE

ANESTHESIA SAFETY NETWORK

INTRODUCTION

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As you will see, this issue is a significantly longer «holiday» version thanks to the many contributions.

First of all, some quick feedback on new partnerships that took place during the month of June 2019. In London we met Martin Bromiley and the CHFG team. This event followed the International Forum for Patient Safety and Quality. We were invited by Johannes Wacker and Daniel Arnal to present our serious game and also to attend the Patient Safety Quality Committee's meeting. Following these meetings, Rhona Flin agreed to write the editorial for the 13th newsletter.

ASN in three years is:

- Your commitments and analysis
- More than 60,000 newsletter downloads in 2018
- Many French and international contributors who contributed to these newsletters with their expertise. They are CRNA, scrub nurses, air traffic controllers, human factor trainers, pilots, anaesthetists, and surgeons.
- A newsletter mentioned as the Gold Standard by Martin Bromiley during the latest conference of the Clinical Human Factor Group (CHFG).
- A review read in English-speaking countries and beyond

For our fourth year of activity, ASN is currently modernising its declaration tool by making it more reflective on the safety model of our activities and less focused on root causes analysis (MINOS analysis method developed by Dedale). Claude Valot encourages you to address these cases with an analytical approach. If you wish, you can provide us with your vision of the analysis by sending it to us by email at: fmartin@anesthesiasafetynetwork.com

Many thanks to David Borshoff for responding positively to the editorial request, and many thanks to Daniel Arnal and Johannes Wacker and all the members of the ESA Patient Safety Committee for their invitation to Vienna for Euroanesthesia 2019.

A big thank you to Claude Valot, Nathalie Robinson, Florence-Marie Jégou, Philippe Izard and Régis Fuzier, Cédric, Guillaume Tirtiaux, the STAN Institute team (Marjorie Mazeau, Erwan Penfentenyo, Jean-Pierre Henry).

A special thanks to our partners from the Patient Safety Movement, Clinical Human Factor Group, ICMAsim, ABASS, STAN Institute.

Finally, thank you all for your interest and enthusiasm. It's a great journey and we're looking forward to continuing it together!

François Jaulin and Frédéric Martin

Dr MARTIN Frédéric - Anesthesia Safety Network
18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

EDITORIAL

In the April edition of this newsletter, Frederic Martin mentioned the lifesaving potential of teamwork and rightly emphasised innovation as not being confined to technical development or new drugs.
Of course I agree, but 'innovation' suggests something new and in anaesthesia at least, I don't think the concept of teamwork is new.

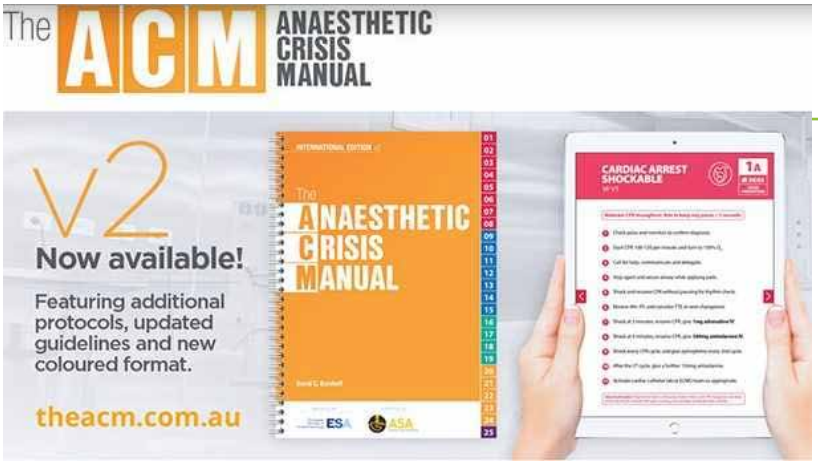
The term Crew Resource Management (CRM) was first introduced into aviation in 1979 by John K Lauber, a NASA research psychologist, following his investigation into a 1978 American air disaster. All crew members had become fixated on a faulty landing gear indicator light while the aircraft ran out of fuel. The well-known components of CRM including clarity of roles, delegation, effective communication, fostering input from others and an atmosphere of openness, are now well established in aviation training.

Despite the seminal work done by David Gaba and colleagues at Stanford nearly three decades ago, introducing a modified CRM (Crisis Resource Management) for anaesthesia safety, it seems we are still struggling to convince our non-anaesthesiologist colleagues of the benefits of teamwork.

In fact, anaesthesia has been leading the way in patient safety for 30 or more years, with pioneering work in simulation, cognitive aids, drug error and team-based crisis management. It is only recently that our surgical and non-anaesthesiology colleagues seem to have got on board!

The slow and drawn out implementation of the surgical safety checklist was in part related to surgeon reluctance as well as a medical culture resistant to change. Some Human Factor and Patient Safety Experts now view ego and hierarchy as detrimental to patient care.

From my own experience with cognitive aid development, overcoming clinician reluctance to use checklists has been a slow process but can be facilitated greatly by institutional support. In Australia, all advanced anaesthesia trainees receive a copy of The Anaesthetic Crisis Manual (The ACM), supported by The Australian Society of Anaesthetists, and it has now become an essential companion for Fellowship exam preparation. However, it isn't just an educational tool but promotes familiarity and helps embeds the use of cognitive aids into our anaesthetic culture.



In addition, by regularly employing the modified aviation mantra* – Call for help, Communicate the problem, Delegate tasks or responsibilities – it helps bring CRM principles in realtime to anaesthesia crisis management.

But perhaps most importantly, the reason we continue to encourage the adoption of cognitive aids into everyday practice, is because they provide a template for a 'shared mental model', an essential ingredient of that innovation called 'teamwork' and we know that's good for patient safety.

***Aviate, Navigate, Communicate**

David Borshoff
Director Anaesthesia and Pain Medicine
St John Of God Murdoch Hospital
Perth, Western Australia

Dr Borshoff is the author of the highly successful Anaesthetic Crisis Manual (theacm.com.au) now in its second edition and having been translated into Italian, Spanish, Russian, Polish and German. He is also co-editor with Dr Scott Weingart of The Resuscitation Crisis Manual, co-editor with Dr Paul Sadleir and Dr Steve Same of the soon to be released The Perfusion Crisis Manual and is currently developing the A-CAS decision support system for crisis management. These publications can be viewed at Leeuwinpress.com.

Time for training work: systemic barriers

If you are familiar with this website, the expression «to err is human» means that for you, nowadays, any caregiver can make a mistake in simple as well as usual, routine activities.

We have understood that the mental processes that cause this deviation/error are the «automatic» mechanisms of routine behaviours.
They are very effective when they allow us to initiate the right behavioural responses quickly and effectively.
We are very satisfied with their existence.
They can also be dangerous when the automatic behavioural response produced is not the right one.
Major problem: it is very difficult to realise that such behaviour is not the appropriate one since its automatic origins are largely unconscious. Only their consequences are visible and they are not always immediate and obvious, when it comes to drugs for example.

To take into account this unavoidable reality, individual reliability methods have been developed so that each caregiver can validate his or her own routine behaviours. For example, the 5Gs of the drug exemption: Good medication, Good dose, Good path, Good patient, at the Good time that everyone is invited to apply.

These individual barriers interact with systemic barriers that are permanently active and designed to capture gaps where they exist and have not yet been identified.
Example of a systemic barrier: Identification of the patient in his or her journey of care (Surname, first name, date of birth, planned intervention, side of the intervention); Interactive checklist before the operation as proposed by the WHO: sign-in, time-out, sign-out.
These systemic barriers capture what would have escaped, the many floating and furtive gaps of professionals under multiple tension and constraints, in a hurry...

Patient safety is significantly enhanced when individual and systemic barriers are active and coordinated.

Let us return to this practical work about the cases reported by the ASN team.

For each of these cases, identify whether:
- *An individual reliability barrier(s) was available but did not work*
- *A systemic barrier(s) was available and did not work*

Most likely they were available... Why didn't they work?

Enjoy your analysis

Claude VALOT *Former researcher at the Institut de Recherche Biomédicale des Armées in Brétigny sur Orge and senior human factors consultant at DEDALE*

BEWARE OF DRUG SUBSTITUTION !

A nurse on the ward called me after a supposed medication error. An 85-year-old patient had been operated on 2 days before for a cholecystectomy under GA. He was currently taking hemigoxin. The anaesthetist prescribed this treatment even though it was not part of the therapeutic booklet. The pharmacist delivered digoxin 0.25 mg with a written note to dispense ½ tablet per day (no comment on software to inform the nurse). The nurse during her morning shift did not find the prescribed hemigoxin. She decided to check the concordance between digoxin and hemidigoxin: «it's the same molecule! « she thought. So she decided to give 0.125 mg of digoxin. She gave the patient 5 pills of digoxin 0.25 mg (5 x 25 = 125 mg). At 3:00 p.m., she called the pharmacy to replanish. The pharmacist refused because the stock had already been delivered. The nurse realised the error and called the doctor on duty. The patient was transferred into the ICU and digoxinemia was measured repeatedly. The patient and his relative were informed about the error. The nurse claimed that she wasn't «guilty» of the error. According to her, there was no mistake. She thought that we should blame the pharmacy. By decontextualizing, I suggested to her that if she was concerned about something she should have called for help.

Good points : *detection / mitigation of damage*
Ways for improvement : *weak signal due to «out of the ordinary» situation: delivery of 5 pills in one hit / call for help / recovery strategies / cross-checking in case of doubt*
KEY WORDS : medication error / damage / doubt

DEFECTIVE PEDIATRIC MODE

A new monitoring device had been in used for 6 months. A major problem was the configuration of the tone source in the known paediatric mode. The source of the tone was set up by default to EKG and was therefore «stable», regardless of oxygen level. Many requests had been made for re-setting without success to date.
I started an ENT-paediatric list. The right configuration of the monitoring was set up for the first child by the anaesthetist. Between the procedures of the first and second child, the CRNA turned off the monitoring device and the anesthesia station to check the gas consumption.
Then the second child was admitted into the OR and the mask induction began using sevoflurane and O_2/N_2O. The venous catheter was placed easily and suddenly a bronchospasm followed by apnea occurred without a priori repercussion on oxygen arterial saturation (the tone of the beep was always the same). We discovered a cyanosis and we suspected a laryngospasm due to ventilatory difficulty. We decided to proceed with a crush induction and tracheal intubation. The outcome was good.

Good points : *perceived threat on lack of configuration and increased vigilance to quickly manage degradation without fixation error.*
Ways for improvement : *threat and error management / poor user experience / alarm settings*
KEY WORDS : alarm / settings / ergonomics

POOR BRIEFING IN TEAM

A 50-year-old patient was scheduled for the placement of a port-a-cath device under general anaesthesia (patient request). The team was composed of an anaesthetist and a scrub nurse. The surgeon was assisting a colleague in another operating room. The OR team checked that he would be available soon. We proceeded with the first step of the checklist (skin preparation, biology, airway approach, fasting > 6 hours). The patient was put to sleep and the laryngeal mask was placed without incident. During the vascular access procedure (jugular puncture by the surgeon), an unexpected high airway pressure occurred with a fast drop of the arterial oxygen saturation. We discovered some dark vomit on the patient face. I decided to aspirate and intubate in rapid sequence (propofol, suxamethonium) supposing that laryngospasm associated with inhalation was present. The oro-tracheal intubation was easy to perform but ventilation was still impossible despite having a tracheal tube in place (« ventilation wall »). The SaO_2 continued to decrease to 77% accompanied with cyanosis.
The scrub nurse asked if the very dirty filter needed to be removed but there was no response from the anaesthetist (fixation error). Then he called for help and he suctioned back the intubation tube and trachea (back faecal fluid). Unfortunately, the ventilation failed again: « nothing passes », « I have a wall » when insufflated and no chest ampliation: bronchospasm and pneumothorax were mentioned. The second anaesthetist confirmed the auscultatory silence. He noted that the filter was dirty and changed it. The ventilation was restored instantly. The anaesthetist decided to insert a gastric tube to bring back a lot of gastric fluid. He asked the surgeon:
« Does your patient have an ascites? » He answered « yes, absolutely! » This information was not included in the patient documentation.

Good points : *Call for help*
Ways for improvement : *effective briefing threat and error management / Two-challenge process = repeating twice the information if you think it has not been perceived « the filter is dirty » / speak up / cognitive aid (European Patient Safety Foundation).*
KEY WORDS : check-list / aspiration / laryngospasm

Dr MARTIN Frédéric – Anesthesia Safety Network
18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

Systematic Trouble-shooting

Unexpected high airway pressure during ventilation

1) Disconnect → Excessive PEEP?

2) Manually ventilate with separate manual bag and without airway-filter

a) Ventilation possible without too much resistance?

→ consider: filter, tubings or ventilator

Check:

- Y-piece and filter → unobstructed or blocked?
- Tubes → connected correctly?
- Tubes → kinked?
- Water-trap → correct position in circuit, no bypassing?
- Valve malfunction → ruled out

b) Ventilation possible only with severe resistance or impossible

↓ go to point 3

3) Advance Suction tube over tip of ET-tube

a) Advancement possible

→ problem lies distal from tip of ET-tube *(consider bronchospasm)*

b) Advancement difficult or not possible

→ problem lies within ET-tube

Check:

- ET-tube → kinked or occluded *(secretion, coagula)*
- ET-tube → herniated cuff

„If in doubt, take it out!"

Unexpected leak in circuit ?

1) Set freshgas-flow to 12 – 15 l/min

Beware of possible baro- and/or volutrauma in certain respirators when the patient is connected to the ventilator

2) Manually ventilate with separate manual bag and without airway-filter

a) Ventilation possible: leak in tubings or ventilator

Check:

- **APL-valve** set correctly (eg. 30 mbar)?
- **Airway-filter** gas-analyzer port open?
- **Airway-filter** damaged?
- **Y-piece:** gas-analyzer port open?
- **Tubes** mounted correctly?
- **Tubes** damaged?
- **In coaxial tubes:** „Shunt" between in- & expiratory tube?
- **Valve** malfunction (eg. missing valve-plate)
- **CO_2 -Absorber** not mounted correctly / damaged?
- **Vaporizer** not mounted correctly / damaged?
- **Water-trap of gas-analyser tube** not mounted correctly / damaged?

b) Ventilation impossible: leak in the airway

Check:

- ET-tube / Cuff un-sealed or too small for px?
- LMA unsealed / damaged?

Mod. gem. T. Prien et al. Anästh Intensivmed 2019;60:75-83

Dr MARTIN Frédéric – Anesthesia Safety Network

18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

LAPAROSCOPY OR LAPAROTOMY?

A patient was operated on under general anaesthesia for an inguinal hernia. The patient confirmed the procedure during the checklist sign-in step (direct approach by laparotomy) as it was notified on the surgical list.
I placed a laryngeal mask without difficulty.
The surgeon arrived at the OR and he pushed the laparoscopic column closer to the patient. I asked him why he needed it. He replied that the operation would be carried out under laparoscopy. I told him: 1) The operating list did not indicate this. 2) The patient was not informed of this technique and he thought he was having the traditional operation. 3) The anaesthesia technique used was therefore not appropriate and the patient needed to be intubated.

Good points : *call for help / Non-aggressive communication between team members*
Ways for improvement : *Perform a team briefing with the awake patient and the surgeon (checklist) / Report this event on the IRS platform to review the safety model*
KEY WORDS : checklist / airway / communication

FASTING CERTIFICATE OR COMMISSION BIAS

A patient was admitted into the OR for an emergency anaesthetic procedure to drain the bile ducts by endoscopic means. There was a lot of pressure to proceed with the operation and the gastroenterologist « certified the patient's fasting ». After a quick checklist without any real team communication the anaesthetist began the general anaesthesia with oro-tracheal intubation. When the patient had fallen asleep, massive faecal fluid regurgitation occurred with aspiration followed by hypoxia and cardio respiratory arrest. We tried to use the aspiration machine but it wasn't working. We urgently fixed the machine and proceeded with CPR.
The patient was resuscitated in 8 minutes and his haematosis was corrected. The patient was admitted into the ICU after the end of the endoscopic procedure but he died the following day.

Good points : *reporting of this accident*
Ways for improvement : *Use of TEM (= Threat and Error Management) briefing / resist to production pressure / morbidity and mortality review / check vital security devices / beware of commission bias*
KEY WORDS : checklist / aspiration / preventable death

Dr MARTIN Frédéric – Anesthesia Safety Network
18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

The surgical checklist is more than a simple «checklist».

Ask any pilot what a checklist is, he will tell you about a critical and life-saving tool, without which he would never be able to fly. Ask the same question to an operating room team, you will then hear « Safety », « Discussions », but also « Obligation », « Traceability », « Administrative documentation » or even « Useless ». Why two different reactions for a document with the same name? The look of an aircraft operator in the operating rooms can provide some insight.

Training and certification

Pilots are trained and evaluated on the use of a checklist throughout their careers. For a fighter pilot, this process is integrated into the three annual flight simulator certification sessions. Few medical teams have been trained to use the checklist in the OR, as this training is not mandatory. However, the effective use of this tool is assessed during the periodic accreditation of the HAS.

Safety and/or traceability

The main goal of the aeronautical checklist is to improve air safety. In less than 350 keywords, the crew members periodically check, orally and jointly, that the aircraft's configuration is consistent with the upcoming flight phase. This mechanism is completely separate from the traceability mechanism, which is carried out independently and continuously by flight recorders. The declared aim of the HAS surgical checklist in the form of sentences (1600 words in total) and proposals to be ticked, this document must be signed by 3 stakeholders in the OR. In their view, this structure is more a legal traceability document than an «operational» safety tool. This helps to ensure that it is considered and treated only as an administrative procedure.

Time Out

The time dedicated to the aeronautical checklist excludes any other act on board, except in the case of a vital emergency. If the crew is interrupted by a third party (air traffic control tower), they answer, « Stand by », an international expression meaning « We are not available, we will get back to you as soon as possible ». There are very few operating theatres where everyone completely stops their work to actively participate in the 3 parts of the checklist.

3rd (mid) time

An air mission is only completed when the debriefing is finished. Its process is standardised within NATO: Has security been engaged? Have the goals been achieved? This is followed by an analysis of the key steps of the mission, concluded by a synthesis of individual and collective learning.

The 3rd part of the surgical checklist should be the opportunity for ultimate sharing between the team members. Unfortunately, it is very often neglected. Lack of time is frequently mentioned as a reason for this omission. However, it could be limited to some brief feedback from each of the participants, such as the « minute debriefing » in use in some companies. 3 minutes is enough...

In order to give to the surgical checklist its full potential, this document must be written by medical teams for patient safety and this should be done independently of any other additional functions.

Dr MARTIN Frédéric – Anesthesia Safety Network

18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

WE DON'T LIKE CHANGE !

One morning I had to proceed with the general anaesthesia for spinal surgery in a new operating room. I was aware of the stress I was under due to this new environment. First of all, I forgot to open the oxygen on the machine breathing circuit. It was quickly corrected by visualizing FeO_2 at 21%. The tracheal intubation was not easy because the patient was toothless. I attached the probe and after rapid pulmonary auscultation, I put the patient in the prone position. I set the mechanical ventilation to 450 ml x 15 per minute. My attention was focused on the installation. I had to keep the head-neck-trunk axis because the patient was elderly with a history of cervical surgery (forehead and chin support). A sudden onset of hypocapnia at 20 mm Hg occurred. The blood pressure (NIBP) was normal. I decided to reduce the per-minute ventilation to correct this hypocapnia perceived to be due to hyperventilation. A rapid desaturation to 79% SaO_2 occured. I turned the oxygen to FiO_2 1.0 and opened the circuit with a high flow of fresh gas. Pulmonary auscultation control revealed a selective intubation with silence on the left side of the chest. I informed the scrub nurse and requested a stretcher-bearer be called to prepare for the turnaround. While I was looking at the chin support, I noticed that it had moved the tracheal tube further in. I moved the head and performed a recruitment manoeuvre.
Everything returned to normal.

Good points : *fixing the problem / wrong breathing circuit used-fixed*
Ways for improvement : *Awareness about cognitive shortcuts (hypocapnia due to hyperventilation) / pulmonary auscultation when position is changed / cognitive aids*
KEY WORDS : selective intubation/ hypoxemia / environment

SPEAK UP

A patient who in the past had a giant urticaria after taking paracetamol had to be operated on. Doliprane® did not appear to be a problem. During the briefing with the scrub nurse,
I warned her that I would not inject paracetamol perioperatively. I asked her to tell me if she saw me plug it in. The general anesthesia was performed and the operation was carried out without any major problems, except for a rapid hypertension attack managed by IV nicardipine in a bolus. I decided to start IV analgesia and prepared the paracetamol flask that I connected to the infusion. The scrub nurse said: «You're finally putting it on anyway?». I answered, «What?» She told me «paracetamol». I realised the problem and removed it by thanking her for reporting it to me.

Good points : *dpromote speaking up / briefing with the whole team*
Ways for improvement : *Dare to verbalise fully / think about a more reliable way to prevent the injection of a contraindicated drug*
KEY WORDS : allergy / briefing / teamwork

Dr MARTIN Frédéric – Anesthesia Safety Network
18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

ALLERGY AND DRUG PRESCRIPTION

I was called by a nurse from the ward for an incident following the injection of Augmentin® medication.
The 54-year-old patient had a urinary tract infection 24 hours after a right pertrochanteric fracture surgery. When I arrived the patient had diffuse erythema and facial edema with BP 90/55. We immediately stopped the augmentin® infusion and used crystalloids. The patient was conscious. I asked for the medical records and I discovered an allergy to amoxicillin was noted. I talked to the nurse. She reported that she had called an anaesthetist after she was informed that the patient had a urinary tract infection (E coli). The anaesthetist then prescribed by phone the antibiotic. She prepared it and administered it. The nurse who normally cared for the patient was busy with an emergency (thoracic CT scan). The follow-up was simple with ICU 24-hour observation.

Good points : *incident detection and mitigation*
Ways for improvement : *Prohibit all oral drug prescriptions outside the emergency / Double-check drug prescription*
KEY WORDS : allergy/ prescription / verbal

COLATERAL DAMAGE

We had begun the day aware of the overloaded workload and had to encountered many equipment problems.
The second last patient was admitted into the OR and we proceeded with the general anaesthesia. The surgeon was known to be bossy. The surgical team was draping the patient under pressure. The surgeon was afraid to cancel his last patient because of technical problems and a tight schedule. He asked if a device was present before the incision was made. The scrub nurse couldn't find it. The surgeon lost his nerve and yelled. I was in attendance with the CRNA and didn't say anything. The scrub nurse finally found the device. The incision was performed and the patient had a significant hypertensive arterial attack SAP 210 mm Hg – DAP 110 mm Hg with tachycardia at 150 per minute. We realised that we had not increased the depth of anaesthesia (morphinic and hypnotic drugs). After discussion with the CRNA, we were concerned and uncomfortable with the rudeness of the surgeon and our «cowardice» or inability to express our disapproval with the surgeon. No bad outcome for the patient reported (no cardio-vascular problems or memorization).

Good points : *reporting / Identification of a contributing factor*
Ways for improvement : *speak up about your discomfort / debrief the event as a team*
KEY WORDS : violence / stress / teamwork

Dr MARTIN Frédéric – Anesthesia Safety Network
18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

Psychological safety and performance

This case perfectly illustrates an experiment conducted in 2007 by psychologists Christine Porath and Amir Erez, who estimated the impact of malicious attitudes on the performance of the targeted individuals[1].

They proceeded as follows: they invited volunteers to solve small performance and creativity tests, providing them with a false explanation as to the purpose of the study. Some participants were directly summoned to the place where the event was going to take place. Others were deliberately led to an office in which an accomplice abruptly and rudely told them they were in the wrong place, before redirecting them.

The results showed that the group who was the target of the rude behaviour experienced a **decrease in performance of up to 30%** compared to that of the other group. And the first group showed a **lower propensity to help others** – by about 75%. Now, we know that the ability of team members to help a colleague facing a difficulty or a high workload is an important feature of efficient teams. The experiment was reproduced while slightly modifying the scenario, so that the second group of participants was not the target of the rude remarks. They only **witness rude behaviour towards others**. And the results were similar.

Whether victim or witness of aggressive behaviour,
our performance will be negatively affected.

So what can we do when facing «toxic» behaviour? Here are some guidelines.

Good practices:

- In all cases, the aim to **maximize patient safety** must guide decisions.
- If it is possible to temporarily interrupt the current mission, consider the incriminating behaviour as a **NoGo**, and devise a solution among the whole team.
- If the present task cannot be interrupted, we must **deal with** the toxic behaviour, taking a step back and keeping in mind that our performance may be degraded.
- In every case, it will be useful to trigger a **debriefing** at the end of the mission, in order to offer feedback to the aggressor.

How can we offer a constructive and effective feedback?
By using the NonViolent Communication techniques.
I propose to address this topic in the next edition of this newsletter.

1. C Porath and A Erez, Does Rudeness Really Matter? The Effects of Rudeness on Task Performance and Helpfulness, Academy of Management Journal Vol. 50 No. 5, 2007.

Written by Guillaume Tirtiaux, Training and Development Director at REPORT'in

REPORT'in

THANKS FOR THE SLIP UP

A patient had to be operated on for a left foot surgery using a popliteal sciatic block. She was very anxious and logorrheic. She refused general anaesthesia because she had a very bad memory of a waking up during a previous surgery leading to a post traumatic stress disorder. She was due to have an outpatient operation. She talked a lot and regularly interrupted the anaesthetist during the interview before the venous catheter was placed. She wondered if the puncture of the locoregional block was painful. Unfortunately the IV catheter insertion was difficult (3 punctures) and the patient was cried. Another general anaesthesia was proposed but the patient refused. She was put in a prone position. The equipment was promptly prepared to counterbalance the delay. The previous intervention was about to end. I required 2 mg of IV midazolam to be administered to the patient. I performed the block using ultrasound technique with no difficulty and the patient was returned to the supine position. I tested the anaesthesia with a cold ampoule after 15 minutes: no signs of anaesthesia were seen in the patient. On the other hand, she stated that her right foot felt ''strange''. I realised I made a mistake on the side that was operated on. I apologized to the patient and explained the problem. Finally a general anaesthesia was performed.

Good points : *apology*
Ways for improvement : *double check with the patient about surgical side / poor quality of past care can generate «post-traumatic stress disorder»*
KEY WORDS : error / side / locoregional anaesthesia

APPLY THE "10-SECONDS-FOR-10-MINUTES PRINCIPLE" [2]

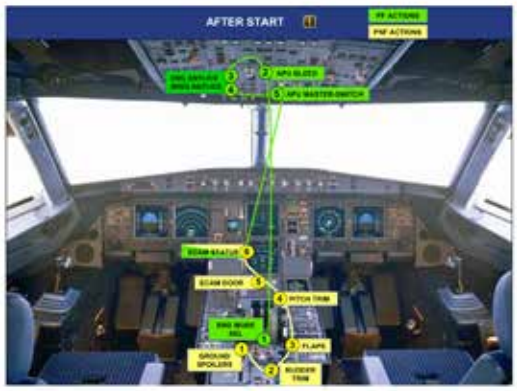
The team was tired at the end of this tight schedule and the surgeon was frustrated by the failure of a JJ procedure. The surgeon announced the need to place the patient in a prone position for percutaneous nephrostomy. I was concerned about a potential legal issue with this woman (urologic sepsis due to ureteral wound combined with anaemia 8 g/dl on hemorrhagic caesarean section the day before (3 litres of loss)). The anaesthetist phone rang just before the turnaround (call from the doctor in the medical department to plan the placement of two IV central catheters). Results: 1/ Forget to set the patient at FiO_2 1.0 before turning and 2/ the team started turning the patient over while the anaesthetist was not ready. When the patient was finally in prone position, a «low volume» alarm sounds (circuit leak). The anaesthetist in charge was convinced that the problem came from the tracheal tube (damaged cuff or extubation). The access to the head was difficult and there was no possibility to inspect the oral cavity using laryngoscopy. I decided to manually ventilate the patient and set freshgas-flow to 15 l/min with FiO_2 100 %. The chest elevated and the pulmonary auscultation was symmetrical. Thus, I reduced the freshgas-flow to 1 l/min. Immediately the expired volume dropped to 200 ml. I was overwhelmed by stress so I called a colleague for help (on-call anaesthesiologist). We visually inspected the breathing circuit (airway-filter, coaxial tubes, CO_2 absorber, water-trap, ... No leak. We decided to call back the orderly into the OR to flip the patient. The surgical team (surgeon and scrub nurse) didn't seem to perceive the seriousness of the situation. We replaced the ET-tube expecting that it was due to a cuff un-sealed. This removal was performed in a prone position using boogie (dangerous behaviour). Despite the replacement of the tube, the leak persisted. Finally, after careful examinination by touching the filter of the inspiratory arm that it was found to be partially disconnected. The «spirometry» normalized, damn it!

Good points : *outcome*
Ways for improvement : *Speak up / inform the team / Share with other stakeholders your plan for action (situation point) / cognitive aid (European Patient Safety Foundation) / ventilate with separate manual bag*
KEY WORDS : leak / equipment / intubation

2. Rall M, Galvin RJ, Flin R. The '10-seconds-for-10-minutes principle'. Bulletin of The Royal College of Anaesthetists. 51. 2614-16. September 2008. (https://www.inpass.de/fileadmin/Bilder/BJA_Bulletin_51_9_2008_Rall_10for10_only_small.pdf)

Dr MARTIN Frédéric – Anesthesia Safety Network

18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com



«Flows» in health: lessons from aeronautics !

There are many high-risk situations that can lead to medical errors in health care organisations. Among these situations, the risk of forgetting a task is frequent. Indeed, we are called upon to carry out tasks on a regular basis in our daily lives or in exceptional situations, such as emergency situations.
The repetition of the task, the related stress, the interruption of tasks, the environment... are all factors that can lead to the omission of a particular task. The consequences can be dramatic.
In the aeronautical industry and particularly during the flight, this risk has been identified and solutions have been proposed. In addition to certain specific actions that will not be detailed here (sterile cockpit, checklists, task interruption...), the use of «flows» helps to limit these risks of forgetting a task.
The principle is to use a systematic circuit of actions or checks at a specific time. Each pilot, depending on whether he is on duty (pilot in charge) or monitoring (help and supervision of the pilot on duty, communications...), has specific tasks to perform at different times. Aircraft manufacturers generally supply these "flows". Thus, for the Airbus 320 or equivalent, after the engines have been started, there are systematic actions by the monitoring pilot (arming of the aerobrakes, drift adjustment, take-off position flaps, trim adjustment, etc.). It is the same for the working driver (in green on the picture).
Such procedures can be applied in the field of healthcare for specific actions such as connecting a PCA, administering a drug, performing a CT scan, etc. Another example can be proposed in the operating room during general anaesthesia (picture). After the end of anaesthetic induction and airway management, a systematic circuit verifying saturation (oxygenation), capnia curve (ventilation-circulation), anaesthesia maintenance (halogenated MAC or AIVOC syringe) and arterial blood pressure (hemodynamic) ensures that a particular procedure is not forgotten (vasopressor injection, halogenated tank opening, ventilation connection, FiO_2 adjustment, etc.). Indeed, each of these items, if forgotten, will quickly lead to a harmful situation for the patient.
To date, there are no imposed «flows» in our daily practice. Each health professional can determine his own flows according to the different clinical situations. It is also possible (or even encouraged) to define common «flows» within teams, in order to harmonize practices. The involvement of team members increases the chances of implementing these procedures.

Régis Fuzier, Philippe Izard
IUCT-Oncopole Toulouse

Reacting in case of relationship crisis

In the case of a heated exchange, not only can the person targeted lose his capacity, but so can witnesses. (ASN 2018-09) Although there is no magic wand in this area, the goal of this article is not to give another directive, but to offer some food for thought.
It is normal to freeze during a moment when we undergo significant stress.
The first thing to do is to avoid then adding an internal argument: ''I should find a way to answer back'' and to be kind to oneself.
Then, as these situations are conducive to accidents, thinking ''relationship crisis = more precautions'' helps to put checking routines that can get us through this mental freezing phase and reinforce safety.
Away from the situation, we may then ask ourselves about our feelings ''How did I feel? What was at stake? What did I need?'' In this situation, the anaesthetist was perhaps distracted, unable to help the one who was yelled at, needing calm to work serenely.
Afterwards, we can learn a way to communicate to help to resolve difficult situations.
From all those I tested, Non Violent Communication seems to me to be the most relevant and efficient when its intention is respected. It requires some training with volunteers, and with experience, we can use it during crises.
The most important thing is to debrief, with the people involved. Often we think that it is better not to go back over the event. Perhaps. But the risk is to create old files that will open up at the wrong moment. Finally, debriefing enables us to think with a clear head on how we would like to react the next time. Asking colleagues and friends what they would have done in the same situation can enrich our toolbox with other solutions.

Keypoints:

During the situation:
- Kindness to oneself if freezing
- Carrying out more checks

After the situation:
- Analysing feelings and needs
- Debriefing
- Asking others about their solutions

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

Institutional Focus

The ARS Nouvelle-Aquitaine has created a new platform to support the management of adverse events: PRAGE integrated to CCECQA. Its mission is to help the management of adverse events whilst remaining an independent organisation.
During the meetings for in-depth analysis of the causes of the adverse event, PRAGE uses a systemic approach based on James Reason's conceptual model with the search of immediate causes and latent factors classified according to the ALARM method. Human factors are emphasized by using a HFACS grid (Human Factors Analysis and Classification System). The same tools are used in order to bring forward all positive actions (e.g.: detection, recovery or mitigation barrier) put in place by the team during medical care.
The HFACS classification based on J. Reason's model, originally created by Scott A. Shappel, was presented to the FAA (Federal Aviation Administration). He describes this tool by saying ''human factor analysis was created to describe the holes in Swiss cheese, as a response to gaps in Reason's model''. This tool resumes the four levels of human error described by Reason: dangerous actions, predisposition factors leading to dangerous actions, lack of supervision/monitoring and organisational influence. In 2013, Thomas Diller published the HFACS Applied to Health Care.
During the analyses conducted in anaesthesia or ICU, we can emphasize the following human factors:

- Concerning dangerous actions, decision errors are almost always present.
  These decisions must often be taken in extreme conditions with well-known and described cognitive bias. Perception errors are later described by the team and sometimes rest on subjective criteria (''the patient tolerates well the degradation of her respiratory function'') instead of objective criteria (blood gas). We recognise the action of cognitive bias such as anchorage or confirmation bias.

- Without any surprise, in predisposition factors leading to dangerous actions we mostly find lack of communication, lack of verification, lack of technical knowledge and inefficient teamwork. Mental load and problematic of situational loss of consciousness, lack of leadership and channelization are also important in adverse events.

- As for monitoring and management, lack of knowledge update by a lack of access to formation is still important but the problematic of tutoring, inadequate surveillance, wrong team combination and standardized deviation are just as important.

- Organisational influences show that risk evaluation is still too scarcely done. Difficulties due to workforce and repartition of human forces are found. It is to be noted that the health care system is still impregnated by a punitive culture of error.

TAKE HOME MESSAGE:

Principles of Threat and Error Management

- **External threats and errors and their management (patient, environment)**
- **Threats and errors by the health care team and their management**
- **Unwanted states of the activity and their management**

The objective is to acquire non-technical skills aimed at managing care as a whole by anticipating and being proactive in order to improve the level of safety

Service de santé des armées

I warmly thank Commander (CF) Eric for authorizing me to attend with him during the landing and catapulting phases of the Rafales, Hawkeye and numerous helicopters. I was impressed by the value of the human factor as a fundamental skill in his profession. I also admired his expertise in it. This rare and precious testimony proves the transversal and multi-professional nature of the Human Factor. I am convinced that our readers will be able to translate the methods discussed in this interview into their daily professional practice..

Interview carried out during the Clémenceau mission aboard the aircraft carrier Charles de Gaulle
05/24/2019

MP Cédric : Hi, I'm the Chief Reserve Physician Cedric of the Armed Forces Health Service. We are currently on board the Charles de Gaulle aircraft carrier in the middle of the Indian Ocean. I perform an external operation there as an anaesthetist resuscitator of the on-board surgical antenna. As a member of the Healthcare Human Factor Association, I have the honour to interview Commander Eric. Good morning Commander, can you introduce yourself and explain your function on board the aircraft carrier?

CF Éric : I am the head of the aviation functional unit, whose goal is to ensure the safe and punctual movement of all aircraft in the hangar, on the deck and in flight within 10 km of the boat. This role is assigned to a former fleet commander to guarantee a sufficient level of leadership. He has an assistant who is also an expert pilot.
For this mission I am led to manage personnel who are organically attached to me (the yellow dogs who lead the manoeuvres on the deck and in the hangars) but also many people from other departments, who are available for this purpose. There is a wide variety of occupations, cultures and levels of experience. Some examples: air traffic controllers, aircraft and helicopter pilots, OAs, aeronautical mechanics, naval mechanics for catapults and stop lines and landing aids and fuel, riflemen for discipline on deck, etc. I also have to coordinate with other functional groups: nautical management and operations management. Everyone has their own language and business culture, some spend two years on the aircraft carrier, others spend their entire careers. We must therefore pay particular attention to the communication aspect in order to coordinate all this. Being a former seaman before becoming a pilot helps a lot.

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MP Cédric : We know that in healthcare, 70 to 80% of our serious adverse events are due to the human factor. What is the place of the human factor in your profession?

CF Eric : My job is linked to the human factor, and therefore to non-technical skills, for 90%. Technology and technique, despite what one might think, occupy only a small part. For this position at least, not for the people I manage, who are in the technical field.

MP Cédric : Can you tell us about your vision of communication?

CF Eric : The big challenge I face is to be at the centre of information and I can therefore talk to 20 people at the same time. I can't even give an exact number, but with all the people who have a radio on deck, on planes and on the intercom with me, it's probably closer to 30... I have to prioritize the information, summarize it, reformulate it concisely, translate it into orders with a language everyone can understand, each with his own culture and experience level. You have to learn to feel this and constantly adapt your communication. So there are two things: processing information and communicating.
The fundamental question to ask is: what does the other really need to do the job? How long will this task take? When you know that, you know when he's going to ask what question... and you know what to say to him. Some are also very straddling on semantics: pilots and OAs! To secure my communication with them, but also with everyone else after all, I have one pilot per fleet with me and also an air traffic controller. Some words are specific to aircraft carriers and do not exist elsewhere in the aeronautical industry. So I do a lot of French and every word counts. A misused word can have safety consequences.
My interlocutors are experts in their own fields but do not necessarily have the non-technical skills related to the human factor, only the aeronautical specialities benefit from this training. It is therefore necessary to show a lot of pedagogy and to organize regular meetings where all the specialties meet to refresh themselves. The aeronauts clearly have a Human Factor acculturation role on board the aircraft carrier. And here again, much is said about the nuances of the French language during these meetings....
When you talk to more than 20 people at the same time, you have to ask them to get to the point and everyone has to wait their turn, whereas I can't wait! I need to have a relevant answer to move on. And I have the right not to answer. That's the game' s rule. I try to memorize the list of people who called me and I remind them in the order of priority in my opinion according to the action in progress. Or not... I can also say that this is not the right time etc.
Finally, in an exceptional situation outside the framework, I must be able to offer a documented summary to the aircraft carrier commander to propose options or derogations and he will decide. Some responsibilities are his own. In the end, he decides if the planes are catapulted and if they can land with his green light. It also decides whether or not to approve planning changes. Not necessarily being a pilot, here too I have to find the words to address a very high level leader who has a much more global vision than mine because it integrates many other elements outside pure aviation, trying to understand what he really needs to decide.
In conclusion, the real key to success is to have maximum silence and a zen atmosphere once the action begins because everything has been prepared before. This is true for catapulting and landing. This reduces communication during the action. In theory, when everything is in accordance with the plan, verbal exchanges are very limited, we communicate by a system of successive visas on a computer for catapulting, then I communicate my orders by light signals or by loudspeaker and radio on the bridge, the commander gives me the green light in silence and there are only brief exchanges of information on intercom or radio with my main contacts. There is verbal and non-verbal communication. On the bridge, it is essentially non-verbal. We interpret the attitude of the people on deck to know what's going on and there are the regular gestures of the yellow dogs with the pilots or between them. Observing the aircraft also provides information on where the pilot stands in his preparations. So there is also a lot of non-verbal communication and you have to know how to observe in silence to increase your awareness of the situation (SA), which makes the link with the following theme I think....

MP Cédric : In this regard, can you tell us about the Situation Awareness (SA), also known as situational awareness?

CF Eric : To develop your SA you have to do several things:

- Anticipate: prepare the deck, weather, emergency areas. Who flies? In which aircraft? With which configuration? Etc; and have everything on a navigational chart at hand;
- Determine some «what if»: pre-planned reactions in case of a particular event: aircraft failure, low fuel level, etc.;
- Above all, we must simplify the world: simplify the changing and complex environment by essence by keeping just a few big key points in mind: our motto is «Klss»: Keep It simple and stupid. Under stress, a human cannot develop overly complex solutions;
- Finally, you have to set time limits for each action in order not to blow up all the other procedures otherwise, after that, you don't control anything and all the planned planning collapses, then you don't know where you're going...you call it setting deadlines..;
- Priorities must be set: if something doesn't work, don't be relentless and switch to something else. Never accept dead ends. The final goal is to recover everyone alive at the end of the flights; You must never lose sight of the final objective;
- If we have to focus on a small task, do not stay too long and return to a global vision: if a small task takes too long, there is a great risk of losing all sense of time and all SA; for this reason we need some automatisms for simple tasks in order to free our brain for decision-making tasks, which cannot be automated;
- But it is also necessary to check the SA of each individual in the group and to communicate, it is easy to forget it and to forget to share one's SA: this is ultimately the most effortful thing to do.

MP Cédric : To conclude, can you explain to us what «passing the blue» is and what its purpose is?

CF Eric :That's making sure the boat is stable on the way to catapult or land an aircraft or engage a helicopter. It is given to me when the wind is correct for the action envisaged and I return it at the end of the action. Blue represents the link between the nautical driving functional system and the aviation implementation system. It materializes a contract between us. Each action must be done at a precise timing with a precise wind. Each action has its own wind limitations and it is therefore necessary to keep in mind many figures or orders of magnitude and constantly monitor the wind and pendulum while looking at what is happening on and around the deck. To be sure to have the blue at the right time, we have created together procedure sheets to coordinate, they are available in navigation deck. They take into account several options that are discussed before the flights: with or without a helicopter, with or without repositioning the boat. The shift manager's planks are very ergonomic, just like mine, so they are easy to use even under stress.

MP Cédric : Thank you again for sharing with us your fascinating vision of the human factor and perhaps see you soon in a future mission.

MP Cédric : This interview is dedicated to my son kerian who is 7 years old today, thousands of miles away.

SAFETY-ALERT

ON WRONG-TUBE CONNECTIONS TO THE RESPIRATOR with potentially fatal outcome

WHAT HAPPENED?

Several cases were reported in Germany, France, Spain and other countries of severe complications with even fatal outcomes after induction of general anaesthesia, caused by wrongly connected tubes to the respirator. [1, 2] In addition to that, **cases of blocked tubes with fatal outcome have been reported in the UK** and the corresponding recommendations published. [3, 4]

REPORTED ERRORS

- An **accidental shortcut of respirator tubes on the level of the water-traps.**
- The **wrong connection of the manual ventilating-bag on the expiratory connector of the ventilator.**
- **Blocking of the tubings** (angle-piece etc.) due to e.g. i.v.-caps.

GENERAL RECOMMENDATIONS ARE

1. Proceed with technical check of every ventilator according to the manufacturer's guidelines before it is connected to a patient.
2. Every anaesthesiologist must confirm that the ventilator is duly functioning.
3. Every ventilator must be equipped with a separate manual ventilating bag.
4. **„Self-check"** of most of the ventilators does not detect wrong connection of tubes, water-traps etc.
5. Perform a short-check of the functionality of the ventilator before each induction of general anaesthesia following the **"Ventilator checklist."**
6. In case of problem, follow the **"Sysytematic troubleshooting"** checklist.

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4 Checking Anaesthetic Equipment-3. 2003. Association of Anaesthetists of Great Britain and Ireland, 21 Portland Place London.

Dr MARTIN Frédéric – Anesthesia Safety Network

18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

ARE YOU INTERESTED IN **SIMULATION** ?

The 1st edition of ICMASim - International Congress on Multi-Sector Simulation will be held from 8 to 10 October 2019 at the Angers Congress Centre. It is associated with the prestigious international think-tank «Global Forum - Shaping the Future» (7 and 8 Oct.) and will offer common highlights: conferences, an exhibition featuring a Lab experience, demonstration workshops, a start-up village and a day of technical company visits (10 Oct.).

Faced with the development of simulation in all sectors of activity, ICMASim will gather and compare the expertise related to transversal simulation. Several international speakers are already known: Mr. Andras Kemeny, Immersive Automotive Simulation Expert, Mr. Takehiko Yamaguchi from Tokyo University, Ms. Janiece Roche, President of the Australian Simulation Association.
An unprecedented opportunity that responds to a growing demand: that of creating bridges between the different sectors of activity to combine research, find new sources of innovation and reach new markets thanks to the multisectoral aspect.

ICMASim was initiated by Professor Granry, Director All'Sims - Centre de Simulation en Santé d'Angers, mandated by the Haute Autorité en Santé to promote research related to Simulation worldwide.
Health will be at the heart of several sessions: e-health, training, ethics or risk prevention, massive data processing for the medicine of the future, etc. Health professionals will be widely represented, in search of technological innovations and new training methods (University Hospital, Health Simulation Centre, Medical Schools, etc.). The Centre de Simulation en Santé d'Angers will open its doors to you during the technical visits.

Join the decompartmentalized simulation and play a role in the development of tomorrow's simulation.

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Dr MARTIN Frédéric – Anesthesia Safety Network
18 bis, rue des Vaussourds, 92500 Rueil-Malmaison // Mail : fmartin@anesthesiasafetynetwork.com // Site : anesthesiasafetynetwork.com

Communicating better, a healthcare challenge and now a University Certificate!

Angers University and the Center of simulation in healthcare launched innovating training to teach healthcare professionals to communicate better between themselves and with the patients.
Information that goes out of the window, unvoiced comments that deteriorate cohesion, efficiency of a team: the consequences of a bad communication can be serious. These aspects however remain poorly seen in the initial training of future professionals.
This new Certificate on communication, pilot at national level, comes from these reports. Opened to healthcare professionals (doctors, pharmacists, nurses...), executives and managers of healthcare within continuous training, as well as interns, the aim is to acquire the various techniques of communication, verbal and non verbal, in various contexts, to train and practice them.
On the program of the University Certificate: communicating in teams, announcing bad news, managing conflicts... The formation, labelled by the Regional Agency of Health, is concentrated on one week (40hours). It is completed with one day of internship in immersion within a human resources direction or a communication department.

Feedback from participants:

''The implementation of concepts learned during the week is really very effective to be able to better put into practice and apprehend the various concepts.''

''Interest of the variety of the exercises''

''I'm delighted to have taken part in this training because it really allowed me to get new communications tools, and to have well covered the subject. Very pleasant and benevolent management.
Relevant speakers''
''I am extremely satisfied by this training, which gave me many keys for my professional life but also for personal communication''
''This training is really very useful for the healthcare professionals, and it could be generalised.''

So do you also wish to take part in a session with a motivated and nice pluri-professional group?

SAVE THE DATES: from March 30th to April 3rd, 2020, in Angers, France (1h30 from Paris in train)?

http://fcsante.univ-angers.fr/fr/acces-direct/formations/attestation-ATTT/sciences-technologies-sante-04/prevenir-les-conflits-entre-les-professionnels-de-sante-et-avec-les-patients-formation-a-une-communication-efficace-program-attestation-universitaire-formation-a-la-communication-entre-les-professionnels-de-sante-avec-les-patients.html

Angers University

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