The World Health Organisation Surgical Checklist. A surgeon’s viewpoint

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Already in 1912, the Bostonian surgeon Richard CABOT (1868-1939) wrote: “The methods of diagnosis, not the men who used them, are flawed. Reform, not blame, is the message” (1).

Eighty years later, the US. Institute of Medicine report of 2000, “To err is Human”, did mention: “Medical errors are largely a problem of the system and atmosphere surrounding health care and not an allocation of blame to individual physicians” (2).

Complexity of Clinical Practice

In 2010, knowledge has dramatically evolved in all areas of Science and fields of Technology. It is even more so for Surgery, especially in the techno-scientific environment of an operating theatre (OT), which is hopefully characterized by the mastering of extreme complexity. However, the art of mastering complexity is a requisite for appropriate clinical practice well upstream of the OT. Let’s give some practical numbers about clinical complexity: the World Health Organisation (WHO) international classification of diseases encompasses 13,000 different diseases, syndromes and types of injury; which means 13,000 different ways that the human body can fail. Clinicians have at their disposal some 6,000 different drugs, some 4,000 medical and surgical procedures. Over the course of one year a clinician will evaluate an average of 250 different primary diseases and conditions, deal with more than 900 other active medical problems, prescribe some 300 different medications, and order more than 100 different types of laboratory tests (3).

According to the startling results of an ICU study (4), every 24-hour the average patient requires 178 individual actions per day, ranging from administering a drug to suctioning lungs. Indeed, the nurses and doctors were observed to make an error in just 1 % of these actions (i.e., an average of 2 errors a day with every patient).

All of this allows summarising the actual context of clinical practice by two words: increasing complexity. All the same for the sources of errors and for the severity of accidents in the OT: both are increasing too.

Four problems related to human and system factors

Generally the knowledge does exist, but however specialized and well trained we may have become, steps are still missed and mistakes are still made in the OT. Indeed, in a complex environment such as the OT five main challenges - related at the same time to the human factors and to the system factors - have to be proactively faced by surgeons and all the actors casted for the OT stage.

1. The fallibility of human memory and attention, especially when it comes to routine matters that are easily overlooked under the strain of more pressing events.
2. The insidious risk that surgeon and/or OT team’s members can lull themselves into skipping several steps even when they remember them (because, after all, those steps don’t always matter). “This has never been a problem before”, people will then say. Until one day it is a problem!
3. The incompetence of OT actors defined as an inability or unwillingness to practice within the standards of care prescribed by the scientific and professional societies in general or by leaders for their department members in particular.
4. The impairment of OT actors defined as a diminished ability (often transient) to provide the requisite standard of care owing to a physical and mental disturbance, or to substance misuse of any kind.
5. The biggest challenge of 21st century surgery is, however, the ability to function in systems-based care rendered by effective teams, whose members have the interpersonal skills to communicate. Why? Because poor care is inevitable when a complicated patient is cared for by myriad individuals who have not been trained to communicate effectively as a team.

The crucial elements in meeting such challenges involve their systematic early identification and reporting, as well as the development of a patently fair process which recognizes the interests of all concerned. In this sense, the surgical checklist approach can be an additional valuable tool for the hospital Medical Advisory Committee (MAC), which has to assume responsibility for monitoring the quality of OT-based practice, among other missions.

To implement this simple and easy-to-use strategy for addressing the five challenges, three main steps are necessary. First, the hospital must develop and implement a hospital-wide educational process for early identification of potential problems. It is more a matter of consensus based institutional culture than a matter of developing some more coercive rules to be enforced. Second, an open communication process must be established both
top-down and bottom-up. Third, a sound MAC must identify and support an appropriate physician (having already demonstrated effective leadership qualities) as the permanent executive clearly designated to deal with matters related directly and indirectly to the prevention, control and solution of these five problematic challenges.

READ-DO versus DO-CONFIRM Checklists

With a READ-DO checklist (read it and do it), members of the team carry out the tasks as they check them off (5). It’s a bit like a recipe. Nevertheless, a norm or a rule to be followed is not just a recipe. A READ-DO surgical checklist is much more than a cooking recipe as it supposes discipline from the users and not just free creativity like one in fashion for new cuisine.

With a DO-CONFIRM checklist, members of the team perform their jobs from memory and experience, often separately. But from time to time they pause to run the checklist and confirm that everything was to be done was done. In the OT, it’s mainly the DO-CONFIRM checklist type that is adopted in order to give members of the team greater flexibility in performing their tasks, while nonetheless having them pause at key points to confirm that critical steps have not been overlooked. To get acceptance from OT actors for bringing things to a halt and kick off a checklist in the high-pressure environment of the OT, the checklist has to be swift and easy to use, brief and effective, systematic and free of non-killer items (i.e., steps that are not dangerous to skip). One of the most important aims is to improve teamwork through better communication, by clearly spreading responsibility and by translating basic knowledge (basic does not exclude complex knowledge) into a simple, usable and systematic form (3). Just like what is done thanks to the checklist on board an airplane!

The Checklist & the Aeronautic Metaphor in Surgery

In fact, the CHECKLIST approach is an old tool widely used in aviation since the bomber B17 “flying fortress” era. Actually, cockpit checklists were already utilized many years before WWII by both the military and airlines pilots. The procedures indispensable for the safe and efficient operation of modern large aircraft as well as smaller aircraft are far too many for even the most experienced pilot to memorize. Even the best trained pilots are likely to forget things on occasion; the cockpit checklist being then the only sure safeguard. Depending on the flying condition it will be a READ-DO or a DO-CONFIRM type of checklist that will make the most sense for the actual situation.

In 1935, the value of the checklist was laconically summarized by a newspaperman after having watched the crash of a brand new Boeing’s bomber during a test flight: “Too much airplane for one man to fly” (3,6). Flying this new sophisticated heavy and powerful plane was too complicated to be left to the memory of one single person, however the best expert he could be. It is basically the same situation that the surgeon faces in the OT. We must admit that errors and oversights, sometimes devastating ones, occur in the OT. Why? Because “Too much complexity in the OT for one man to control everything” and even more: “Too much complexity in the OT for one team to control everything, unless good coordination has been developed or at least checked”.

Anyway, many of us will say that our surgical jobs are too complicated to reduce to a checklist. For instance, a study of 41,000 trauma patients (7) found that they had 1,224 different injury-related diagnoses in 32,261 unique combinations. It’s like having 32,261 kinds of airplane to takeoff, to fly and to safely land (3, 7). In others words, trauma and surgical patients or sick people are much more various than airplanes. Therefore, one can assume that mapping out the proper steps for every case is just impossible, and remain sceptical that a simple basic checklist will improve the results by increasing safety in the OT.

Practically, the Surgical Safety Checklist now proposed by the WHO (Fig. 1) is divided in three chronologic parts (8, 9): the items to be checked before induction of anaesthesia, before skin incision and before patient leaves the operating room. Which is tantamount to the successive stages of an airplane flight: before starting the engines, before taking-off and after landing the airplane. However, both in an OT and on an airplane the checklist items will change over time (timing) and in the working space for the various members of the OT team or the airplane crew. Why? Because there always remains an essential level of horizontal hierarchy of responsibilities that can not be ignored. At this stage, the aeronautic metaphor reaches the level of analogy as far as the essential horizontal hierarchy in a civil aircraft and the hierarchy that should be the rule in the OT is concerned. Indeed, in the cockpit at the front of the aircraft and in the working space of the stewards at the rear, each actor has his own responsibility to assume, but in rather different fields of competence, whose priority change during the flight (e.g., take-off, flight and landing). In other words, the pilot is poorly competent to take care of the passengers during the flight and the steward has no competence to land the aircraft. In the OT, the surgeon and the anaesthesiologist both play crucial roles just like the pilot and the co-pilot. The pilot cannot not treat the copilot as if he is superfluous, just as backup who is given a few tasks so that he has something to do (3). Given the complexity of modern airplanes, the co-pilot is as integral to a successful flight as the anaesthesiologist is to a successful operation. When things go wrong it’s not at all clear which the harder job is.
Fig. 1
Surgical Checklist proposed by the World Health Organization (WHO)
Therefore, it is high time that we establish interdisciplinary team-training programs for our OTs. Once again, in the surgical field we can learn from the airline industry which improved all its safety procedures after the largest aircraft accident in civil aviation history at Tenerife in 1977. Two Boeing 747s collided causing 582 deaths because one captain, who could have been a surgeon in any OT, refused to listen to his co-pilot who was too intimidated to abort a take-off.

Let’s detail some more simple examples for the OT: the surgeon is responsible for the correct positioning of the patient on the operative table depending on the morphology of the patient, his or her technical preference and the type of operation to be performed. On the other hand, the anaesthesiologist is responsible for the tracheal tube placement, positioning and fixation (all the same for all its additional tubing extension). Before skin incision, the anaesthesiologist is generally in full command just like before starting the engine of the plane; same at the end of anaesthesia. Just before incision, some kind of “cleared for take-off” check box serves to confirm that the antibiotics were given. During take-off, the pilot-surgeon is the captain. During the flight as during the operation the different parts of the team are responsible of their own actions. Before landing, which in the OT is tantamount to close the patient’s surgical wound, a sponges’ count has to be done and verified by the circulating and scrub nurses, and the surgeon. But sponges’ count is not the final issue. Indeed, we have to keep in mind that retained foreign objects in surgical patients continue to be a significant public health issue. Retained foreign objects refer to any surgical sponge, instrument, or tool that is left in the patient following completion of the operation. The rate of retained foreign objects ranges from 1:1,500 to 1:19,000 operations (10-12). Roughly two-thirds of retained foreign objects are sponges, and one-third is instruments. In the USA, with more than 28 millions operations performed nationwide, it is possible that 1,500 retained foreign bodies occur in the U.S. each year. At that rate, a large hospital could experience one case of a retained foreign body per year.

At the end of mission or when the patient will be transferred from the operative table to his bed, care must be taken not to rip off the perfusions and the drains while trans-shipping the patient. Once again, a couple of check boxes are not going to do much all by themselves. But well the running through a full checklist making a pause at each predetermined stages, inasmuch as doing so with discipline can standardize safe appropriate behaviour and have the effect of distributing power through individuals accepting mutual control.

**Rules of economics and rules for OT safety**

Let’s make a brief but important political digression: the health economists sometimes compare an OT to a production unit and like also to use the aeronautic metaphor when they speak of soft landing, which is in the business cycle the process of an economy shifting from growth to slow-growth to potentially flat, as it approaches but try to avoid a recession. However, for surgeons rules of economics and rules for OT safety are rather different; the direct consequences too.

On one hand, surgeons and anaesthesiologists have a tremendous task to accomplish in order to assure the soft landing of patients with difficult conditions such as morbidly obese patients. Let alone the risk of retention of a foreign body after surgery that significantly increases in emergencies, with unplanned changes in procedure, and with higher body-mass index (11).

On the other hand, health economists and hospital managers must provide a surgical environment fully equipped and properly maintained. In fact, two items of the WHO surgical checklist clearly imply that their responsibility is also fully engaged: “Has sterility (including indicator results) been confirmed? Are there equipment issues or any concerns? Whether there are any equipment problems to be addressed?” In other words, the final purpose of those checklist items is not just declaring and/or recording equipment’s failures. It is tracking the unexpected or potential failures. But above all it is correcting the manifold declared recurrent equipment’s failures.

Too often, non physician entities attempt to steer the ship of health care without regard for physician insight. However, in the modern era of malpractice called institution litigation, those entities (for instance executive hospital managers) are now welcomed to share with surgeons and anaesthesiologists the responsibility to meet checklist’s items and the burden of accountability when something has failed in the OT.

Furthermore, if health economists want to stick to the production unit concept they must integrate the fact that with advancing technologies, the cost of operating and maintaining an OT has made the methodical, high-quality surgical teaching with a patient present on the operative table increasingly more difficult and expensive. Here again the aeronautic metaphor has something to teach us: airlines have been doing pilots training for decades without airplanes. Would-be pilots spend hundreds of hours in front of a flight simulator before ever making their first flight. Now future surgeons must benefit of a similar experience, using high-tech models of simulators. All of this has to be integrated in the overall costs of surgical training, hospital functioning and national health care programs. In addition, the cost of formal interpersonal communication training must be addressed specifically by health economists as one of the core competencies indispensable for caring effectively and efficiently patients. Once again, the checklist approach would be a good start.
Determinant factors for the success of an operation

Classically the determinant factors for the success of an operation are bound to the general condition of the patient (BMI, age, ASA classification, associated morbidity) and to the experience, skill and surgical technique of the surgeon.

Then, why so many discrepancies still persist between the results from different hospitals?

Because one neglects a wide panoply of essential factors necessary to obtain safely high quality results for the surgical patients, such as good team coordination, clear organisation standards instead of too many overlapping levels of hierarchy, simplified ergonomics of the tools and the working spaces, reliable decision making process and quality of the leadership assumed by people recognised for their real professionalism and their sense of responsibility. Let’s repeat once more that an OT is a complex system. Its complexity being not only related to the essential factors we just enumerated but also to objective factors: the sophistication of the instrumentation, the volume of information to be dealt with, the nature of communication between members of the team, the emergency context, the uncertainty context in which decisions have to be made and operations carried out.

This complexity is even more disrupted by subjective factors directly related to the actors who are on stage playing in the high tension atmosphere of any operating theatre: workload, fatigue and burn-out, managerial pressure to reach higher profitability (ignoring that clinical effectiveness is different from economical efficiency), continuing education and training, permanent adaptation to new technologies, needless interferences in the sanctuary that the OT should remain anyway. Those interferences are futile messages, useless talking and noise, phone calls and ubiquitous use of cellular phone technology that led the American College of Surgeons to develop in 2008 a statement on use of cell phones in the operating room (13).

Each of these objective and subjective factors can be the source of incident, accident and complication. No need to remind the consequences that the complexity of the O.T. environment can also have on the well-being and the quality of life of the most vulnerable members of the OT team (whether they were members of the nursing personnel, paramedics, anaesthetists or surgeons). No need also to remind that the burn-out is not assessed by the actual and potential pitfalls of the OT. Or to put it more bluntly: a good surgical technique and skill associated to a satisfactory performance of the team and to the use of appropriate basic instrumentation allow the average surgeon to reach a success rate of 85% for risky operations. How can we then improve the results for the remaining 15%? Certainly not by the improvement and refinement of the operative technique alone, but by the optimisation of the surgical environment, by better ergonomics and design of the equipment; but above all by better understanding of the subtlety and potential pitfalls of the decision-making process in a dynamic environment. In other words: by improvement of communication and by enhancement of team performance.

Overall, good team performance is most probably the pre-eminent condition to decrease the number of errors, to control the risks as much as possible and to increase the discipline in the daily functioning of an OT. Three important words have just been mentioned: error, risk and discipline. Following Hegel famous suggestion “Have patience for concepts”, it could be worthwhile to elaborate somewhat on the concepts lying behind these three important words (14).

Active error versus latent error

An error can be either active or latent (14).

The error is active as long it occurs directly at the level of the operator (easily identified and designated as being guilty). The effects of such an error are immediate: error of the worker in an assembly line, error of the referee for a football world cup match cancelling a perfect goal, the pilot drinking alcohol in the cockpit, the surgeon operating on the wrong side, the anaesthesiologist unable to place the tracheal tube in the patient’s trachea.

The error is latent as far as it is not related directly to the operator, because the links of the causal chain are not directly under his control, but in fact the result of bad installation or incorrect implementation of equipment or operative facilities, inappropriate maintenance or poor design of the system. The latent errors are generally hidden in the system behind routine procedures, badly structured organisation, erratic managerial decisions, irrational political interferences, arrogance of decision-makers, unrealistic budgetary imperatives.

Recognised risk versus unpredictable risk

Security is more than just the absence of the possibility that active or latent errors will occur. It would be much better to speak of quest for security. In this sense a checklist could be very helpful. In fact, speaking of security and risks, one comes too rapidly to invoke the already worn-out principle of precaution. This is wrong and often much ado about nothing. On the other hand, the crystal clear difference between recognised risk and unpredictable risk is often ignored (14). A train that goes off the rails represents an example of recognised risk, because since trains do exist there have been derailments. The recognised risk is in fact the foundation of the prin-
An unpredictable risk is bound to the uncertainty of current scientific knowledge. The 80s transmission of AIDS via blood transfusion and the 90s transmission of mad cow disease prion represented during those decades unpredictable risks. Indeed, the unpredictable risk is the foundation of the principle of precaution, aimed at preventing, in an uncertainty context, a potential - but still hypothetical - risk for public health.

In the OT, unpredictable risks are not that frequent and mainly represented by the potential risks related to the indiscriminate application of not yet validated technoscientific innovations in a context of uncertainty (e.g., robot, NOTES). In a sense, man knows what he is doing, but does not know what does what he has done, because the absolute mastery of innovation is always behind innovation itself.

In the OT, in a train or an airplane, one deals essentially with recognised risks. Here lies the interest of the checklist as a pre-emptive measure to enforce the principle of protection in order to avoid the consequences of recognised risks. However, the checklist is only one element of the solution that has to be combined with the experience, competence, references, professionalism and sense of responsibility of the OT actors, as well as with individual and team discipline.

**Operational discipline**

What is discipline? “Discipline, it is doing what is right when nobody is watching”.

That is the answer given by three stars General Schumacker of the US Marine Corps on May 7, 2004 when he was asked this basic question during a US Senate hearing about the US. Army personnel misconduct in Iraq. This laconic, clear and correct definition of discipline applies to actors in the OT too.

If the checklist approach is intended to increase basic operational discipline and decrease sources of errors in order to avoid those becoming mistakes, then there is for us a chance of easy redemption in the realm of the OT. Checklists can provide some protection against such mistakes. They remind us of the minimum necessary steps and make them explicit. They do not offer the full security of verification but instil some sort of discipline allowing higher team performance.

Extensive programs of research and development in the field of understanding errors and safety in the OT are on their way since the turn of the third millennium (15-17). Some of them have gone beyond the concept of the system approach to reach the stage of measurement of surgical quality and safety. In those papers one comes again and again across aeronautic terminology such as checklist, communication protocols, situation awareness, black boxes, and flight simulator. This terminology reflects the importance of grassroots discipline for the quest for security.

However, the best flight simulator or the most comprehensive checklist will not prevent committing error and/or mistake bound to routine. The fact that what belongs to the daily routine environment can become invisible is dramatically illustrated by the fire set in a surgical ward by a psychiatric patient. Nobody could find the extinguisher which was actually fixed on the front wall of the nursing station. Everybody was passing by dozens of times every day in front of the extinguisher, but in the emergency fire setting nobody could remember any more that this emergency piece of equipment was there at hand reach and in the field of vision of everyone (18).

**Professionalism and checklist’s limit**

As professionals, society permits us a monopoly on a body of medical and surgical knowledge. In return, our community logically mandates that we use our skills altruistically and charges us with the responsibility of self-regulation (i.e., surgical education as an apprenticeship of “graded responsibility” followed by appropriate evaluation before being granted certification of competence, Code of Medical Deontology, Code of Professional Conduct).

The checklist paradigm is part of it. But the checklists have to be simple, brief and well adapted to the local environment. Modifications, additions and revisions should be considered regularly to fit local practice if it were to remain an effective safeguard tool. Indeed, a too stringent checklist can become once in a while the source of risks. Therefore, it is important to save room for initiative, to allow flexibility for intelligent improvisation, to provide working space for free expression of experienced professionals. In a fast changing techno-scientific environment, initiative, flexibility and experience are often the basic ingredients to adjust for unexpected difficulties and changes. Recall the discovery of the etiology and prevention of puerperal fever by Ignaz Semmelweis, the Hungarian-born working at the Wiener Allgemeine Krankenhaus. His discovery was a brilliant example of fact-finding, meaningful statistical analysis and keen inductive reasoning. The problem was simple: to reduce the high maternal and neonatal mortality due to puerperal fever. The solution proposed by Semmelweis was also simple: the prophylactic hand washing that made him the pioneer of asepsis during the pre-bacteriological era in spite of deliberate opposition and uninformed resistance from stubborn and rather stupid surgeons (19).

If you are confronted with simple and routine problems a relatively straightforward solution that forces the necessary behaviour will make it. It’s what engineers call “forcing functions” (3) just like straightforward hand
wiping before any operation. Here, READ-DO checklist could be helpful. On the other hand, to get things right in complex situations requires an entirely different philosophy about the power of decision making which has to be pushed out to the periphery and away from the centre. Thus you give people the room to adapt, based on their experience and expertise. All you ask is that they talk to one another and take responsibility. Here, DO-CONFIRM checklist could be helpful. This strategy is unexpectedly democratic and that is what works (3).

Nevertheless, inside the checklist paradigm there remain significant differences between an airplane pilot and a surgeon which demonstrate the limit of the metaphor: the patient can choose his surgeon, the passenger can not choose the pilot; the surgeon can stop the operation before changing his strategy, his equipment or his team; the pilot has first to land the airplane!

Louis Pasteur (born in the same decade as Semmelweis and Lister) wrote in the XIXth century: “Discovery by chance happens only to well prepared mind” and “Experience is the sum of our errors” (19). Those two quotes related to professionalism are still very pertinent for the third millennium because, more than ever, we have to take into account experienced actors who know the virtue of checklist but also its limits. Indeed, good surgeons just as fighter plane pilots do not believe too much in the accuracy of surgical strikes, even if true professionalism paid off. In fact, bad professionalism is devastating. Keep in mind a simple comparison: “Amateurs built the Noah’s Ark, professionals built the Titanic”.

A surgeon must always be prepared for unpredictable turns that checklists are unsuited to address. For the simple reason that the practice of surgery faces us with the entire range of problems: the simple problem (just follow the recipe – the most basic checklist of all which is not necessarily static; it can be improved by the staff), the complicated problem (no straightforward recipe because unanticipated difficulties are frequent; timing and coordination are then required), and the complex problem (every patient is unique; it is impossible to reduce complexity to a simple recipe; expertise is valuable but not sufficient and the outcomes remain highly uncertain). Ultimately, there are even certain situations where a clinician has to do just what needs to be done: take care of the patient and forget the paperwork. A good surgeon will never be able to dispense with expert audacity, but that does not mean that he should not be ready to accept some of the virtues of regimentation. In fact, a wise experienced surgeon has learnt how to cope with the blurred schizophrenic borderline between collegiality and regimentation, individualism and team work, autonomy and discipline. This is also an unexpected democratic behaviour; again that is what works in Surgery and Aviation!

Such a behaviour is somewhat an update of our basic idea of heroism and was illustrated in January 2009 by captain Chesley “Sully” Sullenberger, a 58 year old former fighter pilot who had been an airline pilot since leaving the US. Air Force in 1980 (18). His Airbus US Airways Flight 1549 struck a large flock of Canadian geese over Manhattan just after take-off from La Guardia Airport and lost both engines. Sully realized a smooth ditch of the Airbus with 155 people on board in the icy Hudson River. He was called the Hudson River Hero all over the world. However, Sully kept saying over and over during numerous interviews: “I want to correct the record right now. This was a crew effort. The outcome was the result of teamwork and adherence to procedure as much as of any individual skill I may have” (18).

**Error versus mistake**

What is the difference between an error and a mistake? “An error does not become a mistake until one has decided not to correct it”, once said John Fitzgerald Kennedy (19). Nevertheless, correction of errors is more effective if one can prevent them, thanks to the use of a checklist well adapted to the local environment of each OT. By studying past mistakes and lessons from others in the surgical field, we can build formal checks into the OT process. It is a rational and reasonable way to force us to be disciplined and not to skip important steps. But it is a hard way because we, surgeons, are not built for discipline. We are built for novelty and excitement, not for careful attention to details. Discipline is something we have to work at. Aviation is again a model for Surgery: discipline has been made a norm, because in this field professionals study routine failures, look for the pattern of recurrent mistakes and devise failures and refine potential solutions for them.

Nevertheless, the checklist must not become a coercive measure but be an incentive measure “consensus based” for the local OT team. A well adapted checklist can become a simple, effective, cheap, measurable and transmissible intervention with good return on investment (in time, energy and humility) and with leverage effect because it is a behaviour-change delivery vehicle (3).

**Normalisation of deviance**

To get used to work side by side with sources of errors, or even worse to tolerate them, is called “normalisation of deviance” (19). When small changes in behaviour become the standard norm and expand the boundaries so that additional deviations become acceptable, accidents will then occur because signals are overlooked, misinterpreted, accumulated without being noticed (the vigilance’s threshold of the team’s members being neu-
ternalised). For instance, the analysis of the accident of the Challenger space shuttle, demonstrated hidden latent errors as far as nine years before the crash (20). This is a real matter of concern knowing that the NASA is the master of the checklists.

Under conditions of true complexity – when the knowledge required exceeds that of any individual and when unpredictability reigns - checklists can be helpful by making the reliable management of complexity some kind of routine. However, the routine requires balancing a number of virtues (3) : craft and protocol, specialized ability and group collaboration, freedom and discipline. To help achieve that balance, the checklists have to supply, on one hand, a set of checks to ensure the trivial and rather stupid but critical stuff is not overlooked. And on the other hand, another set of checks to ensure actors in the OT talk to each other, coordinate and accept responsibility. In other words, even if the surgical checklist is not intended to be comprehensive (i.e., the frontline actors keep the power to manage the nuances and unpredictability the best they know how), it could serve decreasing errors by increasing operational discipline and not tolerating normalisation of deviance.

Leadership in Surgery and Checklists

In his 2007 American College of Surgeons Presidential address, Gerald B. Healy (21) used the example of a victim of multiple trauma who is currently being treated by a trauma surgeon, a neurosurgeon, an orthopaedic surgeon, an intensivist, an anaesthesiologist, a pulmonologist, an infectious disease specialist, and a host of other individuals including nurses, respiratory therapists and so on. The days when the surgeon who is technically superb and intellectually outstanding, but who is not an efficient communicator and team leader can effectively manage this kind of patients alone are gone. Therefore, we must embark on a major educational program in team training throughout all of Medicine and Surgery. Unfortunately, this is not how most of us were trained, but it is how we now care for patients (21). The surgical checklist associated to effective leadership would be a good start and a proper mix!

In fact, sound team work requires some kind of leadership, which is a process through which a person influences others to accomplish an objective and directs an organization so it becomes more cohesive and more coherent. Gerald B. Healy has identified the 7Cs of leadership : courage, confidence, creativity, communication, caring, charisma and character (21). From a global standpoint, the most effective leaders are those who have taken the time : to understand the community that they guide ; to study its past (the process that has driven it to the foundation it now stands upon) in order not to fail in effectively structuring its present and future ; to find the ability to inspire with a passion and a commitment of purpose. In other words : the leader has to be a role model that includes traits such as integrity, humility, trust and, most important of all, honesty. The leader is the one recognised for his real professionalism, for his sense of responsibility, and for taking the lead in seeking systems solutions as opposed to individual blame. In this sense a culture of checklists instead of a culture of blame promotes patient care solutions not the generation of defensive strategies. Last but not least, the leader must not be designated by committees located far away from the surgical battle field but first of all by his or her peers. And the checklists will be part of the deal, as shared tools to be tested in the real surgical world and not being imposed by outsiders.

Conclusions and Recommendations

1. Do not belief too much in the accuracy of surgical strike. Be modest, use a checklist whenever you can.
2. Don’t forget one essential characteristic of modern life : we all depend on systems – on assemblages of people or technologies or both – and the most profound difficulty is making them work together.
3. Look for the patterns of recurrent mistakes or devise failures.
4. Do not change too often the rules in the middle of the game.
5. Rediscover the value of individual and collective discipline based on simple common sense cross-fertilized with humility ?
6. What belongs to the daily environment becomes invisible. Hit several times the same nail in order to avoid errors bound to routine
7. Accept your fallibilities and recognize the simplicity and power of using a checklist.
8. Take into account the experience of real professional actors who know the virtues and limits of checklists. Identify and choose proper leadership for the OT.
9. Keep in mind that in the near future, according to the emerging concept of “Institution Litigation”, in case of accident in the OT any responsible person – from top-down to bottom-up – will somehow be somewhat guilty.
10. Articles 50 and 51 of the Belgian Code of Medical Deontology represent a rather pretty useful checklist delineating responsibility of anaesthesiologists and surgeons in the OT.

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