

GA

GUEST ARTICLE

E. P. C. M. S.

Why Physicians Should Make Use of Airplane Pilots Techniques

Pedro Blandon, M.D., FASN

Medical errors continue to be a major cause of complications in the care of patients around the US and the world. The report "Errare Humanum Est" by the Institute of Medicine in 2000, published data reporting that medical errors kill more patients than car accidents per year. Dr. Atul Gawande a surgeon, based at Brigham and Women's Hospital in Boston, reported in his book "The Check List Manifesto" in 2010 that the use of checklists in operating rooms have caused an impact around the world in poor and developed countries alike, lowering morbidity and mortality. Studies have found 30 % of stroke patients receive incomplete or inappropriate care from their doctors, as do 45% with Asthma and 60 % of patients with pneumonia

The use of checklists in medicine is not new. Peter Pronovost published a seminal paper, reporting that using checklists when placing central lines saved several thousand lives and complications. In his paper the 10 day line-infection rate went from 11 percent to zero, prevented 43 infections and 8 deaths and saved 2 million dollars in costs. When this was translated to economic terms, hospital administrators paid attention and implemented checklists in several hospital areas. In summary this brought about a wave of simple techniques to avoid wrong patient, wrong side surgery, by the use of "time out" periods among other things. Time out periods as you probably know include the leader of the team and his/her assistants identifying the patient by at least two methods, announcing the procedure about to be performed with its possible complications, risks and benefits. Patients are briefed to make sure they are aware of procedures about to be done and an interesting fact, just introducing members of the team to each other by name, breaks a barrier, that helps detect an abnormality early in a surgery or procedure. For example, a circulator nurse could stop a physician from continuing a procedure if she/he notices a breach of the sterile technique. Knowing each other names in the operating room facilitates and empowers the member of the team to accomplish this simple behavior.

Being the training program director for our internal medicine program at Texas Tech, I became even more interested in these techniques. I encourage our faculty on regular basis to practice and teach them to our medicine residents. I use the example of the miracle in the Hudson to illustrate my point. The airplane accident in New York, where "Sully" Sullenberg a pilot, who has not flown with his crew before, followed procedures to the T, saving hundreds of life in the air and in the ground. By following the appropriate checklist, they made it possible to survive a jet encounter with

large geese going through their jet engines. In aviation pilots rehearse emergencies so many times in a simulated environment, until they become second nature. There should not be any surprises.

Personally I decided to take some flying lessons to learn how instructors teach the use of checklists and mnemonics in aviation and soon I encountered similarities that could be used in medicine. For example the IM SAFE checklist, whereby a pilot must decide if he/she is fit to fly includes: I=illness, M=medications, S=stress and fatigue, A=alcohol recent use, F=food or proper nourishment, E=emotional upset. This checklist should be applied by physicians alike before making important decisions or caring for others. The simulation of stalls helps pilots to recognize when an airplane is flying at an angle that is excessive to allow air over the wing to exert the magic of the Bernoulli's effect. Having my instructor pulling the throttle out and announcing like an incantation "you just had an engine failure" activates a sequence in the trainee's mind including the A,B,C that is A=airspeed to the best glide, B= best place to land, C=checklist to restart engine: (FMCI= Fuel tanks switch, Mixture adjustment, Carburetor Heat application, Ignition, Throttle). The automaticity is achieved after multiple repetitions

Continued on page 17



Dr. Blandon at Santa Teresa airport with his trainer Cessna 152



Why Physicians Should Make Use of Airplane Pilots Techniques (Continued)

and simulations. At the Paul L Foster School of Medicine we have the benefit of an excellent state-of-the-art simulation center managed by Dr. Hoi Ho and believe it or not, a retired commercial pilot, who happens to work as a standardized patient with our medical students.

Another instance where physicians need to learn from pilots is in the hours of rest. The new duty hours limits imposed to training program by the American Council of Graduate Medical Education ACGME, are a result of public outcry, brought about by complaints and lawsuits in cases where tired and unsupervised residents missed a diagnosis or administered the wrong medication or wrong dose to a patient. At Paul L Foster School of Medicine, Texas Tech University we have undertaken ACGME mandates to protect residents in training. Effective October of 2010, a group of Internal Medicine hospitalists started taking the overflow of cases once residents have reached their limit in hours or patients.

In the current medical environment where knowledge can easily overwhelm a single provider, we should not be afraid of pulling our checklists and making sure we cover our basis. Checklists far from being cookbook recipes, pretend to cover the obvious, the routine that can be easily be missed when one relies on memory alone.

REFERENCES

Gawande, A. *"The Checklist Manifesto"*. 1st edition. Metropolitan Books. 2009

Haynes A et al. "A Surgical Checklist to Reduce Morbidity and Mortality in a Global Population. *N Engl J Med* 360:491-99. January, 2009

Pronovost P, Needham D, Berenholtz S, et al. (December 2006). "An intervention to decrease catheter-related bloodstream infections in the ICU". *N. Engl. J. Med.* 355 (26): 2725-32.

Federal Aviation Regulations (FAR)/Aeronautical Information Manual (AIM) 2011

ACP Hospitalist September 2010: A lot to remember: Checklists can help improve care

ACGME Duty Hours www.acgme.org

Pedro Blandon, M.D., FASN, Program Director, Internal Medicine Residency, Assistant Professor, Internal Medicine and Nephrology, TTUHSC-Paul L. Foster School of Medicine, El Paso, Texas.

AD