

Systemic Failures in Medicine and How do we Prevent them from Happening?

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Medical errors injure and at times kill patients. They occur in all practice settings; in big as well as small hospitals in different countries around the world. Most of these errors are unintentional and preventable. In 1999 the Institute of Medicine (IOM) published a report titled "To Err is Human" which reported a staggering number of patient deaths due to medical errors and laid out a comprehensive strategy to reduce preventable medical errors [1]. A study in the Journal of Patient Safety in 2003 reported a lower limit of 210,000 deaths per year associated with preventable harm in hospitals [2].

In the month of December 2012, five patients suddenly died in the intensive care unit of Sushruta Trauma Center, New Delhi after oxygen supply to their ventilators was suddenly cut off. Sushruta Trauma center was established by the government of Delhi in 1998 to provide acute care to trauma victims including those with head injuries. Details of how and why this tragedy occurred are still murky with varying accounts reported in the media. The hospital authorities blamed the contractor of the company responsible for the oxygen supply to the hospital for the tragedy. One allegation cited is that when the oxygen pressure in the plant dropped and an alert was sounded, the contractor did not have the required number of technicians on site to identify and rectify the problem in a timely fashion. Irregularities in the contract between the hospital and the supplier were also reported in the media. That the contractor had not been paid for the services rendered was reported. A couple of doctors too were accused of negligence and their services terminated since the problem in the oxygen supply had been noted earlier but nothing was done to address it.

Nearly a year earlier in Dec 2011, 89 people died when a fire broke out in a busy hospital in Kolkata. An inquiry into this is still ongoing.

The tragedies which occurred in Sushruta Trauma Center and AMRI hospital in Kolkata are prime examples of systemic failures in medicine. A systemic failure may be simply defined as a failure due to a flaw or flaws in a system. Systemic failures in medicine are predictable but not always accurately and timely, can occur again and again if flaws are not identified and rectified, are extremely hard to prevent completely (every system no matter how well designed can and shall fail at some point) and usually occur due to human error. The term systemic failure is frequently used in the political and financial circles especially when things go wrong like for example the recent stock market crash in America was blamed on a systemic failure of the banking system. Medicine however is different. Systemic failures in medicine cost lives and corrodes the trust which the public has in its physicians and the health care infrastructure. When failures occur in medicine such as medication errors (patient gets the wrong medication or a wrong dose of the correct medication), surgeon operates on the wrong patient or the wrong limb of the correct patient and it is usually the individual physician or surgeon who is held responsible. A close review of each case however shows that in the vast majority of them the individual failure is precipitated, activated or amplified by a wider systemic failure. For example in the case of medication error why did the physician prescribe the wrong dose or wrong medication? Was it because of ignorance or was it an error of judgment? Why was the wrong dose dispensed by the pharmacy? Why did the nurse at bedside

not detect the error? Finally why did the patient not detect the error (personal accountability)? In the case of a wrong patient undergoing a surgical procedure why was the wrong patient taken to the operating room (OR)? Was it a simple case of mistaken identity by the transport staff? Why did the nurse and the operating room staff not confirm the patient identity prior to the surgical procedure? Why did the surgeon not confirm the identity? Why did the patient not say something when he was being transported to the OR? So in most cases individual failures in medicine appear to be a necessary but not sufficient condition for iatrogenic errors to occur. Both individual and systemic factors have to fail.

So how do we avoid these tragic errors in medicine? Here the role of checklists, time-outs and protocols cannot be over-emphasized [3]. A time-out in the OR is akin to a surgical safety checklist. As soon as the patient is wheeled into the OR, everyone involved in the procedure (the patient, the surgeon, the nursing staff and the anesthesiologist) agree on the identity of the patient, the procedure which is to be carried out and the site of the planned surgery. The time-out is at times repeated prior to the actual incision. In the case of Sushruta Trauma Center a checklist certifying monthly inspections of the oxygen supply plant could have prevented the tragedy. A back-up oxygen supply should have been in place. A protocol delineating what to do in case of abrupt interruption of oxygen supply to the ventilators could have prepared the nursing and physician staff to intervene in a timely fashion. Annual fire safety inspections should be mandated for every hospital for continued licensure status. In addition what to do if a fire breaks out should be posted on every floor (checklist) and hospital staff should participate in mock fire drills.

In the Army drills are carried out day after day, month after month and year after year. The idea is to prepare both for the known and the unexpected. An efficient health care team is no different from a well-oiled fighting army. Every member of the team knows what he has to do to keep the system working smoothly and there are checks and counter checks built into the system to help detect and address errors in a timely fashion. A time-out before any surgical procedure, adherence to established protocols, and a checklist prior to medication administration are a few examples of good and safe medicine.

The golden rule "practice makes perfect" applies also to medicine. To this we add "practice makes medicine perfect and safe".

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Received March 12, 2014; Accepted April 14, 2014; Published April 16, 2014

Citation: Sethi PK, Sethi NK (2014) Systemic Failures in Medicine and How do we Prevent them from Happening? J Pain Relief 3: 141. doi:10.4172/2167-0846.1000141

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