Patient Safety in Dentistry (Part 1)

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Medical and dental errors result in an unacceptable level of risk for the patients treated in hospitals as well as in ambulatory outpatient care facilities. In 1999, the Institute of Medicine revealed in its report “To Err is Human: Building a Safer Health System” that up to 98,000 death occurred in USA due to preventable medical errors. Since then, studies show that medical errors are the eighth leading cause of death in USA and are increasing in number, killing up to 195,000 Americans every year. Similar situations are observed in other countries around the globe. According to the WHO, the burden of unsafe acts is extremely high compared to other industries; and 10% of hospital patients suffer an adverse event (AE: an incident in which a patient is harmed) and the incidence of AE in developing countries is higher than 10%. Examples of unsafe acts include:

1. Health Care Associated Infection (HCAI)
2. Medication Errors
3. Unsafe Surgery
4. Unsafe Injections
5. Miscommunication

What is Patient Safety?

Patient Safety was defined as: “Avoiding injury or harm to the patients from the service delivered or intended to be delivered to them.”

Consequently, it is obvious that the science of patient safety is more concerned about not only the mechanism of eliminating errors that caused harm to patient during service delivery but also the science of human errors and the ways of reducing them as well as applying the system thinking strategy when dealing with this issue.

The Healthcare System

A complex system is one in which there are so many interacting parts that it is difficult, if not impossible, to predict the behavior of the system based on
knowledge of its component parts. The delivery of health care fits this definition of a complex system.

The complexity of health care system can be attributed to the following factors:

- The diversity of tasks involved in the delivery of patient care;
- The dependency of health-care providers on one another;
- The diversity of patients, clinicians and other staff;
- The huge number of relationships between patients, health-care providers, support staff, administrators, family and community members;
- The diversity of care pathways and organizations involved;
- Increased specialization of health-care professionals—while specialization allows a wider range of patient treatments and services, it also provides more opportunity for things to go wrong and errors to occur
- Variations in the physical layout of clinical environments;
- Variability or lack of regulations;
- Implementation of new technology

All health care professionals including dentists need to have an understanding of the nature of complexity in health care, as it is important for preventing adverse events.

Health care professionals use the term sentinel events to describe adverse events that lead to death or permanent disability. J. Reason created the “Swiss cheese model” (Fig. 1) to explain how faults in different layers of a system lead to adverse events and medical errors. This model shows how a fault in one layer of a system of care is usually not enough to cause an accident. Adverse events usually occur when a number of faults occur in a number of layers (e.g. fatigued workers + inadequate procedures + faulty equipment) and momentarily line up to permit the “trajectory” of an accident opportunity.
The status of Unsafe Act in dentistry

Dental care is less aggressive than hospital care and consequently generates comparatively milder damage. However, sometimes accidents can occur or certain treatments in compromised patients may lead to serious consequences to a patient’s health.

Dentists must also understand that dental maneuvers are so numerous and repetitive that serious adverse events (although unlikely) may happen sooner or later. Moreover, as dental practice becomes more sophisticated, the risks to patients increase. Dentists more frequently handle dangerous drugs and use advanced technical appliances (e.g. lasers, electrocautery, ionizing radiation) that have the potential to cause serious harm.

Dentists and dental assistants may also come into contact with blood and body fluids that can transmit infectious diseases. The ADA’s Statement of Dental Patient Rights and Responsibilities (Appendix 2) reflects substantial effort and directly correlates with The Joint Commission’s National Patient Safety Standard: Include the patient (and patient’s family) in their own care. Unfortunately, many existing quality improvement efforts have been in response to an increasingly
litigious culture. The patient has not always been the primary focus of quality improvement calls to action.

In dentistry, there has been limited analysis of treatment errors and adverse outcomes. One study shows that dentists were responsible for 18% of reported errors on the wrong body part and 41% of reported errors due to wrong procedure/wrong treatment. Further, dentists ranked second among a group of health care professionals in committing errors relating to identification of wrong body part or wrong procedure/wrong treatment.

In the lack of available information, the approach of choice for estimating the incidence of adverse outcomes in dentistry is to consider legal actions confronting dentists. For example, in Ontario between 2001 and 2010, files opened by the Professional Liability Program of the Royal College of Dental Surgeons of Ontario (RCDSO) rose by 75% (from 875 to 1528 cases per year). This increase may be explained by operator limitations, unrealistic expectations of patients, procedural risks and simply the increased numbers of practicing dentists. In view of these findings and recent analyses of adverse outcomes in medical care delivery, dentists should proactively investigate adverse outcomes and their prevention.

Moreover, in the six year period between 2006 and 2011, the DDU received 138 claims and opened 109 advice files involving allegations of erroneous extractions. The number of files received in 2011 was nearly three times that in 2006 (57 compared with 21). The most common allegations were:

- the wrong tooth was extracted because the dentist had misread the chart or referral letter;
- the dentist failed to extract the tooth causing pain;
- the extraction was unnecessary and the tooth could have been saved; and
- the dentist had not properly obtained consent from the patient.

The cost of settling 56 claims was over £413,000, an average of more than £7,300 per claim plus legal fees. Of the remaining claims, 31 were discontinued, closed or found to be outside the three-year statutory limitation period, and 51 remained active at the end of the period. The highest payout was for a patient
who had an incisor removed rather than a pre-molar. The patient received over £23,000 compensation, plus legal costs.

In the Middle East region, one newspaper’s report originating from Saudi Arabia declared that investigation was conducted by the MOH authorities to clarify the death of 13 dental patients. It is worth mentioning that the MOH regulations in Saudi Arabia are considered one of the strictest in the Middle East region.

While no ubiquitous process currently exists for reporting medical or dental errors, the National Provider Data Bank in USA (NPDB) does provide large-scale trends on adverse outcomes related to healthcare. From NPDB’s inception in 1990 through 2004, 13.2 % of all NPDB reports involved dentists. Of these 47,771 reports, Table 1 details a broad range of negative clinical outcomes related to dental care: insignificant (9.7 %), emotional injury only (1.5 %), minor temporary injury (49.1 %), minor permanent injury (23.7 %), significant permanent injury (5.7 %), major permanent injury (1.0 %), quadriplegic/brain damage/lifelong care (0.2 %), death (2.0 %) and no outcome indicated (7.1 %). Of the 34,934 reports involving dental malpractice, the unsafe acts were primary allegations: inadequate treatment (75.8 %), diagnosis (9.9 %), surgery (9.4 %), medication (1.9 %), anesthesia (1.1 %) and other (1.9 %).