

Appendix E

Errors

Errors may be defined as failures to meet the intended aims. While prevention of errors represents ultimately the best approach, the management of errors is critical for quality control and assurance designed to preserve the safety and well-being of individual patients.

At a basic level, errors of commission (choosing a wrong action) and errors of omission (inappropriate choices of inaction) may be distinguished. At a more advanced level, skill-, rule- and knowledge-based failures due to different types of lapses (inattention, misapplication of good rules, application of bad rules) may be distinguished. In addition, a number of individual biases may produce errors of judgment. External factors including deficiencies in process quality, technical shortcomings, economic consideration, and other issues in health care may also become sources of errors. The nomenclature and hierarchy of errors is shown in **Figure 1**.

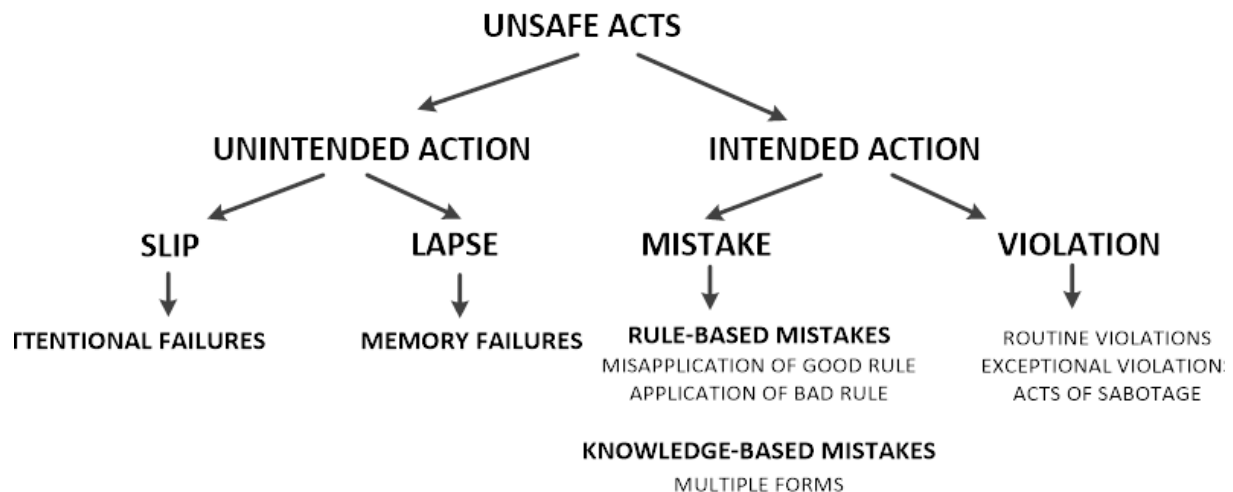


Figure 1. Nomenclature of errors based on Reason J. *Human error*. Cambridge, Cambridge University Press, 1990.

Control of errors represents the key task of quality control in medicine. Due to the potentially significant risk of harm to the patients control of errors is particularly important in interventional cardiovascular medicine. Thus, management of errors consisting of error recognition, error admission, error analysis, learning from errors, error control and error prevention must be a critical part of both; the interventional fellowship programs and interventional clinical practice. Clearly, attitudes of paternalization, ingrained culture of ‘deny and defend’, adversity to change, the semantics of denigration of errors, lack of transparency, and other factors represent some of the main obstacles to establish standards to improve quality of interventional cardiovascular therapy by minimizing exposure of patients to intervention associated harms. To move forward on justification, quality and safety of cardiovascular interventions interventional teaching programs and clinical practices must implement standards on error management. Individual operators are advised to build-up own

libraries of cases with unexpected and unwanted outcomes. Meticulous analysis of these cases represents the best means to avoid errors and repetition of errors in the future.

Further reading

- Reason J. Human error. Cambridge, Cambridge University Press, 1990.
- Runciman B, Merry A, Walton M. Safety and ethics in healthcare; a guide to getting it right. Boca Raton, CRC Press, 2017.