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## **Addressing Human Error within the Irish Healthcare System**

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## **Addressing Human Error within the Irish Healthcare System**

### *Abstract*

Research shows that human error, as opposed to mechanical failure, is the major causal factor of industrial and transportation accidents. The same is true in healthcare. This paper briefly discusses five human error reduction methods that have been adapted from high reliability organisations, such as aviation, for use in the healthcare industry. However, before the widespread adoption of these methods, an ‘evidence based’ approach should be taken to ensure that they have been adequately tailored to meet the needs of Irish healthcare workers.

### *Taking-off from the wrong runway*

In August 2006 Comair 191 was assigned for takeoff from Blue Grass Airport, Kentucky, USA. However, the aircrew erroneously used a runway that resulted in the jet over-running the runway causing the deaths of 49 people. The likely causes of the accident were the failure of the flight crew to use available cues and aids, and their failure to cross-check and verify that the aircraft was on the correct runway.

Contributing to the accident were the flight crew's non-pertinent conversations during the taxi<sup>1</sup>.

### *Medication error*

In September 2006 at the Methodist Hospital, Indianapolis, USA, nurses at the newborn intensive care unit administered a blood-thinner (heparin) to six premature babies. However, the automated drug dispensing cabinet had mistakenly been stocked with an adult dose (10,000 units/ml), instead of the diluted form (10 units/ml). It was not noticed by the nursing staff that the label said 'heparin' not 'hep-lock,' and that it was dark blue instead of baby blue. Three of the babies that were administered the incorrect dose subsequently died as a result of the error<sup>2</sup>.

### *Introduction*

Human error is the major causal factor of industrial and transportation accidents. Healthcare is also not immune to the effects of human error. For example, a review of anesthetic incidents reveals that approximately 80% of sentinel events were due to human error<sup>3</sup>. As shown in the two examples above, there are similarities between the types of human errors that occur in healthcare and other high risk industries. Over the last two decades the healthcare industry has adopted some of the methods for

reducing human error that were first used in High Reliability Organizations (HROs) such as civilian aviation.

Organizations whose performance may be catastrophically impacted by failures in complex human technology systems are known as high risk industries. The sub-set of high risk industries that succeed in avoiding catastrophes in high risk environments are known as HROs<sup>4</sup>. In recent decades HROs have focused on human factors and systems oriented approaches to improving safety. This paper will briefly discuss five human error reduction methods that have been adapted from HROs to healthcare, and conclude with a discussion of how they could be used in Irish healthcare.

#### *Crew Resource Management (CRM) Training*

CRM training is a set of instructional strategies designed to improve teamwork in operational environments. Although it has been used for more than three decades in commercial aviation, the first application of CRM training in healthcare was with anaesthetists in the late 1980s<sup>5</sup>. Since then CRM training has been delivered to a wide range of healthcare practitioners. Typically CRM training covers topics such as: decision making; situation awareness; communication; team working; leadership; and managing stress and fatigue<sup>6</sup>. CRM training can reduce medical error by providing training, and practice, in those skills that contribute to poor team performance.

#### *Behavioural rating systems*

Behavioural rating systems are a framework of non-technical behaviours indicative of some aspect of performance<sup>6</sup>. Nontechnical behaviours are the cognitive and social skills that complement technical skills. Behavioural rating systems were first developed for use in civil aviation, but have now been developed for anaesthetists,

surgeons, and other medical personnel<sup>6</sup>. Behavioural markers provide an objective framework for giving trainees feedback on their skills, evaluating training effectiveness, and auditing skills.

### *Procedures and standardisation*

Due to the complexity of HROs, they are supported by a uniform infrastructure of procedure and rules of operation. Obviously, healthcare is also complex, and there would appear to be a shift towards recognising the benefits for both safety and performance of checklists and procedures such as the World Health Organisation's surgical safety checklist, and the SBAR (situation, background, assessment, and recommendations) method for conducting a patient handover.

### *Safety climate assessment*

Safety climate is a summary of perceptions that employees share about their work environment. Safety climate surveys have been widely used as a 'leading' indicator of safety performance<sup>7</sup>. Leading indicators of safety such as safety climate and confidential reporting (discussed below) allow issues to be addressed before they result in an accident or sentinel event. Singer et al<sup>8</sup> used a questionnaire to compare safety climate across different U.S. hospitals as well as with a sample of U.S Naval aviators. It was found that the safety climate in naval aviation was, on average, three times better than in hospitals.

### *Confidential reporting systems*

Confidential incident reporting systems provide a method for reporting unsafe events without being punished. Systems such as NASA's Aviation Safety Reporting

System have been invaluable in improving safety in commercial aviation. There are a number of examples of the use of confidential reporting systems within healthcare (e.g. Confidential Reporting System in Surgery), and the relevance to the Irish healthcare system has been raised in the past<sup>9</sup>.

### *Conclusion*

Systems can be put in place that can reduce the frequency of human error and increase the likelihood of capturing and mitigating it before it leads to a sentinel event. In fact, healthcare organisations within Ireland are already using some of the methods described in this paper. It is suggested that these methods should be considered within the context of the Irish healthcare system using a systematic ‘evidence based’ approach rather than the ‘piecemeal’ adoption of various different methods. These systems are not a panacea, nor are they a pill all will be willing to swallow. However, lesson can be learned from other industries in how to avoid unnecessary morbidity and mortality. Care just has to be taken to ensure the methods have been adequately tailored to the needs of Irish healthcare workers.

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