Benefits of Using Simulation to Enhance Learning from Serious Incident Reporting

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Abstract. Mechanisms for learning from incident reporting are generally well established in high reliability organisations. However this is less true within healthcare. In addition, the role of human factors and ergonomics (HFE) in enhancing safety within healthcare is only now being appreciated. This study explored the use of simulation as a method of learning from error and increasing understanding of the role of HFE in enhancing human performance.

Keywords: Serious Incident Reporting, Simulation, Healthcare, SEIPS.

1. Introduction

Mechanisms for reporting errors and serious incidents (SIs) are well established within the NHS. However, there is an acknowledgement that the process is not as robust as in other high reliability organisations and that more could be done to encourage learning from SI reporting (1). Learning from incidents predominantly relies on issuing bulletins and alerts; however these have limited value in raising awareness as they are often stripped of clinical context that allows proper understanding of why the error occurred. In addition, they are limited to the extent to which they change working practice as bulletins are poor methods of encouraging people to adopt new ways of working (2). Use of simulation to increase learning from SIs has been piloted elsewhere, predominantly concentrating on the role of teamwork and communication in error (3). We chose to expand this concept and explore use of simulation, to improve communication and teamwork and to highlight additional human factors and ergonomics principles behind human performance using the Systems Engineering Initiative for Patient Safety (SEIPS) model (4). We anticipated that this would lead to greater awareness of the role of HFE in human performance and medical error. We also anticipated that using simulation to recreate the original incidents would lead to a greater contextual understanding of the error than is traditionally seen through the issuing of alerts and bulletins.

2. Methodology

Members of the project team reviewed incidents which had occurred within the Trust at an SI panel meeting. Two scenarios were chosen. The first involved miscommunication of a verbal drug order. Ordinarily, drugs are prescribed in writing. There are instances, usually during emergency care, where verbal orders are given due to the emergency nature of the situation, e.g. cardiac arrests, resuscitation, theatre environment, which introduce potential for miscommunication. The second involved device incompatibility involving needle-free connectors that, despite an MHRA alert in 2011, had continued to occur during cardiac arrest situations (5). Simulation scenarios were constructed following review of the incident reports that drew out various HFE elements implicated

in these incidents, e.g. communication, equipment design. Scenarios were filmed and used for participant debrief and accompanied by a presentation to participants to highlight the SEIPS model.

3. Results

Nine junior doctors participated in the two scenarios. Several had not been aware of the MHRA bulletin around needle free connectors, or had not appreciated the clinical context in which these incidents occurred, confirming the limitations of such alerts. Observations of discussions during feedback and debrief highlighted greater awareness of the impact of HFE in the occurrence of error. These included: teamwork and leadership, hierarchy, equipment design, time pressures, situation awareness, and the impact of physical workspace. Additional benefits identified were the potential to use simulation to demonstrate how changes to practice could be instituted to reduce error, such as the role of read-back in clarifying verbal orders and benefits from using aide memoires.

4. Conclusion

The use of simulation was an effective way of retaining the clinical context surrounding the error, which is otherwise lost within an alert/bulletin. This, in combination with a presentation outlining the SEIPS model, promoted a greater understanding of the role of HFE in improving human performance. Future work will concentrate on:

- adapting existing scenarios to other clinical areas where similar incidents have occurred
- creation of additional scenarios in order to foster learning from other SIs
- greater training within multi-disciplinary teams to embed new ways of team working
- additional quantitative and qualitative evaluation of simulation both on incident reporting and subsequent team behaviour.

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