Malignant Hyperthermia Preparedness through Interprofessional Education (MH-PIE): a blended learning model

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Aim:

Malignant Hyperthermia (MH) occurs in susceptible individuals after exposure to triggering anaesthetic agents which is fatal without early treatment.

The Malignant Hyperthermia Preparedness through Interprofessional Education (MH-PIE) programme allows interdisciplinary learners to build on their knowledge and skills in managing MH as a team in a safe environment.

Methodology:

Baseline needs analysis revealed staff lacked knowledge, experience, confidence and skills in managing MH.

MH-PIE adopts a blended simulation based medical education model (B-SBME), blending on-line briefing sessions on MH management followed by high-fidelity in situ simulations, concluding with immediate face-to-face debriefing sessions. Learners build on their knowledge and skills in a constructivist manner.

48 participants in 4 groups underwent 2 simulation scenarios with a high-fidelity full body mannequin (SimMan 3G) after completing the on-line training sessions. Participants were anaesthesiologists, nurses, radiologists and radiographers. An questionnaire assessing participants' knowledge and confidence of managing MH was administered pre- and post-simulation. We also measured the timings to achieve critical milestones in management.

Results

Learners' confidence and knowledge level increased from a mean score of 14.7 to 19.4 (upon a total of 22), an improvement of 32% ($p<0.05$).

All groups improved their timings in achieving key tasks and met international guidance of <10 minutes for Dantrolene administration.

Workplace latent threats were identified during debriefings.

Conclusion

The MH-PIE programme increases learners' knowledge and confidence in the recognition and management of MH. It also enhances the interdisciplinary teams' effectiveness in MH management by quicker times to achieve critical management milestones.

In situ simulation facilitates realistic learning in a safe environment in an iterative fashion with colleagues. This builds confidence and experience in managing MH crises while allowing acquisition of non-technical skills.

MH-PIE has uncovered latent workplace threats which after rectification enhance patient safety and successful MH crisis management.