Title of Project:

Exploring the role of tactical decision games (TDGs) as a novel method of teaching non-technical skills (NTS)

Contributors:

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Structured abstract:

Background:
Key NTS required by newly qualified doctors are decision-making, situation awareness, task management and teamwork. Research has found that newly qualified doctors have difficulty demonstrating effective NTS behaviour. TDGs represent a novel potential method of developing NTS.

Aims and Methods:
Phase 1: To explore the feasibility and acceptability of using non-medical TDGs to develop NTS in final year medical students. Students participated in a non-medical TDG session followed by an acute care simulation and a focus group.
Phase 2: To explore how non-medical TDGs and acute care simulation scenarios could be used to develop medical students’ NTS. Students participated in a non-medical TDG session followed by an acute care simulation with video-stimulated debrief interviewing.
Phase 3: To explore the potential role of acute medical TDGs as a novel method of developing final year medical students’ NTS. Medical TDGs were developed in conjunction with an expert panel. Students participated in a medical TDG session followed by a focus group.

Results:
Non-medical TDGs are a feasible and acceptable method of developing final year medical students’ NTS. Year 5 medical students are able to recognise, understand and discuss key NTS after participating in a non-medical TDG and acute care simulation.
scenario session. Medical TDGs are a novel way of developing final year medical students’ NTS.

**Conclusion:**
Non-medical and medical TDGs represent exciting potential methods of teaching NTS to final year medical students.
**Research report:**

**Background:**

Non-technical skills (NTS) can be defined as “the cognitive, social and personal resource skills that complement technical skills, and contribute to safe and efficient task performance” (Flin et al. 2008). Key NTS required by newly qualified doctors are decision-making, situation awareness, task management and teamwork (Mellanby et al. 2014). Previous research has demonstrated junior doctors and their supervisors perceive that newly qualified doctors have difficulty demonstrating effective NTS behaviour. (Brennan et al. 2010; Tallentire et al. 2011; Tallentire et al. 2012). There is therefore a need to understand how medical schools can better develop students’ NTS.

Tactical decision games (TDGs) are low-fidelity classroom-based activities designed to increase proficiency in NTS (Flin et al. 2008). TDGs consist of a developing emergency scenario e.g. a plane crash where participants have a time-limited period to decide on a course of action as an individual and as a group. A facilitator then leads discussion around decisions made by the group, and the rationale underpinning these decisions. TDGs have been widely used in non-medical domains such as the US marines, military, police and oil and gas industries (Schmitt 1996, Crichton et al. 2000). Using TDGs to develop undergraduate medical students’ NTS does not appear to have previously been studied. The overall aim of this project is to explore the use of TDGs as a novel tool to develop NTS in final year medical students.

**Aims/Research Questions:**
Phase 1: To explore the feasibility and acceptability of using non-medical TDGs to develop NTS in final year medical students.

Phase 2: To explore how non-medical TDGs and acute care simulation scenarios could be used to develop medical students’ NTS.

Phase 3: To explore the potential role of acute medical TDGs as a novel method of developing final year medical students’ NTS.

Methods

The University of Edinburgh College of Medicine and Veterinary Medicine Committee on the Use of Student Volunteers prospectively approved all of this work.

Phase 1) - Two non-medical TDGs (a plane crash and a shipwreck scenario respectively) were piloted in separate sessions within the University of Edinburgh Centre for Medical Education (CME). Thereafter, 38 Year 5 students voluntarily participated in a non-medical TDG session in four groups of between eight and 13 students respectively. Feedback and discussion followed each of the TDGs, using a validated NTS behavioural marker system (Mellanby et al 2014). Sessions were video-recorded and field notes made by ID. Focus groups were then used to evaluate students’ perceptions of the TDGs. A total of five focus groups, each comprising between four and seven students and lasting between 60 and 90 minutes, were undertaken. The focus groups were audio-recorded and transcribed verbatim. Transcribed data was subsequently thematically analysed by ID and GS with the aid of NVivo Version 10 (QSR International Pty Ltd, Doncaster, Vic, Australia) software.
Phase 2) - The same two generic/non-medical TDGs used in Phase 1 were also used in Phase 2. A total of 17 students participated in a non-medical TDG session in a total of three groups each containing between four and seven students. Sixteen students subsequently participated in an acute care simulation scenario in groups of between two and six students. The acute care simulation scenarios were developed by individuals trained in simulation-based education and covered clinical presentations commonly faced by junior doctors. The acute care simulation scenarios were all video-recorded to allow the researchers to analyse students’ NTS behaviour. Video-stimulated debrief interviewing (VSDI) was then used to explore students’ real time and early reflective understanding of their NTS behaviours within the scenarios. A total of eight VSDIs were carried out with four of the eight interviews including observing students who provided a complementary perspective and also contributed to probing the thought processes of the participating students. The VSDIs were audio-recorded and transcribed verbatim. Transcribed data was subsequently thematically analysed by ID and TL with the aid of NVivo Version 10 software.

Phase 3) – Two acute medical TDGs were developed with support from two national experts in NTS and simulation-based education. The medical TDGs were written to contain common tasks that the students could expect to encounter in their first year of clinical practice. 24 students participated in a medical TDG session in groups of six students. All students participated in both medical TDGs. All medical TDG sessions were audio-recorded. Focus groups were used to gauge students’ perceptions of participating in the medical TDG sessions and inform the development of subsequent sessions. All 24 students participated in a focus group which each comprised of six
students. Transcribed data from the medical TDG sessions and focus groups was then thematically analysed by ID and SK with the aid of NVivo software.

**Results**

Phase 1 – Six key themes emerged from the data: “the value of non-medical games”; “giving and receiving feedback”; “observing and reflecting”; “recognising and understanding NTS”; “dealing with uncertainty and ambiguity” and “introducing TDGs into the curriculum”. This study has been published in Medical Teacher.

Phase 2 and Phase 3 – draft papers are in preparation and will be submitted for consideration of publication in the next 2-3 months. I will inform CSMEN when papers have been accepted for publication. In summary, we found that:

A) Year 5 medical students were able to recognise, understand and discuss key NTS after participating in a non-medical TDG and acute care simulation scenario session.

B) Medical TDGs are a novel way of developing final year medical students’ NTS.

**Discussion/conclusion**

We found that both non-medical and medical TDGs represent exciting novel means of developing final year medical students’ NTS. We have now introduced a medical TDG session into the Year 5 clinical assistantship programme so that every year 5 student participates in a medical TDG session. We have also developed a renal TDG session that is being implemented in the Year 4 renal module. Further work is required to explore the role of TDGs in developing NTS throughout the undergraduate curriculum and also in postgraduate contexts.

**Recommendations**
Non-medical and medical TDGs can be used to develop NTS. TDGs could be adapted and used in different NTS settings to develop NTS.

**Dissemination**

**Publications**


**Presentations**

Drummond I, Sheikh G, Lamb T, Skinner J, Wood M. Exploring the influence of participating in tactical decision games on medical students’ recognition and understanding of non-technical skills. Association for Medical Education in Europe (AMEE), Glasgow, 2015 (poster presentation).

Drummond ID, Skinner J, Wood SM. Exploring the role of tactical decision games (TDGs) as a novel method of teaching non-technical skills (NTS). Association for Medical Education in Europe (AMEE), Milan, 2014 (oral presentation). *Nominated for Patil Teaching Innovation Award (12 abstracts shortlisted from >800 submissions).*

Drummond ID, Skinner J, Wood SM. Exploring the role of tactical decision games (TDGs) as a novel method of teaching non-technical skills (NTS). Association for the Study of Medical Education (ASME), Brighton, 2014 (oral presentation).

**References**


