

ACCEPTED AUTHOR MANUSCRIPT

INNOVATION IN EDUCATION – THE MILITARY MEDICAL ETHICS ‘PLAYING CARDS’
AND SMARTPHONE APPLICATION

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Abstract

Military medical personnel need to understand military medical ethics to comply with international humanitarian law, national health practice and professional norms. Teaching this subject is constrained by a lack of educational resources, being further exacerbated by the limits imposed by the Covid-19 pandemic. This paper describes an innovative approach to deliver military medical ethics education using 52 scenarios published as a set of playing cards and a smartphone app. The rationale for the methodology and the development of these scenarios is summarised. This package forms a part of a 'd(igital)-learning' educational suite that includes physical cards, the app and a website for teaching both military and military medical ethics. The paper describes the experience of delivering this d-learning package in military medical ethics to UK and international audiences. The final sections offer a look ahead to the next stages for refinement to the current suite and the wider d-learning resources.

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Key Messages:

1. This paper introduces an innovative tool for delivering military medical ethics education in small groups.
2. This paper describes a methodology for the creation of the tool - playing cards.
3. This paper discusses the use of playing cards in both physical and virtual environments which is supported by quantitative data from user surveys.
4. This paper offers a critical assessment of the tool and possible ways of improvement in the near future based on the received user feedback.

Key Words: MEDICAL EDUCATION & TRAINING, HEALTH SERVICES ADMINISTRATION & MANAGEMENT, ETHICS

Introduction

Military ethics is the set of principles that guide military professionals in the moral decisions they need to make in the service of their country. Military ethics is 'principally governed by the laws of armed conflict (LOAC) and international humanitarian law (IHL) though ethical behaviour is much more than solely compliance with the law [1, 2]. Set up in 2015, the King's College London Centre for Military Ethics (KCME)¹ seeks to meet the demand for education in military ethics by hosting a range of educational resources including reading material, self-directed online-courses and playing cards with ethical scenarios for small group teaching[3]. The scenario-based cards foster small group learning in military institutions by consolidating didactic teaching of ethics[4, 5]. The cards have been a successful defence engagement tool with education being delivered in the UK and internationally (e.g., Oman, Jordan, Colombia, Kuwait, Australia, and Brunei).

Military health services personnel have to comply with the ethical standards of both the health and military professions[6]. The 'dual-loyalty' tension can present complex problems, requiring specific education in military medical ethics (MME) including scenario-based learning[7, 8]. Taking advantage of 'digital learning' (*d*-learning) (comprising of both *e*-learning (the use of online material for learning) and *m*-learning (learning using a mobile device), we created a *d*-learning suite for teaching MME[9, 10]. This paper describes the development of a deck of playing cards and a mobile phone application (app) to provide MME scenarios. Each scenario (card) is supported by additional materials (e.g. key legal references, discussion points, further questions) within the app or via a QR code to the KCME website. The smartphone app (*m*-learning) is written for iOS and Android devices for maximum accessibility. The app ensures simultaneous, off-line access for educators and learners to the same resources from the KCME website. It supplements the physical cards and can be used in both virtual and physical teaching environments, including operational settings (e.g., a field hospital). To help optimise its content, the app also contains links to feedback surveys for learners and educators.

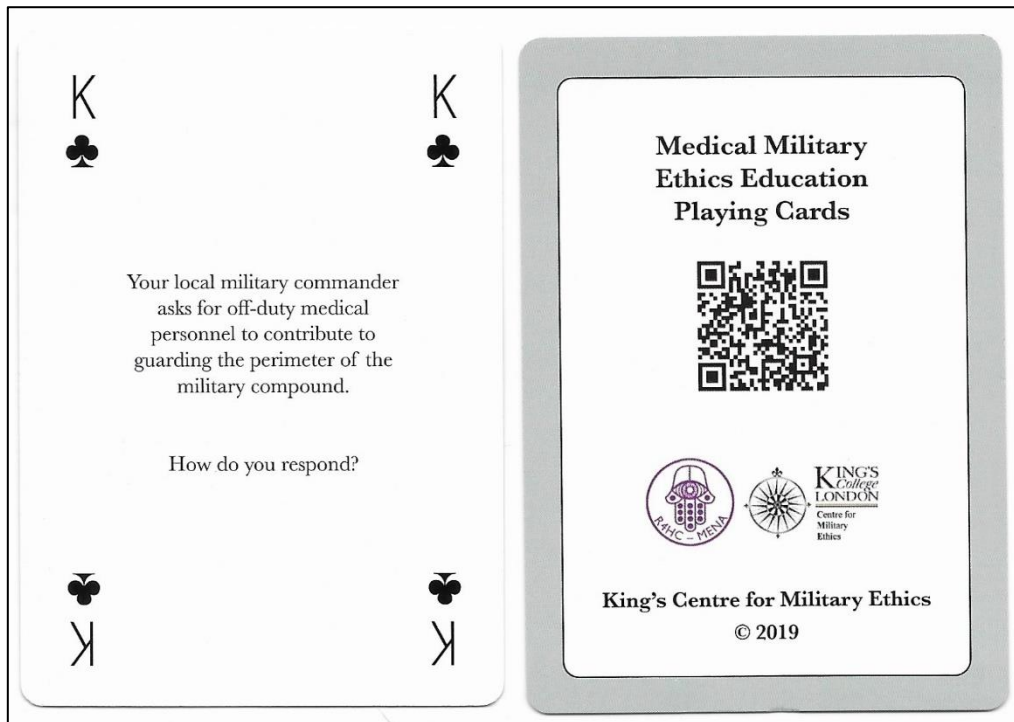
Development of the MME Cards

The topics for the MME scenarios were identified using semi-structured interviews with a consultative group of military medical and humanitarian personnel in the UK and Jordan. Fifty-two questions were created and subdivided into 4 categories. Three of these (Principles of

¹ King's College London Centre for Military Ethics website can be accessed at <http://militaryethics.uk>.

Healthcare, Relations with Patients and Protection of Healthcare Personnel) were adopted from the international reference *Ethical Principles of Healthcare in Times of Conflict*[11]. The fourth category emerged from the interviews, and covers teamwork, communications and cultural matters [12-16]. An example of a playing card is at *Figure 1*.

Figure 1 – An example of a playing card 'King Clubs'



The first edition of the cards was released in 2019 and used by Dr Daniel Messelken (Centre for Military Medical Ethics at the University of Zürich) to stimulate discussion in small groups and to practice ethical decision-making during the 7th International Committee on Military Medicine (ICMM) Course on *Military Medical Ethics in Times of Armed Conflict* in Spiez, Switzerland in September, 2019. The overall feedback was very positive. Packs of cards were subsequently shared with the consultative group and other interested parties for use in their MME teaching. Further, the cards were used in November 2019 during a 2-hour seminar on Ethics in Crisis as part of the pilot Comprehensive Medical Support in Complex Emergencies course taught in the Kofi Annan International Peacekeeping Training Centre (KA IPTC), Accra, Ghana. In groups of 6, each participant randomly selected a card from the deck. Each group was instructed to choose the best scenario from these cards and analyse it. This created a general discussion followed by a deeper discussion of the selected card. The audience consisted of 23 participants: 13 civilians and 10 military personnel with a mixed Western (5) and African (18) origin. The session was evaluated using the KA IPTC Learning Management System survey using a 5-point Likert scale. The majority (17) found the session excellent; four participants rated it as 'good' and one – as 'undecided'.

Development of the MME App

Based on feedback from Edition 1, the card deck was refreshed and additional supporting material for each scenario was written. The full collection was imported into the app, which was beta-tested with a reference panel from the original consultative group. Edition 2 of the MME cards and app were launched in November 2020. From launch to 21 Jul 2021, MB has taught an 'Introduction to Military Medical Ethics' package using the app to over 470

participants in both virtual and physical environments. The positive feedback demonstrated the effectiveness of the combination of video, synchronous online teaching, small group discussion and the app for education in MME. As of July 25, 2021, the total number of downloads for the app was 666: 391 from iOS devices and 275 from Android devices. *Table 2* shows the download breakdown by country.

Table 2 – App downloads by country

COUNTRY	DOWNLOADS
UK	336
US	30
CANADA	12
AUSTRALIA	8
NIGERIA	7
UGANDA	6
IVORY COAST	2
GREECE	2
FRANCE	2
HUNGARY	2
AZERBAIJAN	1
SUDAN	1
TAIWAN	1
GUINEA	1
UZBEKISTAN	1
NETHERLANDS	1
BRUNEI	1
PHILIPPINES	1
PAKISTAN	1
IRELAND	1
ETHIOPIA	1
MALAWI	1

Two teaching sessions serve as examples of the experience of delivering online education to adapt to the social distancing measures resulting from the COVID-19 pandemic. On February 2, 2021, the app was used for an online teaching session entitled 'Military Medical Ethics Workshop' to 60 UK reserve medical personnel from the Medical Operational Support Group (MOSG). This was led by Dr Janet Kelly (University of Hull) and structured as guided preparatory learning, a confirmatory presentation, small group discussion, finishing with feedback from each group facilitated by MB. The app served two distinct purposes: to help augment participants' existing knowledge and understanding about MME; and to encourage '*polite but challenging conversation around real-life vignettes (quote from participant)*' in a group discussion. Participants shared their own experiences as additional perspectives and developed answers to the scenarios as a group. Feedback was collected using an anonymous semi-structured survey. 76% of the learners – commissioned officers, and senior and junior NCOs – were very satisfied with the session; 20% were somewhat satisfied; and 4% remained neutral.

A second virtual session was delivered by MB and Professor Peter Mahoney on March 24, 2021 to a mixed professional group of 70 personnel from 256 Field Hospital. The structure resembled the MOSG session. The groups were split between two facilitators to enable smaller discussion groups using the app. Some participants, including two doctors, a nurse, a chaplain and a medic volunteered to provide a detailed assessment of the session. The app helped the participants engage in a dynamic yet focused discussion and hone their existing

MME knowledge, provide different views, and assess selected topics from different angles. From the feedback, 60% rated the group activity using the app as 'excellent'; 30% – as 'good'; and 10% – as 'average'. Several possible improvements were suggested including longer group sessions and an incorporation of bullet points with discussion areas on each card prior to a detailed discussion. It was recommended to mix discussion groups to include clinicians and clinical support personnel from all ranks to obtain different perspectives and avoid profession-related bias.

Beyond these examples, the material has been used for a range of virtual teaching sessions covering other UK Reserve military audiences, new entry officers to the UK Army Medical Services, 'Train the Trainer' for senior military medical educators, a remote MME educational conference in Greece, and two additional physical sessions with audiences in Ghana. This experience has also led to the creation of a template 'virtual teaching' studio comprising four 'screens': PowerPoint is displayed on two screens, one as the presented slide in 'shared screen' and the subsequent slide visible in 'presenter' view; a second device (separately logged-in to the video conference) displays the actual screen seen by attendees; and, finally, the MME app is used on a further device (see *Figure 3*). This enables the presenter can display and integrate material for teaching between a personal computer, mobile devices and different forms of software.

Figure 3 – Virtual Teaching Studio for MME



Feedback and Evaluation

Feedback and evaluation are important for analysing new educational innovations. Our digital architecture provides a backbone for embedding this within our educational process. The app includes links to surveys for learners and educators. The survey data is collected using GDPR-compliant, web-based survey software, SparkChart™, that is approved by the King's College London Research Ethics Committee Minimal Risk procedures. The learner survey has 17 semi-structured questions covering the app layout and individual scenarios. It uses a 5-point Likert scale with optional free text. As of July 4, 2021, there have been a total of 34 completed entries. 75% agreed or strongly agreed (25%) that that app was useful for teaching MME. Furthermore, 75% agreed (and 25% strongly agree) that the contents for each suit are appropriate; that the scenarios cover the subject well; and that no scenarios need removing. Additional topics were suggested, including: ethics in mass casualty incidents; resource allocation during a pandemic (e.g., Covid-19); and a mechanism for user suggested additional topics. 75% agreed that other languages are needed, including French, German, Russian, Arabic and Chinese. The second survey is designed for educators who used the app during various events. This covers information about the educational event, feedback from users plus

the option to 'cut and paste' informal feedback sources including narrative comments from hosts or participants.

Discussion

This article describes an integrated design for physical and digital educational resources to support MME teaching. The 'playing cards'-approach to hosting scenarios proved to be an effective tool in supporting the engagement of learners with the material. The creation of the app proved to be essential to extend this impact as the learning environment shifted from physical classrooms to online videoconferencing, and to make the learning more mobile. Through experimentation, we developed a combination of electronic devices and software to support the effective delivery of a virtual teaching event.

This overall experience also showed that MME teaching packages require tailoring to discrete target audiences within the range of military health professional groups. It has been suggested that policy and education in ethics is an operational priority for military health professionals [17] and our recent literature review has identified several academic papers that call for specific education in this field [18]. Further, separate topics need amplification for clinical personnel (doctors, nurses and medics), non-clinical personnel (administrative officers and personnel assigned to medical duties e.g., first aiders), and experienced senior medical leaders. Individual scenarios may be more suited to each audience, alongside the depth and sophistication of the discussion. An additional deck of cards will be developed to cover 'Role 4' healthcare, nursing in a military context, garrison healthcare (including primary medical care, dental care, mental health, community rehabilitation and occupational medicine) and, health policy and research. This experience has also shown the potential value in developing a formal curriculum in MME that mirrors similar curricula in pre-hospital emergency care for different military health professionals[19].

Given the COVID-19 restrictions, there have been limited opportunities to deliver the material to physical audiences. Further educational events are planned for UK and international audiences to refine the material and translate the resources into other languages. The feedback procedure will be upgraded to encourage completion of the learner's survey and to improve the educator survey. It is planned to develop a 'train the trainer' module to expand the number of educators who are familiar with the teaching material, and an online introductory course in MME is being developed. Overall, it is believed that these resources will provide valuable support to education in MME and will also inform the development of digital education suites for other subjects in military medicine.

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