

## The Challenges of “Continuing Medical Education” in a Pandemic Era

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### Abstract

**Closure of medical schools or the barring of “live patient” contact during an epidemic or pandemic is potentially disruptive to medical education. During the SARS epidemic, the use of web-based learning, role play, video vignettes and both live and mannequin-based simulated patients minimised disruptions to medical education. This article examines the pedagogical innovations that allow clinical teaching to continue without medical students examining actual patients, and proposes a contingency plan in the event of future outbreaks that may necessitate similar containment measures.**

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**Key words:** Infection control, Medical education, Pandemic, Strategies

### Introduction

Although pandemics of influenza have occurred (albeit rarely, i.e. once every few decades) for more than 3 centuries, recent outbreaks of H1N1 and H5N1 influenza<sup>1</sup> and the severe acute respiratory syndrome (SARS),<sup>2</sup> have necessitated the institution of such measures as school closure and mandatory quarantine of cases<sup>1</sup> in a bid to contain the spread of infection. SARS was unique for occurring primarily in hospitals, mainly amongst healthcare workers,<sup>3</sup> although it also affected the general populace. Pandemic influenza, however, is mainly community-based. The SARS outbreak mandated the closure of medical schools and barring of medical students from patient contact.<sup>4,5</sup> Even though work proceeded apace in hospitals during the outbreak, the medical education of junior doctors was severely curtailed or limited in affected countries.<sup>6</sup>

Despite compliance with these policies, medical students and academics alike have decried the closure of medical schools and prohibition of patient contact for medical students, citing the importance of examining “live” rather than “simulated” patients and the duty of care owed by healthcare personnel<sup>7,8</sup> and medical students to the sick – even at personal risk of falling prey to a contagious disease.<sup>9</sup> Undergraduates in the United Kingdom are routinely informed that the General Medical Council’s Good Medical Practice guidelines apply as much to medical students as to

qualified staff.<sup>10</sup> One compelling argument for a “business as usual” approach to medical education, perhaps, is the fact that epidemics will continue to break out, medical students and healthcare workers remaining susceptible to contagion. Thus, it behooves medical schools and hospitals to ensure that all healthcare personnel (including medical students) are well-trained in the use of personal protective equipment (PPE) and conversant with infection control measures,<sup>7</sup> rather than that medical students should be protected from the harsh realities of professional life by restricting their contact with patients. Although pedagogical philosophy dictates that medical students be treated as “junior doctors”, i.e. an integral “part of the healthcare team” and therefore subject to the same risks and duties, we must remain mindful of the fact that students are not under the same contractual obligations as healthcare workers.<sup>7</sup> As medical students cannot match the knowledge, skills and clinical experience of a qualified doctor, it might be argued that any participation in the care of a patient with pandemic influenza or SARS would primarily be for the students’ educational benefit, rather than the provision of meaningful care for the patient. Therefore, the risks to their health might not outweigh the benefits.<sup>11</sup> Certainly, issues such as health insurance for medical students and other medico-legal considerations will need to be resolved before students can be allowed to volunteer, even as skilled helpers.<sup>10</sup>

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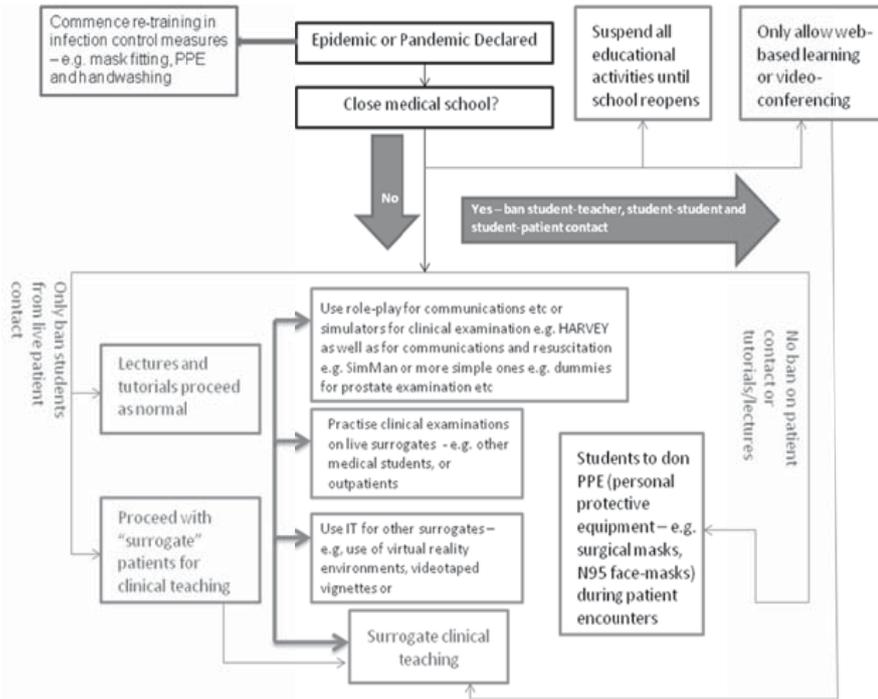


Fig. 1. Decision tree for utilising different teaching methods during a pandemic or epidemic.

Interestingly, the protracted period of successful antibiotic development, effective public health measures and paucity of pandemic outbreaks in the last few decades have resulted in a generation of physicians (and medical students) who have entered the profession with little thought for the occupational risks and possibility of mortality,<sup>7</sup> although the deaths of healthcare workers during the SARS outbreak<sup>12</sup> have no doubt brought such issues to the forefront in recent times. Of course, there have been other occupational hazards to be considered and feared, such as the risk of contracting AIDS or hepatitis from needlestick injuries.<sup>13</sup> Objections to educational interruptions aside, it must be remembered that social distancing measures, such as the closure of schools and universities, have been shown to limit the spread of infections,<sup>14,15</sup> justifying, in part, the barring of medical students from live patient contact.

**Rethinking Medical Education in a Pandemic Outbreak**

Pandemic outbreaks present unique challenges to medical educationists; i.e. to decide if the situation merits school closure or restriction of ward privileges and, if so, how to continue with clinical training in the absence of “live patient” contact. Measures entailing the use of patient surrogates such as videotaped vignettes and student volunteers,<sup>16</sup> audiotaped recordings<sup>17</sup> or mannequin simulators,<sup>18</sup> webcasting and online chatrooms,<sup>4,19</sup> were successfully adopted by medical schools during the SARS outbreak. This caused no surprise, as simulators have been shown

to be as effective as live actor-patients (if not more so) for teaching purposes.<sup>20,21</sup> The SARS outbreak also posed a unique challenge by interrupting high-stakes summative examinations, necessitating the adoption of innovative methods to conduct them, including the incorporation of a telephone-based viva voce.<sup>4</sup>

**Medical Pedagogy Without “Live” Patients**

It is timely, in light of possible future outbreaks, to examine how to teach and assess medical students without the use of live patients, and to formulate contingency plans in the likely event that clinical teaching is again disrupted. Upward-spiraling healthcare costs, resulting in a move to outpatient care and a dearth of clinical material for educational purposes, have fortuitously provided the impetus for the development of pedagogical innovations, amongst which are patient simulators (for auscultation of heart and breath sounds, delivery of a sim-baby, and the teaching of surgical skills); e-learning modules ranging from online use of flash multimedia and digitised still images to teach radiology and anatomy, video vignettes and virtual patients to teach clinical examination, procedural and diagnostic skills, communications and ethics and to online high-stakes examinations such as the modified essay question;<sup>22,23</sup> use of virtual-reality simulators to teach anatomy<sup>24</sup> as well as resuscitation,<sup>25</sup> surgical<sup>26</sup> and palpation skills.<sup>27</sup> Despite their undoubted usefulness, IT- and simulation-based education come at a price; both

are resource and manpower-intensive,<sup>28,29</sup> and the costs of setting up a virtual learning environment or simulation laboratory may prove a deterrent to their utilisation.

### Conclusion: How to “Continue Medical Education” in a Pandemic or Epidemic

*“In times of change, learners inherit the Earth, while the learned find themselves beautifully equipped to deal with a world that no longer exists.”*

**Eric Hoffer**

Lest we discover that we have inadvertently abrogated our duty to educate the next generation of doctors through our inability to change with the times, or through ill-preparedness, we need to embrace the pedagogical innovations already in place, as well as dream up new ways to do so.

Ideally, of course, there is no better teaching tool than the live patient, with whom the medical student or trainee doctor has to interact and empathise with and from whom much can be learned. In the event of a pandemic, however, where such contact may put the student at risk, or prove deleterious in terms of patient care, it is reasonable to utilise the vast resource of “patient surrogates” that have been developed.

The figure provides a decision tree for deciding upon teaching methods in times of crisis (pandemic or epidemic). Irrespective of whether school closures are effected or patient contact barred, all healthcare personnel and medical students should revise personal protection practice, i.e. handwashing techniques, mask fitting and the donning of PPE. Ideally, healthcare workers and students alike should don PPE and continue with their clinical education in the wards, contributing to patient care as well. In the event that this is impossible, the teacher should utilise the vast array of teaching methods available, until such time as “normal” medical education can be restored.

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