

# A Response to “In vivo Simulation-Based Learning for Undergraduate Medical Students: Teaching and Assessment” [Letter]

Jessica Nicholls-Mindlin   
Anna Chelchowska   
Lucy Mellers 

Medical Sciences, University of Oxford,  
Oxford, UK

## Dear editor

We read with interest the article by Sideris et al<sup>1</sup> on in vivo simulation based learning (SBL) for medical students. Animal simulations have been included in medical education for decades. However, in 2016 the University of Tennessee College of Medicine became the last medical school in the US to stop animal use for teaching purposes, stating that: “non-animal teaching methods have supplanted the cruel and unnecessary use of live animals”.<sup>2</sup> By contrast, many UK medical schools still believe that the use of animals in teaching is necessary.

As medical students at Oxford University, in vivo SBL has been a compulsory part of our course. In preclinical years we investigated the physiological effects of clinically relevant drugs like adrenaline in vivo. This extraordinary waste of animal life for a negligible educational gain is at odds with Oxford University’s claim to follow the 3Rs. Similar educational impact could be achieved through videos of the experiments, reducing animal suffering. Sideris et al<sup>1</sup> argue that although in vivo SBL does not lead to improved practical skills, it can provide excitement and inspiration, which could boost medical students to “strive for perfection”. In our experience this was very much not the case; many students found the experience upsetting and demoralising.

The method of recruitment to the “Essential Skills in the Management of Surgical Cases” course<sup>3</sup> introduces selection bias. Students had to register their interest for this course and were selected based on their CV. High ratings from this subpopulation of students, for a course tailored to their surgical career aspirations, cannot be generalised to the whole student body. A rigorous investigation should include all medical students. It is striking that even this biased sub-population preferred that animal use was limited.<sup>1</sup>

The authors state that in vivo SBL should be used with caution in undergraduate teaching. Indeed, adding in vivo simulation to the general medical curriculum raises a host of ethical questions. Cheong<sup>4</sup> questions whether a student refusing to partake in a compulsory animal experiment should be allowed to become a doctor. If refusing does not result in failing assessments, it implies that animal use is supplementary rather than essential, making it harder still to justify. On the other hand, refusing progression to students who do not take part conflicts with the ethical pillars of autonomy and justice; medical students should be supported to

---

Correspondence: Jessica Nicholls-Mindlin  
Medical Sciences Office, John Radcliffe  
Hospital, Headley Way, Oxford, OX3  
9DU, UK  
Tel +44 1865285783  
Email [jessica.nicholls-mindlin@worc.ox.ac.uk](mailto:jessica.nicholls-mindlin@worc.ox.ac.uk)

make autonomous decisions about what they believe is ethically just. Further, the GMC document “Outcomes for Graduates”, states doctors should “act with integrity”.<sup>5</sup> Abstaining from an activity that results in an unnecessary animal death could certainly be interpreted as acting with integrity, therefore failing students for this action would be in contravention of the GMC guidance.

While the authors advocate for a cautious approach to in vivo SBL, we would go one step further and propose that UK medical schools follow US medical schools and eradicate animal use from the curriculum.

## Disclosure

The authors report no conflicts of interest in this communication.

## References

1. Sideris M, Nicolaidis M, Jagiello J, et al. In vivo simulation-based learning for undergraduate medical students: teaching and assessment. *Adv Med Educ Pract.* 2021;12:995–1002. doi:10.2147/AMEP.S272185
2. Last remaining medical school to use live animals for training makes switch to human-relevant methods. Physicians Committee for Responsible Medicine. Available from: <https://www.pcrm.org/news/news-releases/last-remaining-medical-school-use-live-animals-training-makes-switch-human>. Accessed September 11, 2021.
3. Pantelidis P, Sideris M, Tsoulfas G, et al. Is in-vivo laparoscopic simulation learning a step forward in the undergraduate surgical education? *Ann Med Surg.* 2017;16:52–56. doi:10.1016/j.amsu.2017.01.025
4. Cheong J. The use of animals in medical education: a question of necessity vs desirability. *Theor Med.* 1989;10(1):53–57.
5. Outcomes for graduates. Available from: <https://www.gmc-uk.org/education/standards-guidance-and-curricula/standards-and-outcomes/outcomes-for-graduates/outcomes-for-graduates>. Accessed September 11, 2021.

Dove Medical Press encourages responsible, free and frank academic debate. The content of the *Advances in Medical Education and Practice* ‘letters to the editor’ section does not necessarily represent the views of Dove Medical Press, its officers, agents, employees, related entities or the *Advances in Medical Education and Practice* editors. While all reasonable steps have been taken to confirm the content of each letter, Dove Medical Press accepts no liability in respect of the content of any letter, nor is it responsible for the content and accuracy of any letter to the editor.

**Advances in Medical Education and Practice**

Dovepress

**Publish your work in this journal**

*Advances in Medical Education and Practice* is an international, peer-reviewed, open access journal that aims to present and publish research on Medical Education covering medical, dental, nursing and allied health care professional education. The journal covers undergraduate education, postgraduate training and continuing medical education

including emerging trends and innovative models linking education, research, and health care services. The manuscript management system is completely online and includes a very quick and fair peer-review system. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <http://www.dovepress.com/advances-in-medical-education-and-practice-journal>

<https://doi.org/10.2147/AMEP.S338895>