



Just-in-time training could be just what the doctor ordered

A new approach for teaching clinical skills

Justine M Naylor *conjoint professor and senior principal research fellow in orthopaedics*^{1,2,3}

¹ School of Clinical Medicine, UNSW Medicine and Health South West Sydney Clinical Campus, Sydney, NSW, Australia

² South West Sydney Local Health District, Sydney, NSW, Australia

³ Ingham Institute Applied Medical Research, Liverpool, NSW, Australia

Justine.Naylor@health.nsw.gov.au

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At the heart of the practice of medicine is the tenet “to do good or to do no harm.”¹ Fundamental to achieving this objective is continuing professional development (CPD), which should be lifelong and learner-centred, encompassing the clinical domain from consultation room to the bedside and operating room.² CPD is relevant for all career stages from novice to veteran, although the optimal point for each stage might differ. CPD takes many forms—a long way from the traditional, and now outdated, approach of “see one, do one, teach one”³—including physical and mental rehearsals of clinical skills under laboratory conditions, vicarious experiences through self-guided readings or tutorial and lecture participation, self-reflection, and peer review.⁴ It involves a variety of media from paper to audiovisual based formats, and a host of digitally based tools that now includes (the soon-to-be ubiquitous) artificial intelligence.

From the patient’s perspective, the overarching goals of the clinician’s self-improvement learning cycle might be “to do no harm to me”; however, the goal is more nuanced for the clinician. Veterans might strive to limit the human capital depreciation that inevitably occurs after underuse of their learned skills⁵ or simply by ageing.⁶ And in doing so, practice and refresher courses both recharge the fading battery and, critically, keep the cognitive load manageable—which itself appears essential for the avoidance of burnout.⁷ For novices, CPD could represent an opportunity to hone newly acquired skills and question the therapeutic merits of their decisions, with the question of burnout not even on their radar. Finally, workplaces everywhere recognise that CPD is an investment in quality and safety, but that it can be costly and time consuming.⁸ Thus, in this era of rising healthcare costs and workloads, and clinical labour shortages, the need to find CPD approaches that meet the needs of all stakeholders becomes yet another healthcare imperative.

In a linked paper in *The BMJ*, Flynn and colleagues conducted a randomised controlled trial (doi:10.1136/bmj.2024.080924)⁹ to evaluate a novel approach to clinician training and CPD: the use of just-in-time coaching for inexperienced clinicians to improve high risk procedural care in operating theatres. Just-in-time skill training in this instance can be viewed as point-of-care training performed under controlled, but clinical conditions and is planned. The CPD would be recognised for both the trainee and the trainer.

Flynn and colleagues randomised anaesthetic trainees to receive, within 1 hour of the true clinical encounter, a standardised coaching session on an infant manikin by an expert intubation coach or

receive usual on-the-job training. For the intervention group, 10 minutes of training was completed in each trainee session before the actual patient (toddler) intubation and up to five sessions were provided in total. The intervention assumed that by engaging and priming the requisite motor skills, rehearsal of a clinical procedure just before the actual procedure should be as useful to the clinician as it is to athletes and musicians about to compete or perform. Just-in-time simulation training has been trialled in other scenarios to varying degrees of success, but not always using a randomised trial design.^{10–12} Here, the strategy was successful.

The first attempt success rate for intubation (the primary outcome) was significantly higher in the intervention group than in the control group and this trend was consistent regardless of type of trainee (residents, fellows, or student resident nurses). Secondary outcomes such as clinician cognitive load and competency were also better in the intervention group than in control. Although not formally monitored, Flynn and colleagues found no overt evidence that the additional training disrupted or slowed workflow or was overly burdensome for the coaches. The authors pondered the wider implications of just-in-time training for more experienced clinicians, both within the speciality of anaesthetics and beyond. They noted observations from elsewhere that even small breaks from the operating room for cardiac surgeons diminishes surgeon performance such that inpatient mortality risk is increased.¹³ In such instances, a quick physical refresher by a veteran returning to work could be a life-saving measure, but this claim requires validation through further research.

Regardless of any broader applications, considering the intervention outside of a clinical trial, this form of point-of-care CPD has the potential to be widely adopted if it accelerates competency in inexperienced individuals with little added burden on existing resources and, as a bonus, protects the mental health of its users. Furthermore, this form of coaching might not only help us from doing harm but could also prevent us from doing time.

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