

**Title:** MyOnCall Pager App: Collecting validity evidence for assessment of clinical decision-making

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**Background:** Errors in clinical decision-making (CDM) threaten patient safety, and thus CDM is an important skill [1]. Purposeful practice and assessment of CDM is limited in medical training [2]. The MyOnCall (MOC) Pager, informed by modern decision-making theory [3], is a mobile application that allows learners to answer simulated pages about virtual patients with the intent of building safe CDM skills. This study aims to collect validity evidence for the MOC Pager's CDM questions through test content, response process and correlation between responses and level of training.

**Method:** Semi-structured cognitive interviews were conducted with five senior residents (SR) regarding 15 sample general surgery (GS) pages. Interviews were independently coded and analyzed in duplicate [4,5]. Fifty pages, each consisting of a management question (ex., diagnosis, treatment) and CDM question (i.e., how urgently to see patient), were then administered to 10 GS SR, 10 GS junior residents (JR), and 10 medical students (MS). An answer key was developed for the CDM questions using SR responses, which categorized responses as 'best', 'safe', 'unsafe' or 'overly cautious'. MS and JR responses were compared using Mann-Whitney U tests, and individual response patterns were analyzed.

**Results:** Cognitive interviews identified problems with response matching and CDM response options were changed accordingly. There was a significant difference between MS and JR scores for the median number (IQR) of correct management questions [35.0 (2.00) vs 39.5 (3.75),  $p=0.006$ ] and 'best' CDM responses [17.5 (8.75) vs 25.0 (2.50),  $p=0.002$ ]. Individual response patterns identified outliers in the proportion of 'unsafe' and 'overly cautious' responses selected, with some learners demonstrating a wide range of management scores. Additionally, MS and JR reported feeling uncomfortable managing pages alone up to 42% and 18% of the time, respectively.

**Conclusion:** Interviews highlighted learners' cognitive processes when responding to simulated pages. Individual analysis captured patterns in CDM skills that are unique for each learner. Overall, the preliminary validity evidence rectified response matching issues and demonstrated that the MOC Pager questions discriminate between MS and JR in terms of appropriate management and 'best' CDM responses. Accordingly, the MOC Pager questions may serve as a unique adjunct to clinical training and formative CDM assessment.

355/400 words

[1] J Gen Intern Med 2010 25: 774-779

[2] Med Educ 2005 39: 418-427

[3] Acad Med 2017 92: 746-751

[4] Washington DC: National Academy Press 1984: 70-100

[5] Psicothema 2014 26: 136-144