Using a testicular simulation model as an educational tool to improve testicular volume estimations

CRAIG, Jessica, SHARMAN, Megan, FITZGERALD, Ciara, WIGG, Dominic, WILLIAMS, Beth, WILKINSON, Ellen, WRIGHT, Neil, LANGLEY, Joe <http://orcid.org/0000-0002-9770-8720> and ELDER, Charlotte

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Jessica Craig, Megan Sharman, Ciara Fitzgerald, Dominic Wigg, Beth Williams, Ellen Wilkinson, NP Wright, Joe Langley, CJ Elder

Background: Measuring testicular volume (TV) by orchidometer is a standard method of male pubertal staging. Previously we have developed a simulation model for TV estimation with different sized silicon testes housed in latex scrotum and displayed on paediatric mannikins. When used in a study of 215 paediatric endocrinologists TV was measured accurately on only 33% of occasions. Intra-observer reliability was also lacking with participants giving different estimations for the same size testicle on 61% of occasions. We have investigated whether training naïve medical students, using a workshop involving our simulation models, could improve the accuracy and reliability of TV estimation.

Method: All participating preclinical medical students watched a 5min video to represent standard undergraduate training in male pubertal assessment. Volunteers were then randomised directly to assessment or to attend a workshop consisting of a more in-depth video and five stations contextualising and practicing the skills required for accurate and reliable TV estimation, prior to assessment. The workshop was designed to promote skill acquisition through the four different learning modalities. The assessment consisted of three child mannequins displaying testes of 3ml, 4ml (twice), 5ml, 10ml and 20ml. To assess intra-observer reliability, the effect of repeated examinations on accuracy and the effect of time on skill retention, participants were asked to return a fortnight later for repeat assessment.

Results: Ninety students participated (55F), 46 of whom attended the workshop and were considered "trained". Of the total number of estimates across both assessments (1020), 31% in the trained group were correct, compared to 26% in the untrained group. Both groups had a tendency to overestimate (40% trained, 48% untrained). The trained group were more accurate (estimating the correct TV or one size away), 77% versus 65%, and the untrained group significantly more inaccurate (estimating 3 or more sizes away) 14% versus 3%. On reassessment the trained group improved their overall accuracy whereas the untrained group marginally worsened.

Conclusion: Overall TV estimation accuracy was poor. Workshop style training improved accuracy and retention of skill acquisition and could be considered as a learning tool for those new to the specialty.