Learning curve for transcervical chorionic villus sampling in a medical simulator.

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OBJECTIVE

Determine the learning curve for transcervical chorionic villus sampling (TC-CVS) using a medical simulator.

METHODS

Four Maternal and Fetal Medicine (MFM) Fellows with no previous experience in TC-CVS participated in the study, after an initial introductory course, each fellow performed the TC-CVS under supervision in medical simulator with a standardized technique, then learning curves were constructed by cumulative summation (CUSUM).

Figure 1. Images of the medical simulator

Figure 2. Ultrasound image of the TC-CVS procedure in the medical simulator.

RESULTS

A total of 300 procedures were evaluated by experienced MFM specialists. The four fellows reached proficiency in TC-CVS, fellow A reached the competence in the 78th attempt, fellows B, C and D in 58, 65 and 52 attempts respectively, with a median of 61.5 (range 52-78). The mean failure rate among the fellows was 8.1% (range 6.6-9%).

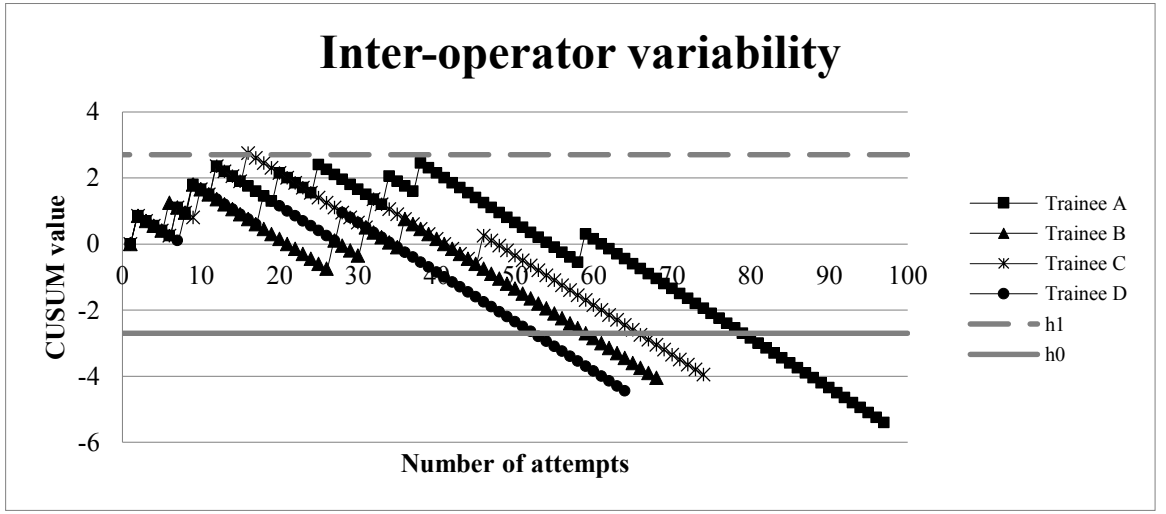

Figure 3. Cumulative sum (CUSUM) inter-operator variability plot of the learning curve for all the trainees in transcervical chorionic villus sampling (TC-CVS) in the medical simulator.

CONCLUSIONS

The use of a medical simulator and CUSUM allows training and monitoring of individual learning curves for TC-CVS in MFM fellows.