

Development, Evaluation, and Educational Impact of the Pyeloplasty Skills Assessment Rubric: Phase III Qualitative Findings from a Multicenter, Multi-Phase Study

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Introduction: Competency-based medical education (CBME) has demonstrated benefits across medical specialties, with Entrustable Professional Activities (EPAs) providing a framework for assessing readiness for independent practice. Urology in the United States has yet to broadly adopt CBME or EPAs for resident development. In this study, we qualitatively evaluated the impact of a novel Pyeloplasty Skills Assessment Rubric (PySAR), representing a rudimentary EPA for robotic pyeloplasty in pediatric urologic surgery, on trainees and faculty.

Methods: Following development and establishment of face and content validity through a rigorous Delphi process (Phase I), faculty-trainee dyads at 5 institutions used PySAR pre- and post-operatively to assess performance and provide structured feedback (Phase II). In Phase III, virtual semi-structured interviews explored the impact of PySAR on trainees and faculty. Interviews were recorded, transcribed, and independently and inductively coded by 2 study team members per transcript, with consensus achieved through discussion. Code processing and storage were completed within Atlas Ti software. Codes were then condensed and analyzed into overarching themes and sub-themes.

Results: Four themes were identified (Figure 1).

Participants described PySAR as facilitating preoperative preparation, individualized learning goals, and shared expectations between trainees and faculty. During operative learning, PySAR promoted stepwise skill acquisition and intentional teaching. Participants reported more specific and actionable feedback, opportunities for reflection, and longitudinal tracking of competency. PySAR promoted explicit discussions of entrustment and autonomy, supporting trainee progression toward increased responsibility based on demonstrated performance. Rubric implementation challenges included time constraints, variability in faculty use and scoring, and integration into clinical workflow.

Conclusions: PySAR was perceived not simply as an assessment instrument, but as a framework for structuring competency-based surgical education. It has the potential to enhance the learning environment for both trainees and faculty by promoting intentional preparation and teaching, meaningful feedback with longitudinal assessment, and progression toward entrustment and autonomy.