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TEACHING AND EVALUATION OF BASIC URODYNAMIC SKILLS: QUEBEC UROLOGY RESIDENT EXPERIENCE

Hypothesis / aims of study
Recognizing the growing role of urodynamics (UDS) in advanced urology, residency programs have rapidly incorporated it into their training curriculum. However, there is no consensus on the best methods of teaching UDS application. Therefore, we aimed to determine the most appropriate teaching method with objective evaluation to enhance urodynamic skills, in order to improve quality of teaching and patient care.

Study design, materials and methods
Urology residents (n = 20) were randomized according to postgraduate year and training institution to either review a video training module (1) or a teaching document (2), on UDS, prior to an objective structured clinical examination (OSCE). Participants were given a basic questionnaire evaluating age, training level, adequacy of training, estimated UDS interpretation proficiency. The OSCE contained 12 UDS tracings with questions and assessing level of certainty. Two urologists independently established the correct answers. Two blinded, independent graders scored each UDS question to determine competency (0=incorrect, 1=partially correct, 2=correct). Certainty was scored on a scale of 0 to 4 (0 representing a guess and 4 representing 100% certainty).

Results
The median self-reported proficiency was 5 out of 10, mean total score was 13.3 of 24, and overall certainty was 27 of 48. There was significant difference in overall competency between both groups (video: 15.1 ± 2.08, document: 11.4 ± 2.41, $P<0.01$). Also, the video training module group achieved a higher score on overall certainty (30.7 ± 4.99 versus 22.4 ± 10.3, $P<0.05$). When analyzing each diagnosis, we found that the mean score for correctly identifying proper calibration and bladder outlet obstruction was significantly higher in the video training module group, while approaching significance for detrusor sphincter dyssynergia ($P<0.05$) respectively. Overall competency was significantly correlated with self-reported proficiency ($r = 0.502$, $P<0.05$), total certainty ($r = 0.531$, $P<0.05$), and overall urodynamic experience ($r = 0.503$, $P<0.05$).

Interpretation of results
The overall competency score achieved by the video training group and document module in this study was low (median score =55.4%). In fact, this observation is apparently reflective of the UDS skills being dominated by other graduation requisites such as clinical skills and surgical performance. There is considerable variation within the use of UDS teaching materials and competency appraisal. Residents-in-training are taught using a mixture of tracings from faculty staff collections, various textbooks, and other resources. with didactic teaching sessions being the most frequent and Interactive video tutorials being the least common method

When reviewing residents' opinion for the most preferred urodynamic teaching method, 13 residents (65%) selected real patient practical sessions, and 8 (35%) preferred problem-based learning (case discussion). Most of the participants reported feeling they had received inadequate training allocated to UDS studies during their residency with a mean (SD) score of 4.9 (1.74) on a scale from 0 to 10. Participants recorded their satisfaction level based on a 5- point Likert scale that ranged from 0 to 4, overall mean (SD) satisfaction score was 2.1 (1.02),

In fact, this study does not assign a "magic number" of UDS traces that resident must read, but it does reveal that standard UDS training is insufficient. Moreover, there is a necessity of a standardized systematic exam to accurately assess interpretation.

As with all other practical skills, there is a learning curve, with the interpretation becoming easier with increasing experience. An intensified practical course of UDS consolidation has been suggested to enhance interpretation skills.

Concluding message
A urodynamic video training module improved residents UDS knowledge and interpretation skills. These findings highlight the need to incorporate multimedia teaching for UDS interpretation into urology curriculum. Future research should focus on curriculum standardization and optimal learning methods to improve UDS competency.

Table 1: Urodynamic competency, certainty & proficiency based on study group

	Video group (n = 10) Mean (SD)	Document group (n = 10) Mean (SD)	Overall (n = 20) Mean (SD)	*P*-value
Total Competency (0-24)	15.1(2.08)	11.4(2.41)	13.3(2.90)	0.0017*
Total Certainty (0-48)	30.7(4.99)	22.4(10.30)	26.6(8.95)	0.0341*
Interpretation Proficiency (1-10)	5.9(1.97)	4.1(1.79)	5.0(2.05)	0.0465*
Performance Proficiency (1-10)	3.8(2.15)	2.0(1.25)	2.9(1.94)	0.0343*
Overall UDS Experience (1-10)	5.5(1.84)	3.6(1.90)	4.6(2.06)	0.0355*
Amount of Teaching (1-10)	5.0(1.63)	4.8(1.93)	4.9(1.74)	0.8054

*Statistical significant, p<=0.05 (t-test)

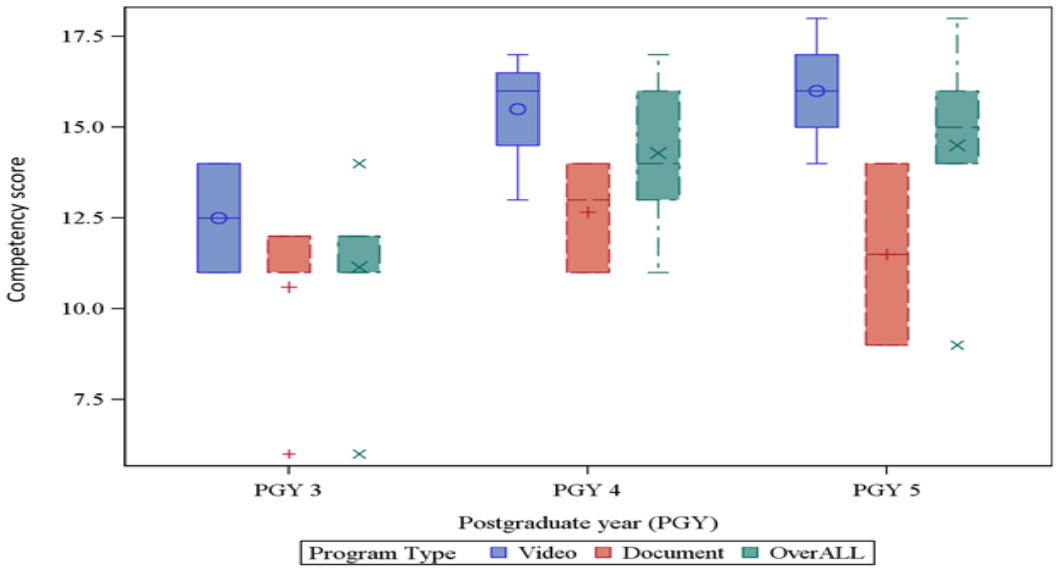

Figure 1: Urodynamic Competency score based on Postgraduate year.

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Disclosures

Funding: No **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Mcgill university Institutional Review Board **Helsinki:** Yes **Informed Consent:** Yes