Visual Feedback and Interactive Learning Modules Improve Resident Learning of Colposcopy

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Disclosures

• No financial relationships or conflict of interest to disclose
Training of residents in colposcopy historically involves didactic components (variable, left to individual programs) followed by supervised performance of colposcopy.
Background

Current resident requirements related to colposcopy:

*ACGME milestone:
Residents must be able to formulate management plans and initiate treatment for complex ambulatory gynecologic problems (including cervical dysplasia) and be able to perform colposcopy.
*CREOG’s Educational Objectives include the resident “be able to understand and perform colposcopy with biopsy of cervix/vulva/vagina”.

The optimal way to reach these milestones and objectives are not proscribed and left to individual programs
Formalized didactic curricula are available, but widespread adoption has not occurred. Each program has its own didactics

Supervised performance of colposcopy (direct observation, 68.8%)

Following completion of these criteria, resident deemed “competent”
Study Objective

Compare objective measures of resident colposcopic skill (via online RACCE exam) as well as confidence levels, perceived level of knowledge and satisfaction with training before and after implementation of a novel online teaching series.
Methods

Sample size: number of residents in our OBG program (24)

No sample size calculation performed as a finite number of residents are available at our institution

Pre and post education test scores compared in combination (all residents) then separated by PGY year

Scores compared via student t test
Methods

4 question online survey monkey completed at baseline and again 6 months post intervention.

Resident confidence levels, perceived level of knowledge and satisfaction with residency training were assessed.
Methods

ASCCP Resident Assessment of Competency in Colposcopy Examination (RACCE*) was administered at baseline and 6mos post intervention

*multiple-choice questions, slide identification questions and case history studies. 1 hour in length

Designed to assess medical knowledge, diagnostic skills and patient management competencies in colposcopy

Scores were collected confidentially and each resident received their scores upon completion of the examination
Learning intervention

5 modules given over 20 weeks
1. Background, equipment and technique
2. Colposcopic findings of normal TZ, variants and low grade dysplasia
3. Colposcopic findings of HGSIL
4. Review of dysplasia treatment modalities
5. Special populations: pregnant, young, postmenopausal
Learning intervention

Blackboard Online platform
Interactive modules based on adult learning pedagogy: feedback, pictures, games and contained a quiz at end
Modules administered sequentially, each module open 4 weeks
Available 24/7 for residents to use on their own time
Could be open/closed as needed to complete learning
Results

Resident Confidence levels, perceived knowledge levels improved, and satisfaction with training all improved, but did not reach statistical significance (p=0.89, p=0.25 and p=0.33 respectively).
Scores on the objective online examination given 6 months after baseline showed improvement across all levels

Reaching statistical significance in the PGY1 group (p=0.03) and all resident (p=0.01) categories.
Pre and Post Test Scores by PGY year after Colposcopic teaching

<table>
<thead>
<tr>
<th>PGY</th>
<th>Pre</th>
<th>Post</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGY1</td>
<td>60</td>
<td>65</td>
<td>0.03</td>
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<tr>
<td>PGY2</td>
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<tr>
<td>PGY4</td>
<td>60</td>
<td>65</td>
<td>0.36</td>
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</tbody>
</table>
Pre and Post Test Scores from all PGYs after Colposcopic teaching

Test scores

pre
p=0.01
post
Results

Improvements in medical knowledge (p = 0.03) and Management (p = 0.007) portions of the examination.
Colposcopic Resident Exam Performance Topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Pre-test Average Score</th>
<th>Post-test Average Score</th>
<th>Statistical Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Knowledge</td>
<td>60</td>
<td>70</td>
<td>p=0.03</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>50</td>
<td>60</td>
<td>p=0.21</td>
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<tr>
<td>Biopsy</td>
<td>60</td>
<td>70</td>
<td>p=0.34</td>
</tr>
<tr>
<td>Management</td>
<td>60</td>
<td>70</td>
<td>p=0.007</td>
</tr>
</tbody>
</table>

Average Score
Results

Biopsy placement and colposcopic diagnosis sections demonstrated an increase in knowledge but did not reach statistical significance ($p=0.34$, 0.21 respectively).
Conclusions

Following a novel online educational series, resident confidence levels, perceived knowledge levels and satisfaction with training all improved.

Performance on an objective online competency assessment also improved post intervention.
Conclusions

Education modules incorporating visual patterns and features of dysplasia as well as self-assessment with feedback can improve resident accuracy in colposcopy.