In compliance with continuing education requirements, all presenters must disclose any financial or other associations with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters as well as any use of unlabeled product(s) or product(s) under investigational use.

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Sarah Elizabeth Williams of Vanderbilt University Medical Center wishes to disclose she receives an Independent Grant from the Pfizer Foundation.

Planning committee discussed conflict of interest with each presenter to ensure there is no bias.

Content will not include any discussion of the unlabeled use of a product or a product under investigational use.

CDC did not accept commercial support for this continuing education activity.
THE CONTEXT OF IMMUNIZATION EDUCATION FOR PEDIATRIC RESIDENTS

Sharon G. Humiston, MD, MPH
Professor of Pediatrics
Children’s Mercy, Kansas City, MO
How a person learns to practice during residency sticks

There is continuing medical education after residency, but it’s usually not considered foundational
Residency comes after 4 years of medical school

All pediatricians complete a 3-year pediatric residency, after which they are eligible to take the board examination for certification in general pediatrics

After residency
- Pediatric subspecialist fellowship (3 years for most subspecialties), then pass a subspecialty board exam
- Practice
Pediatric Subspecialties

- Adolescent Medicine
- Allergy and Immunology
- Cardiology
- Child Abuse and Neglect
- Critical Care (Pediatric ICU)
- Dermatology
- Developmental and Behavioral Pediatrics
- Emergency Medicine
- Endocrinology
- Gastroenterology and Nutrition
- Genetics
- Hematology/Oncology
- Infectious Disease
- Neonatology (Neonatal ICU)
- Nephrology
- Physical Medicine & Rehabilitation
- Pulmonology
- Rheumatology
- Sports Medicine
- Toxicology
195 Pediatric Residencies in the U.S.

- List by state: https://www.residencyplace.com/PathFinder/ProgramList.aspx
- Family medicine: 479 residencies
- Internal medicine: 429 residencies

Examples of Combined Programs

- Medicine-Pediatrics - 4 years (80)
- Pediatrics & Genetics - 5 years (16)
- Pediatrics & Physical Medicine and Rehabilitation – 5 years (7)
- Pediatrics & Emergency Medicine - 5 years (3)
Pediatric Residency Year-by-Year

- Internship (PGY1) – The stress of being new, many call nights
- 2nd Year (PGY2) – More electives
- 3rd Year (PGY3) -- The stress of being “responsible”
- Chief Year (PGY4) - Some people compete for a “Chief Year”
The Pediatric Residency Review Committee (RRC) of the ACGME has requirements.

About 2/3 of resident rotations are stipulated by ACGME – e.g., all programs must offer a block of developmental pediatrics and a block of adolescent medicine.

There is not a lot of room for electives or additions.
It’s not all primary care

At this program, residents spend ½ day each week throughout residency in their Continuity Clinic

<table>
<thead>
<tr>
<th>PL1</th>
<th>PL2</th>
<th>PL3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Department</td>
<td>Emergency Department</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>NICU</td>
<td>NICU</td>
<td>Critical Care</td>
</tr>
<tr>
<td>Ambulatory Care</td>
<td>PICU</td>
<td>PICU</td>
</tr>
<tr>
<td>Adolescent Clinic</td>
<td>Ambulatory Care</td>
<td>Adolescent Clinic</td>
</tr>
<tr>
<td>Developmental and Behavioral Medicine</td>
<td>Developmental and Behavioral Medicine</td>
<td></td>
</tr>
<tr>
<td>OWL</td>
<td>OWL</td>
<td>OWL</td>
</tr>
<tr>
<td>General Inpatient</td>
<td>General Inpatient</td>
<td>General Inpatient</td>
</tr>
<tr>
<td>General Inpatient</td>
<td>Hematology/Oncology</td>
<td>General Inpatient Green Team</td>
</tr>
<tr>
<td>Core Subspecialty Inpatient</td>
<td>Core Subspecialty Inpatient</td>
<td>Cardiology Inpatient Blue Team</td>
</tr>
<tr>
<td>Core Subspecialty Endocrine*</td>
<td>Infectious Diseases*</td>
<td>Anesthesia*/SCAN</td>
</tr>
<tr>
<td>Core Subspecialty Outpatient*</td>
<td>Community Advocacy or International Health Advocacy*</td>
<td>Individualized Education Unit*</td>
</tr>
<tr>
<td>Office-Based Practice*</td>
<td>Individualized Education Unit*</td>
<td>Individualized Education Unit*</td>
</tr>
<tr>
<td>Individualized Education Unit*</td>
<td>Individualized Education Unit*</td>
<td>Individualized Education Unit*</td>
</tr>
</tbody>
</table>

* = Vacation Eligible

Core Subspecialty Inpatient = Gold (Gastroenterology/Renal) or Orange (Neurology/Pulmonology)
Core Subspecialty Outpatient = 1 week rotation: Renal, Neurology, Pulmonology, Gastroenterology
Ambulatory Care = Well-Baby Nursery/Outpatient Clinic
Additional Requirements

- **Quality Improvement (QI)**
  - Bi-monthly patient safety and QI lectures
  - Team-based participation in a resident-led QI project

- **Research** - The curriculum must advance residents’ knowledge of the basic principles of research; residents should participate in scholarly activity
The Goal: American Board of Pediatrics Certification

- Complete residency
- Pass “Board” exam
25 topics

Not much on vaccines

The following have some vaccination-related info:

- Preventive Pediatrics/Well-Child Care (8%)
- Infectious Diseases (7%)
- Immunology and Allergy (4%)

Part 1: Professional Standing (maintain a valid (current), unrestricted medical license)

Part 2: Lifelong Learning (self-assessment activities)

Part 3: Cognitive Expertise (periodic assessment of knowledge)

Part 4: Improvement in Practice (QI activities)

Note: residents can “bank” credits
As of Spring 2015

Residents may earn MOC credit for approved QI work they’re already doing in residency.

After passing initial American Board of Pediatrics exam, they can apply “banked” QI credit.
States, hospitals, and other institutions have CME requirements

The ABP has MOC requirements
Quality Improvement in Resident Continuity Clinics to Increase HPV Vaccination Rates

Cynthia Rand, MD, MPH
Associate Professor
University of Rochester School of Medicine & Dentistry

Funded by CDC Grant #1H23IP000950
Disclosures

Cynthia Rand
Has documented no financial relationships to disclose or Conflicts of Interest (COIs) to resolve.
Objectives

• Provide resident training in QI with a ‘real-world’ project focused on improving HPV vaccination rates

• Improve resident education on adolescent immunization
Setting: The Academic Pediatric Association (APA)

- National organization
- 2,000+ members
- Members train most pediatric residents and many family medicine residents (plus medical students)
- Clinics serve mostly the poor in all states
- APA members are expert at QI, research, education, and advocacy

(The American Academy of Pediatrics includes APA members and community physicians)
Background & Context

• 200 pediatric residency training programs in the U.S.

• What residents learn during training informs how they later practice

• Pediatric faculty need to be trained in order to provide effective training to residents

• The best training occurs in the context in which care is delivered – immunization delivery *in* clinic
Continuity Research Network (CORNET)

- National practice based research network
- Includes academic clinics associated with pediatric training programs
- High proportion of children on Medicaid
- High proportion of minority patients
vanity Clinic

• Continuity clinic is a weekly ½ day clinical session for pediatric residents for 3 years of training
• Often begins with 15-30 minutes of group teaching
• 3 major curricula used, in 101 programs:
  • Hopkins
  • Yale
  • Pittsburgh
Continuity Clinic Curricula Edits

• 18 month curricula includes education about adolescent vaccines

• We worked with editors of 3 curricula to update vaccine guidelines and case-based learning to improve these modules

• Modules are updated every other year as guidelines change
Bundled Intervention

1) Webinar training in QI methods
   - Four 15 minute modules

2) Webinar training in offering a strong recommendation for HPV vaccination at all visits

3) Learning collaborative discussions to discuss barriers and facilitators to the intervention, prompts, and standing orders

4) Monthly feedback run charts from chart audits

Focus on reducing missed opportunities for HPV vaccination
Resident Roles

- Data collection for monthly chart audits
- Reviewing run charts with QI team
- Disseminating best practices to continuity clinic team related to adolescent immunization
- Listening to recorded monthly learning collaborative calls
Office practices survey baseline and post-project (completed by attending physician):

- Describe office practices and protocols regarding HPV vaccination
- Teams included: ≥1 physician, resident physicians, nurses, MA and others (e.g., receptionist)

Measures from chart audits (most often completed by residents)

- MOs for vaccination (10 charts/month for 6 months)
- Tally form to measure vaccination rates
## Practice Demographics

<table>
<thead>
<tr>
<th>States</th>
<th>CORNET (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practices</td>
<td>15</td>
</tr>
<tr>
<td>Number of patients 11-17 seen annually</td>
<td>49,290</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FTE Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending/MD, DO</td>
<td>66</td>
</tr>
<tr>
<td>Resident/Fellow</td>
<td>148</td>
</tr>
<tr>
<td>Mid-level (NP/PA)</td>
<td>11</td>
</tr>
<tr>
<td>RN/LPN</td>
<td>72</td>
</tr>
<tr>
<td>Medical Assistant/CNA</td>
<td>50</td>
</tr>
<tr>
<td>Other FTE’s</td>
<td>30</td>
</tr>
</tbody>
</table>
Results: Strategies to Reduce Missed Opportunities

- Post common schedule: 80% Pre, 93% Post
- Provide patient education: 40% Pre, 93% Post
- Educate nursing and office staff to recognize valid and administer multiple invalid contraindications to HPV vaccine: 53% Pre, 93% Post
- Providers are trained to administer multiple adolescent vaccinations at one visit: 53% Pre, 67% Post
- Delegated a 'clinic champion': 73% Pre, 93% Post

Legend: Pre, Post
Results: HPV Vaccination Systems

- **Standing Orders for HPV**: Pre - 10%, Post - 40%
- **Reminder-Recall System**: Pre - 0%, Post - 5%
- **Provider Prompts**: Pre - 0%, Post - 90%
Strong Recommendation by Age and Gender

Females

- 9-10: Pre < Post
- 11-12: Pre > Post
- 13-15: Pre = Post
- 16-18: Pre > Post

Males

- 9-10: Pre < Post
- 11-12: Pre > Post
- 13-15: Pre = Post
- 16-18: Pre > Post
Limitations

- Data relies on patients with visits; additional methods are needed to bring patients in for care

- Office systems survey completed by one individual in practice, may not represent all providers/staff

- Not a randomized controlled trial, need to account for secular trends
Conclusions

A learning collaborative model in residency clinics can:

– Teach residents QI methodology
– Teach residents about working with inter-professional teams
– Reduce missed opportunities for HPV vaccination

Challenges include:

– Multiple levels of learners
– Large practices with trouble reaching all providers

Keys to success include:

– Communication with entire office staff
– Frequent reminders to continuity clinic teams
Our Team

**Coordinators:**
- Holly Tyrrell
- Cathleen Concannon

**Data Analysis:**
- Nick Goldstein

**Faculty**
- Paul Darden, MD
- Sharon Humiston, MD, MPH
- Cynthia Rand, MD, MPH
- Stan Schaffer, MD, MS
- Bill Stratbucker, MD
- Peter Szilagyi, MD MPH

Thanks to our practices for their hard work!
Collaboration for Vaccination Education and Research (CoVER)

S. Elizabeth Williams, MD, MPH
Vanderbilt University Medical Center
Disclosures

• Funded by the Pfizer Foundation Independent Grants for Learning and Change
What is CoVER?

Why do we need to develop resident vaccine training?
Resident Training on Vaccines

• Vaccines are consistently listed as one of the greatest public health accomplishments\(^1\)

• Vaccine uptake is challenging for some populations (‘vaccine hesitant’ parents), and for some individual vaccines (HPV, influenza)

• No standard method for training residents on important factors related to vaccines and vaccination\(^2\)

• Majority of pediatric program directors report that vaccine education is valuable and needed\(^2\)

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\(^1\)CDC, Ten Great Public Health Achievements, MMWR, 2011

\(^2\)Williams, Formal training in vaccine safety to address parental concerns not routinely conducted in U.S. pediatric residency programs, Vaccine, 2014
What is CoVER?

- The Collaboration for Vaccination Education and Research

- Created to develop and evaluate a vaccine education curriculum for pediatric (Peds) and family medicine (FM) residents

- Investigators include experts in vaccinology, vaccines, vaccine safety, and medical education
What is CoVER?

• Medical education experts, vaccine experts and residency program directors met to determine critical components and structure for optimal vaccine resident training

• CoVER team developed a comprehensive vaccine curriculum

• 26 programs participating in a RCT to evaluate impact of training on resident knowledge, attitudes, and confidence related to vaccines

• RCT includes both FM and Peds programs
What is CoVER?

• 4 modules were developed using interactive e-learning software
  • Vaccine fundamentals
  • Vaccine preventable diseases
  • Vaccine safety
  • Vaccine hesitancy and communication

• 1 in-person training guide developed
  • Focused on vaccine communication techniques for HPV and influenza vaccine
Brief Look at the Modules

- **Module 4**

Module 4: Vaccine Communication

Most parents and patients accept all routinely recommended vaccines
What Do Residents Know About, and Think About, Vaccines?

Baseline survey data
Demographics of Respondents
(N=734, 56% response rate)
Knowledge Questions

- Baseline survey included 14 knowledge questions developed by CoVER team
  - Also input from residents
- Questions covered a range of vaccine topics
- Goal was varied level of difficulty
- Results from baseline survey responses support this goal was achieved
Example Knowledge Question

Sample Question: A healthy 14-year old male presents for a well-child visit. He received his first dose of HPV vaccine 2 months ago. Which of the answers below would complete his HPV series per the CDC recommendations?
Correct Responses to Knowledge Questions, by Resident Year

Percent Correct

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGY1</td>
<td>49</td>
</tr>
<tr>
<td>PGY2</td>
<td>55.5</td>
</tr>
<tr>
<td>PGY3</td>
<td>55.33</td>
</tr>
<tr>
<td>PGY4</td>
<td>63.9</td>
</tr>
</tbody>
</table>
Correct Responses to Knowledge Questions, by Resident Type

- Pediatrics (N=438): 56%
- Family Medicine (N=208): 49%
- Med Peds (N=67): 54%
- Other (N=20): 50%
Confidence
Vaccine Confidence, by Resident Year

Q1: How confident do you feel in your ability to discuss vaccines with a parent who would like to delay or withhold one or more vaccines?

Q2: How well prepared do you feel to answer parental concerns regarding vaccines?

Scale 0-100, median reported in graph

*P<0.001 both questions
Vaccine Confidence, by Resident Type

Q1: How confident do you feel in your ability to discuss vaccines with a parent who would like to delay or withhold one or more vaccines?

Q2: How well prepared do you feel to answer parental concerns regarding vaccines?

Scale 0-100, median reported in graph

*P=0.014 question 2
Confidence in Vaccine Expertise, by Resident Year

<table>
<thead>
<tr>
<th>Question</th>
<th>PGY1</th>
<th>PGY2</th>
<th>PGY3</th>
<th>PGY4</th>
<th>pv</th>
</tr>
</thead>
<tbody>
<tr>
<td>On a scale of [0-100] do you consider yourself a vaccine novice or expert?</td>
<td>36.0 (21.0, 58.0)</td>
<td>51.0 (37.0, 65.0)</td>
<td>58.5 (50.0, 69.0)</td>
<td>59.0 (50.3, 66.8)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Increasing belief of expertise by year of residency, but still only score themselves in the middle of this ‘vaccine-expert’ scale by end of residency

*median (IQR)
Attitudes and Beliefs
## Attitudes/Beliefs, by Resident Year

<table>
<thead>
<tr>
<th>Question</th>
<th>PGY1</th>
<th>PGY2</th>
<th>PGY3</th>
<th>PGY4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>freq. (col%)</td>
<td>freq. (col%)</td>
<td>freq. (col%)</td>
<td>freq. (col%)</td>
</tr>
<tr>
<td>I believe that many of the illnesses vaccines prevent are severe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree/agree</td>
<td>260 (98.9%)</td>
<td>228 (98.7%)</td>
<td>212 (96.8%)</td>
<td>19 (100%)</td>
</tr>
<tr>
<td>Not sure</td>
<td>1 (0.4%)</td>
<td>1 (0.4%)</td>
<td>3 (1.4%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Disagree/strongly disagree</td>
<td>2 (0.8%)</td>
<td>2 (0.8%)</td>
<td>4 (1.9%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>It is better for my patient to develop immunity by getting sick rather than to get a vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree/agree</td>
<td>1 (0.4%)</td>
<td>5 (2.2%)</td>
<td>8 (3.7%)</td>
<td>1 (5.3%)</td>
</tr>
<tr>
<td>Not sure</td>
<td>8 (3.1%)</td>
<td>4 (1.7%)</td>
<td>4 (1.8%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Disagree/strongly disagree</td>
<td>253 (96.6%)</td>
<td>222 (96.1%)</td>
<td>208 (94.6%)</td>
<td>18 (94.7%)</td>
</tr>
</tbody>
</table>
## Attitudes/Beliefs, by Resident Year

<table>
<thead>
<tr>
<th>Question</th>
<th>PGY1</th>
<th>PGY2</th>
<th>PGY3</th>
<th>PGY4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>freq. (col%)</td>
<td>freq. (col%)</td>
<td>freq. (col%)</td>
<td>freq. (col%)</td>
</tr>
<tr>
<td>Children get more vaccines than are good for them</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree/agree</td>
<td>3 (1.2%)</td>
<td>10 (4.3%)</td>
<td>4 (1.8%)</td>
<td>1 (5.3%)</td>
</tr>
<tr>
<td>Not sure</td>
<td>6 (2.3%)</td>
<td>4 (1.7%)</td>
<td>8 (3.7%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Disagree/strongly disagree</td>
<td>254 (96.8%)</td>
<td>217 (93.9%)</td>
<td>203 (92.7%)</td>
<td>18 (94.7%)</td>
</tr>
<tr>
<td>I trust the information I receive about vaccines from the CDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree/agree</td>
<td>260 (98.8%)</td>
<td>227 (98.3%)</td>
<td>216 (98.2%)</td>
<td>19 (100%)</td>
</tr>
<tr>
<td>Not sure</td>
<td>1 (0.4%)</td>
<td>2 (0.9%)</td>
<td>4 (1.8%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Disagree/strongly disagree</td>
<td>2 (0.8%)</td>
<td>2 (0.9%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
Hesitancy
Hesitancy Among Resident Physicians?

Have you ever agreed to delay a vaccine in the absence of a true contraindication due to a patient or parental request?

| Yes   | 66% |
| No    | 34% |

Overall, how hesitant about childhood vaccines would you consider yourself to be?

- Not at all hesitant: 86%
- Not too hesitant: 11%
- Not sure: 1%
- Somewhat hesitant: 2%
- Very hesitant: 0%
Hesitancy Impacts Attitudes/Beliefs

- **Children get more vaccines than are good for them**
- **It is better for my patient to develop immunity by getting sick than to get a vaccine**
- **I trust the information I receive about vaccines from the CDC**
- **I believe that many of the illnesses vaccines prevent are severe**
“I think these modules were excellent and I really learned a lot!”

“I wondered if you knew who had made the CoVER modules for the vaccine curriculum. They were really well done and we are considering using them as a model”

“I was able to convince a non-vaccinator family to get both of their kids up-to-date after using some of the things I learned in CoVER!”
Challenges

• Resident uptake of self-led training is challenging given time constraints and overlapping obligations
• Limiting amount of material on vaccines in modules
• Ability to evaluate impact on resident knowledge and confidence depends on resident completion of end-of-year survey
• Difficult of determining impact on actual vaccine uptake by patients after training
Conclusions

• There is room for improvement on resident vaccine knowledge

• Peds and FM resident trainees have sub-optimal confidence in ability to counsel families about vaccines

• Vaccine hesitancy exists among our Peds and FM resident trainees
Acknowledgements

• Co-investigators for CoVER
  • PI: Barbara Pahud, MD, MPH, Children’s Mercy Kansas City
  • Co-PI’s:
    • Sharon Humiston, MD, Children’s Mercy Kansas City
    • Kadriye Lewis, Ed.D, Children’s Mercy Kansas City
    • Don Middleton, MD, University of Pittsburgh Medical Center

• Program Coordinator:
  • Shannon Clark, MPH

• Statistical Support:
  • Brian Lee, PhD

• Participating institutions and residents

• Pfizer Foundation for supporting this work
Questions for Future

• Ideas to improve resident uptake for self-led training?
• How to evaluate impact on vaccination rates (given baseline rates are already relatively high, various vaccination documentation systems, etc)?
• How to maintain up-to-date vaccine information moving forward?
• CME, MOC possibilities?
## Knowledge

### Distribution of Correct Responses to Knowledge Questions, by Resident Type

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Median</th>
<th>25th %ile</th>
<th>75th %ile</th>
<th>Correct</th>
<th>Answered</th>
<th>Percent Correct</th>
<th>Lower CI</th>
<th>Upper CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatrics</td>
<td>438</td>
<td>57.1%</td>
<td>43.7%</td>
<td>64.3%</td>
<td>3389</td>
<td>6101</td>
<td>55.5%</td>
<td>54.3%</td>
<td>56.8%</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>208</td>
<td>50.0%</td>
<td>42.9%</td>
<td>57.1%</td>
<td>1412</td>
<td>2879</td>
<td>49.0%</td>
<td>47.2%</td>
<td>50.9%</td>
</tr>
<tr>
<td>Med/Peds</td>
<td>67</td>
<td>57.1%</td>
<td>42.9%</td>
<td>64.3%</td>
<td>500</td>
<td>932</td>
<td>53.6%</td>
<td>50.4%</td>
<td>56.9%</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>50.0%</td>
<td>41.1%</td>
<td>57.1%</td>
<td>154</td>
<td>307</td>
<td>50.2%</td>
<td>44.4%</td>
<td>55.9%</td>
</tr>
</tbody>
</table>
# Knowledge results

## Distribution of Correct Responses to Knowledge Questions, by Resident Year

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Median</th>
<th>25th %ile</th>
<th>75th %ile</th>
<th>Correct</th>
<th>Answered</th>
<th>Correct (%)</th>
<th>Lower CI</th>
<th>Upper CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGY1</td>
<td>264</td>
<td>50.0%</td>
<td>42.9%</td>
<td>57.1%</td>
<td>1801</td>
<td>3672</td>
<td>49.0%</td>
<td>47.4%</td>
<td>50.7%</td>
</tr>
<tr>
<td>PGY2</td>
<td>231</td>
<td>57.1%</td>
<td>50.0%</td>
<td>64.3%</td>
<td>1787</td>
<td>3218</td>
<td>55.5%</td>
<td>53.8%</td>
<td>57.3%</td>
</tr>
<tr>
<td>PGY3</td>
<td>220</td>
<td>57.1%</td>
<td>42.9%</td>
<td>64.3%</td>
<td>1703</td>
<td>3077</td>
<td>55.3%</td>
<td>53.6%</td>
<td>57.1%</td>
</tr>
<tr>
<td>PGY4</td>
<td>19</td>
<td>64.3%</td>
<td>60.7%</td>
<td>71.4%</td>
<td>170</td>
<td>266</td>
<td>63.9%</td>
<td>57.8%</td>
<td>69.7%</td>
</tr>
</tbody>
</table>

Increased correct responses with increasing year of training.