Cyber-teaching, Cyber-learning, and now Cyber-evaluation!
How to Evaluate Clinical Competence using Distance Technology

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Presenters

OSU Online NP Programs

- Received HRSA Funding to start online program
- Core courses were offered asynchronously
- Began offering assessment and pharmacology synchronously
- Developed clinical courses synchronously
OVERVIEW
Methods to Evaluate Clinical Competence from a Distance

We've Come a Long Way, Baby!

THE ORIGINAL COMPUTER!
Print Delete
Evaluation Strategies

- Non-exam evaluation methods
  - Preceptor calls, blogs

- Exam evaluation methods
  - On-call phone triage exam
  - 2-step objective exam with remote online proctoring & conference call line
  - OSCEs across the curriculum
  - 2-step OSCE utilizing surveys and conference calling
  - Comprehensive final exam, individual only
On-Call Exam Competencies

- Knowledge of content
- Critical thinking
- Communication skills
- Ability to do health coaching
- Time management

On-Call Exam Specifics

- Schedule set up
- Hire mock patients
- Develop clinical scenarios
- Two calls in two hours
- Call is recorded for grading
## Scheduling Students

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 a.m.</td>
<td>Work on 10-12, 12-24</td>
<td></td>
</tr>
<tr>
<td>12 p.m.</td>
<td>1:30 pm - 2:30 pm</td>
<td>12-24, 2:30-3:30</td>
</tr>
<tr>
<td>2 p.m.</td>
<td>3:30 pm - 4:30 pm</td>
<td>4:30-5:30</td>
</tr>
</tbody>
</table>

## On-Call Grading

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>10</td>
<td>Student either answers call or calls patient back within 3 minutes</td>
</tr>
<tr>
<td>Communication</td>
<td>10</td>
<td>Student asks open-ended questions and is professional</td>
</tr>
<tr>
<td>Assessment</td>
<td>10</td>
<td>Student asks pertinent history questions related to the problem</td>
</tr>
<tr>
<td>Management</td>
<td>10</td>
<td>Student management plan is reasonable, patient-centered</td>
</tr>
<tr>
<td>Health coaching</td>
<td>10</td>
<td>Student provides follow-up suggestions, clarifies questions, concerns</td>
</tr>
<tr>
<td>Documentation</td>
<td>10</td>
<td>Student provides accurate charting note</td>
</tr>
<tr>
<td>Reflection</td>
<td>10</td>
<td>Student is able to correctly note areas of learning needs, strengths</td>
</tr>
</tbody>
</table>

Faculty Comments:
TEAM-BASED LEARNING
Two-Step Exams

Two-Step Exams

• Team-based learning
• Also known as:
  – Two-part testing, blended exam, cooperative exam
• One exam is given with two attempts
  – Individual exam (weighed 50% to 90%)
  – Group exam (weighed 50% down to 10%)

Two-Step Exam: Part I

• Individual exam is proctored
  – Using proctoring centers and sending exams was not practical solution
  – Trial of using online proctoring company did not meet our students’ needs
Two-Step Exam: Part II

• Part II of the exam is the Group exam
  – On campus for large or small classes

  Discuss
  Defend
  Debate
  Decide

Online Faculty Proctoring

• Individual exam is now proctored by faculty
  – Students log in to their web conferencing software

Two-Step Exam: Part II

• Part II for distance students can be given using conference calling
Instructional Technology

- Tips about using Adobe Connect for proctoring

Instructional Technology

- Alternatives to Adobe Connect

Objective Structured Clinical Exams
Implementing OSCEs across the curriculum
Standardized Patient Clinical Exams or Objective Structured Clinical Exams (OSCEs)

- Students came to campus
  - Twice a term
  - Used hired patients
  - Used moulage for “abnormals”

OSCEs Using Digital Recording on Campus and in the Community

First Attempts at Online OSCEs

- Achievements
  - Students could use webcams
  - Faculty could implement from a distance and could give immediate feedback
- Difficulties
  - Teaching each patient the case
  - Faculty in front of the computer for extended periods of time
  - Recording the web-conference (Skype)
Online OSCE using Adobe Connect

OSCE Preparation uses Course Management System

- Post OSCE checklist for the semester
- Provide details regarding volunteer needed
- Post schedule, instructions for the students
- Require students to practice
- Require students and volunteer patients to sign release forms
- Prepare faculty resources, hidden posts
  - Results of lab or imaging tests
  - Pictures or files for abnormal results
OSCE Preparation: Faculty Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Teal</th>
<th>Student</th>
<th>Exam room</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30</td>
<td>1.00</td>
<td>Student’s Name</td>
<td>1</td>
</tr>
<tr>
<td>4:45</td>
<td>2.00</td>
<td>Student’s Name</td>
<td>2</td>
</tr>
<tr>
<td>5:00</td>
<td>3.00</td>
<td>Student’s Name</td>
<td>3</td>
</tr>
<tr>
<td>5:15</td>
<td>4.00</td>
<td>Student’s Name</td>
<td>4</td>
</tr>
<tr>
<td>5:30</td>
<td>5.00</td>
<td>Student’s Name</td>
<td>5</td>
</tr>
<tr>
<td>5:45</td>
<td>6.00</td>
<td>Student’s Name</td>
<td>6</td>
</tr>
<tr>
<td>6:00</td>
<td>7.00</td>
<td>Student’s Name</td>
<td>7</td>
</tr>
<tr>
<td>6:15</td>
<td>8.00</td>
<td>Student’s Name</td>
<td>8</td>
</tr>
<tr>
<td>6:30</td>
<td>9.00</td>
<td>Student’s Name</td>
<td>9</td>
</tr>
<tr>
<td>6:45</td>
<td>10.00</td>
<td>Student’s Name</td>
<td>10</td>
</tr>
<tr>
<td>7:00</td>
<td>11.00</td>
<td>Student’s Name</td>
<td>11</td>
</tr>
</tbody>
</table>

OSCE Checklist Across Curriculum

See pdf OSCE Checklists Across Curriculum

- Introduction
- HOPI
- ROS
- Health History
- Family, Social, Cultural Assessment
- Physical Exam
- Diagnosis
- Management Plan
- Patient / Family Education
- Therapeutic Communication
Online OSCE: Patient-Focused Education

https://youtu.be/5ZNkkMhf9LA

PRACTICE Using Checklist

OSCE
Using the survey tool to evaluate student performance
Self Reflection

To know thyself is the beginning of wisdom.

Socrates

In a typical self critique

• “I thought that I did well”.
• “I thought that my verbal and nonverbal techniques were therapeutic”.
• “I felt like I was able to establish rapport”.
• “I performed all necessary physical exams”.
• “I should have been more thorough on medication teaching”.

The Joni Tornwall Enlightenment

Just happened to fly by! Uh... You are doing WHAT?
Individual Response: PE

Question 1
What parts of physical exam did you complete today? Choose what you did.
- I washed my hands
- Skin inspection
- Head inspection
- Vital signs related to the headache
- Spinal exam of ears
- Spinal exam of both ears
- Percussion or palpation of abdomen
- Inspection of oral mucosa
- Inspection of posterior pharynx
- Inspection of lymph nodes cervical
- Inspection of lymph nodes submandibular
- Inspection of lymph nodes submental
- Inspection of breast chest, anterior
- Inspection of breast chest, posterior
- Inspection of breast chest, compared at all 3 spots
- Association of heart at all 3 spots

Individual Response: Dx tests

Question 6
What diagnostic tests did you order?
- Acetothix
- Blood gas
- CBC
- Chemistry
- Chest CT
- CXR
- D-dimer
- Hemoglobin A1C
- Peak flow
- Pulmonary function test
- Pulse oximetry
- Urine pregnancy test
- Urine toxicology screen
- V/Q scan
Individual Response: Follow-up

**Question 9**
How did you address follow up plan?
- Return in 48 to 72 hours
- Return in one week
- Return in two weeks
- Return in one month
- Return after more than one month
- Return as needed
- Advised about symptom resolution (what to expect)
- Advised about symptom exacerbation (treatment failure)
- Advised when to go to ER
- Did not address follow up plan

Individual Response: Free Text

**Question 11**
List 3 omissions/errors from your OSCE today and how you would correct them.

- "I forgot to ask for pulse ox. I guess I considered it. In the future I will be more proactive."

- "I also forgot to percuss the lungs. I even told myself to do it and still forgot."

- "I failed to fully explain all the treatment, but that's because I decided to send him to the ED."

Class Stats: PE
Class Stats: Diagnosis

### Section 2
What is the review diagnosis for the patient’s chief complaint?

- Asthma
- 6 (99%)
- Bronchitis
- 1 (16%) 100%
- Pneumonia acquired pneumonia
- 0 (0%)
- Urinary tract infection
- 0 (0%)
- Chest pain
- 0 (0%)
- Headache
- 1 (16%) 100%
- Fetus
- 0 (0%)
- Meningitis
- 1 (16%) 100%
- Acute appendicitis
- 0 (0%)
- Abdominal pain
- 0 (0%)
- Endometriosis
- 0 (0%)
- Hysterectomy
- 0 (0%)
- Surgery
- 0 (0%)
- Expired
- 0 (0%)
- Gastrointestinal disease
- 0 (0%)


Class Stats: Treatment Plan

### Section 3
What did you include in the treatment plan for the patient during this visit?

- Referral to lab for immunoassay evaluation
- 2 (33%)
- Addressed addiction issues
- 12 (100%)
- Addressed medication
- 19 (100%)
- Addressed smoking cessation
- 16 (100%)
- Discontinued antibiotic use
- 15 (75%)
- Prescribed anti-itch medication
- 29 (100%)
- Prescribed anti-inflammatory medication
- 27 (100%)
- Prescribed antibiotics for acne
- 6 (100%)
- Prescribed a topical anti-inflammatory
- 5 (100%)
- Prescribed a topical acne medication
- 5 (100%)
- Booked an appointment for follow-up assessment
- 7 (100%)
- Prescribed a topical acne medication
- 3 (100%)
- Prescribed a topical anti-inflammatory
- 6 (100%)

OSCE

Two Step OSCEs - using a team approach
Part II of the OSCE

- 20% of total OSCE grade
- Talk on conference line, work on Google doc
- Focus on diagnosis and management
- Complete within a pre-set timeframe

The Evaluation

<table>
<thead>
<tr>
<th>Diagnosis &amp; Management Table</th>
<th>Group members: Student 1, Student 2, Student 3, Student 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Diagnosis and ICD-10 code (5 points)</td>
<td></td>
</tr>
<tr>
<td>Physical exam findings, signs, symptoms that supported the primary diagnosis (5 points)</td>
<td></td>
</tr>
<tr>
<td>Pharmacological treatments (50 points)</td>
<td></td>
</tr>
<tr>
<td>List additional diagnoses and their ICD-10 codes (5 points)</td>
<td></td>
</tr>
<tr>
<td>List medical interventions (15 points)</td>
<td></td>
</tr>
<tr>
<td>Education (1 component, 10 points)</td>
<td></td>
</tr>
<tr>
<td>1. Explanation of illness and primary diagnosis</td>
<td></td>
</tr>
<tr>
<td>2. Importance of preventative measures</td>
<td></td>
</tr>
<tr>
<td>3. Importance of regular medication</td>
<td></td>
</tr>
<tr>
<td>4. Follow-up care</td>
<td></td>
</tr>
</tbody>
</table>

Completed Part II of the OSCE

| Primary Diagnosis and ICD-10 code (5 points) | |
| Community Acquired Pneumonia (5 points) | |
| Physical exam findings, signs, symptoms that supported the primary diagnosis (5 points) | |
| Pharmacological treatments (50 points) | |
| List additional diagnoses and their ICD-10 codes (5 points) | |
| Medications | |
| ANOC 50mg PO Bid for 3 days | |
| Levofoxacin 500mg PO q8h for 5 days | |
| Moxifloxacin 400mg PO q24h for 5 days | |
| List medical interventions (15 points) | |
| 1. Sputum culture, sensitivity | |
| 2. Chest x-ray | |
| 3. PCR for influenza | |
| 4. Blood culture | |
| 5. CRP level | |
| 6. Antibiotics choice | |

OSU CON Cyber-Evaluation NONPF
Completed Part II of the OSCE

<table>
<thead>
<tr>
<th>List Health Promotion Disease Prevention needs (7 point)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking cessation</td>
</tr>
<tr>
<td>Vaccination needs (Ting, Influenza, Pneumococcal)</td>
</tr>
<tr>
<td>Healthy diet</td>
</tr>
<tr>
<td>Pap Test</td>
</tr>
<tr>
<td>Neurogram</td>
</tr>
<tr>
<td>Continue occupant addiction support meetings</td>
</tr>
<tr>
<td>Education (4 components, 20 points)</td>
</tr>
<tr>
<td>1. Explanation of findings and primary diagnosis.</td>
</tr>
<tr>
<td>The cough, rhonchi in your lungs, fever, and discomfort of certain area of your lungs in addition to the findings on your chest x-ray, and the findings on your chest x-ray are signs of pneumonia, an infection. This is usually caused by bacteria but can be caused by a virus.</td>
</tr>
<tr>
<td>2. Treatment plan and patient education.</td>
</tr>
<tr>
<td>Start antibiotic treatment after seeing the doctor may cause diarrhea, upset or nausea. Also, risk of tendon rupture. If sudden onset of joint pain (especially Achilles Tendon or shoulder), stop this medication and call the office. Take probiotics with food</td>
</tr>
</tbody>
</table>

Benefits of Team-Based OSCEs

- Clarification of difficult case
- Reduced post-exam questions to faculty
- Exams become a learning tool through group process

Lessons Learned

- Innovate
- Implement
- Refine
Concluding Thoughts: Two-Step Exams

Past:
Test centers, trips to campus, costs

Now:
Online proctoring, free

Concluding Thoughts: On-Call & OSCEs

Past:
On campus, costs of models, minimal collaboration, exam security issue, evaluation

Now:
Remote, no cost, collaboration in Part II, exam integrity, effective results analysis

Thank you

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Margaret Clark Graham
Alice M Teall
Rita Kaspar
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