“Technology Mediated Clinical Education”
and
The Partnership for the Advancement of Clinical Training (PACT)
AACOM  April 3, 2014

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New York Institute of Technology College of Osteopathic Medicine
The Challenge

Diversity of Training Facilities

• Over forty (40) Clinical Affiliates for required 3rd and 4th year clerkships;

• Rural—Community—Preceptor Offices—Tertiary Care/Urban Settings;

• Large geographic area:
  – New York, New Jersey, Connecticut
The Challenge
Clerkship Scheduling

- Approximately 300 Students per Class;
- Six (6) 3rd Year Core Clerkships plus a 3rd Year Selective;
- Ten (10) 4th Year Clerkships;
- Total of 5,100 Clerkship Assignments.
The Vision: "PACT”

Partnership for the Advancement of Clinical Training

• The PACT initiative provides an organizational framework for the College and its Affiliated Hospitals to collaborate in the development of an educational infrastructure that promotes a superior clerkship education.
“PACT” GOALS

• Assurance of a consistent core clinical curriculum across all sites
• Efficient and Effective Electronic Evaluation Systems
• Continuous faculty development of designated clerkship directors
• Implementation of “Technology Mediated Clinical Education”.
PACT: Students

- **Empower students** to develop their clinical skills while continuing to enhance their knowledge base utilizing online resources.

- **Quality and Consistency** of content and delivery.
PACT: Faculty

• Identify, educate and develop Clerkship Directors at all Core clerkship sites;

• Faculty “ownership” of the educational process;

• Provide educational resources for consistency of content and delivery of core clinical concepts
Collaboration through Educational Summits
July, 2012 and May, 2013

• Over 125 participants, representing most of our affiliated hospitals.
• Curriculum Overview
• Simulation Center
• Technology Mediated Clinical Education
• OMM Integration
Clinical Department Workshops

• The afternoon sessions encompassed six (6) concurrent workshops led by NYITCOM’s Clinical Chairs, focusing on:

  – Reviewing current 3\textsuperscript{rd} year clerkship core curriculum;
  – Discussing the evaluation system;
  – Examining clerkship structure at representative hospitals; and,
  – General recommendations for clerkship enhancement.
PACT Technology Training

• Technology training was initiated through multiple small group sessions for:
  – Hospital DMEs;
  – Hospital-based Clerkship Directors;
  and,
  – NYITCOM Clinical Chairs.
PACT Technology Training

• All participants were given new i-Pads and training for:
  – Sending and receiving NYITCOM email (and personal and/or hospital email);
  – Use of Skype and Facetime;
  – Accessing NYITCOM Library Resources;
  – Accessing NYITCOM E*Value Program to view student log submission, and submit **Student Performance Evaluation Forms**;
  – Download textbooks from “INKLING”; and,
  – Access NYITCOM “Academic Web-site”.
Benefits of PACT Technology Mediated Clinical Education

• On-line, readily accessible 24/7/365;

• Case based, Problem oriented scenarios;

• Required responses-interactive and engaging;

• Rich audio-visual format and content;
Benefits of PACT Technology Mediated Clinical Education

• Cases follow Clinical decision making,

• Delivery of a consistent core clinical curriculum across sites,

• Faculty development of designated Clerkship Directors.
Electronic Evaluations of Student Clerkship Performance

• Clerkship directors are entered into the E*Value System to complete and submit Electronic Evaluations;

• They receive an email on the last day of the clerkship with a LINK to the Evaluation(s);

• If the Evaluations are not completed and submitted within a week, “reminder” emails are automatically sent from the System;

• Evaluations are received and posted at NYITCOM.
Electronic Evaluations

E*Value System

- 103 NYITCOM and Hospital “Directors” who can access Student Log Submissions; of which,
- 88 Hospital-Based “Site-Directors” (Clerkship Directors), of which,
- 48 Hospital-Based “Preceptors” who:
  - View and Validate Student log submissions, and,
  - Complete and submit Electronic Evaluations.
Technology Mediated Clinical Education

RESOURCES
PACT Technology Mediated Clinical Education

**MED-U.org** (Medicine, Surgery, Pediatrics, Family Medicine, Radiology, Emergency Medicine)

**APGO.org** (OB/GYN)

**Symptommedia.com** (Psychiatry)

**EMIL-Electronic Medical Information Library**

**Inkling** - on line, interactive textbooks
RESOURCES

MedU
MEDICINE

Short n’ simple
FAMILY MEDICINE

Clipps cases
Surgery
Pediatrics

CLIPP eCLIPPs
4th Year

RADIOLOGY-CORE
Emergency Medicine
General Medicine Ambulatory
Psychiatry

NYITCOM Videos from SIM Lab

Standardized Patients

Medscape-selected articles
Evaluation Plan

• Process and outcome measures
  – Student engagement and satisfaction with Technology Mediated Clinical Education(TMCE)-survey
  – Performance on COMAT – Year to Year comparison
Quality Assurance

• Tracking-successful completion of assignments
• Data and Reports
• Electronic Student Performance Evaluations
Quality Assurance

- Regular Site Visits/Focus Groups—for each Clerkship by:
  Medical Educator and the Assistant Dean for Clinical Education

- Multi-year Clerkship Evaluations from Student Survey
Student Satisfaction with “Technology Mediated Clinical Education”
<table>
<thead>
<tr>
<th>Clerkship</th>
<th>Number of students (missing)</th>
<th>Mean response to question (standard deviation); 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I found the web site easy to use</td>
<td>I found the web site exercises accommodating to my individual learning style</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>58 (3)</td>
<td>4.1 (0.7)</td>
</tr>
<tr>
<td>Medicine</td>
<td>17 (1)</td>
<td>4.3 (0.6)</td>
</tr>
<tr>
<td>Ob/Gyn</td>
<td>56 (2)</td>
<td>3.6 (1.1)</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>56 (1)</td>
<td>4.0 (0.9)</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>50 (2)</td>
<td>4.0 (0.9)</td>
</tr>
<tr>
<td>Surgery</td>
<td>21 (3)</td>
<td>3.9 (1.2)</td>
</tr>
<tr>
<td>Total</td>
<td>258 (12)</td>
<td>3.9 (0.9)</td>
</tr>
</tbody>
</table>
Bar graph: Mean response to survey question by clerkship

Question

- I found the web site easy to use
- I found the web site exercises accommodating to my individual learning style
- I found the topics on the web site to be relevant to my clerkship patient experiences
- The web site exercises have helped improve my clinical confidence
- The web site exercises have helped to develop my medical knowledge
- The web site exercises have augmented my clinical clerkship experience
- The web site exercises have helped me prepare for the COMAT examination
Clerkship: Family Medicine

Mean Response

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I found the website easy to use</td>
<td>4.1</td>
</tr>
<tr>
<td>I found the website exercises accommodating to my individual learning style</td>
<td>3.6</td>
</tr>
<tr>
<td>I found the topics on the website to be relevant to my clerkship patient experiences</td>
<td>4.1</td>
</tr>
<tr>
<td>The website exercises have helped improve my clinical confidence</td>
<td>3.7</td>
</tr>
<tr>
<td>The website exercises have helped to develop my medical knowledge</td>
<td>3.8</td>
</tr>
<tr>
<td>The website exercises have augmented my clinical clerkship experience</td>
<td>3.7</td>
</tr>
<tr>
<td>The website exercises have helped me prepare for the COMAT examination</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Error Bars: 95% CI
Clerkship: Internal Medicine

Question

I found the website easy to use
I found the website exercises accommodating to my individual learning style
I found the topics on the website to be relevant to my clerkship patient experiences
The website exercises have helped improve my clinical confidence
The website exercises have helped to develop my medical knowledge
The website exercises have augmented my clinical clerkship experience
The website exercises have helped me prepare for the COMAT examination

Mean Response

4.3
3.6
4.1
3.4
3.7
3.5
3.0

Error Bars: 95% CI
Clerkship: Ob/Gyn

Mean Response

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>I found the website easy to use</td>
<td>3.6</td>
</tr>
<tr>
<td>I found the website exercises accommodating to my individual learning style</td>
<td>3.6</td>
</tr>
<tr>
<td>I found the topics on the website to be relevant to my clerkship patient experiences</td>
<td>3.8</td>
</tr>
<tr>
<td>The website exercises have helped improve my clinical confidence</td>
<td>3.4</td>
</tr>
<tr>
<td>The website exercises have helped to develop my medical knowledge</td>
<td>3.9</td>
</tr>
<tr>
<td>The website exercises have augmented my clinical clerkship experience</td>
<td>3.6</td>
</tr>
<tr>
<td>The website exercises have helped me prepare for the COMAT examination</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Error Bars: 95% CI
Clerkship: Pediatrics

<table>
<thead>
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<th>Mean Response</th>
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<tbody>
<tr>
<td>I found the website easy to use</td>
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</tr>
<tr>
<td>I found the website exercises accommodating to my individual learning style</td>
<td>3.3</td>
</tr>
<tr>
<td>I found the topics on the website to be relevant to my clerkship patient experiences</td>
<td>3.7</td>
</tr>
<tr>
<td>The website exercises have helped improve my clinical confidence</td>
<td>3.1</td>
</tr>
<tr>
<td>The website exercises have helped to develop my medical knowledge</td>
<td>3.5</td>
</tr>
<tr>
<td>The website exercises have augmented my clinical clerkship experience</td>
<td>3.3</td>
</tr>
<tr>
<td>The website exercises have helped me prepare for the COMAT examination</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Error Bars: 95% CI
Clerkship: Surgery

Question

Error Bars: 95% CI
COMAT
<table>
<thead>
<tr>
<th>Subject</th>
<th>Class</th>
<th>School_N_Candi</th>
<th>School mean (sd) in percent</th>
<th>Nat'l_N_Candi</th>
<th>Nat'l mean (sd) in percent</th>
<th>Mean difference</th>
<th>95% CI of the difference</th>
<th>p-value (one-sample t-test)</th>
<th>Mean difference</th>
<th>95% CI of the difference</th>
<th>p-value (two-sample independent t-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Medicine</td>
<td>2014</td>
<td>271</td>
<td>73.0 (6.1)</td>
<td>1214</td>
<td>72.2 (6.6)</td>
<td>0.84</td>
<td>(0.11, 1.57)</td>
<td>0.025</td>
<td>0.40</td>
<td>(-0.83, 1.63)</td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>160</td>
<td>72.8 (6.6)</td>
<td>1755</td>
<td>71.6 (11.5)</td>
<td>1.23</td>
<td>(0.21, 2.27)</td>
<td>0.019</td>
<td></td>
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<td></td>
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<tr>
<td>Internal Medicine</td>
<td>2014</td>
<td>279</td>
<td>68.6 (8.1)</td>
<td>1583</td>
<td>66.8 (7.7)</td>
<td>1.79</td>
<td>(0.84, 2.75)</td>
<td>&lt; 0.001</td>
<td>3.02</td>
<td>(1.54, 4.50)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>145</td>
<td>70.3 (6.9)</td>
<td>1583</td>
<td>65.5 (10.5)</td>
<td>4.81</td>
<td>(3.67, 5.95)</td>
<td>&lt; 0.001</td>
<td></td>
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<tr>
<td>OB/GYN</td>
<td>2014</td>
<td>286</td>
<td>74.1 (6.6)</td>
<td>1250</td>
<td>74.6 (6.8)</td>
<td>-5.55</td>
<td>(-1.32, 0.21)</td>
<td>0.16</td>
<td>2.87</td>
<td>(1.62, 4.12)</td>
<td>&lt; 0.001</td>
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<tr>
<td></td>
<td>2015</td>
<td>175</td>
<td>75.6 (6.6)</td>
<td>1817</td>
<td>73.3 (7.8)</td>
<td>2.32</td>
<td>(1.33, 3.31)</td>
<td>&lt; 0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrics</td>
<td>2014</td>
<td>278</td>
<td>66.0 (6.9)</td>
<td>1155</td>
<td>66.1 (6.8)</td>
<td>-0.07</td>
<td>(-0.88, 0.74)</td>
<td>0.86</td>
<td>3.20</td>
<td>(1.90, 4.50)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>171</td>
<td>69.8 (6.7)</td>
<td>1697</td>
<td>66.7 (7.3)</td>
<td>3.12</td>
<td>(2.11, 4.14)</td>
<td>&lt; 0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychiatry</td>
<td>2014</td>
<td>274</td>
<td>72.0 (7.0)</td>
<td>1238</td>
<td>71.8 (6.5)</td>
<td>0.17</td>
<td>(-0.65, 1.00)</td>
<td>0.68</td>
<td>2.67</td>
<td>(1.33, 4.01)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>161</td>
<td>75.4 (6.7)</td>
<td>1550</td>
<td>72.6 (7.6)</td>
<td>2.85</td>
<td>(1.80, 3.90)</td>
<td>&lt; 0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td>2014</td>
<td>276</td>
<td>71.6 (6.4)</td>
<td>1380</td>
<td>70.4 (6.9)</td>
<td>1.18</td>
<td>(0.43, 1.93)</td>
<td>0.002</td>
<td>1.76</td>
<td>(0.43, 3.09)</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>136</td>
<td>75.1 (6.7)</td>
<td>1749</td>
<td>72.2 (8.2)</td>
<td>2.94</td>
<td>(1.80, 4.08)</td>
<td>&lt; 0.001</td>
<td></td>
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</tr>
</tbody>
</table>
The bar chart shows the mean GRADE adjusted for national mean across different clerkships for two classes: Class of 2014 and Class of 2015. The p-values for the comparison between the two classes are as follows:

- Family medicine: p = 0.52
- Internal medicine: p < 0.001
- Ob/Gyn: p < 0.001
- Pediatrics: p < 0.001
- Psychiatry: p < 0.001
- Surgery: P = 0.01

The p-values are obtained from a two-sample independent t-test.
Student Feedback
Clinical Clerkship experience
Multi-year comparisons
Hospital - OB/GYN
'Recommend This Rotation'

Clerkship mean  NYIT COM class mean
PACT-TMCE

Where do we go from here?

• Identify New Resources

• Improve integration including Basic Sciences with the Clerkship experience

• Assess Impact of TMCE on overall Clerkship Quality

• Electronic Evaluations-E*Value
A Special Thank you to

Min-Kyung Jung, Ph.D.
Bhuma Krishnamachari, Ph.D.

For our statistical analysis
Thank You

QUESTIONS?
Please Contact Us

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