Osteopathic Medicine: A Hands-on Approach to Healthcare

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College of Osteopathic Medicine
Lafayette College, Class of 2011
What is Osteopathic Medicine?

- Alternative Philosophy of Medicine
- Founded by Andrew Taylor Still, M.D. in 1874
  - Still challenged common medical theory with a philosophy rooted in the body’s innate ability to heal itself
# Osteopathic Medicine: Differences in Philosophy

<table>
<thead>
<tr>
<th>MD</th>
<th>DO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease-focused</td>
<td>Patient-focused</td>
</tr>
<tr>
<td>Relief of symptoms is the goal</td>
<td>Overall health is the goal</td>
</tr>
<tr>
<td>Heavily focused on research and advancements in pharmaceutical and other treatments</td>
<td>Focused on primary care, prevention, and the treatment of the body and its systems with manipulation when applicable</td>
</tr>
</tbody>
</table>
4 Tenets of Osteopathy

1. The body is a unit, and represents a combination of body, mind, and spirit
2. The body is capable of self regulation, self-healing, and health maintenance (simply “homeostasis”)
3. Structure and function are reciprocally interrelated
4. Rational treatment is based on these principles (as well as current medical knowledge)
Allopathy (M.D.) vs. Osteopathy (D.O.)

- 135 (+17 Canadian) Schools
- 14,000 graduates in 2011
- About 700,000 MDs in the U.S.
- **Fully licensed**
- Commonly practice specialty medicine (Cardiology, ENT, Gas, etc.)

- 43 Schools
- 5,300 graduates in 2011
- About 66,000 DOs in the U.S.
- **Fully licensed**
- Commonly specialize in primary care specialties (pediatrics, family medicine, internal medicine, etc.)
Differences in Education

Osteopathic Manipulative Medicine

- Additional 200 hours of instruction beyond M.D.s
- Provide an affective alternative treatment (and means for diagnosis) for complications ranging from migraine headaches to pneumonia
Midwestern University
Arizona College of Osteopathic Medicine

- Located in Glendale, AZ
- 11 Different health Professions Programs
- 10 programs at Chicago College of Osteopathic Medicine, in Downer’s Grove, IL
- Arizona College of Osteopathic Medicine
  - 250 seats per class
  - Traditional 2+2 curriculum
  - Community-based rotations
  - Started in 1996; first graduates in 2000
<table>
<thead>
<tr>
<th>Pre-Clinical Years</th>
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<tbody>
<tr>
<td><strong>OMS 1</strong></td>
<td><strong>OMS 2</strong></td>
</tr>
<tr>
<td>Anatomy (cadaver dissection)</td>
<td>Introduction to Clinical Medicine</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>Introduction to Radiology</td>
</tr>
<tr>
<td>Histology</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Human Behavior</td>
<td>Osteopathic Medical Manipulation</td>
</tr>
<tr>
<td>Immunology</td>
<td>Pathology</td>
</tr>
<tr>
<td>Introduction to Clinical Medicine</td>
<td>Pharmacology</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>Psychopathology</td>
</tr>
<tr>
<td>Osteopathic Medical Manipulation</td>
<td>Elective Research</td>
</tr>
<tr>
<td>Physiology</td>
<td></td>
</tr>
<tr>
<td>Elective Research</td>
<td></td>
</tr>
</tbody>
</table>
Possible Research Opportunity

- Dean of Students, Dr. Mark Speicher, Ph.D.
- Studies the effectiveness of physicians and how their practices relate to patient outcomes.
- Dr. Speicher is also very invested in searching for what makes the best medical student (AZCOM outperforms most other DO schools in residency placement and licensure exam pass rates).
Select ten common, important clinical practice guidelines.

Use a mathematical model to nest patients within physician practices.

Measure the variation in compliance with guidelines between patients within the same practice, and between physician practices.

How much variation is due to physician factors and how much is due to patient factors?

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Guideline</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma in Adults</td>
<td>Use of Appropriate Medications in Patients with Asthma&lt;sup&gt;22&lt;/sup&gt;</td>
<td>Is the patient currently being treated with, at a minimum, an inhaled corticosteroid?</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>Inappropriate Treatment of Adults Having a Diagnosis of Bronchitis with Antibiotics&lt;sup&gt;23&lt;/sup&gt;</td>
<td>Is the patient being treated with antibiotics for chronic bronchitis? (For this guideline, a value of 1 indicates the patient did NOT receive antibiotics; not being prescribed antibiotics is the appropriate treatment. A value of 1 means the guideline was complied with.)</td>
</tr>
<tr>
<td>Coronary Artery Disease (CAD)</td>
<td>Treatment of Adults with Coronary Artery Disease – beta blockers&lt;sup&gt;24&lt;/sup&gt;</td>
<td>Is any patient who had a previous myocardial infarction currently taking a beta-blocker?</td>
</tr>
<tr>
<td>CAD</td>
<td>Treatment of Adults with Coronary Artery Disease – lipid testing&lt;sup&gt;24&lt;/sup&gt;</td>
<td>Did the patient have a low-density-lipoprotein level blood test in the last six months?</td>
</tr>
<tr>
<td>CAD</td>
<td>Treatment of Adults with Coronary Artery Disease – lipid lowering&lt;sup&gt;24&lt;/sup&gt;</td>
<td>Is any patient who had a previous myocardial infarction currently taking a lipid-lowering medication?</td>
</tr>
<tr>
<td>Congestive Heart Failure (CHF)</td>
<td>Medications for Adults with Congestive Heart Failure – ACE-inhibitors&lt;sup&gt;25&lt;/sup&gt;</td>
<td>Is the patient currently receiving a prescribed ACE-inhibitor (or acceptable alternative)?</td>
</tr>
<tr>
<td>CHF</td>
<td>Medications for Adults with Congestive Heart Failure – beta-blockers&lt;sup&gt;25&lt;/sup&gt;</td>
<td>Is the patient currently receiving a prescribed beta-blocker?</td>
</tr>
<tr>
<td>Diabetes, Type 1 or Type 2</td>
<td>Comprehensive Care of Patients with Diabetes – HbA1c&lt;sup&gt;26&lt;/sup&gt;</td>
<td>Did the patient receive a hemoglobin A1c test at least twice annually following diagnosis?</td>
</tr>
<tr>
<td>Diabetes, Type 1 or Type 2</td>
<td>Comprehensive Care of Patients with Diabetes - LDL&lt;sup&gt;26&lt;/sup&gt;</td>
<td>Did the patient receive testing for blood levels of low-density lipoproteins in the last 12 reported months?</td>
</tr>
<tr>
<td>Asthma in Children</td>
<td>Use of Appropriate Medications in Patients with Asthma&lt;sup&gt;22&lt;/sup&gt;</td>
<td>Is the child currently being treated with, at a minimum, an inhaled corticosteroid?</td>
</tr>
</tbody>
</table>
Results of the Analysis

- Compliance with guidelines is very low, ranging from 8% (Guideline 10) to 68% (Guideline 5). The average rate of compliance across all ten guidelines was 29%. This means less than one-third of patients usually received care that followed well-researched, widely accepted practice guidelines.
- There is 20 times more variation in guideline compliance at the patient level than at the physician level.

<table>
<thead>
<tr>
<th>Clinical Practice Guideline - Diagnosis Group</th>
<th>All</th>
<th>Asthma</th>
<th>Bronchitis</th>
<th>CAD-Beta</th>
<th>CAD-Lipid Test</th>
<th>CAD-Lipid Meds</th>
<th>CHF-ACE</th>
<th>CHF-Beta</th>
<th>Diabetes-HbA1c</th>
<th>Diabetes-LDL</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>43,582</td>
<td>2,436</td>
<td>4,174</td>
<td>1,480</td>
<td>8,469</td>
<td>8,469</td>
<td>2,660</td>
<td>2,776</td>
<td>14,647</td>
<td>14,647</td>
<td>16,351</td>
</tr>
</tbody>
</table>
| Proportion of patients receiving CPG-
  compliant care                            | 0.29 | 0.10 | 0.26 | 0.50 | 0.28 | 0.68 | 0.57 | 0.50 | 0.32 | 0.21 | 0.08 |
| Proportion of physicians following CPGs for
  this diagnosis                           | 0.26 | 0.10 | 0.33 | 0.35 | 0.34 | 0.34 | 0.35 | 0.36 | 0.33 | 0.33 | 0.14 |
Licensing Board Examinations

- **COMLEX-USA**
  - Required of All Osteopathic Medical Students
    - Level 1: End of Second Year
    - Level 2 CE and PE: Fall of Fourth Year
    - Level 3: First Postgraduate Year

- **USMLE**
  - Required of All Allopathic Medical Students
  - Required of Osteopathic Students by *Some* Allopathic Residency Programs
    - About 80-85% of AZCOM Students Take Step 1
    - Step 1 First-time Taker Pass Rate ~85%
AZCOM COMLEX Level 1 Performance

Ranks of School Passing Rates on COMLEX Level 1
(May 2010 - April 2011)

Ranks of School Mean Scores on COMLEX LEVEL 1
(May 2010 - April 2011)

- All COM's Pass Rate
- AZCOM Pass Rate
Clinical Years

- Cardiology (1 month)
- Family Medicine (2)
- General Surgery (1)
- Internal Medicine (2)
- Obstetrics/Gynecology (1)
- Pediatrics (1)
- Primary Care (1)
- Psychiatry (1)
- Rural Medicine (1)

- Critical Care Medicine (1 month)
- Electives (6)
- Emergency Medicine (1)
- Medical Subspecialty (1)
- Surgical Subspecialty (1)
Rotation Locations for AZCOM Students

- Phoenix, AZ (150 students)
  - West Valley
  - East Valley
- Tucson, AZ (20)
- Northern California (Turlock/Modesto; 15)
- Southern California (Los Angeles; 40)
- Chicago, IL (20)
- Ohio University CORE, Toledo, OH (5)
Different Rotation Environments

- **Ward-based Rotations**
  - With residency programs
  - Inpatient
  - Traditional Medical Education
  - Lots of Academic Programs
  - Less hands-on
  - Lots of different pathology

- **Preceptor-based Rotations**
  - With an individual adjunct faculty member in the community
  - Mostly outpatient; some inpatient
  - More hands-on
  - Less pathology, more typical of actual practice
AZCOM Performance on COMLEX Level 2 PE (Multiple Choice Clinical Science Exam)

Ranks of School Mean Scores on COMLEX LEVEL 2-CE
(Midwestern University Arizona College of Osteopathic Medicine
(The red bar represents your school’s performance)

Ranks of School Passing Rates on COMLEX Level 2-CE
(Midwestern University Arizona College of Osteopathic Medicine
(The red bar represents your school’s performance)

All COM's Pass Rate
AZCOM Pass Rate
AZCOM Performance on COMLEX Level 2 PE (Clinical Skills Exam)
Class of 2011 Match Results

- 149 Graduates
- 27 Stayed in Arizona
- 56 Matched Osteopathic
  - 5 to AZ DO Programs
- 53 Matched Primary Care
- Other Specialties
  - Medical Specialties: 1 Psych; 4 OBG
  - Surgical Specialties: 2 OTO/Facial plastics; 1
  - Non-categorical one-year positions: 4 IM Prelim; 8 Transitional; 5 Traditional Rotating

<table>
<thead>
<tr>
<th>Specialty</th>
<th># of Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine</td>
<td>34</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>29</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>25</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>10</td>
</tr>
<tr>
<td>Orthopedic Surgery</td>
<td>7</td>
</tr>
<tr>
<td>General Surgery</td>
<td>6</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>6</td>
</tr>
</tbody>
</table>
Measuring Medical Student Performance

- Are there better predictors than MCAT and undergraduate GPA for medical student performance?
- Are there other skills we should be looking for in medical students?
- How do you tell a good physician from a bad physician? How do you tell a good medical student from a bad medical student?

*Indicates significance at the p<0.05 level
** Indicates significance at the p<0.001 level

<table>
<thead>
<tr>
<th>First-Year Basic Science Grades</th>
<th>Overall UGPA</th>
<th>Science UGPA</th>
<th>Total MCAT</th>
<th>Traditional Predictors</th>
<th>LASSI Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy Grade†</td>
<td>0.262**</td>
<td>0.264**</td>
<td>0.032</td>
<td>0.138</td>
<td>0.129</td>
</tr>
<tr>
<td>Biochemistry Grade†</td>
<td>0.268**</td>
<td>0.274**</td>
<td>0.164*</td>
<td>0.081</td>
<td>0.172*</td>
</tr>
<tr>
<td>Histology Grade†</td>
<td>0.231**</td>
<td>0.214**</td>
<td>0.003</td>
<td>0.129</td>
<td>0.201</td>
</tr>
<tr>
<td>Immunology Grade</td>
<td>0.226**</td>
<td>0.189**</td>
<td>0.030</td>
<td>0.048</td>
<td>0.236**</td>
</tr>
<tr>
<td>Neuroscience Grade</td>
<td>0.256**</td>
<td>0.281**</td>
<td>0.023</td>
<td>0.014</td>
<td>0.028</td>
</tr>
<tr>
<td>Physiology Grade†</td>
<td>0.135*</td>
<td>0.153**</td>
<td>0.244**</td>
<td>0.061</td>
<td>0.125</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First-Year Clinical Course Grades</th>
<th>Overall UGPA</th>
<th>Science UGPA</th>
<th>Total MCAT</th>
<th>Traditional Predictors</th>
<th>LASSI Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Medicine Grade‡</td>
<td>0.195**</td>
<td>0.151*</td>
<td>-0.034</td>
<td>0.162*</td>
<td>0.200*</td>
</tr>
<tr>
<td>Osteopathic Manipulative Medicine Grade‡</td>
<td>0.215**</td>
<td>0.173**</td>
<td>0.015</td>
<td>0.121</td>
<td>0.116</td>
</tr>
<tr>
<td>Human Behavior Grade‡</td>
<td>0.188**</td>
<td>0.111</td>
<td>0.037</td>
<td>0.062</td>
<td>0.083</td>
</tr>
</tbody>
</table>
OMM Technique

- **Barrier Theory**
  - Anatomic
  - Physiologic
  - Restrictive or Pathologic

- **T.A.R.T.** (indicators of somatic dysfunction, tenderness, asymmetry, restriction, tissue texture)

- **Indirect vs. Direct**
  - Wide range of techniques (11) that range from invasive to non-invasive
  - Strain-Counterstrain is an example of a very non-invasive technique
Thank You

Please feel free to email questions!

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