Strategies for integrating Radiology into new medical school curriculum

Thomas Grist, MD
University of Wisconsin
• Replaces traditional model for medical student education
  – 2 years basic sciences
    • Radiology co-directed anatomy
  – 2 years clinical experiences
    • Radiology required 2 week clerkship
    • Radiology co-directed neurosciences clinical clerkship
• New model: Integrated basic, public health, and clinical sciences throughout medical students’ education
Why Change?

• Team-based care
• Prepare to work in health systems and communities
• Influential reports suggest we do this*
• Residencies demand students to be better prepared for competency-based milestones
• Residency application deadlines create time-pressure on 4th year

A Message from Dean Golden

Health care is in an unprecedented era of change. These changes are affecting not only how our doctors care for patients, but also how we train future generations of physicians.

The University of Wisconsin School of Medicine and Public Health is committed to innovations that will prepare our students to meet society's evolving health care needs and become leaders in the health care systems of the 21st century.
Rationale and issues

- Nearly 50% of all medical schools have either revised or are revising their 4 year curriculum
- Based on educational theories
- Initiative not yet proven: little outcomes data
- However “everyone else seems to be doing it”
- Problems with the legacy model
  - Relevance of basic sciences
  - Variable preparedness for internship and residency
  - Lack of integration across disciplines
  - Adapt to new ways millennials learn

What is Radiology’s role in this model?
Principles of change

• **Full integration** of basic, public health and clinical sciences where students apply science concepts throughout their education

• Competency-based curriculum with **longitudinal sequencing** requiring collaboration of medical educators across all years of the curriculum

• Increased **interprofessional and team-based** educational opportunities

• Longitudinal **public health and system-based practice** opportunities with special emphasis on “hands-on” application of knowledge in clinical and community settings

• **Earlier entry into clinical clerkships** to facilitate career exploration and competitiveness for residency selection

• Advanced learning opportunities for **better internship preparation**
UW: ForWard Curriculum
ForWard Highlights

• Longitudinal Teacher Coaches (LTCs)
• PaCE cases
• ELOs (Endurable Learning Objects)
  – Narrated Powerpoints
  – Interactive Modules
Longitudinal Teacher/Coaches

• LTC’s follow students through new three-phase curriculum
• Lead Patient centered Education (PaCE) studies (Case groups)
• Teach ForWard Clinical Skills Curriculum
• @UW: 0 Radiologists
Trivia:

- What does E.L.O. stand for besides enduring learning object?
- Bonus: Name their signature song.

Electric Light Orchestra

Evil Woman

https://www.youtube.com/watch?v=J8sr74iCjyA
Welcome to Neuroradiology

Welcome to the Neuroradiology component of the Neurology Clerkship at the University of Wisconsin. Neuroradiology plays an integral role in the diagnosis of Neurologic conditions. It is important to have an understanding of the different types of imaging studies that are used to assist in the diagnosis of Neurologic disease as well as the indications and contraindications to each imaging modality. The site is designed to teach the basics of Neuroradiology and is divided into 4 main sections: course specifics, imaging techniques, anatomy, and cases. Click on the icons below or along the main toolbar to take you to each section. Save the site to the desktop of your mobile device for easy access.

Disclaimer: The materials here serve only as general guidelines. Institutions, hospitals, and practitioners differ in their specific practices. No part of this curriculum is intended to replace proper medical training through graded supervision.
Trivia:

• What is Reed Dunnick’s most often stated quote?
• If your not at the table, you are on the menu.
## Integrated Block Leaders

<table>
<thead>
<tr>
<th>Name</th>
<th>Phase 1 Block Title</th>
<th>Department/Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scott Mead, MD</td>
<td>Patients, Professionalism and Public Health</td>
<td>Medicine/Hospital Medicine</td>
</tr>
<tr>
<td>Beth Altschafl, PhD</td>
<td>Body in Balance</td>
<td>Neuroscience</td>
</tr>
<tr>
<td>Gary Lyons, PhD</td>
<td>Food, Fasting and Fitness</td>
<td>Cell and Regenerative Biology</td>
</tr>
<tr>
<td>Greg Rice, MD</td>
<td>Human Family Tree</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>Erik Ranheim, MD, PhD</td>
<td>Invaders and Defense</td>
<td>Pathology and Laboratory Medicine</td>
</tr>
<tr>
<td>Jason Stephenson, MD</td>
<td>Mind and Motion</td>
<td>Radiology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Phase 2 Block Title</th>
<th>Department/Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirstin Nackers, MD</td>
<td>Life Cycle</td>
<td>Pediatrics/ Hospital Medicine</td>
</tr>
<tr>
<td>Mark Beamsley, MD</td>
<td>Chronic Care</td>
<td>Family Medicine</td>
</tr>
<tr>
<td>Laura Zakowski, MD</td>
<td>Acute Care</td>
<td>Medicine/General Internal Medicine</td>
</tr>
<tr>
<td>Ann O'Rourke, MD</td>
<td>Surgical Care</td>
<td>Surgery</td>
</tr>
</tbody>
</table>
Who is currently involved

- Erica Riedesel – Care Across the Life Cycle Design Team
- Tabby Kennedy – Acute Care Design Team
- Allison Grayev – Integrated Radiology, Anatomy, Histology (iRAH) Lead
- Jason Stephenson – Mind and Motion Course Director
Phase 1

Each Thematic Block will integrate relevant normal and abnormal anatomy, physiology, pathology and pharmacology, as well as important longitudinal threads.

Fall, Year 1

<table>
<thead>
<tr>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients, Professionalism and Public Health</td>
<td>Body In Balance: Cellular Physiology, Heme, CV, Pulmonary, Renal, Pharmacology</td>
<td>[Details not visible]</td>
<td>[Details not visible]</td>
<td>[Details not visible]</td>
</tr>
</tbody>
</table>

Clinical and Public Health Application Experiences

Spring, Year 1

<table>
<thead>
<tr>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Fasting and Fitness: Nutrition, GI, Biochemistry, Hormonal Controls, Exercise Physiology</td>
<td>[Details not visible]</td>
<td>The Human Family Tree: Molecular Bio, Genetics, Embryology, Childhood, Pregnancy, Aging, Reproductive Endo, Neoplasia</td>
<td>[Details not visible]</td>
<td>[Details not visible]</td>
</tr>
</tbody>
</table>

Clinical and Public Health Application Experiences

Fall, Year 2

<table>
<thead>
<tr>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invaders and Defense: Immunity, Infection, Rheumatology (Autoimmunity)</td>
<td>[Details not visible]</td>
<td>Mind and Motion: Psychiatry, Behavioral Science, Neurology, MSK</td>
<td>[Details not visible]</td>
<td>[Details not visible]</td>
</tr>
</tbody>
</table>

Clinical and Public Health Application Experiences

- Where is anatomy?
Phase 1

Care Across the Life Cycle

Chronic and Preventive Care

Acute Care

Surgical and Procedural Care

Phase 2

Phase 3
Phase 2

**Spring, Year 2**

<table>
<thead>
<tr>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Clinical Block #1</td>
<td></td>
<td></td>
<td>Integrated Clinical Block #2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Longitudinal Curriculum</strong> (dedicated ½ day per week): Basic Science and Public Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fall, Year 3**

<table>
<thead>
<tr>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Clinical Block #3</td>
<td></td>
<td></td>
<td>Integrated Clinical Block #4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Longitudinal Curriculum</strong> (dedicated ½ day per week): Basic Science and Public Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Spring, Year 3**

<table>
<thead>
<tr>
<th>January</th>
<th>February</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USMLE and YEPSA, and Individualized Learning Plans</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Longitudinal Curriculum</strong> (dedicated ½ day per week): Basic Science and Public Health</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Proposed Integrated Clinical Blocks
(Each Block 12 Weeks in Duration)

• **Surgical and Procedural Care:**
  – Perioperative Care, Team-Based Care, Procedural Skills, General Surgery, Surgical Gynecology, Anesthesia, Procedural and Surgical Specialties (i.e. Ophthalmology, ENT, Urology, **Interventional Radiology**)

• **Care Across the Life Cycle:**
  – Working with Caregivers, Vulnerable Populations, Women’s Health, Child Health, Obstetrics, Newborn Care, Pediatrics including Pediatric Subspecialties, Outpt Gynecology, Geriatrics

• **Acute Care:**
  – Urgent Disease Presentations, Inpatient Care, Transitions in Care Inpatient Medicine, Inpatient and Consultation Neurology and Psychiatry, Emergency Medicine, Critical Care, Palliative Care, Rehabilitation Medicine, **Radiology**

• **Chronic and Preventive Care:**
  – Chronic Disease Management, Health Promotion, Community Health Longitudinal Ambulatory Care, Family Medicine, General Internal Medicine, Psychiatry and Behavioral Health, Specialties focused on chronic disease management (i.e. HIV, Multiple Sclerosis, Diabetes)
Phase 1
Acting Internships

Phase 2
Public Health Selectives

Phase 3
Foundational Science

Internship Preparatory Courses
## Phase 3

### Spring, Year 3

<table>
<thead>
<tr>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Exploration and Specialty-Recommended Basic Science and Clinical Experiences</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Fall, Year 4

<table>
<thead>
<tr>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Exploration and Specialty-Recommended Basic Science and Clinical Experiences</td>
<td></td>
<td></td>
<td></td>
<td>Residency Interviews, Electives (including online), Research</td>
<td></td>
</tr>
</tbody>
</table>

**USMLE Step 2**

### Spring, Year 4

<table>
<thead>
<tr>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued Interviews, Electives (including online), Research, Match</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty-Specific Internship Preparation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Courses that will necessarily include Radiology

- All Phase 1 Courses
- Acute Care
- Internship Preparatory Courses
Radiology in Phase 1

- Integrated Radiology, Histology, and Anatomy medium-sized group sessions
- Ultrasound in physical diagnosis sessions
Radiology in Acute Care

- Weekly online modules and corresponding case-based seminars proctored by Radiology faculty
- Additional optional online resources (formerly from the Radiology Clerkship)
Radiology in Internship Preparation Courses

• Can’t miss imaging diagnoses for interns
• Imaging indications/ACR criteria
Proposed roles for Radiology

Other Phase 2 Courses

Other?
Who is currently involved

• Erica Riedesel – Care Across the Life Cycle Design Team
• Tabby Kennedy – Acute Care Design Team
• Allison Grayev – Integrated Radiology, Anatomy, Histology (iRAH) Lead
• Jason Stephenson – Mind and Motion Course Director
How to pay for this in our Departments?

• Funds flow redesign
• Lobby for funds to support academic time
• Rate?
  – Specialty specific AAMC rate?
  – Blended rate between AAMC and MGMA?
• How to fund what ELO’s are truly worth?
Trivia: Who wrote this poem?

Come gather around people
Wherever you roam
And admit that the waters
Around you have grown
And accept it that soon
You'll be drenched to the bone
And if your breath to you is worth saving
Then you better start swimming or you'll sink
like a stone

For the times they are a-changing
Conclusions

• Medical education is changing
• Integration throughout 4 years
• Emphasis on team based learning requires team based teaching
• Important to embed Radiologists in this process
• Challenges will be to demonstrate and get paid for the value we provide