Developing a Residents-as-Teachers Curriculum:
Design, Implementation and Assessment

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The Good Teacher

We know a good teacher when we see it, but how can we teach and evaluate to create good teachers?
Objectives

1. Define the principles of adult learning theory essential to incorporate into a Residents as Teachers curriculum

2. Acquire the skills to develop and implement an effective Residents-as-Teachers curriculum to equip learners to be successful educators

3. Assess residents competency as teachers using objective, measureable and skill based evaluation tools
Applying the Principles of Adult Learning Theory to Resident as Teacher Curriculum
Adults learn better when:

- Want or need to learn something
- Utilize and value previous knowledge and experience
- Meet individual learning needs and styles
- Allow for input into learning content/activities
- Provide sufficient time for assimilation of new information or practice of new skills

Adults learn better when:

- Focus on relevant and realistic problems and the practical application of learning
- Practice or apply successfully what they have learned
- Engage in active mental and physical participation
- Experience guidance (coaching) and measurement of performance allowing a sense of progress towards goals

Teaching Clinical Reasoning
Teaching Clinical Reasoning

Diagnosing a Vehicle

• Symptoms- It’s big and has wheels
• Differential Diagnosis…
Learning a Script

When you enter the room you see this:

What will you teach them to remember this?
They enter the next room…. And then,

• Symptoms- it’s big and red
• Differential Diagnosis… Firetruck!
You enter the room and see this…

What is the teaching point here?
Into the next room….

- It’s big and red and has a ladder!
- Diagnosis - Firetruck
And you go in and see this...
And so your day goes on....

It’s big and red and says FIRE and has flashing lights!
It’s a firetruck!

Well, we may as well teach them about ambulances
Just when you thought we were done teaching about firetrucks...
Case presentations

Others: Student Notes (EMR), small group discussions
Steps in Diagnostic Reasoning

Figure 1. Key Elements of the Clinical Diagnostic Reasoning Process.

Bowen, J  *NEJM* 2006
Problem Representation
<table>
<thead>
<tr>
<th>Acute</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudden</td>
<td>Gradual</td>
</tr>
<tr>
<td>Delayed</td>
<td>Abrupt</td>
</tr>
<tr>
<td>Progressive</td>
<td>Waning</td>
</tr>
<tr>
<td>Constant</td>
<td>Intermittent</td>
</tr>
<tr>
<td>Unilateral</td>
<td>Bilateral</td>
</tr>
<tr>
<td>Painful</td>
<td>Painless</td>
</tr>
<tr>
<td>Mild</td>
<td>Severe</td>
</tr>
</tbody>
</table>
Example case

• You are seeing a 3 year boy with 1 day of low grade fever and a limp. Child seems to be favoring the left leg.

• Problem Representation:
  – Febrile toddler with acute onset of limp
Defining, Discriminating Features

Memory Anchor Points

Defining Features

Toxic Synovitis

Septic Arthritis

JIA

Discriminating Features

From Bowen 2006
Illness scripts

Transient Synovitis of the Hip

EPIDEMIOLOGY
- Toddlers
- Not neonates

CLINICAL
- Limp – acute onset
- Unilateral
- Recent URI
- Normal / near normal labs
- Well appearing

PATHOPHYSIOLOGY
- Viral synovial inflammation

M Long, from Bordage
Defining, Discriminating Features

- Memory Anchor Points
  - High WBC
- Defining Features
  - Acute onset
  - Fever
  - Hip joint
  - Mod pain
- Toxic synovitis
- JRA
- Exquisite tenderness
- Septic Arthritis
  - CRP, ESR
- Discriminating Features
  - Bilateral findings
  - Systemic rash
  - Subacute onset

From Bowen 2006
Let’s focus on the assessment

• Assessments may be….
• Absent:
  – SOP: “This is a blue vehicle with flashing lights and siren, my plan is to give it gas.”
  – SOSOP: “This is a blue vehicle with flashing lights and siren. So, for assessment, this is a blue vehicle with flashing lights and siren. Plan is to give it gas.”
Other Possible Assessments / DDX

• Inaccurate Differential
  – “This is a short green vehicle used for water-travel.”

• Disembodied Differential (also seen in video)
  – “This is a vehicle. DDX for vehicle is Tractor, motorcycle, Taxi, fire truck”

• Silo Differential
  – This is a vehicle with a ladder, a hose, and a siren. The DDX for ladder includes.....The DDX for siren includes...

• Frozen DDX
  – Sees siren.... “It must be an ambulance”

• Zebra DDX
  – Its large and it had flashing lights....It could be a space shuttle.
Teaching Clinical Reasoning

• Intern Oral Presentation Video
Feedback & Teaching

• How would you deliver feedback to this intern?
• How would you incorporate teaching?
Objective Assessment

Does it Exist for Effective Teaching?
Historical Needs in Medical Education

Many faculty educators have not received formal training in educational techniques or had their teaching competencies assessed.

Institutional and National Faculty Development Programs
Historical Needs in Medical Education

Competency-based evaluation of clinical reasoning, patient interviewing, and procedural skills in undergraduate and graduate medical education

Development of the Observed Standardized Clinical Examination (OSCE) - validated in the literature
Addressing Resident as Teacher Needs

Residents play an integral role in the education of peers and medical students.

Duty-hour changes necessitated an increase in shift-based work schedules with increasing nights.

Variety of “resident-as teacher” curricula by individual training programs - Limited assessments.
The Leap

Clinical Reasoning
Patient Interviewing
Procedural Skills

Feedback
Bedside Teaching
Didactic Instruction

Observed Standardized Clinical Examination (OSCE)

Observed Structured Teaching Evaluation (OSTE)
Goals of an Objective Assessment

• Easy to use
• Reproducible
• Objective measure of observable skills
• Foundation in consensus behaviors/skills
• Delineation of a spectrum of performance
• Translates to actionable feedback
• Applicable over the training continuum
Development of an OSTE

1. Identify the Competency

Effective Teaching
Development of an OSTE

1. Identify the Competency

2. Foundation in consensus competencies

- Effective Teaching
  - Relevant ACGME Core Competencies
  - Relevant Pediatric Milestones Project Behaviors
Development of an OSTE

1. Identify the Competency
2. Foundation in consensus competencies
3. Define an EPA

- Effective Teaching
  - Relevant ACGME Core Competencies
  - Relevant Pediatric Milestones Project Behaviors

EPA of Effective Teaching
Development of an OSTE

1. Identify the Competency
2. Foundation in consensus competencies
3. Define an EPA
4. Determine skills/traits
Development of an OSTE

1. Identify the Competency
2. Foundation in consensus competencies
3. Define an EPA
4. Determine skills/traits
5. Characterize observable behaviors
Development of an OSTE

1. Identify the Competency
2. Foundation in consensus competencies
3. Define an EPA
4. Determine skills/traits
5. Characterize observable behaviors
6. Align behaviors with gradient of competency
Development of an OSTE

1. Identify the Competency

Teaching

More specifically looked at brief one-on-one didactic between an intern and 3rd year medical student
# Development of an OSTE

1. Identify the Competency

2. Foundation in consensus competencies

3. Define an EPA

<table>
<thead>
<tr>
<th>Proposed EPA</th>
<th>ACGME Core Competencies</th>
<th>Pediatric Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching</td>
<td>Medical Knowledge</td>
<td>Demonstrate sufficient knowledge of the basic and clinically supportive sciences appropriate to pediatrics</td>
</tr>
<tr>
<td></td>
<td>Practice-based Learning and Improvement</td>
<td>Identify strengths, deficiencies, and limits in one’s knowledge and expertise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop the necessary skills to be an effective teacher</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participate in the education, of patients, families, students, residents, and other health professionals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Take primary responsibility for lifelong learning to improve knowledge, skills, and practice performance through familiarity with general and experience-specific goals and objectives and attendance at conferences</td>
</tr>
<tr>
<td>Interpersonal and Communication Skills</td>
<td>Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Communicate effectively with physicians, other health professionals, and health related agencies</td>
</tr>
<tr>
<td>Professionalism</td>
<td></td>
<td>Demonstrate a sense of duty and accountability to patients, society and the profession</td>
</tr>
</tbody>
</table>
Development of an OSTE

1. Identify the Competency
2. Foundation in consensus competencies
3. Define an EPA
4. Determine skills/traits

<table>
<thead>
<tr>
<th>TEACHING SKILL</th>
<th>Skill 1</th>
<th>Skill 2</th>
<th>Skill 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting the tone and providing context</td>
<td>Covering key content areas of a topic in an effective and efficient manner</td>
<td>Reviewing and adapting to the needs of a learner</td>
<td></td>
</tr>
</tbody>
</table>
Development of an OSTE

1. Identify the Competency
2. Foundation in consensus competencies
3. Define an EPA
4. Determine skills/traits
5. Characterize observable behaviors
6. Align behaviors with gradient of competency
Implementation

- Practice with example scenarios
  - Edit
  - Share with others to establish validity
    - Edit
    - Discuss scoring among evaluators to establish consistency
      - Edit
Let’s Practice
Bedside Teaching
Bedside Teaching

• “*Medicine is learned by the bedside and not in the classroom*” – Sir William Osler
• Most effective method to teach clinical skills
• Favored form of teaching by medical students
• Often poorly conceived and structured
• Many teachers have had little formal training in educational principles

Barriers to Bedside Teaching

- Low resident confidence
- No formal training
- Lack of understanding of its benefit
- Perception that patients/parents don’t like it
- No time and lower priority
Barriers to Bedside Teaching

2009; 9/13 Canadian peds residencies (residents & PD’s) surveyed regarding how teaching skills developed

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Expectations are high. Often one’s confidence regarding teaching is low. (PGY-2)

Very little info is provided [about] what is expected in terms of teaching… (PGY-2)

… it is assumed we’ll figure it out for ourselves. (PGY-1)

My teaching abilities have never been emphasized in my evals (whether good or bad). (PGY-2)
Overcoming Barriers: Confidence

• UK Study, 2013
  – Bedside Teachers Program: junior doctors attended teaching training symposium
    • Three 45 minute tutorials: (1) student learning styles, (2) small group teaching, (3) delivering feedback (including One-Minute Preceptor)
    • Two 1-hour sessions: tutors are observed teaching
  – Final year med students rated and compared teaching delivered by junior doctors with senior (education) staff
Resident Teacher Confidence

- Modest intervention, large gain!
- “In comparison with teaching on the same topic delivered by senior medical staff, I agree/strongly agree that junior doctors…”

- Are more approachable: 100%
- Give better organized sessions: 90%
- Are more passionate about teaching: 94%
- Are more effective at clearly explaining things I previously did not understand: 100%
Overcoming Barriers: Benefit

Australia: survey of 100 medical students on usefulness & quantity of bedside teaching in pediatrics

Useful?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>History Taking</td>
<td>93%</td>
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<tr>
<td>Physical Exam</td>
<td>98%</td>
</tr>
<tr>
<td>Communication</td>
<td>93%</td>
</tr>
</tbody>
</table>

Enough Provided?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>History Taking</td>
<td>54%</td>
</tr>
<tr>
<td>Physical Exam</td>
<td>55%</td>
</tr>
<tr>
<td>Communication</td>
<td>60%</td>
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</table>
Overcoming Barriers: Parental Perception

• Australia: 107 parents surveyed over 3 months
  Bedside teaching:
  – Important for students (98%)
  – Improved care of others (87%)
  – Would recommend participating in bedside teaching to other parents (88%)

• Of 52 parents with previous experience with bedside teaching, only 6% dissatisfied with discussion
Curriculum Strategies

• Identify key components
• Acknowledge and help resident teachers overcome barriers
• Develop a curriculum that is fun and engaging
  – Simulation; standardized patient
  – Video
  – Role play!
Role Play: Bedside Teaching

• What were missed opportunities?
  – Observe communication skills between intern and patient
  – Include patient and avoid/explain medical jargon
  – Determine knowledge base of intern and address gaps
  – Determine clinical reasoning of intern
  – Demonstrate key physical exam findings that both aid diagnosis and enhance education
Role Play: Bedside Teaching

• What was enhanced in this example?
  – Patient/family-centered care; patient inclusion
  – Observe relationship/communication between intern and patient
  – Improved understanding of clinical reasoning
  – Identification of knowledge gaps; efficiency in teaching
  – Utilization of physical findings for accuracy in diagnosis and education
12 Tips to Improve Bedside Teaching

1. Prepare
2. Draw roadmap
3. Orient learners; negotiate goals/objectives
4. Introduce yourself & team to patient, EMPHASIZE teaching nature of encounter
5. Role-model physician-patient interactions
6. Step out of limelight; be keen observer
7. Challenge without humiliation; gentle correction
8. Tell learners what they’ve been taught
9. Leave time for questions & clarifications
10. Find out what went well & what did not
11. Self-evaluate; what would you do differently next time?
12. Start preparation for next encounter with new insights

Subha Ramani
RAT Curriculum at Johns Hopkins

- Intern orientation
- Quarterly noon conferences, rotating topics
- 1/2 day retreat for rising senior residents
  - 4 “scenarios”: video, group discussion, role play
    - Diagnosing the learner, clinical reasoning vocabulary
    - One on one teaching techniques (1 min preceptor)
    - Giving feedback
    - Navigating family centered rounds (engaging families, scary differentials…)
    - Tools for teaching when team isn’t too busy

- A curriculum in evolution…
Microburst Teaching

- Different teaching methods and styles are interchanged
- Presented in brief burst
- Teaching to various learners with different learning styles
Microburst Teaching Techniques

- One Minute Preceptor
- Modeling
- Active Demonstration
- Brief Didactic
Let’s Practice
Questions?

Commitment Statement

Evaluations
References


