Evaluating the Efficacy of a Teaching Skills Workshop for Internal Medicine Residents

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A. Background

Importance of teaching in medical residency training

- time spent by residents in teaching role
- studies estimate that 20-25% of residents' time is spent in teaching role\(^{23,24}\)
- inability to self-evaluate teaching skills
- study revealed no correlation between residents' self-evaluations and student evaluations of residents' teaching skills\(^{15}\)
- involvement in medical student education
- student survey estimates that 1/4 - 1/3 of their clinical education is learned from residents\(^{25}\)
- residency directors estimate that residents provide >60% inpatient teaching to students\(^{26}\)
- impact on resident education fourth and fifth year surgical residents rated in top quartile on teaching skills scored highest on in-service exam\(^{15}\)
- pediatric residents who taught lecture vs. those who observed lecture were more likely to retain that information\(^{19}\)

B. Other Studies

Factors affecting teaching behavior

- negative impact
- 81% of residents report inadequate time as deterrent to improved teaching skills\(^{15}\)

- positive impact
- greater teacher involvement with trainee\(^{4}\)
- area of expertise\(^{4}\)
- Attributes of excellent attending physician role models (Wright et al. \textit{NEJM})\(^{7}\)
  - greater assigned teaching responsibilities
>25 hours per week teaching and conducting rounds while serving as attendings
- stressing the importance of doctor-patient relationship in one's teaching
- teaching the psychosocial aspects of medicine
- building relationship with house officers
- having served as a chief resident
- having participated in any formal training in teaching

- Teaching skills workshops (see table-next page)

C. Proposal

- Randomized two year study involving two internal medicine programs
- Columbia-Presbyterian Hospital
- Cornell-New York Hospital (or to be determined)
- Residents blinded to the conduction/intent of the study
- Observer raters blinded to the study design/study group

D. Intervention

- teaching skills workshop to train residents (between first and second year of residency) at one site (experimental) - continue current curriculum, i.e. no workshop, at second site (control)

E. Primary outcome

- Does a teaching skills workshop improve residents' teaching skills as measured by student, intern and observer evaluations?

F. Secondary outcome

- Does exposure to residents formally trained in teaching skills influence students decision to specialize in Internal Medicine?
- Do residents trained in teaching skills perform better on standardized exams? (Does improved teaching relay to improved learning by the teacher?)
- Do students taught by trained residents perform better on standardized exams?
<table>
<thead>
<tr>
<th>Study</th>
<th>Specialty</th>
<th>Design</th>
<th>Findings</th>
<th>Weakness</th>
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</thead>
<tbody>
<tr>
<td>Jewett ⁸</td>
<td>Peds</td>
<td>▪ 53 residents&lt;br&gt;▪ randomization –evaluation (faculty, peer, student, self)</td>
<td>▪ improved confidence&lt;br&gt;▪ 52% v. 27% &quot;effective&quot;</td>
<td>▪ NO statistical significance&lt;br&gt;▪ does not evaluate degree of improvement&lt;br&gt;▪ unknown baseline characteristics/evaluations</td>
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<tr>
<td>Bing-You ⁹</td>
<td>Int. Med.</td>
<td>▪ 26 residents&lt;br&gt;▪ case study, voluntary&lt;br&gt;▪ pre/post self-evaluations&lt;br&gt;▪ trained rater post-workshop</td>
<td>▪ improved confidence&lt;br&gt;▪ some skills improved (post-workshop 2 thru 11 mos)</td>
<td>▪ only assessed self-eval pre/post&lt;br&gt;▪ trained rater only showed stability of scores (presumed effect)&lt;br&gt;▪ unblinded observer</td>
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<tr>
<td>Litzelman ¹¹</td>
<td>Int. Med.</td>
<td>▪ 72 interns&lt;br&gt;▪ two year case study&lt;br&gt;▪ evaluation (self/student)</td>
<td>▪ improved in self-eval&lt;br&gt;▪ improved in student eval</td>
<td>▪ retrospective self-eval (to obtain pre data)&lt;br&gt;▪ unknown effect of workshop (no control group)&lt;br&gt;▪ data not shown</td>
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<tr>
<td>Edwards ¹³</td>
<td>Int. Med.&lt;br&gt;OB/Gyne&lt;br&gt;Family Med.</td>
<td>▪ 22 interns &amp; residents&lt;br&gt;▪ randomization&lt;br&gt;▪ evaluation (self/student, trained rater)</td>
<td>▪ improvement in overall&lt;br&gt;▪ teaching rating by trained rater&lt;br&gt;▪ others not statistically sign</td>
<td>▪ high dropout rate&lt;br&gt;▪ ?unblinded rater</td>
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<tr>
<td>Wimpf ¹⁴</td>
<td>Int. med.</td>
<td>▪ 446 interns &amp; residents&lt;br&gt;▪ 6 yr study (3 yr pre &amp; 3 yr post)&lt;br&gt;▪ questionnaire (interns, student)</td>
<td>▪ improvement in each area&lt;br&gt;▪ assessed each year&lt;br&gt;▪ improvement in overall effectiveness ea yr (5.25-5.4)</td>
<td>▪ -ariation between classes/program</td>
</tr>
<tr>
<td>White ¹⁸</td>
<td>Peds</td>
<td>▪ 21 residents in outpt. clinic&lt;br&gt;▪ case study&lt;br&gt;▪ observer rating pre/post</td>
<td>▪ -improvements in all areas assessed</td>
<td>▪ unblinded observers&lt;br&gt;▪ no control group&lt;br&gt;-valuated obj. of training workshop</td>
</tr>
<tr>
<td>Lawson ²⁰</td>
<td>Family Med.</td>
<td>▪ 20 residents’&lt;br&gt;▪ evals pre/post of video(self, peer, program director, raters) and teaching assignment</td>
<td>▪ significant gain in mean score by self and trained raters of videotape&lt;br&gt;▪ improved overall attitudes</td>
<td>▪ data not shown for other areas of evaluation&lt;br&gt;▪ no control group&lt;br&gt;presumably voluntary participation</td>
</tr>
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</table>
G. Data
   - To be collected during year one (pre-workshop) and year two (post-workshop)

H. Evaluations
   - 5 point Likert scale
   - overall teaching effectiveness
   - teaching skills in specific areas (delineation of expectations, creating a comfortable
     learning environment, formulating differential diagnosis, physical exam, procedures,
     didactic teaching, lecture)
   - third year medical student and intern evaluations of second year resident teaching skills
   - (pre-intervention) or second year resident teaching skills (post-intervention)

I. Performance
   - third year student performance on standardized Internal Medicine shelf examination
     (to be administered upon completion of Internal Medicine clerkship)
   - second year resident performance on standardized in-service examination
     (to be administered upon completion of junior year)
   - outside observer evaluation of clinical teaching skills
   - (trained educator to participate in work rounds to evaluate teaching skills of second year
     residents-one time eval for all residents post-intervention)

J. Specialty choices
   - evaluate decision of third year medical students choices in specialty
     as determined by results of the Match during their fourth year of medical school

K. Statistical Analysis
   a. Unpaired t-test
      Assume 80 total residents at each site, 40 residents in each group
      Assume mean pre-intervention (year one) equal at both sites of 4.5 with standard deviation of 0.1
      Therefore, effect size=0.0317
      I would expect mean post-intervention (year two) of 4.8 (experimental group) and 4.5
      (control group) which would correlate with an effect size of 0.3

L. References
1. Griffith CH, Georgesen JC, Wilson JF. Specialty choices of students who actually have choices: the
   895-900.
3. Tremonti LP and Biddle WB. Teaching behaviors of residents and faculty members. J Med Ed 1982;
   57: 854-59.
4. Irby DM, Gillmore GM, Ramsey PG. Factors affecting ratings of clinical teachers by medical
   1072-1075.
7. Wright SM et al. Attributes of excellent attending-physician role models. NEJM 1998; 339: