

# 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<sup>23,24</sup>
  
- inability to self-evaluate teaching skills
- study revealed no correlation between residents' self-evaluations and student evaluations of residents' teaching skills<sup>15</sup>
  
- involvement in medical student education
- student survey estimates that 1/4- 1/3 of their clinical education is learned. from residents<sup>25</sup>
  
- residency directors estimate that residents provide >60% inpatient teaching to students<sup>26</sup>
  
- impact on resident education fourth and fifth year surgical residents rated in top quartile on teaching skills scored highest on in-service exam<sup>15</sup>
- pediatric residents who taught lecture vs. those who observed lecture were more likely to retain that information<sup>19</sup>
  
- impact on student education
- students exposed to residents, preceptors or attendings with high ratings as teachers performed better on exams and clerkship - residents' influence surpassed that of attending physicians or preceptors<sup>21</sup>
  
- impact on medical students' choices of specialty
- top students exposed to "excellent" residents and attendings in internal medicine were more likely to choose a residency in internal medicine
  
- endorsement by the ACGME (1995)<sup>27</sup>

## B. Other Studies

- Factors affecting teaching behavior
- negative impact
- 81 % of residents report inadequate time as deterrent to improved teaching skills<sup>15</sup>
  
- positive impact
- greater teacher involvement with trainee<sup>4</sup>
- area of expertise<sup>4</sup>
- Attributes of excellent attending physician role models (Wright et al. *NEJM*)<sup>7</sup>
  - 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
- Comell-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?

Study	Specialty	Design	Findings	Weakness
Jewett <sup>8</sup>	Peds	<ul style="list-style-type: none"> <li>▪ 53 residents</li> <li>▪ randomization –evaluation (faculty,peer,student,self)</li> </ul>	<ul style="list-style-type: none"> <li>▪ improved confidence</li> <li>▪ 52% v. 27% "effective"</li> </ul>	<ul style="list-style-type: none"> <li>▪ NO statistical significance</li> <li>▪ does not evaluate degree of improvement</li> <li>▪ unknown baseline characteristics/evaluations</li> </ul>
Bing-You <sup>9</sup>	Int. Med.	<ul style="list-style-type: none"> <li>▪ 26 residents</li> <li>▪ case study, voluntary</li> <li>▪ pre/post self-evaluations</li> <li>▪ trained rater post-workshop</li> </ul>	<ul style="list-style-type: none"> <li>▪ improved confidence</li> <li>▪ some skills improved (post-workshop 2 thru 11 mos)</li> </ul>	<ul style="list-style-type: none"> <li>▪ only assessed self-eval pre/post</li> <li>▪ trained rater only showed stability of scores (presumed effect)</li> <li>▪ unblinded observer</li> </ul>
Litzelman <sup>11</sup>	Int. Med.	<ul style="list-style-type: none"> <li>▪ 72 interns</li> <li>▪ two year case study</li> <li>▪ evaluation (selfstudent)</li> </ul>	<ul style="list-style-type: none"> <li>▪ improved in self-eval</li> <li>▪ improved in student eval</li> </ul>	<ul style="list-style-type: none"> <li>▪ retrospective self-eval (to obtain pre data)</li> <li>▪ unknown effect of workshop (no control group)</li> <li>▪ data not shown</li> </ul>
Edwards <sup>13</sup>	Int. Med. OB/Gyne Family Med.	<ul style="list-style-type: none"> <li>▪ 22 interns &amp; residents</li> <li>▪ randomization</li> <li>▪ evaluation (selfstudent, trained rater)</li> </ul>	<ul style="list-style-type: none"> <li>▪ improvement in overall</li> <li>▪ teaching rating by trained rater</li> <li>▪ others not statistically sign</li> </ul>	<ul style="list-style-type: none"> <li>▪ high dropout rate</li> <li>▪ ?unblinded rater</li> </ul>
Wimpf <sup>14</sup>	int. med.	<ul style="list-style-type: none"> <li>▪ 446 interns &amp; residents</li> <li>▪ 6 yr study (3 yr pre &amp; 3 yr post)</li> <li>▪ questionnaire (intems,student)</li> </ul>	<ul style="list-style-type: none"> <li>▪ improvement in each area</li> <li>▪ assessed each year</li> <li>▪ improvement in overall effectiveness ea yr (5.25-5.4)</li> </ul>	<ul style="list-style-type: none"> <li>▪ -ariation between classes/program</li> </ul>
White <sup>18</sup>	Peds	<ul style="list-style-type: none"> <li>▪ 21 residents in outpt. clinic</li> <li>▪ case study</li> <li>▪ observer rating pre/post</li> </ul>	<ul style="list-style-type: none"> <li>▪ -improvements in all areas assessed</li> </ul>	<ul style="list-style-type: none"> <li>▪ unblinded observers</li> <li>▪ no control group</li> <li>▪ -valuated obj. of training workshop</li> </ul>
Lawson <sup>20</sup>	Family Med.	<ul style="list-style-type: none"> <li>▪ 20 residents'</li> <li>▪ evals pre/post of video(self, peer,program director,raters) and teaching assignment</li> </ul>	<ul style="list-style-type: none"> <li>▪ significant gain in mean score by self and trained raters of videotape</li> <li>▪ improved overall attitudes</li> </ul>	<ul style="list-style-type: none"> <li>▪ data not shown for other areas of evaluation</li> <li>▪ no control group</li> <li>▪ presumably voluntary participation</li> </ul>

**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**

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