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Evaluating Residency Programs by Whether They Produce Good Doctors

Editor's note: Not all physician training programs are alike. Many physicians and non-physicians believe that graduates of some training programs deliver better care, although this intuition has not been tested. Residency programs provide physicians with in-depth specialty training (usually lasting 3–6 years). Can the quality of that training be judged by the downstream outcomes of patients treated by their graduates? Should patients pick their doctors in part by where they trained? This Issue Brief looks at one specialty—obstetrics and gynecology (OB)—and explores whether OB training programs can be distinguished by the quality of care their graduates provide.

Conventional wisdom suggests that patients, health systems, and referring physicians act as if training programs matter

Although patient outcomes have been used to assess the performance of hospitals and physicians, they have not been used to evaluate the quality of residency training programs. Identifying which training programs produce better physicians might help medical educators identify what makes better programs better, and could possibly help patients select better physicians.

- Various stakeholders may already take the reputation of a training program into account, including prospective trainees, when they apply to a program, future employers, when they hire graduates, and patients, when they select a physician. It is not known whether reputation is associated with better outcomes.
- Even if it turns out that patients receiving care from physicians trained at top institutions have better outcomes, one obvious explanation is that top programs attract the most talented candidates. With talented trainees, even residencies with weak educational programs might produce talented graduates.
- Untangling the selection effect (how talented the trainee is going in to a program) from the training effect (how much the trainee is educated during the program) might be important when evaluating the training program itself, but might be less important to a patient or other stakeholder trying to select the top-performing physicians. Why should a patient care whether a physician is good because he or she started out that way or was transformed during training?

Study analyzes maternal complication rates by OB training programs

To test the concept that residency programs matter, Asch and colleagues studied OB residency programs and analyzed maternal complication rates by program. In the US, OB residency programs are four years long and most OB residents enter them right after graduating from medical school. They chose OB because delivery is one of the most common reasons for hospital care, and because maternal complications might serve as a marker for quality of OB care.

- The investigators used data from all Florida and New York obstetrical hospital discharges between 1992 and 2007, representing 4.9 million deliveries performed by 4124 obstetricians from 107 US residency programs. The programs were distributed among 22 states and the District of Columbia and represented 43% of the current 249 accredited US OB residency programs.
- The investigators tracked three maternal complications each from vaginal and cesarean births, including laceration, hemorrhage, and infection. They used composite rates for each type of delivery and an overall measure for any maternal complication regardless of whether the birth was vaginal or cesarean.
- They divided training programs into five groups based on the overall complication rates of the programs' graduates, and estimated how much a woman could benefit from being treated by a physician from a high-ranking program compared to a low-ranking one.
- They adjusted their analyses for other possible factors associated with maternal complications, including individual physician and patient characteristics. Physician characteristics included sex, years of experience, and state. Patient characteristics included demographics, insurance coverage, weekend admissions, maternal comorbidities, whether the hospital had an OB residency, and year of delivery.

Graduates of top-tier programs have consistently lower rates of maternal complications than graduates of bottom-tier programs

The results indicate that after adjustment for other factors, obstetricians' residency program was associated with substantial variation in maternal complication rates. The investigators found that OB residency programs can be ranked according to the maternal complications of the women treated by their graduates, and that the difference in complication rates among top-tier and bottom-tier programs is large.

- The unadjusted rate of any major maternal complication was 12.5%. For vaginal deliveries, the complication rate was 12.9%; for cesarean delivery, it was 11.6%.
 - Adjusted rates of complications from physicians trained in the top fifth of programs were substantially lower than from those trained in the bottom fifth of programs. All else being equal, a woman choosing an obstetrician who trained at a program in the top tier would face a 10.3% risk of a major complication compared with 13.6% if she chose an obstetrician trained at a program from the bottom tier.
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- Program rankings were generally consistent across complications, regardless of delivery mode (i.e., vaginal or cesarean). Residencies that produced physicians with low rates of one complication also produced physicians with low rates of other complications. This finding provides additional support for the conclusion that residency program matters.

Medical licensure scores do not explain the difference in outcomes for graduates of top-tier programs

A secondary analysis explored whether the program rankings could be explained by the talents of the trainees going into the program. The investigators used data on medical licensure scores obtained from the National Board of Medical Examiners and the Federation of State Medical Boards. These tests are typically taken near the start of residency.

- Complete test data were available for 74% of the physicians in the study. To the extent that licensure examinations are an indicator of underlying trainee ability, including these test scores in the analysis might separate the contributions of selection and training effects to program quality.
- After adjusting for licensure scores, program rankings were largely unchanged. The scores had no effect on rankings by each complication nor by the overall measure of complication. This suggests either that these scores do not capture medical students' clinical ability, or that skills and knowledge developed during residency are more important for producing good outcomes than the skills and knowledge developed during medical school.

POLICY IMPLICATIONS

This study suggests that where an obstetrician completed residency may provide a meaningful signal about the risk of maternal complications among that obstetrician's patients. It may not be the strongest signal, and is not the only signal, but patients are more likely to identify a higher-quality physician by using rather than ignoring residency program rankings.

- If these findings are confirmed and refined, women might select obstetricians in part by where they were trained. The general consistency in programs' rankings across complications supports the validity of the measures and also suggests that top programs may be likely to produce physicians who are better in unmeasured ways as well.
- These findings may also have important implications for medical educators. It demonstrates that it is possible to judge the quality of medical training programs by subsequent patient outcomes. This may be a more important measure than evaluations based on admission selectivity, board scores, or ranking by newsmagazines or leaders in the field.

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POLICY IMPLICATIONS

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- These results open an opportunity for studying this concept in other clinical fields. Previous research has suggested that experience (often measured in the form of procedure volume) may be an important indicator of quality. Aptitude and training plausibly sit alongside of experience in the set of factors that contribute to physician quality. This study is the first to document residency training's association with later clinical outcomes.
- Further research is needed to understand how training affects patient outcome across fields, across clinical conditions within a field, and across time.

This Issue Brief is based on the following articles: D.A. Asch, S. Nicholson, S. Srinivas, J. Herrin, A.J. Epstein. Evaluating obstetrical residency programs using patient outcomes. Journal of the American Medical Association, September 23/30, 2009, vol. 302, pp. 1277-83; D.A. Asch, A. Epstein, S. Nicholson. Evaluating medical training programs by the quality of care delivered by their alumni. Journal of the American Medical Association, September 5, 2007, vol. 298, pp. 1049-51.

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Issue Brief



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