

Progressive scholarly acceptance

Understanding how the relevant medical community accepts new therapies is vital to patients, physicians, and society. Increasingly, focus is placed on how medical **innovations** are evaluated. But recognizing when a treatment has become accepted practice-essentially, acceptance by the scientific community-remains a challenge and a barrier to investigating treatment development. This report aims to demonstrate the theory, method, and limitations of a model for measuring a new metric that the authors term “progressive scholarly acceptance.” A model was developed to identify when the scientific community has accepted an innovation, by observing when researchers have moved beyond the initial study of efficacy. This model could enable further investigations into the methods and influences of treatment development ¹⁾.

Patients, practitioners, payers, and regulators are advocating for reform in how medical advances are evaluated. Because surgery does not adhere to a standardized developmental pathway, how the medical community accepts a procedure remains unclear. The authors developed a new model, using publication data and patterns, that quantifies this process. Using this technique, the authors identified common archetypes and influences on neurosurgical progress from idea inception to acceptance. **METHODS** Seven neurosurgical procedures developed in the past 15-25 years were used as developmental case studies (endovascular coil, deep brain stimulation, vagus nerve stimulation, 1,3-bis(2-chloroethyl)-1-nitrosourea wafer, and 3 radiosurgery procedures), and the literature on each topic was evaluated. A new metric the authors termed “progressive scholarly acceptance” (PSA) was used as an end point for community acceptance. PSA was reached when the number of investigations that refine or improve a procedure eclipsed the total number of reports assessing initial efficacy. Report characteristics, including the number of patients studied, study design, and number of authoring groups from the first report to the point of PSA, were assessed. **RESULTS** Publication data implicated factors that had an outsized influence on acceptance. First, procedural accessibility to investigators was found to influence the number of reports, number of patients studied, and number of authoring groups contributing. Barriers to accessibility included target disease rarity, regulatory restrictions, and cost. Second, the ease or difficulty in applying a randomized controlled trial had an impact on study design. Based on these 2 factors, 3 developmental archetypes were characterized to generally describe the development of surgery. **CONCLUSIONS** Common surgical development archetypes can be described based on factors that impact investigative methods, data accumulation, and ultimate acceptance by society. The approach and proposed terminologies in this report could inform future procedural development as well as any attempts to regulate surgical innovation ²⁾

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Schnurman Z, Kondziolka D. Evaluating innovation. Part 1: The concept of progressive scholarly acceptance. *J Neurosurg.* 2016 Jan;124(1):207-11. doi: 10.3171/2015.1.JNS142661. Epub 2015 Aug 7. PubMed PMID: 26252458.

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