Targeting Quality Improvement in Clinical Practice Guidelines

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Abstract
Clinical practice guidelines provide key action statements targeted at quality improvements. Areas of potential quality improvement can be identified by exploring known contributors to cognitive errors. Three common contributors to medical error and reduced quality care are (1) the complexity of modern medicine, (2) the tendency to apply cause and effect to random associations, and (3) our bias to our first intuition. Future authors of clinical practice guidelines should consider these 3 influences when deciding how to best provide guidance to improve patient care.

Keywords
clinical practice guidelines, quality improvement, medical error, cognitive error

Received September 3, 2015; accepted September 24, 2015.

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authors of clinical practice guidelines (CPGs) generate key action statements (KASs) selected for their potential to improve patient care.1 However, providers are not intentionally participating in substandard care, and CPG authors rarely have data that confirm a gap between the current practice and the recommended practice. This creates a dilemma for authors of how to craft and select statements that will result in quality improvement.

Fortunately, gaps between current care and ideal care can be generalized into groups. Some of the leading intellectual writers of this generation have focused on cognitive and medical errors. While cognitive and medical errors can be subdivided numerous ways,2 problems associated with the influences of complexity, randomness, and intuition recur.

Complexity
Atul Gawande writes in The Checklist Manifesto how error in intensive care units and the operating room is commonly grounded in failure to follow known procedures in the vastness of modern medicine.3 As physicians have adapted to increasingly complex care with subspecialization, they tend to focus on the unique clinical aspects of a situation rather than the routine. Also, it is more and more difficult to assimilate the literature outside our subspecialty. Gawande cites how Pronovost’s application of a simple 5-item central-line checklist resulted in a calculated 43 fewer infections, 8 fewer deaths, and $2 million saved over 15 months at Johns Hopkins University.4

It is likely the breadth and complexity of medical literature that prohibit front-line providers from implementing simple and effective therapies in specific scenarios. Take the example of a KAS that strongly recommends against systemic antimicrobials for uncomplicated otitis externa.5 While the efficacy of topical therapy is strongly supported in the literature, the complexity of modern medicine can reduce the application of the information. In a review of 5 recent CPGs published in Otolaryngology—Head and Neck Surgery, the combined total of 1078 references (range, 138-364) attests to the complexity and specialization of the literature.5-9

Randomness
Leonard Mlodinow, who lectures on randomness in physics at Cal Tech, demonstrates in his book The Drunkard’s Walk that “avoiding the illusion of meaning in random patterns is a difficult task.”10 In medicine, both diagnosis and treatment are subject to false associations of efficacy, especially when tests are inaccurate or ailments self-limited. In surgery, where randomized controlled trials can be methodologically or ethically prohibitive, advising treatment based on perceived improvement is not necessarily logical or valid. The ability to perceive cause and effect when none exists (in random associations) is deeply ingrained into human thinking. This can manifest in unnecessary testing and treatment. For example, the recommendation against the routine use of water precautions (eg, ear plugs) for children with tympanostomy tubes is where the association between swimming and ear drainage was mostly random.9

Intuition
In his book Thinking, Fast and Slow, Daniel Kahneman, a psychologist and Nobel laureate in economics, studies how we make “fast” decisions using “rules of thumb” as a
Reliance on these shortcuts in reasoning leads to errors that have been carefully demonstrated. One common error is “anchoring,” which could be described as the bias that physicians have to their initial impressions (or diagnoses). Human brains have a tendency to overvalue supporting information and undervalue information that disagrees. In practice, we are biased by our first intuitive diagnosis to overly discount inconsistent information that might support a different conclusion.

Multiple KASs from recent guidelines seek to emphasize the differential diagnosis in terms of clinical importance. The tinnitus CPG recommends additional attention to tinnitus that is unilateral, persistent, associated with hearing difficulties, pulsatile, or bothersome. There is a potential to quickly categorize all tinnitus as common, harmless, and untreatable. Anchoring to tinnitus as untreatable and common could lead to a missed diagnosis.

**Conclusion**

In the development of KASs, areas for quality improvement can be identified through consideration of 3 known sources of error in human thinking. If there are simple and effective treatments, the complexity of modern medicine almost certainly ensures that they are not consistently applied. Second, there are likely associations in diagnostic testing and treatments that were once thought to be true that studies have since shown to be random associations. Third, there is a human tendency to overly discount rare occurrences in favor of our first intuition. Exploring these 3 tendencies may help authors more efficiently craft KASs that will improve patient care.

**Author Contributions**

James W. Mims, complete authorship.

**Disclosures**

Competing interests: None.

**Sponsorships:** None.

**Funding source:** None.

**References**