

Patient-Reported Outcomes in Foot and Ankle Surgery



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KEYWORDS

- Patient-reported outcomes • PROMIS • AOFAS • SF-36 • VAS • OFAR • Foot and ankle
- Orthopedics

KEY POINTS

- The concept of tracking medical outcomes to provide better care has been around for more than 150 years, but most patient-reported outcome (PRO) tools in current use have been described in the past 25 years.
- Use of PROs to inform clinical practice and clinical research began increasing in popularity in the last decade of the twentieth century.
- There is currently an incredible quantity and variety of PRO measures available to the foot and ankle surgeon. These measures vary in length, degree of validation, and attributes measured. There is little consensus on which tools should be used for PRO collection in clinical practice.
- The emergence of Patient-Reported Outcomes Measurement Information System computer-adaptive tests and the proliferation of outcomes registries may encourage more widespread PRO collection as part of orthopedic practice and lead to consensus on which measures to collect.
- Participation in an existing registry can be a relatively easy means of incorporating PROs into practice and collecting valuable data for practice assessment and quality improvement.

INTRODUCTION

Health outcome measures are tools that capture the health status of a patient throughout an episode of care for treatment of an injury, condition, or health maintenance. These measures can generally be divided into clinical outcomes (as assessed by a clinician), laboratory outcomes (as seen with objective findings from laboratory tests, radiographs, and so forth), and PROs (or health status as perceived by patients). Interest in collection of PROs as part of standard clinical practice has increased substantially in recent years. This relates to several factors, including eligibility for full reimbursement from payors, fulfillment of American Board of Orthopaedic Surgery recertification criteria; an expanding market of secure, cloud-based survey tools;

and requirements of large hospital networks. Whatever the reasons, PROs are here to stay as a critical tool in assessing outcomes in foot and ankle surgery. The goal of this article is to describe common PROs in foot and ankle surgery, explore means of implementation into clinical practice, and assess the future of PROs in foot and ankle orthopedics.

HISTORY OF PATIENT-REPORTED OUTCOMES

Florence Nightingale is generally considered a founder of modern evidence-based medicine.¹ As a field nurse during the Crimean War in the mid-1850s, she was distraught by the massive loss of life she observed during the war. As a dedicated statistician, she noticed that approximately 7

Disclosure Statement: No authors have financial interests related to the submitted work. Dr K.J. Hunt is Chair, Managerial Board of the Orthopedic Foot & Ankle Outcomes Research Network.

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Orthop Clin N Am 49 (2018) 277–289

<https://doi.org/10.1016/j.jocl.2017.11.014>

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soldiers died from disease for every 1 soldier who died from combat wounds. Through simple interventions, such as improved hygiene and better nutrition at the Scutari Hospital near modern-day Istanbul, she was able to reduce mortality among admitted soldiers from 42.7% in February 1855 to 2.2% by June 1855.² She returned to her native Britain in 1856 and lobbied for the formation of a royal commission that would track disease and mortality rates to aid in the identification of emergent public health concerns. Over the following decade, she lobbied for collection of data pertaining to hospital outcomes, trained versus untrained nurses, the relationship between housing and health status on the British census, and the incidence of maternal mortality for hospital and home births. By working to collect population-level health data and then acting to address the most prevalent and preventable forms of disease, Florence Nightingale paved the way as an early advocate for modern evidence-based medicine.

It was nearly 60 years later, in 1914, that Ernest Codman, MD, an early orthopedic specialist, cofounder of the American College of Surgeons, and creator of the first national tumor registry, published the “end results idea” wherein each patient received a note card that detailed presenting symptoms, treatments, and other relevant clinical details.³ After at least a year, the success or failure of the treatment was also detailed on the note card. By encouraging the collection of outcomes data on an individual level, this concept pioneered the development of hospital standards by challenging physicians to assess their treatment outcomes and take appropriate measures to prevent new failures if previous outcomes were poor.

In more recent years, with the signing of the Patient Protection and Affordable Care Act in 2010, health care spending now accounts for 17.8% of the GDP,⁴ and with the expansion of managed care, there have been renewed calls for a quality revolution in health care. In 1998, Arnold Relman, MD, charged, “We can no longer afford to provide health care without knowing more about its successes and failures.”⁵ In a 2010 editorial in *The New England Journal of Medicine*, Michael E. Porter, PhD, echoed these calls in stating, “Measuring, reporting, and comparing outcomes are perhaps the most important steps toward rapidly improving outcomes and making good choices about reducing costs.”⁶ Dr Porter’s reminder is of the basic economic tenant that value = outcome ÷ cost and that the first step toward improving value in health care is to better track and understand outcomes.

In response to these calls for innovation, there has been a powerful push toward the widespread adoption of PRO metrics to increase patient engagement, help move toward a model of value-based reimbursement, and aid in the practice of evidence-based medicine.⁷ To better track and understand outcomes after treatment, there is a fundamental need for the following:

- Consistent, validated PRO metrics
- High-quality prospective comparative studies of treatments using validated PROs
- Efficient methods of data collection, storage, analysis, and dissemination

Toward this end, many professional societies and national organizations have taken the charge to establish and endorse guidelines for the collection and analysis of PROs. These include the International Society for Quality of Life Research,⁸ the National Quality Forum,⁹ the Patient-Reported Outcomes Measurement Information System (PROMIS) initiative at the National Institutes of Health (NIH),¹⁰ and the American Orthopaedic Foot & Ankle Society (AOFAS) Orthopaedic Foot and Ankle Outcomes Research (OFAR) initiative.¹¹

PATIENT-REPORTED OUTCOMES IN ORTHOPEDIC SURGERY

Early outcome measures in orthopedic surgery were somewhat limited. Prior to the advent of the more complex tools available today, patients were primarily assessed by objective and quantifiable measures like loss of life, loss of limb, return to work, and length of hospital stay. Toward the end of the twentieth century, the study of outcomes in medicine and in orthopedics began receiving more attention. Many of today’s most popular PRO metrics originated in the 1990s (Fig. 1). One of the first modern outcome metrics was introduced in 1976 when Scott and Huskisson¹² described the visual analog scale (VAS). The VAS is a simple measure wherein the patient is instructed to mark their current level of pain on a 100-mm horizontal line representing the full spectrum of pain. The scale was validated for orthopedic conditions in 1980¹³ and has been a mainstay of pain assessment in orthopedics for decades.

In 1989, Tarlov and colleagues¹⁴ published the Medical Outcomes Study in *JAMA* wherein they developed a conceptual model of quality in health care that contains 3 tenets:

1. Structure
2. Process
3. Outcome

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