Improving Value in Neonatal Intensive Care

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KEYWORDS

• Quality improvement • Value • Value equation • Costs • Outcomes • Neonatology

KEY POINTS

- Increasing value using quality improvement methods is fundamental to improving the US health care system.
- Quality improvement teams can improve value by either improving outcomes or reducing costs, but measuring both is essential.
- Value-based improvement is challenging for multiple reasons, including the investment of time and effort in producing sustainable change and the lack of training of health care providers.

Health care costs in the United States continue to rise.[1] Press coverage of rising health care premiums[2] and monopoly-driven precipitous price increases for medications, such as insulin, epinephrine autoinjectors, and naloxone,[3] persist. Although adult medicine, especially in the last year of life,[4] continues to consume most health care spending, newborn care comprises a major portion of health care costs in pediatrics.[5] It is estimated that in 2013, out of $233.5 billion spent on children's personal health

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care, the category of "well-newborn care," with $27.9 billion, was the single largest category of health care spending.[6]

Quality improvement in neonatal care has grown from its humble beginnings in single units to health care system–level quality collaboratives that improve care for thousands of infants.[7] Despite much effort to improve patient outcomes, however, there remain many opportunities to improve value in the care delivered to neonatal intensive care unit (NICU) patients. Quality improvement that focuses solely on clinical outcomes is no longer enough. Improvement efforts instead must reframe goals and aims to incorporate both outcomes and costs to add value to the care provided to infants and their families.

Many regulatory bodies now require some level of proficiency in quality improvement. In residency and fellowship training, the Accreditation Council for Graduate Medical Education requires programs to have a component of education around quality improvement.[8] In its Part 4 Maintenance of Certification requirements, Improving Professional Practice, the American Board of Pediatrics requires pediatricians to demonstrate competence in systematic measurement and improvement in patient care in a range of American Board of Pediatrics–approved quality improvement projects designed to assess and improve the quality of patient care.[9] Despite these recent training requirements, there are many clinicians who have never received any formal quality improvement training. Furthermore, lack of formal training in either quality improvement or basic health care economics make it intimidating for providers to achieve the challenge of practicing value-added care. Thus, for hospital-based care, leadership should be willing to properly invest in staff training and time to do the work, perhaps reinvesting some of the savings that result from quality improvement efforts back into quality programs.

In this review article, we start by defining value, introducing concepts described by Porter[10] and case examples of the use of the value equation in neonatology described by Dukhovny and colleagues.[11] We examine the integration of value in quality improvement and its relationship to the Institute of Healthcare Improvement Triple Aim.[12] We then present a review of the value literature in neonatology, with special emphasis on how quality improvement has led to change in value. Additionally, we discuss ways of adding value to quality improvement projects and then elaborate on the various perspectives (patient, NICU, and health care system–level) of quality improvement work and the relevant value-based measures for each of those viewpoints. Lastly, we break down the steps of adding value-based quality improvement components (charters, aims, and measures) to new or existing quality work.

DEFINITION OF VALUE

In a 2010 Porter[10] described a landscape in health care where conflicting goals and competing interests have resulted in lack of a shared vision and in an inability to improve performance. He defines value as "the health outcomes achieved per dollar spent" and argues that value ought to be the common goal in performance improvement. In the value equation, health outcomes achieved would thus be the numerator, and dollars spent the denominator.

Both Porter[10] and Dukhovny and colleagues[11] elaborate on the numerator, and the denominator within the value equation, but diverge with regard to specifics. With regards to the numerator, after acknowledging that value is difficult to measure and often misunderstood, Porter[10] argues that health outcomes should not be measured in terms of processes of care, that process measures are not substitutes for measuring actual clinical outcomes specific to particular diseases and conditions.