Prognosis as an Intervention

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KEYWORDS

• Prognosis • Neonatal outcomes • Prediction • NICU

KEY POINTS

- Prognostication can be conceived of as a perinatal intervention that should be evaluated, like other clinical interventions, for its effects on important outcomes.
- Several studies have examined the effect of communicating prognoses on parental anxiety and understanding, although further research on specific methods and approaches is needed in this area. Less is known about how communicating prognoses might affect patient clinical outcomes.
- Clinicians should be aware of the potential hazards of self-fulfilling prognoses (for example, evidence where the practice of resuscitation is based on outdated survival statistics and, in turn, perpetuates these statistics) and expectancy effects (whereby expectation of certain outcomes may make the outcomes more likely through subtle changes in practice). Such effects of prognostication on clinical outcomes deserve further study.

Although prognostication is classically 1 of 3 aspects of medicine (the others being diagnosis and therapy[1]), there are reasons to consider prognostication an intervention in itself, maybe even a therapy. What are the effects of prognostication—For the clinician? For the patient? Does establishing and communicating a prognosis affect patient outcomes?

Like all medical interventions, the details of prognosis matter: What sort is made? To whom? How? In what quantities? And under what circumstances? In this light, the effect of prognosis on outcomes might be understood in the same way that effects of other neonatal interventions—like surfactant, antenatal corticosteroids, and oxygen—are understood.

Neonatology and perinatology were early adopters of the rigorous methods of evidence-based medicine. Yet, although prognostication is practiced daily in both fields, its effects remain poorly understood. The intent of this article is to elaborate on how neonatologists and perinatologists might conceive of prognosis as an intervention—with outcomes relevant to patients, families, and society at large—and to highlight aspects of this important area of practice that require further study.

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WHAT IS PROGNOSIS?

Prognosis, literally translated from its Greek roots, means "foreknowing."[2] It can be described as "what to expect" regarding a patient's health.

Prognostication has deep roots in medical tradition. A volume on prognosis attributed to Hippocrates, from 400 BC, begins: "It appears to me a most excellent thing for the physician to cultivate Prognosis; … he will manage the cure best who has foreseen what is to happen from the present state of matters. … Thus a man will be the more esteemed to be a good physician, for he will be the better able to treat those aright who can be saved, having long anticipated everything; and by seeing and announcing beforehand those who will live and those who will die, he will thus escape censure."[3]

Modern neonatologists and perinatologists continue to focus some part of their medical practice on "seeing and announcing beforehand those who will live and those who will die." Antenatal consults, where such information is discussed with a family expecting a complicated birth, have become standard practice[4] and integral to training in these specialties.[5] Moreover, recommendations for antenatal consultation and other forms of prognostication elaborate the need to convey information about conditions besides mortality.[6] There is more to life than death.[7] For many conditions in neonatal and perinatal medicine, researchers and clinicians have focused on understanding and conveying information about specific impairments, usually sensory, motor, or cognitive, that are sometimes equated with poor "quality of life" or states "worse than death."[8] In this way, the word *prognosis*, as used in common parlance among neonatologists, perinatologists, and the families they care for—in phrases, such as "a poor prognosis" or "a good prognosis"—may be synonymous with the risk for mortality or severe life-altering impairment.[9]

Notwithstanding that death and severe impairments receive the most attention, neonatologists and perinatologists are called on to make predictions about what to expect regarding all variety of outcomes: How long will the infant be in the hospital? How much will the medical care cost? What sort of medical care will this child need after leaving the neonatal intensive care unit (NICU)? How will this illness affect these parents' work, relationship, and family? In this way, prognosis can be conceptualized more broadly.[10,11]

Classically, knowledge of prognosis links diagnosis and therapy so that, by understanding what to expect after a diagnosis, an appropriate course of intervention can be determined. In modern circumstances, understanding prognosis is intimately linked with notions of informed consent and shared decision making.[12]

FIRST, FORMULATE EVIDENCE-BASED PROGNOSES

There are 2 key aspects to approaching prognosis as an evidence-based intervention: how to formulate an accurate prognosis and what to do with that prognosis.[13] This section focuses on the former: When a prognosis is made, what supports that claim?

Doctors have long understood that questions about prognosis for an individual patient can be answered in terms of what has happened to other similar patients. As William Farr, one of the earliest medical statisticians, recognized: "In prognosis, patients may be considered in two lights: in collective masses, when general results can be predicted with certainty; or separately, when the question becomes one of probability. If 7000 of 10,000 cases of fever terminate fatally, it may be predicted that the same proportion will die in another series of cases; and experience has proved that the prediction will be verified, or so nearly verified as to leave no room for cavil or skepticism. The recovery or death of one of the cases is a mere matter of probability."[14]