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POLICY FORUM

The Cost of Saving the Tiniest Lives: NICUs versus Prevention

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In an incisive Narrative Matters piece in *Health Affairs*, John Lantos made the following observation about neonatal intensive care units (NICUs):

Neonatal intensive care is one of the triumphs of modern medicine. Babies who inevitably would have died a few decades ago routinely survive today. But the success of NICUs should not lead us to see them as the only solution to infant mortality or as an adequate moral response to our children's health needs. We should constantly remind ourselves that the need for so much intensive care for so many babies is a sign of political, medical, and moral failure in developing ways to address the problems that sustain an epidemic of prematurity [1].

Lantos writes eloquently about how NICUs have emerged over the last several decades as major revenue generators in the world of inpatient pediatric care. Like transplantation, neonatal medicine captures the public's imagination as few other areas of medicine do—patients who would have surely died years ago are now miraculously saved. NICUs and transplantation are also valence issues for the public: everyone supports saving premature children and extending people's lives. The questions that Lantos poses for policymakers and health care leaders are, "Why do we have such an epidemic of prematurity in the United States?" and "Why don't we do a better job of addressing this public health problem?"

In the United States alone, 4 million babies are delivered annually, with almost 15 percent of those (500,000) being premature, defined as less than 37 weeks' gestational age. Of these, 5 percent (25,000) are born weighing less than 2 pounds, of which 75 percent (18,750) survive [2]. Approximately 75 percent of NICU admissions are related to prematurity and 25 percent are term newborns with a variety of pathology.

Daily NICU costs exceed \$3,500 per infant, and it is not unusual for costs to top \$1 million for a prolonged stay. Expenditures to preserve life are limited in every society, and, although third-party payers have questioned this level of expenditures, courts have consistently reaffirmed the rights of parents to determine the treatment of their newborns.

Initiating NICU Care

Lantos has stated that he does not believe reimbursement influences treatment decisions in the NICU [1]. In our estimation, the following factors have more often trumped cost considerations in the decision to initiate NICU care: (1) Fear of litigation and a 30 percent cesarean section rate. Despite popular belief, no significant differences exist in the outcomes of premature infants delivered by vaginal versus the surgical method. Yet, the medical-legal focus often rests on the final 2 hours of a 7,000-hour pregnancy so the pressure to practice defensive medicine is strong. (2) A substantial rise in the use of assisted reproductive techniques, which triggers a heightened “rescue” mentality because parents have incurred physical and financial burdens in seeking to conceive and deliver a baby. (3) Legislation such as the Baby Doe law. The Baby Doe legislation in the early 1980s, prompted by the case of a newborn with Down syndrome and a nonlethal condition treatable by surgery, stated that newborns should receive proper medical care unless therapy was deemed futile [3, 4].

Lifelong Cost

NICU costs are just the beginning. The extraordinary cost of managing the medical, educational, and social needs of extremely low-birth-weight newborns, as well as term newborns with perinatal asphyxia, often are not discussed with parents early in the infant’s care. Advances in neonatal medicine in the last 20 years give an infant born 13 weeks early and weighing 2 pounds a 90 percent chance of survival. But, short- and long-term outcomes have not improved significantly in the last 2 decades. The incidence of cerebral palsy remains essentially unchanged. Approximately 25 percent of all newborns younger than 26 weeks’ gestation have a handicap severe enough to prohibit them from functioning independently [5, 6].

While devastating handicaps such as blindness, deafness, and cerebral palsy often figure prominently in discussions of withdrawing or withholding life-sustaining treatment, many mild and moderate handicaps are associated with preterm and low-birth-weight babies. Asthma, attention-deficit disorder, visual problems, “mild” cerebral palsy, and the need for special education can drain a family financially, physically, emotionally, and spiritually [7]. Cerebral palsy is not diagnosed until well after 1 year of life, and diagnostic tests in the neonatal period cannot predict long-term outcomes. It would seem that a truly informed consent process would demand disclosure of these milder disabilities. Since clinicians and families share a built-in bias to treat aggressively, parents should at least be informed of the potentially long-term struggles in raising a child with special needs.

Most U.S. clinicians practice a “wait until death appears certain” strategy in the management of newborns [8]. A strategy of withholding treatment on grounds of a statistically grim prognosis can be implemented for a short period of time. An extremely premature newborn or an asphyxiated, term newborn has a “clinical honeymoon” period that usually ends by the third day of life. The incidence of infection, respiratory deterioration, bleeding in the brain, and seizures can surface at this time. An experienced clinician, using evidence-based medicine and ethics, could

redirect a family's focus to the future of its newborn if the clinical scenario suggests considering withdrawal or withholding of intensive care medicine [9].

Alternate Means for Saving Babies

NICU costs are relatively small in the big picture of the U.S. health care economy. For instance, in a \$2-trillion health care economy, the total economic costs of preterm birth has been estimated to be \$26 billion (between 1 and 2 percent of total health care expenditures) [10]. Nonetheless, \$26 billion is a substantial amount of money. Could the money saved from prolonging death in certain cases be directed to improving prenatal care? Could better prenatal care or other preventive interventions stave off the cascade of NICU interventions immediately after birth (and later during the child's development)? Studies suggest that infections during pregnancy may be related to preterm birth. Unfortunately, most studies have not conclusively demonstrated links among antibiotic therapy, infections during pregnancy, and reduced preterm births [11]. Stress has also been identified as a risk factor for preterm birth, but epidemiologists have reported difficulty in designing studies to further research this issue [11].

Lantos' critique of neonatology is well taken—NICUs have done an amazing job of saving countless lives. Yet, as with transplantation, there is little discussion of the role of prevention. Would greater preventive efforts yield substantial cost savings and reduce morbidity and mortality of children? Perhaps, but the current health care system offers clinicians little incentive to focus on such efforts. In many ways, the world of neonatology is a microcosm of our health care system which greatly rewards rescuing our most vulnerable patients through a panoply of technological interventions but downplays the role of prevention. Physicians, policymakers, and political leaders should pay greater attention to the needs of pregnant women to reduce the number of infants that are born preterm and require high-tech interventions of the NICU.

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