

# What Matters Most for the Survival of Small Newborns in Resource-Limited Settings?

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In 1963, Lubchenco proposed a system to characterize intrauterine growth by gestational age, which highlighted the differences between preterm and growth-restricted term infants.<sup>1</sup> More than 50 years later, there is limited capacity to distinguish preterm from small but mature infants in low- and middle-income countries where these conditions, together with asphyxia and infection, are leading causes of neonatal death. Lee et al sought to determine if community health workers could use physical/neuromuscular signs and anthropometrics to estimate the maturity of infants born in rural communities in Bangladesh with the ultimate goal of facilitating early identification and referral of preterm infants.<sup>2</sup> The study used community surveillance for early diagnosis of pregnancy and successfully accomplished ultrasound dating of pregnancy before 20 weeks. Twenty-five physical, neuromuscular, and anthropometric observations were assessed and then analyzed individually and in combination for their diagnostic accuracy. All fell short of acceptable utility for estimation of gestational age in this population with a high prevalence of intrauterine growth restriction.

So what broader significance do such negative findings hold? They reaffirm the realities of improving survival of infants born outside medical facilities and highlight the importance of an approach emphasizing basic interventions that protect all newborns

in the community while simultaneously developing health system capacity to provide special services to small and preterm newborns at higher levels.<sup>3</sup> One aspect of the study cited by the authors as a major limitation, that of survivor bias, gives important insights. Of the 121 preterm infants born in the study, only 59 were assessed in the prescribed 72-hour period after birth; 22 had died or were too ill to assess, 34 were reached later than 72 hours after birth, and 6 were lost to follow-up. The overall proportion of infants assessed was higher for term than preterm infants, and a higher proportion of preterm visits were delayed beyond 72 hours. Rather than ignorance or lack of recognition underlying a delay in seeking medical attention, there is more often pragmatism or fatalism. For example, community health workers, traditional birth attendants and families interviewed in eastern Uganda mentioned many features that correctly identify preterm infants, such as small size at birth, inability to suckle or open the eyes, and skin that appeared wrinkled or similar to a newborn rat.<sup>5</sup> Many families ascribed preterm birth to witchcraft or natural phenomena such as earthquakes. Some expressed fatalism and lack of confidence in the medical system, as conveyed in the words of one mother, "I wished that I had had a miscarriage instead of delivering this preterm, it would be better. I never thought that this baby would survive; I thought that it would die any time."<sup>5</sup> There is an urgent need to understand the context surrounding prematurity in



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communities, make access to medical services easy and prompt, and increase the capacity to care for small infants both in communities and in facilities.

Instituting basic interventions that protect small and immature infants as a routine for all births can begin to make a difference and change expectations in the community.<sup>6</sup> Thorough drying and stimulation followed by uninterrupted skin-to-skin care and early initiation of breastfeeding in the first hour give all infants a survival advantage. Thermal support provided by prolonged skin-to-skin contact becomes critical for the successful transition of small or premature infants. Difficulty suckling or breathing, in combination with locally recognized physical features of prematurity, may be the earliest signal to seek medical care urgently.

When in-facility birth with a skilled attendant is not feasible, early contact with the health system should be the goal for every infant.<sup>7</sup> Cell phone communication makes rapid notification of a community health worker feasible. Emphasis on early prenatal care and accurate dating of pregnancies can alert both health workers and mothers to potential preterm birth. Screening at first contact depends on assessment

of size and functional status of the infant rather than determination of gestational age. Is the infant feeding? Is the temperature normal or low? Is there poor tone or breathing difficulty? Health facilities receiving referrals of small infants must have at least the capacity to support mothers and their infants in continuous skin-to-skin care, as well as alternative methods of feeding breast milk and prevention and treatment of infection.

As health system capacity develops, accurate prenatal determination of gestational age will aid most in dissecting the burden of disease from prematurity versus growth restriction and delivering more sophisticated preventive and individualized care, such as antenatal corticosteroids and respiratory support. To save lives now, simple universal interventions in the community and development of supportive care in health facilities can benefit small infants, whether or not their gestational age is known.

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