Neonatal Public Health: Progress and Challenges

Colin Binns, MBBS, PhD, and Wah-Yun Low, PhD

The first days of life outside the womb are the most dangerous times in our lives. In 2013, the estimated world neonatal (0-28 days) mortality rate was 19.5 per 1000 live births (World Health Organization statistics 2015). This means that of the 135 million births each year, 2.8 million (or 7100 per day) die within the first month of birth. While this is still a great tragedy of human life, it is a substantial improvement on the 4.8 million (13,200 per day) neonatal deaths in 1990. While this 40% reduction represents great progress, there is still a public health challenge ahead to reach an acceptable level. Black et al lists the major causes of deaths in 2008 (in millions 0-28 days) as preterm birth complications 1.03, birth asphyxia 0.8, sepsis 0.52, pneumonia 0.4, congenital abnormalities 0.27, diarrhea 0.08, and tetanus 0.06. These statistics represent valuable human lives and inspire us to resolve to improve our public health efforts.

The underlying cause of many of the neonatal deaths is inappropriate infant feeding practices. Universal exclusive breastfeeding within the first hour has been estimated to reduce the risk of neonatal death by 44%. Yet, in the Asia-Pacific region, fewer than half of newborn babies (41%) are given breast milk within the first hour of birth. In China, the widespread promotion of infant formula and the frequency use of interventional obstetrics have resulted in a high rate of use of prelacteal foods which are detrimental to neonatal health.

One neonatal public health problem that has almost been eliminated is neonatal tetanus. In the Papua New Guinea, neonatal tetanus was the major cause of neonatal mortality until the advent of widespread vaccination. The absence of trained birth attendants, no facilities for delivery, poor hygiene, and the practice of cutting the cord close to the abdomen resulted in very high rates of neonatal tetanus. In the Sepik Region of Papua New Guinea, the neonatal mortality rate from neonatal tetanus may have been as high as one-third of births. In the 1950s, Schofield pioneered the use and the schedules needed for maternal vaccination in the prevention of neonatal tetanus. Together with improved maternal health services, facility delivery, and better hygiene, this has reduced the rate substantially. But as there is no herd immunity for tetanus the prevention of neonatal tetanus requires 100% immunization rates of mothers.

In 1988, the World Health Organization estimated that there were approximately 800,000 neonatal deaths from tetanus annually and the World Health Assembly resolved to practically eliminate these by the year 2000. While substantial progress has been made, there were still an estimated 58,000 deaths in 2010. The proportion of neonatal deaths caused by tetanus fell from 14% in 1993 to 1.7% in 2008. However, it is estimated that in rural north India, 16% of neonatal deaths can be attributed to inadequate maternal vaccination with tetanus toxoid. Neonatal tetanus is a distressing disease and in rural areas where little treatment is available, watching a
tiny life convulse its way out of this world is something one will never forget. Even in sophisticated medical centers, mortality is still very high. Prevention is the only answer.

Worldwide, the fall in neonatal mortality between 1990 and 2013 has saved the lives of 24 million neonates. The Lancet Commission on Global Health suggests a 2030 target in low or lower middle income countries of a neonatal mortality of 1.1%.\(^{11}\) Norheim et al\(^{11}\) estimate that at the current rate neonatal deaths are being reduced by 23% per decade. The rate of decrease in older children is greater than this, suggesting that more effort needs to be applied to neonatal deaths. The challenge is to find ways to reduce the neonatal death rate further. More effort needs to be put into prevention through maternal vaccination, improved nutrition, antenatal care, and delivery supervision. Even where prevention is emphasised, childbirth is always a hazardous introduction to life and there will continue to be a need for resuscitation and neonatal care. In the review in this issue, Mielke and Sousa\(^{12}\) introduce a discussion on neonatal resuscitation and care across our region. They note the need for further community action and the better training of traditional birth attendants to deliver good care during the “golden minute,” the first minute after birth.\(^{12}\) There is a need for Schools of Public Health and other education institutions to respond to their challenge.

References