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## Editorial

# Relevance of Neonatal Care in Developing Countries

N K Ho

### INTRODUCTION

In this issue of the SMJ, the authors of *Very Low Birth Weight Infants – Mortality and Predictive Risk Factors* presented their data on the mortality of the very low birth weight (VLBW, birth weight of 1500 gram or less) infants. They have pointed out that the survival rates for the extremely low birth weight babies (ELBW, birthweight of 999 gram or less) lag far behind the experience of that of other countries<sup>(1)</sup>.

They attributed the high mortality rates of the ELBW infants to less than adequate or even substandard neonatal set up. Strictly speaking these are the risk factors for neonatal mortality and morbidity. Their hospital is facing multiple problems similar to that of many other neonatal units in developing countries<sup>(2)</sup>. The hardware problems are: overcrowded neonatal nursery with limited physical space and high occupancy rate, insufficient basic facilities and supplies such as hand drying materials, tubes and catheters, etc. Poor infection control results in serious infections that rank very high as the cause of neonatal death in such countries. Others are unsatisfactory utilisation and maintenance of facilities and equipment, sharing and re-using of materials, etc. The software problems include poor organisation, shortage of personnel and high turnover rate of nursing and medical staff, heavy workload, stressful working environment, as well as poor job satisfaction, etc. Expensive drugs such as exogenous surfactants and expensive equipment, the effect of which are found to be beneficial, are beyond reach for many developing countries. It is acknowledged that whilst the use of exogenous surfactant has spread worldwide during the past many years, it may have a different impact in the developed world<sup>(3)</sup>. Developing countries should prioritise neonatal care<sup>(4)</sup>, provide less costly neonatal service<sup>(5)</sup> and apply appropriate technologies<sup>(6)</sup>.

In recent years, a myriad of reports from developed countries have been appearing in the medical journals to show how better survival statistics of VLBW and ELBW infants can be achieved<sup>(7)</sup>. Singapore reported a favourable outcome of VLBW and ELBW babies<sup>(8)</sup>.

It is difficult or meaningless to compare the survival statistics of developed and developing countries when the latter have not even satisfied the guidelines or met the basic requirements expected of a neonatal unit<sup>(9)</sup>. For neonatal care, developed countries have a head start ahead of developing countries. Plans to improve the mortality rates of VLBW and ELBW infants should be relevant and realistic. The essential things should be done first. It will be a futile exercise if one emulates the aggressive or sophisticated management that is practised in the developed countries. Transfer of technology from a developed to a developing country can end up with administrative, personnel and engineering problems. The basic problems such as

control of infections, resuscitations of the newborn at birth, maintenance of body temperature, administration of appropriate dose of oxygen, acceptable laboratory capabilities, etc have not been tackled. Neonatal units in the developing countries should begin by solving these basic problems first. It should be emphasised that prioritisation of neonatal care and application of appropriate technologies<sup>(4,6)</sup> are relevant in developing countries.

It is a common observation that many hospitals in developing countries are buying the latest models of ventilators to develop their neonatal intensive care unit. (NICU). This is especially so for hospitals wanting to build up their image as a modern, well-equipped hospital in order to compete for patients. As a result, many states or provinces, regions or counties, cities or towns begin to establish their own NICU. Multiply the total number of NICU and the annual cost of running or maintaining them would undoubtedly arrive at an astronomical figure – a hefty, if not formidable, sum for the health budget! Proliferation of NICUs also contributes to duplication and underutilisation of expensive neonatal technologies<sup>(10)</sup>.

If it is argued that every hospital should equip with the latest medical facilities, then it may be necessary to set up cardiovascular unit, haemodialysis unit, bone marrow transplantation unit, organ transplantation unit, etc. in the hospital. However, even in developed countries, these highly specialised, labour intensive medical treatments are only available in major general hospitals or teaching hospitals. The reason in doing so is to pool the limited financial, facilities, as well as human resources<sup>(10)</sup>.

Neonatal care is widely recognised to have saved many lives and has resulted in decreased mortality, it is unquestionably one of modern medicine's expensive programs with increasing expenditures for apparently diminishing returns as neonatal care becomes used for increasingly immature newborns.

The Western countries introduced the Perinatal Regionalization Program (PRP) many years ago<sup>(11)</sup>. Health care planners in the developing countries can study this concept of regionalised perinatal care that has existed for more than 25 years. The guidelines are reviewed regularly<sup>(12)</sup>.

The purpose of the PRP is to pool resources. It categorises the neonatal services into 3 levels, depending on the severity of illnesses of the infants. Only the seriously ill newborn babies are managed in the Level III subspecialty nurseries or the tertiary level NICUs. The program also encourages transfer of the highrisk pregnant mothers or transfer in utero, to regional centres. Level III nurseries offer highly specialised care including the use of life-support systems such as mechanical ventilation. They are housed in the major teaching hospitals that also provide training of specialists. The program should include well organised neonatal transport system for sending babies to a hospital where appropriate facilities and expertise are available.

Low birth weight babies born in hospitals with NICU have lower mortality rates than infants born in hospitals without such a unit<sup>(13)</sup>. The introduction of the program has resulted in a marked decrease in neonatal mortality and morbidity with improved long-term outcome. Each country should therefore decide on the number of NICU and its location, based on its geography, population, financial resources, and availability of trained personnel. Some local authorities impose restrictions on the acquisition of hightech equipment or ventilators according to the particular category in which the hospital belongs. Successful regionalisation depends on establishing a common understanding and commitment to the roles of the community, regional and tertiary hospitals. Excellent communication or consultation and good working relationships among care providers, a well-organised system of referral and transfer, and a willingness to work collaboratively with families in the community are all essential components.

It is necessary to set up a high-risk follow up centre to look into the long-term outcome of the high-risk infants prospectively<sup>(14)</sup>. The follow-up programme serves to evaluate, audit, and monitor the neonatal services in the community. It enables early identification of physical, neurological, visual-auditory, developmental or social behaviour disabilities. The child would then be able to be placed in the relevant

intervention programme<sup>(15)</sup>. As information of neurodevelopmental outcome of VLBW infants reflects the standard of neonatal practice at their time of birth, neurodevelopmental assessment should be an on-going exercise in order to provide up-to-date data. Collection of perinatal database is important to evaluate the outcome of healthcare and to identify the needs of perinatal care for future planning.

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*Cover picture:*

*"Happy Owl" Ink on paper 48 cm x 37.5 cm.*

Prof Arthur Lim is an artist and his art is well known not only in Singapore but throughout Asia and beyond.