Chapter 27

Essential Newborn Care and Neonatal Transport

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Background

Every hospital in Thailand can provide medical services for the mothers and their newborn infants. However, the facilities, medical personnel and equipment might be different, even the hospitals at the same level. Care of the newborn infants, especially the sick ones, consist of early recognition of the problem, appropriate management and effective neonatal transportation whenever the hospital facility is limited. These goals need competent medical personnel to provide essential newborn care and effective neonatal transfer.

Songkhla, a province in the south of Thailand, has 16 community hospitals (primary care hospitals) and Songkhla Hospital (secondary care hospital), Hat Yai Hospital (tertiary care hospital) and Songklanagarind Hospital (super-tertiary care hospital). The number of live births approximates 20000 cases per year. In 2008, there were 28 beds of neonatal intensive care units (NICU) from the last 3 hospitals as mentioned above for critically ill newborn infants. Songklanagarind Hospital has a variety of subspecialties and high technological equipment to provide better care for the infants who have complex health problems such as congenital heart disease (required opened heart surgery) and very premature infants. It is the referral center hospital for various hospitals in the south of Thailand. It has a 15 bed-NICU and only 10 beds for moderate neonatal care due to limited number of registered nurses. The number of beds is limited. Simultaneously, very low birth weight, premature infants or newborn infants with complex problems need longer period of hospital care before discharge. Prior 2010, the newborn infants in community hospitals were commonly referred to a higher level hospital although they required just primary care for examples: a newborn infant with respiratory problems that needed only minimal oxygen supplementation or late premature infants who initially needed oro-gastric tube feeding after birth. In addition, according to limited resources, neonatal transfer at that time was vulnerable to complications during transfer. In 1998-1999, the study about the initial situation of referred newborn infants to Songklanagarind Hospital by Mekasirin A et al, found that 49 percent of infants had hypothermia, 32 percent dysglycemia, 25 percent cyanosis, 5 percent hypotension and 0.6 percent acidemia. Furthermore, those referred infants when their clinical condition improved and was stable (could stay in room temperature, required only tube feeding with a low-flow oxygen cannula), could not be able to refer back to the community hospitals because the nurses in the community hospitals were not confident to care for them. With these reasons, Songklanagarind Hospital did not have enough beds to serve the very complicated infants who needed super-tertiary care.

Between 2008 and 2009, the department of Pediatrics, Songklanagarind Hospital established a training program for competency based newborn care and transfer for primary care doctors and nurses in the community hospitals of Songkhla province. The goals of the training program included having the ability to provide essential newborn care and effective neonatal transfer.
This program was supported by the National Health Security Office (NHSO), Songkhla province. We selected four pilot community hospitals in Songkhla province: Thepa Hospital, Chana Hospital, Nathawee Hospital and Padangbeza Hospital. We developed the curriculum for teaching the essential knowledge and skills for caring of the newborn infant. Skill training was established in Sonklanagarind and Hat Yai Hospitals. According to the limitation of essential newborn care equipment and apparatus in community hospitals, NHSO of Songkhla province has provided the equipment including infant incubator, pulse oximeter, infusion pump, syringe pump and low-flow oxygen blender with nasal cannula if, at least one doctor and two registered nurses of each community hospital had graduated from the training course.

The objectives of the training program for doctors and nurses in the community hospitals consist of:

1. Be able to perform neonatal resuscitation in the delivery room.
2. Be able to assess the newborn infant and provide general care of the well newborns.
3. Be able to manage common neonatal problems.
4. Be able to care for premature infants that weighing >1800 g. without respiratory problems and can receive oral feeding.
5. Be able to provide a continual care of growing premature infants receiving tube feeding and very small amount of oxygen via nasal cannula.
6. Be able to provide neonatal transport effectively.

The training program consisted of lectures in the classroom and practising newborn care in a nursery and moderate care neonatal unit for a period of two weeks. The topics included:

1. Knowledge
   1.1 Neonatal resuscitation.
   1.2 Assessment of the newborn and general care of the well newborn.
   1.3 Care of common neonatal problems: hypothermia, hypoglycemia, polycythemia, anemia, shock and respiratory distress/cyanosis.
   1.4 Respiratory care and oxygen therapy.
   1.5 Feeding the premature infant.
   1.6 Care of the growing premature infant and premature infants receiving oxygen cannula.
   1.7 Neonatal transportation.
2. Psychomotor skills: workshops in neonatal resuscitation, practice to assess and care for the well newborn after birth until discharge from the hospital, manual skills for venipuncture and intravenous infusion and continuing care for growing premature infants requiring low flow oxygen cannula.

The results of the training program of 2008-2009, there were four training courses and the participants included 21 doctors and 24 nurses (this included doctors and nurses from other hospitals that requested to participate). The primary care doctors attended only the lecture and workshop for neonatal resuscitation. The four pilot community hospitals had at least one doctor and two nurses participated in this program, (we provided the necessary equipment as mention above after their graduation).
Benefits

1. Immediate assessment by the participants showed that they were satisfied with this program.

2. Follow up result after one year of the training program (2010) at the pilot community hospitals found that the registered nurses were confident to provide newborn care and continuing care for growing premature infants who were transferred back to the community hospital. The newborn infants who were referred from the community hospital to our hospital had fewer complications than in the past (Table 1).

Table 1 Initial complications of the referred newborn infants at Songklanagarind Hospital.

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<th>1998-1999 (%)</th>
<th>2011-2012 (%)</th>
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<tr>
<td>Hypothermia</td>
<td>49.0</td>
<td>7.7</td>
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<tr>
<td>Abnormal blood glucose</td>
<td>32.0</td>
<td>7.7</td>
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3. The premature infants weighing less than 2000 g. who were referred from the community hospitals to Songklanagarind Hospital, when the clinical condition improved and was stable, could transferred back to their community hospitals. Songklanagarind Hospital can now admit higher number of critically ill newborn infants from various hospitals. The number of admitted cases increased, although the number of beds in NICU was the same. In 2008, there were 564 admitted cases and increasing to 673 admitted cases in 2013; averaging 2 admitted cases per day.

In conclusion, the training program for competency based essential newborn care in the community hospital, can improve newborn care of the neonatal network in the south of Thailand.

Conclusion

Furthermore, according to the incidence of perinatal asphyxia in Songkhla between 2009 and 2010, the data from Songkhla Public Health office showed that there were 35.0 and 27.9 per 1000 live births. After completing the earlier training program, department of Pediatrics, Songklanagarind Hospital cooperated with NHSO and established the neonatal resuscitation program for the primary care doctors and nurses in southern Thailand (such as Songkhla, Pattani, Narathiwat and Yala). The workshops of the neonatal resuscitation program were held every year from 2011 until the present year (2014). During the last 3 years, there was a total of 1217 participants (in 2011, 2012 and 2013 were 331, 514 and 372 participants, respectively). For the next training program, we plan to establish a training course for initial stabilization of the newborn before referral, to follow the guidelines of the S.T.A.B.L.E program.
References

1. Mekasirin A, Dissaneevate S, Janjindamai W. The outcome of referred newborn infant to Songklanagarind Hospital before and after National Health Reformed Policy [Thesis for Thai board of Pediatrics, Thai Medical Council]. Department of Pediatrics, Faculty of Medicine, Prince of Songkla University; 2007.

Figure 1 Program director presents the certificate to healthcare personnel attended the training course.

Figure 2 The NHSO, Songkla province offers essential equipment for newborn care to the participated community hospitals.