Course: Normal neonate

Day 1: Topic: Newborn situation in Bangladesh; Assessment of newborn at birth

Concept: It is important that midwives understand the context of the newborn in Bangladesh, the challenges and the issues associated with newborn care, and the national strategies to reduce Newborn deaths. It is also very important that Midwives have the skill to care for the newborn at birth and to provide appropriate and timely care.

	Topics: **1. Background** – Newborn situation in Bangladesh – Mortality trends in Bangladesh – Introduction to Essential Newborn care document **2. Assessment of newborn at birth** – Apgar assessment – Thermal protection / regulation / skin to skin / hyperthermia / hypoglycaemia / hypoxia – Normal weight gain – Normal urine output – Attachment and bonding	
Objectives	**Contents and Method**	**Learning Activities**
	Topic: 1. Introduction to course and Background **1.1. Newborn situation in Bangladesh, mortality trends in Bangladesh, why newborns die:** **Content:** Teacher to create lecture from the information set out below, and from resources in the resource folder.	

<u>Newborn situation in South East Asia</u>

More than a million children do not survive beyond the neonatal stage every year **(WHO/Unicef, 2012)**

Of all cases of deaths of children below the age of five, more than 40% happen in the newborn stage.

Neonatal outcomes are affected by maternal health and by the level of care during pregnancy, childbirth and immediately after birth. Globally, about three -quarters of all deaths at this stage occur during the early neonatal period (0-7 days).

Further, 25-45% of all neonatal deaths occur in the first 24 hours after birth. Maternal complications, particularly in the early neonatal period, carry a high risk of neonatal death. A large proportion of deaths due to asphyxia and complications of premature birth occur in this stage, while the majority of deaths caused by infections and tetanus take place during the late neonatal period (7-28 days).

Most of the problems with newborn occur due to lack of basic and essential newborn care, such as ensuring proper breathing, temperature control, hygiene and proper feeding.

It is well known that majority of neonatal deaths can be prevented with low technology; low cost interventions

Newborn deaths result from a combination of medical causes, social factors, and health system failures that vary by context and culture.

In most settings, newborn health is closely associated with maternal health.

Factors contributing to the high newborn mortality rates in South Asia include: widespread low birth weight (LBW); lack of skilled health care at birth; and low levels of exclusive breast-feeding in the initial months of life.

Various studies show the major causes of fetal-neonatal death are: birth asphyxia; birth injuries; infections; complications of pre-term birth; and birth defects.

Maternal sexually transmitted infections (STIs) are a major, preventable cause of stillbirth. WHO (1991) and Van Dam (1995) reported that STI could cause spontaneous abortion, low birth weight baby, congenital abnormalities, neonatal infections, and blindness.

Every year babies are dying from asphyxia, birth injuries, infection and birth defects.

Another important concern is low birth weight babies (LBW): an estimated 11 million children in South Asia are born each year at weights less than 2500 grams. This amounts for over 50 percent of all LBW neonates in the world (Paul and Beorari, 2002).

Infants born with low birth weight suffer from extremely high rates of morbidity and mortality

from infectious diseases.

Source: South-East Asia Regional Strategic Framework for Improving Neonatal & Child Health and Development, WHO/Unicef, 2012.

Trends in Neonatal mortality - Bangladesh

Infant mortality rate:

total: 43 deaths / 1,000 live births (BDHS 2011)

Trends in Bangladesh Infant Mortality **Infant Mortality Rate (IMR) per 1000 live births**	
Year/s	**Rate**
1993-1994	87
1996-1997	82
1999 - 2000	66
2004	65
2007	52
2011	43

Bangladesh Demographic and Health Survey (BDHS) 2011

Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: **- e**xplain the newborn situation and newborn mortality trends in Bangladesh	**Resource folder:** **Resource NN 1 -** Trends of Neonatal Mortality **Resource NN 2 –** Maternal & Neonatal Health, Unicef **Resource NN 3 -** Country Health Profile - WHO **Resource NN 4 -** Bangladesh - Basic health statistics **Resource NN 5 -** Bangladesh Demographic and Health Survey 2011	

currently; - explain the reasons for newborn deaths;	**Method:** a. Teacher will give lecture on mortality trends and reasons for newborn deaths. Include a definition of a neonatal death (death of a newborn baby in the first 28 days of life). b. Class discussion. Particularly important that students can explain the common reasons for newborn deaths. This will help them to understand what care is needed to prevent those deaths that are preventable. c. Teacher asks questions to review and summarise.	a. Lecture b. Class discussion c. Review questions
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: **- e**xplain the newborn situation in Bangladesh; - explain the reasons that newborns die; - discuss ways to reduce newborn mortality;	**Topic: 1. Introduction to course and Background** **1.2. Introduction to Essential Newborn Care document** **Contents:** **Essential Newborn care** • Essential newborn care (ENC) is a set of preventive measures including hygienic cord care, thermal control (including drying and wrapping, skin-to-skin, and delayed bathing), and early and exclusive breastfeeding. • These measures are needed to ensure the survival of all newborns and to assist babies to breathe when needed. Early recognition or detection of sick newborns is also a component of ENC. **ENC comprises of:** • Basic preventive newborn care - such as care before and during pregnancy, clean delivery practices, temperature maintenance, eye and cord care, and early and exclusive breastfeeding on demand day and night; • Early detection of problems or danger signs (with priority for birth asphyxia and sepsis) and appropriate referral and care-seeking.	

	Note: The material for teaching of this course comes primarily from NN Resource - Emergency Training (ETAT) and Essential Newborn Care, Bangladesh, 2010. This manual **(Resource NN 6)** will be the main resource for this paper.	
	Resource folder: **Resource NN 2 -** Maternal & Neonatal Health, Unicef **Resource NN 6 –** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh	
	Method: a. Teacher to introduce the topic. b. Teacher to show students a copy of the resource: **Resource NN 6 –** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh, 2010. Explain the sections of the book: Section 1 - Care at Birth Section 2 - Communication skills Section 3 - Care of Newborn in Postnatal Ward Section 4 - Management of a Newborn with sepsis Section 5 - Management of Neonatal Jaundice Section 6 - Management of a newborn with convulsion Section 7 - Management of Low Birth Weight Babies Section 8 - Breastfeeding: Overcoming Difficulties Section 9 - Neonatal Transport Explain to students that they will be coming back to this manual again and again in this course; today is just to know how the book is set out, so they will be familiar to use it in future. c. Students form into 4 small groups. Teacher gives each group a copy of the Unicef Report on Maternal & Neonatal Health in Bangladesh (**Resource NN 2**). Each group to study one section:- Background; Issues; Action; Impact. Small group to discuss and summarise key points then teach whole class about your group's section of the report. d. Whole class discussion about the issues that have been raised.	a. Teacher talk b. Teacher shows and explains resource c. Small group work: read, summarise, teach other students d. Whole group discussion.

Objectives	Contents and Method	Learning Activities
	Topic 2. Assessment of newborn at birth – Apgar assessment – Thermal protection / regulation / skin to skin / hyperthermia / hypoglycaemia / hypoxia – Normal weight gain – Normal urine output – Attachment and bonding	
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: **- e**xplain the criteria in Apgar score and when it should be assessed; - demonstrate ability to assess Apgar score correctly in practice scenarios; - demonstrate knowledge of how and where to record Apgar score; - explain what to do as a result of the Apgar score of a newborn;	**Topic: 2. Assessment of newborn at birth** **2.1. Apgar assessment** **Content:** It is very important for midwives to have the skill to care for the newborn at birth, and to provide appropriate and timely care. Care at birth is important because a baby's survival is totally dependent on the caregivers and the mother. It is important to provide the right care at birth to reduce the risk of complications. **Immediate Newborn Care** **Note the time of birth** so that decisions can be made in a timely and correct manner based on exact time after birth. **1. Assess newborn initially at birth:** Do this by asking 4 questions: - Gestation – is baby term gestation? - Amniotic fluid - is fluid clear? - Breathing or crying – is baby breathing or crying? - Muscle tone – does baby have good muscle tone? If all answers are **YES** - provide **Routine care;** If any answers **NO** - proceed to **resuscitation of newborn**. **2. Assessment of baby's condition – Apgar score:** - The Apgar score was devised by Dr. Virginia Apgar in 1953; it is commonly used as a quantitative measure of	

	newborn wellbeing just after birth - There are 5 criteria scored, and each score indicates a physiological state. - It is important that an accurate assessment is made. The most important measures within the scoring system are the heart rate and respiratory rate. - At one minute and 5 minutes after birth, the midwife makes a general assessment of the baby's condition using the Apgar score. This can be done with baby in mother's arms. At each of those two times, baby is given a score of 0, 1 or 2 for each of 5 criteria. This gives baby a possible 'score' of 10. - The 5 criteria are given in the table below: ▪ heart rate ▪ respiratory effort ▪ muscle tone ▪ reflex/reaction ▪ colour - Many years in the past, baby's reaction or reflex may have been assessed by smacking baby; this is **absolutely not** done now. Also in the past, there was a time when babies were routinely suctioned, so the reaction to this was assessed. Again, this is no longer done. While some babies may require suction as a part of resuscitation, it is not done as a routine action. - The modern way to assess baby's reaction is by assessing the reaction to being rubbed dry. - The Apgar score is given as, for example "Apgar 8 at 1 minute, and 10 at 5 minutes". - The higher the score, the better the baby's condition. - The Apgar score should be recorded in baby's records. **Note**: Recording the numbers alone does not provide enough information about the newborn's condition, especially when the baby needs resuscitation. It is important that the condition of the newborn is also recorded in the clinical notes.	

Sign	Score 0	Score 1	Score 2
Heart rate	Absent	Less than 100 bpm	More than 100 bpm
Respiratory effort	Absent	Slow or irregular	Good, or crying
Muscle tone	Limp	Some flexion of limbs	Active
Reflex response to stimuli	Absent or none	Minimal grimace	Cough, reaction, movement
Colour	Pale	Body pink; extremities blue	Completely pink

Students may find a useful mnemonic for remembering the criteria of the Apgar score is:

A Appearance (that is, colour)

P Pulse (that is, heart rate)

G Grimace (that is, response to stimuli)

A Active (that is, muscle tone)

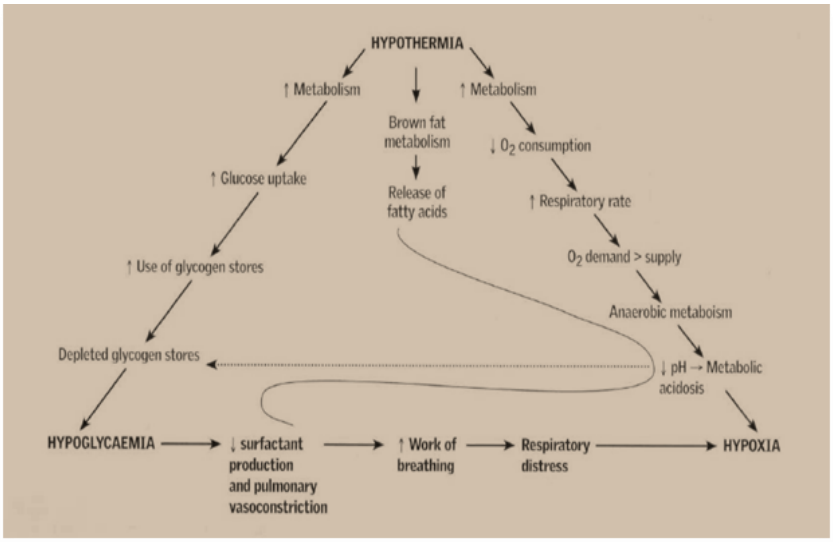
R Respirations

- The Apgar score at **one minute** is used to make decisions for further management of resuscitation.
- However, it is the score at **5 minutes** that is more reliable as a predictor of the child's risk of death within the first 28 days, and their ongoing neurological condition in life.
- An Apgar score of **less than 7** needs medical assistance.

	Resource folder: **Resource NN 7 -** Association of Apgar scores with death & neurological disability **Resource NN 8 –** Postpartum Care of mother and newborn, WHO manual **Resource NN 9 -** EmOC Manual, Immediate care of the newborn at birth (20)	
	Method: a. Teacher to give lecture. b. Practice assessing Apgar scores; have flip chart with table of Apgar criteria so students can see it; teacher to call out scenario details from a prepared page; students assess score; teacher check they have the score correct from information given.	a. Lecture b. Practice assessments with scenarios
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - **e**xplain the newborn energy triangle; - discuss the dangers of hypothermia;	**Topic: 2. Assessment of newborn at birth** **2.2. Thermal protection / regulation / skin to skin / hyperthermia / hypoglycaemia / hypoxia** **Content:** One of the biggest threats to the health and wellbeing of the newborn is if he/she gets cold at birth. This sounds a simple thing, but it can have serious consequences: hypothermia, hypoglycaemia, and hypoxia can result. It is imperative therefore that the midwife understands thermal protection and regulation. **Method:** a. Teacher to ask if students can define each word; teacher make sure the student's definition is correct. • **Hypothermia:** having an abnormally low body	a. Questions and definitions

	temperature, typically one that is dangerously low • **Hypoglycaemia**: deficiency or low level of glucose in the bloodstream • **Hypoxia**: reduction or low level of oxygen supply in the blood stream, so low supply of oxygen to body organs and tissues, below physiological levels *[This is a good time to help students learn the skill of how to 'approach' or understand big words / complex medical or midwifery terms: there will be many such words in their training!* *For example: 'hypo' means low or small;* *'thermia' is related to thermal, so is about temperature.* *Therefore 'hypo-thermia' means 'low temperature'.]*	

Newborn Energy Triangle



Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students	**Contents:** - **Hypothermia**	

will be able to: **- e**xplain the 'newborn energy triangle'; - discuss the dangers of hypothermia and what problems it can lead to; - explain the risks of, signs of, and dangers of: hypothermia, hypoglycaemia, and hypoxia;	- leads to increased metabolism - leads to increased glucose uptake - leads to increased use of glucose stores - and depleted use of glucose stores = **Hypoglycaemia** - **Hypothermia** - leads to increased metabolism - leads to increased oxygen consumption - leads to increased respiratory rate - leads to increased oxygen demand - leads to Anaerobic metabolism - and decreased pH and metabolic acidosis = **Hypoxia** - **Hypoglycaemia** - leads to deceased surfactant production and pulmonary vasoconstriction - leads to increased work of breathing - and Respiratory distress = **hypoxia**	
	Resource folder: **Resource NN 10 -** Newborn Energy triangle	
	Method: a. Lecturer to give a lecture on this topic, including going through the newborn energy triangle step by step, explaining each step to students. b. Teacher asks students questions for revision. (See list below of questions with answers). c. If a student is not sure of the answer; other students may know or be able to expand the answer, so ask the whole class. Make sure that all aspects of the question are answered, or teacher fill in any gaps. **Revision Questions could include:** • **Hypothermia:** - **What is normal temperature for a newborn?** o 36.5 – 37.2 degrees - **What temperature would indicate hypothermia?** o temperature less than 36.5 degrees	a. Lecture b. Quiz c, Whole class discuss answers

	- **Why are neonates at risk of hypothermia?**
	  o Initially wet
	  o Thin layer of subcutaneous fat.
	  o Surface area / mass 3 x higher than adults.
	  o Autonomic responses not fully developed difficulty maintaining temperature on own.
	
	- **What will happen if hypothermia is left untreated?**
	  o Poor sucking and feeding energy intake goes down
	  o Baby becomes less active and lethargic
	  o Hypotonic
	  o Respiration becomes shallow and slow
	  o Heart rate decreases
	  o Hypoxia and hypoglycaemia develop
	
	• **Hypoglycaemia**
	- **What blood glucose level (BGL) would indicate hypoglycaemia?**
	  o BGL less than 2.6 mmol/L
	
	- **Why are newborns at risk of hypoglycaemia?**
	  o Small for gestational age (SGA) babies have been malnourished in utero and this uses up energy, making them more likely to become hypoglycaemic
	  o Large for gestational age (LGA) babies use their energy stores very fast, and need early and regular feeding to stop them from being hypoglycaemic
	  o Infants of diabetic mothers – overproduction of insulin continues for several hours after birth, and they use up all their stores of glucose and can become hypoglycaemic
	  o Hypothermia and hypoxia and other conditions that have led to a baby using up energy stores can lead to hypoglycaemia
	
	• **What will happen if hypoglycaemia is not treated?**
	  o Lethargy and poor feeding	

	○ Hypotonic ○ Jitteriness ○ If untreated convulsions, cyanosis and apnoea ○ Can result in neurological damage, coma and even death • **Hypoxia:** - **What is hypoxia?** ○ Hypoxia is defined as too little oxygen in the cells of the body - **Why are newborns at risk of hypoxia?** ○ If the infant failures to breathe well after delivery the infant will develop hypoxia. ○ If the infant gets cold, stressed or hypoglycaemic, the infant can develop hypoxia - **What will happen if hypoxia is not treated?** ○ the infant's heart rate falls, ○ respiratory distress ○ central cyanosis develops ○ infant becomes hypotonic (floppy) and unresponsive ○ If not correctly managed, may lead to brain damage or death	
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - **e**xplain how baby can lose heat at birth; - discuss how to prevent heat loss	**Topic: 2. Assessment of newborn at birth** **2.2. continued: Thermal protection - skin to skin** **Understand how babies lose heat at birth:** Newborn baby's temperature falls within seconds of being born. If the temperature continues to fall the baby will become hypothermic, with all the potential consequences of that. There are 4 ways that a baby may lose heat to the	

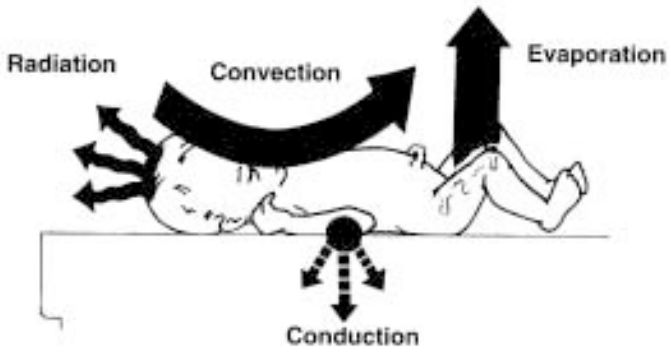
at birth;

- **e**xplain the importance of skin to skin;

- discuss the role of skin to skin in preventing and treating hypothermia

environment:

- Radiation
- Evaporation
- Conduction
- Convection



Method of heat loss	**Prevention**
Radiation: Cold metallic surroundings	Keep the room warm
Evaporation: Wet baby	Immediately after birth dry baby with a clean, warm, dry cloth
Conduction: Cold surface e.g. weighing scale etc.	Put the baby on the mother's abdomen or on a warm surface
Convection: Cold draught	Provide a warm, draught free room for delivery at 25°C

3. Keeping a newborn warm after delivery:

The Warm Chain:

– Provide a warm draught free room for birth, at 25-28°C;
– Immediately after birth, dry baby with a clean warm dry cloth;

	– Put the baby on the mother's abdomen between the mother's breasts; – Cover the mother and baby with a warm dry cloth; Encourage breast feeding as soon as possible after birth. **If separation of mother and baby is necessary - because of their medical needs - do the following:** – Wrap the baby in a clean warm dry cloth and place baby under a radiant warmer. – If a warmer is not available, wrap baby in a clean dry warm cloth and cover with a blanket. A family member can hold baby to make sure baby stays warm. – Ensure baby's head, hands and feet are covered. – Delay the first bath to beyond first 24 hour period. – Skin-to-skin contact can re-start as soon as mother and baby do not need any further medical care. **Skin-to-skin contact of the newborn with mother should be promoted whenever possible.** Skin to skin contact (SSC or just 'skin to skin') describes when baby is placed directly on mother's skin (chest or abdomen). Wrap cloths or blankets are placed over the top of the baby, not wrapped around the baby. So the baby is truly lying 'skin to skin' with their mother. This is sometimes called Kangaroo Mother Care; read more at the end of this section. A 2007 report in the WHO Report (Early skin-to-skin contact for mothers and their healthy newborn infants) considered the results of 30 international trials of skin-to-skin (SCC) and concluded that: - Data was scarce to assess the effect of early skin-to-skin contact on breastfeeding up to 4-6 months and 12 months of life. - However, the review found that skin-to-skin contact between the mother and her baby immediately after birth reduces crying, improves mother-infant interaction, keeps the baby warm, and helps the mother to breastfeed successfully. - No important negative effects were identified.	

	Source: Puig, G. & Sguassero, Y. (2007). Early skin-to-skin contact for mothers and their healthy newborn infants. The WHO Reproductive Health Library; Geneva: World Health Organization. **EVIDENCE SUMMARY** Ideally, early skin-to-skin contact (SSC) begins immediately after birth by placing the naked newborn baby prone on the mother's bare chest. This practice based on intimate contact within the first hours of life may facilitate maternal-infant behaviour and interactions through sensory stimuli such as touch, warmth, and odour. Moreover, SSC is considered a critical component for successful breastfeeding initiation. **RELEVANCE TO UNDER-RESOURCED SETTINGS** **Magnitude of the problem** Each year, new scientific and epidemiological evidence contributes to our knowledge of breastfeeding's role in the survival, growth, and development of a child as well as the health and well-being of a mother. Current breastfeeding patterns are still far from the recommended level and considerable variation exists across regions. Extra tactile, odour, and thermal cues provided by skin-to-skin contact may stimulate babies to initiate breastfed more successfully. So, this practice should be seen as a beneficial, low cost, and feasible intervention to promote lactation after delivery especially in settings that lack sanitation and safe water, so where breastfeeding can be lifesaving. In addition, a recent study conducted in Ghana demonstrated that the promotion of early initiation of breastfeeding has the potential to make a major contribution to the achievement of the child survival millennium development goal; 16% of neonatal deaths could be prevented if all infants were breastfed from day 1, and 22% of neonatal deaths could be prevented if breastfeeding started within the first hour. **Implementation of the intervention** Early SSC should be considered as a routine health care intervention after delivery both in developed and developing country settings. However, the implementation	

	of this intervention requires further considerations in under-resourced communities. On one hand, factors such as room temperature, lack of privacy/space, overcrowding, etc., may interfere with its potential benefits; on the other hand, the situation is often worsened by inaccurate medical advice from health workers who lack proper skills and training in early breastfeeding support, starting with early skin-to-skin contact. **RESEARCH** Appropriate definition of SSC is a priority for future research taking into account specific timing, frequency and duration of intervention. As neonates tend to be more alert within the first two hours of life, this should be considered a convenient period for initiating successful mother and child interaction. Well-conducted RCTs are warranted to demonstrate the real impact of early SSC on maternal and infant health, including preterm babies and mothers who deliver by caesarean section and in different settings (developed and developing countries). **Kangaroo Mother Care** Kangaroo mother care (KMC) is a method of care of preterm infants. It is particularly useful for the care of low-birth-weight and preterm infants. KMC gets its name from the way a mother kangaroo carries her baby in her pouch all of the time after it is born. Kangaroo mother care was developed in South America as a way to keep premature infants warm so that they stabilise their temperature, and survive and develop better. Recently, Save the Children in its annual State of the World's Mothers report highlighted how KMC is now being used to improve newborn survival outcomes and support parent-child bonding not only in developing countries, but in richer countries for newborn care. The method involves infants being carried, usually by the mother, with skin-to-skin contact. It is a simple system, and can be adapted to local conditions. There are two components to Kangaroo Mother Care (KMC): **1. Skin-to-skin contact**	

	Early, continuous and prolonged skin-to-skin contact **2. Exclusive breast feeding** Promotes lactation and facilitates feeding	
	Resource folder: **Resource NN 11 -** Skin to skin treatment of Hypothermia **Resource NN 12 -** Early skin to skin contact, WHO RHL **Resource NN 13 -** Skin to skin contact - La Leche League **Resource NN 14 -** Six reasons to be skin to skin with baby after birth **Resource NN 15 -** The Importance of Skin to Skin Contact **Resource NN 15 a** - Kangaroo Mother Care.ppt **Resource NN 15 b** - WHO - Practical guide to Kangaroo Mother Care **Resource NN 15 c** - Kangaroo Mother Care report BD **Resource NN 15 d** - KMC Implementation Guide, MCHIP **Resource NN 15 e -** Kangaroo Mother Care in Matlab	
	Method: a. Teacher give lecture on how babies lose heat after birth. b. Students form into 5 small groups; each group given one of the skin to skin resources and one of the Kangaroo Mother Care resources (NN Resources 11 – 15d). Read and discuss in small group. c. Whole group discussion on what they have learnt about skin to skin or Kangaroo Mother Care as a way to prevent heat loss or treat it in newborns.	a. Lecture Small group work, read and discussion c. Whole group discussion
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: **- e**xplain the pattern of normal weight gain in a newborn after birth;	**Topic: 2. Assessment of newborn at birth** **2.3. Normal weight gain** **Content:** See **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh; Section 6 on Breastfeeding for optimal nourishment for normal newborn, and normal weight gain. Baby should be weighed at birth, and the weight entered on	

	a standard growth chart. This will help determine if baby is appropriate weight for gestational age (between 10th and 90th centile); small for gestational age (SGA - below 10th centile); or large for gestational age (LGA - above 90th centile). Most babies lose some weight in the first week of life, as breastfeeding gets established. It has been said that a loss of up to 10% of the birth weight is normal, although other research suggests 3% – 7% is normal. It is generally expected that baby will return back to its birth weight by 10 to 14 days old. After that, indicators of adequate breast feeding include: baby passing urine 6 or more times in 24 hours; and weight gain of 20 to 40 grams per day on average.	
	Resource folder: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh; Section 6	
	References: Fraser, D. M. & Cooper, M. A. (2003). Myles Text book for midwives. (14th ed.); pages 798 & 760. Davies, L. & McDonald, S. (2008). Examination of the newborn: a multi-dimensional approach; page 35.	
	Method: a. Ask students if they know normal weight pattern of newborns, to check their prior knowledge. b. Teacher give talk, and show growth chart for normal newborn.	a. Assess students' prior knowledge b. Teacher talk
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: **- e**xplain the normal amount, colour and	**Topic: 2. Assessment of newborn at birth** **2.4. Normal urine output** **Content:** **Newborn Elimination:** **Urine**	

frequency of newborn urine patterns; - **e**xplain the normal amount, colour and frequency of newborn bowel elimination patterns; - discuss the changes in newborn output / elimination over the first week after birth;	The normal newborn should pass urine at least once by 24 hours after birth; the average is usually by 4 to 10 hours after birth. If it has not done so by 24 hours old, baby should be referred for a medical check in case of a genitourinary tract problem. In the first day of life, baby may only pass urine one time, and careful note should be taken to check that baby has passed urine for the first time. Researchers say it may be as little an amount as 2 to 4 mls/kg/hour – that is, it may not be very much in amount. By the 2nd day, baby may pass urine 2 times in 24 hours; by the 3rd day, 3 times; by the 5th day, 5 times. Then when breastfeeding is established and baby's intake of fluid increases, an indicator of adequate breast feeding includes baby passing urine 6 or more times per 24 hours. Urine is normally pale and clear. In the first few days, there may be urates present in the urine. These appear as a red-orange 'dust' or grainy powder in the babies wet nap. Urates are harmless, and temporary. No action needs to be taken. **Bowel movements** Bowel sounds are present in the newborn within one hour of birth. The newborn baby should open their bowels within 48 hours of birth. The newborn's first bowel motions ('stools') are called meconium, and are thick, black and like tar. This meconium has been present and developing in the bowel of the fetus since 16 weeks gestation; it contains bile, fatty acids, mucous, and epithelial cells. Baby may pass this meconium one or more times per day in the first 2 days. All the meconium should have been passed by 72 hours (3 days) after birth. If it is still present by 96 hours (4 days) baby needs a medical referral for further checks. From the 3rd to the 5th day the baby's stools are	

	changing, and are called 'transitional stools'; they are a brownish-yellow colour. Baby will normally have 2 or more bowel motions per day in those days. Once breastfeeding is established, baby's bowel motions are loose, soft, bright yellow, acidic, and inoffensive smelling. There may be small curds within the bowel motion which appear like 'pips' or seeds. A baby who is fully breastfed may pass as many as 8 or 10 stools in 24 hours, or as few as one every 2 or 3 days. Either of these frequencies is normal. If a baby receives formula feeds, the stools are more formed (like paste) and paler in colour, less acidic, and have a particular odour.	
	Resource folder: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh; Section 2	
	References: Fraser, D. M. & Cooper, M. A. (2003). Myles Text book for midwives. (14th ed.); pages 805, 856 – 857, 730 & 739. Davies, L. & McDonald, S. (2008). Examination of the newborn: a multi-dimensional approach; page 26 – 27.	
	Method: a. Ask students if they know normal elimination pattern of newborns, to check their prior knowledge. b. Teacher give talk, and show chart for normal newborn urine and bowel elimination.	a. Assess students' prior knowledge b. Teacher talk
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to:	**Topic: 2. Assessment of newborn at birth** **2.5. Attachment and bonding** **Content:**	

- **e**xplain the difference between bonding and attachment; - explain why both are important; - discuss ways that midwives can promote bonding and good relationships between mother/parents and baby;	**What's the difference between attachment and bonding?** While it's easy to confuse the two terms, **attachment** refers to the child's emotional connection to the mother/parents; and **bonding** refers to the mother's or parents' feelings and connection to her/their child. **Bonding –** refers to the feelings of the parent towards their new baby. Usually occurs in the first weeks after a baby is born. Describes the relationship from the parent's or primary caregiver's perspective. **Attachment** - refers to the relationship a child forms with a parent (or primary caregiver). Usually develops in the first two years of life. Describes the relationship from the child's point of view. Occurs as a developmental process. **Bonding:** Bonding is the intense feelings that develop between parents and their baby. It makes parents want to shower their baby with love and affection, and to protect and nourish their little one. Bonding gets parents up in the middle of the night to feed their hungry baby, and makes them attentive to the baby's wide range of cries. Scientists are still learning about bonding. They know that the strong ties between parents and their child provide the baby's first model for intimate relationships and foster a sense of security and positive self-esteem. And parents' responsiveness to an infant's signals can affect the child's social and cognitive development. **Why Is Bonding Important?** Bonding is essential for a baby. Studies of newborn monkeys who were given mannequin mothers at birth showed that, even when the mannequins were made of soft material and provided formula to the baby monkeys, the babies were better socialised when they had live mothers to interact with. The baby monkeys with mannequin mothers also were more likely to suffer from despair. Scientists suspect that lack of bonding in human babies can cause similar problems.	

	Most infants are ready to bond immediately. Parents, on the other hand, may have a mixture of feelings about it. Some parents feel an intense attachment within the first minutes or days after their baby's birth. For others - especially if the baby is adopted or has been placed in intensive care - it may take a little longer. But bonding is a process, not something that takes place within minutes and not something that has to be limited to happening within a certain time period after birth. For many parents, bonding is a by-product of everyday caregiving. They may not even know it's happening until they observe baby's first smile and suddenly realise that they are filled with love and joy. A mother and her baby should be kept together in the same bed right from birth. This helps the mother to get to know her baby and make an early close loving relationship (bonding), she can also respond quickly when her baby wants to feed, which helps establish breastfeeding and reduces breastfeeding difficulties.	
	Resource folder: **Resource NN 16 -** Early parent-baby relationships - bonding **Resource NN 17 -** Bonding and why it's important **Resource NN 18 -** Bonding and attachment in babies and young children **Resource NN 19 -** Attachment theory **Resource NN 20 -** What is bonding - advice for parents	
	References: Fraser, D. M. & Cooper, M. A. (2003). Myles Text book for midwives. (14th ed.); pages 715 - 716	
	Method: a. Teacher introduces the topic, and explains the difference between attachment and bonding, and why both are important. b. Students form into 5 small groups; each group receives	a. Teacher explain b. Small group work: read,

	one of the resources to read. Discuss in small group and feedback to larger group the key findings. c. Whole class discussion on bonding, attachment; why they are important; and why and how midwives can help promote bonding and attachment.	discuss, key points, feedback c. Discussion

Resources used for this lesson:

Resource NN 1 - Trends of Neonatal Mortality

Resource NN 2 – Maternal & Neonatal Health, Unicef

Resource NN 3 - Country Health Profile - WHO

Resource NN 4 - Bangladesh - Basic health statistics

Resource NN 5 - Bangladesh Demographic and Health Survey 2011

Resource NN 6 – Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh

Resource NN 7 - Association of Apgar scores with death & neurological disability

Resource NN 8 – Postpartum Care of mother and newborn, WHO manual

Resource NN 9 - EmOC Manual, Immediate care of the newborn at birth (20)

Resource NN 10 - Newborn Energy triangle

Resource NN 11 - Skin to skin treatment of Hypothermia

Resource NN 12 - Early skin to skin contact, WHO RHL

Resource NN 13 - Skin to skin contact - La Leche League

Resource NN 14 - Six reasons to be skin to skin with baby after birth

Resource NN 15 - The Importance of Skin to Skin Contact

Resource NN 15 a - Kangaroo Mother Care.ppt

Resource NN 15 b - WHO - Practical guide to Kangaroo Mother Care

Resource NN 15 c - Kangaroo Mother Care report BD 2003

Resource NN 15 d - KMC Implementation Guide, MCHIP

Resource NN 15 e - Kangaroo Mother Care in Matlab

Resource NN 16 - Early parent-baby relationships - bonding

Resource NN 17 - Bonding and why it's important

Resource NN 18 - Bonding and attachment in babies and young children

Resource NN 19 - Attachment theory

Resource NN 20 - What is bonding - advice for parents

References for today's lesson:

Blackburn, S. (2007). (Ed.). Maternal, fetal and neonatal physiology: A clinical perspective (3rd ed.). London: Saunders.

Davies, L. & McDonald, S. (2008). Examination of the newborn - a multi-dimensional approach. Edinburgh: Churchill Livingstone.

Emergency Training (ETAT) and Essential Newborn Care (ENC), Bangladesh. (2010).

Fraser, D. M. & Cooper, M. A. (2009). (Eds.). Myles text book for midwives (15th ed.). Churchill Livingstone Elsevier. London.

Henderson, C., & MacDonald, S. (Eds.). (2004). Mayes midwifery. A textbook for midwives. (13th ed.). Bailliere Tindall: London.

Integrated Management of Pregnancy and Childbirth. (2006). Pregnancy, childbirth, postpartum and newborn care (2nd ed.). Geneva: World Health Organisation.

Klossner, N. J. (2006). Introductory Maternity Nursing. USA: Lippincott Williams & Wilkins

WHO/RHT/MSM/98.3. (1998). Postpartum care of the mother and newborn; Report of a Technical Working Group. World Health Organisation. Retrieved from https://extranet.who.int/iris/restricted/handle/10665/66439

Course: Normal neonate

Day 2: Topic: Physiological Jaundice; Newborn Nutrition and Breastfeeding

Concept: Jaundice is a relatively common event in young infants, so midwives need to have a clear understanding of assessment and management of jaundice in newborns. To prevent neonatal morbidity or mortality due to jaundice, they need to understand when it is a normal physiological matter, and when it is a pathological case of jaundice which needs to be referred to a higher level centre.

Breastfeeding can save babies lives. About one-quarter to one-half of all infant deaths in developing countries occur in the first week of life. Immediate breastfeeding within the first hour, followed by early and exclusive breastfeeding, improves the health and survival status of newborns. It is therefore important that Midwives understand its importance, so they can promote and support it. They also need to have good knowledge and skills about breastfeeding, and the correct techniques when breastfeeding, so that they can help mothers as required. This can make a difference in whether breastfeeding will be successful, and avoid problems.

	Topics: **1. Physiological Jaundice** – Physiological Jaundice – Assessment and Management of Physiological Jaundice **2. Newborn nutrition and breastfeeding** – Health benefits of breastfeeding - Mother and Baby – Feeding in the first week – Colostrum – How much breast milk does baby require – Days 1, 2, 3, 4, and 5	
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - define physiological	**Topic: 1. Physiological Jaundice** **Content:** **1.1. Physiological Jaundice** Prepare lecture based on: ▪ **Resource NN 6 -** Emergency Training **(**ETAT) &	

jaundice of the newborn; - explain common causes of jaundice; - explain a t beginner level the physiology; - explain timing and signs to distinguish between physiological and pathological jaundice;	Essential Newborn Care, Bangladesh, Section 5, Jaundice (page 55). ▪ Fraser, D. M. & Cooper, M. A. (2009). (Eds.). Myles text book for midwives (15th ed.) (Pages 863 – 875). **Include:** - Physiology - Common causes - Characteristics of neonatal jaundice o physiological and pathological - Relevant history taking - Physical examination - Baseline investigations	
	Resource folder: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh **Resource NN 21 -** Physiological Jaundice	
	Reference: Fraser, D. M. & Cooper, M. A. (2009). (Eds.). Myles text book for midwives (15th ed.) (page 863 – 875)	
	Method: a. Teacher give hand-out for students (Resource NN 21); b. Teacher gives lecture. c. Ask questions to evaluate students understanding. Particularly, ask how students will differentiate between physiological and pathological jaundice.	a. Hand-out b. Lecture c. Questions
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - explain how to assess a jaundiced	**Topic: 1. Physiological Jaundice** **Content:** **1.2. Assessment and Management of Physiological Jaundice** Prepare lecture based on: ▪ **Resource NN 6 -** Emergency Training **(**ETAT) &	

newborn; - discuss the potential treatments of jaundice; - demonstrate at beginner level how to use the treatment charts for determining if phototherapy or exchange transfusion is needed; - identify which cases need referral to a higher level centre;	Essential Newborn Care, Bangladesh, Section 5, Jaundice (page 55 onwards). ▪ Fraser, D. M. & Cooper, M. A. (2009). (Eds.). Myles text book for midwives (15th ed.) (Pages 875 – 878). **Cover:** – Breast feeding, it's role in stimulating bowel and the passage of meconium – Physiology and pathophysiology of jaundice – Phototherapy o Treatment line graphs – Exchange transfusion – Treatment of underlying cause	
	Resource folder: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh **Resource NN 21 -** Physiological Jaundice	
	Reference: Fraser, D. M. & Cooper, M. A. (2009). (Eds.). Myles text book for midwives (15th ed.) (page 875 – 878)	
	Method: a. Teacher gives lecture. b. Ask students questions to evaluate their understanding. - Ensure they understand the importance of breast feeding and early colostrum. - Ensure they understand which cases need to be referred to a higher level. c. Demonstrate use of the jaundice treatment line graph to decide if baby needs phototherapy. d. Teacher calls out various scenarios for students to practice plotting serum bilirubin levels on the graph to decide if baby needs phototherapy.	a. Lecture b. Discussion c. Teacher demonstration d. Practice scenarios
Objectives	**Contents and Method**	**Learning Activities**

At the end of the lesson, students will be able to: - explain the benefits of breast feeding for both mother and baby; - explain the immediate benefits and the long term benefits of breastfeeding;	**Topic: 2. Newborn nutrition and breastfeeding** **2.1. Health benefits of breastfeeding - Mother and Baby** The evidence of short and long term health benefits of breastfeeding for both woman and baby are well documented. It is essential that midwives are well versed in these benefits so that they can educate women and families, and practice in ways which promote breastfeeding. About one-quarter to one-half of all infant deaths in developing countries occur in the first week of life. Immediate breastfeeding within the first hour, followed by early exclusive breastfeeding, improves the health and survival status of newborns. **Content:** • **The immediate benefits of breastfeeding for the baby:** - Breast milk is the ideal baby food. It has the perfect combination of proteins, fats, carbohydrate, and fluids that new-born babies require. - Breastfeeding reduces the risk of developing infection. On average, breastfed babies have fewer infections in their early life. In particular, they have less diarrhoea and vomiting, chest infections, and ear infections compared to babies who are not breast fed. The main reason for this is that antibodies and other proteins are passed in the breast milk from mother to baby. These help to protect against infection. **Note:** A review in 42 developing countries estimated that exclusive breastfeeding for six months, with partial breastfeeding continuing to 12 months, could prevent 1.3 million deaths each year in children under five years. - Breastfeeding reduces the risk of cot death. There is good evidence that sudden infant death syndrome (cot death) is less common in breastfed babies. This is not fully explained, although the fact have fewer infections is possibly a contributing factor.	

	• **The immediate benefits of breastfeeding for the mother:** - Contraction and Involution of the uterus ensures that uterus is contracted and that it involutes. This can be significant benefit in reducing PPH - Convenience: it requires no special equipment - Financial: it is cheap / free • **Long term benefits to baby of being breastfed:** - **Less Acute otitis media (middle ear infections)**: Babies that were ever breastfed had a 23% lower incidence of acute otitis media than exclusively formula fed babies. - **Less Atopic dermatitis (type of eczema):** In families with a history of atopy *(tendency to allergies such as asthma, eczema, hayfever etc.)* exclusive breastfeeding for at least 3 months was found to have a 42% reduction in atopic dermatitis compared with breastfeeding for less than 3 months. - **Less Gastrointestinal infections:** Infants who were breastfeeding had a 64% reduction in the risk of non-specific gastroenteritis compared with infants who were not breastfeeding. - **Less Lower respiratory tract diseases:** There is a 72% reduction in the risk of hospitalization due to lower respiratory tract diseases in infants less than 1 year of age who were exclusively breastfed for 4 months or more. - **Less Asthma:** Breastfeeding for at least 3 months was associated with a 27% reduction in the risk of asthma for those without a family history of asthma and a 40% reduction for those with a family history of asthma. - **Less Type 1 Diabetes:** Breastfeeding for at least 3 months results in between a 19% and 27% reduction in incidence of childhood Type 1 Diabetes compared with breastfeeding for less than 3 months (findings confirmed through multiple studies, but some cause for caution in interpreting results). - **Type 2 Diabetes:** Found a 39% reduction in risk of Type 2 diabetes later in life for people that were breastfed as infants (some cause for caution in interpreting results). - **Less Childhood Leukaemia:** Breastfeeding for at	

	least 6 months associated with 19% decrease in risk of childhood acute lymphocytic leukaemia and a 15% decrease in the risk of acute myelogenous leukaemia. - **Less Sudden Infant Death Syndrome (SIDS):** The meta-analysis found that breastfeeding was associated with a 36% reduction in the risk of SIDS compared to not breastfeeding. Another study completed since the meta-analysis was done found a 50% reduction in the risk of SIDS as a result of breastfeeding. • **Long term benefits to mother of breastfeeding:** - **Less Maternal type 2 diabetes:** In women with no history of gestational diabetes, each additional year of breastfeeding resulted in a 4% to 12% reduction in the risk of maternal type 2 diabetes. (There were only nurses included in these studies though, so interpreting results for the general population must be done with care). - **Less Breast cancer**: A reduction of risk of contracting breast cancer of 4.3% for each year of breastfeeding (one study) or 28% for 12 or more months of breastfeeding (another study). Another study reported on in 'Save Yourself, Save Our Health Care System' found that if women in Canada breastfed for at least 16 months over their lifetime, we could cut the breast cancer rate from 6% of women to 3% of women. - **Less Ovarian cancer:** Breastfeeding results in a 21% decrease in the risk of ovarian cancer. Retrieved from http://www.ahrq.gov/Clinic/tp/brfouttp.htm	
	Resource folder: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh **NN 22 -** Benefits of breastfeeding **NN 22 a -** Benefits of breastfeeding two	
	Method: a. Teacher asks students if they think breastfeeding is beneficial; and if they know of any benefits from it. b. Teacher give lecture on short and long term benefits to mother and to baby of breastfeeding.	a. Question b. Lecture

	c. Teacher asks students if they learnt any new reasons for breastfeeding. Discussion on what they learnt. d. Students form into pairs; each student practices explaining to a 'mother' why it would be good to breastfeed. Give feedback about ability to convey the messages clearly. e. Feedback and discussion in whole class about the experience of giving a promoting breastfeeding message.	c. Question and discussion d. Role play in pairs e. Feedback and discussion in whole group
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - discuss why breast feeding should ideally begin in first hour after birth; - explain to a new mother how to achieve and recognise a good latch, and correct attachment at the breast; - explain how baby 'gets' milk from the breast; - discuss how often baby should feed;	**Topic: 2. Newborn nutrition and breastfeeding** **Content:** **2.2 Feeding in the first week** • **Initiate Breastfeeding within one hour of birth:** About one-fourth to one-half of all infant deaths in developing countries occur in the first week of life. Immediate breastfeeding within the first hour, followed by early exclusive breastfeeding, improves the health and survival status of newborns. **Helping mother to initiate breastfeeding within 1 hour** - Tell the mother to help the baby to her breast within the first hour. - Check position and attachment are correct at the first feed. Offer to help the mother at any time. - The baby's first feed of colostrum is very important because it helps to protect against infections. - The baby can feed from its mother whether she is lying down or sitting; but baby and mother must be comfortable. - Do not give artificial teats or pre-lacteal feeds to the newborn e.g. no sugar water, or local foods, or even water. - There is no need to routinely separate babies born by Caesarean Section or Instrumental delivery from mother. **Position and attachment of baby for successful breastfeeding:**	

	Use textbooks, **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh, Section 8, and the resources listed below, to prepare lecture. Include these headings: - anatomy and physiology of the breast - milk production - positioning the mother - positioning the baby - how milk is extracted from the breast - how to recognise a good latch - feeding behaviour of baby - timing and frequency of feeds - the role of the midwife in breastfeeding	
	Resource folder: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh **Resource NN 22b** - Initiating breastfeeding within 1 hour **Resource NN 23 -** Breastfeeding within one hour of birth can reduce infant mortality **Resource NN 24 –** Infant and young child feeding, WHO Fact sheet No. 342 **Resource NN 25 –** Early Initiation of Breastfeeding and Exclusive Breastfeeding **Resource NN 26 –** Breastfeeding position & information pictures **Resource NN 27 –** Breastfeeding position & attachment, with pictures **Resource NN 28 –** Positioning mother and baby for breastfeeding **Resource NN 29 -** Skills check list – Breast feeding basics	
	Method: a. Students are formed into 3 groups; each group is given one of the resources on early initiation of breastfeeding: either **Resource NN 22a –** Initiating Breastfeeding within one hour of birth, **Resource NN 23 -** Breastfeeding within one hour of birth can reduce infant mortality, or **Resource NN 25 –** Early Initiation of Breastfeeding and	a. Small group work - read, discuss, then whole class discussion b. Lecture

	Exclusive Breastfeeding. Group to read their article, and discuss in small groups. Then teacher leads class discussion on how midwives can assist in initiating breastfeeding in first hour, and why it is important to success of breastfeeding. b. Teacher gives lecture using headlines as given above. Include pictures on lactation basics, and correct attachment and latch. c. Teacher gives demonstration with doll, to show correct positioning, and how midwife can assist mother to understand this. If time permits, students also can practice demonstration with doll. **Evaluation:** Teacher asks questions and evaluates level of understanding of students through their ability to answer questions.	c. Demonstrate with doll
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - explain what colostrum is; - describe the contents of colostrum; - explain the importance of colostrum;	**Topic: 2. Newborn nutrition and breastfeeding** **2.3. Colostrum** **Content:** **Colostrum** is the milk secreted during the first week after birth. (Some women also have colostrum leak from their breasts late in pregnancy. Colostrum is thick, yellow, and looks like cream. It contains more antibodies and white blood cells than the later milk. Though there are only small quantities, it is very rich and has high protein content; it is sufficient for the needs of the baby. The baby's first feed of colostrum is very important because it helps to protect against infections. Colostrum contains over 60 components, half of which are only found in human milk. these include: - Immunoglobulins which produce specific antibodies - High amounts of lipids, milk fats and proteins - High levels of beta carotene and other antioxidants which act as cell protectors in the infant to enhance his immune system - High concentrations of leucocytes	

	- Protective antibodies against bacteria and viruses - Helps seal the newborn's stomach and intestines, thus helping protect against infection - Colostrum is a 100% safe vaccine! - When baby is born, its stomach is only the size of a marble. That is why baby wants to feed often as she can't take much at a feed. - Colostrum is very easily digested - Colostrum has a laxative effect on a newborn, so helps baby pass first bowel motions. This is important, as it also therefore helps baby pass excess bilirubin out in the bowel motions, thus preventing jaundice. - Colostrum helps encourage optimal development of brain, heart and central nervous system as it has sodium, potassium, milk fats, chloride and cholesterol which help in the cell membrane production necessary for their growth and development - High in proteins for nutrition and to regulate blood sugar levels	
	Resource folder: **Resource NN 30** - Contents of colostrum **Resource NN 31 -** Colostrum	
	Method: a. Teacher gives lecture, referring to flipchart or poster listing active ingredients and benefits of colostrum. b. Discussion with whole class about benefits of colostrum, and midwifery practices that would help promote early and frequent colostrum for new baby.	a. Lecture b. Discussion
Objectives	**Contents and Method**	**Learning Activities**
	Topic: 2. Newborn nutrition and breastfeeding **2.4. How much breast milk does baby require in the first week**: **Content:** A baby's stomach is very small - see the pictures below:	

Size of Babies stomach Day 1 – Day 7 (La Leche League International, 2006) from http://www.llli.org/faq/colostrum.html

At the end of the lesson, students will be able to: - define the changes that breast milk undergoes in the first week of life, and during a feed; - describe newborn feeding behaviour and patterns in first days; - disucss size of baby's stomach, and how to tell if baby is getting enough breastmilk;	Seeing this demonstration of the size of the newborn's stomach helps to explain why the newborn baby only requires small amounts of breastmilk in the first days of life. Refer to texts and resources for more information on: - Feeding behaviour - Finishing the first breast - Finishing a feed - Timing and frequency of feeds - Volume of feed Previous sections of this lesson have addressed output / elimination and weight patterns which provide further reassurance about breastfeeding success. **Types of breast milk** ***Colostrum*** is the milk secreted during first the week after delivery. It is yellow, thick and contains more antibodies and white blood cells. Though secreted only in small quantities, it has higher protein content and is sufficient for the needs of the baby. ***Transitional milk*** is the milk secreted during the following two weeks. The immunoglobulin and protein contents decrease, while the fat and sugar contents increase.	

	Mature milk follows transitional milk. It is thinner and watery but contains all the nutrients essential for optimal growth of the baby. ***Fore milk*** is the milk secreted at the start of a feed. It is watery and is rich in proteins, sugar, vitamins, minerals and water and satisfies the baby's thirst. ***Hind milk*** comes later towards the end of a feed and is richer in fat content and provides more energy, and satisfies the baby's hunger. Note: For optimum growth the baby needs both fore and hind milk. Therefore, each time the baby should be allowed to empty one breast completely. The second breast should be offered only after emptying the first one or during subsequent feeding.	
	Resource folder: **Resource NN 32 -** Size of new born baby's stomach in first week **Resource NN 33** - Promoting healthy growth and development of newborn **Resource NN 34** - Nutrition in lactation **Resource NN 35 -** Nutrition in lactation and pregnancy **Resource NN 35 a -** Nutrition condition of women and children in Bangladesh **Resource NN 36 -** Counselling re rest and nutrition for mother, and infant feeding; India	
	References: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh; Section 8 Fraser, D. M. & Cooper, M. A. (2003). (Eds.). Myles text book for midwives (14th ed.). Pages 759 - 760	
	Method a. Lecture b. Discussion	a. Lecture b. Discussion

Resources used in this lesson:

Resource NN 6 - Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh

Resource NN 21 - Physiological Jaundice

Resource NN 22 - Benefits of breastfeeding

Resource NN 22a - Benefits of breastfeeding two

Resource NN 22b - Initiating breastfeeding within 1 hour

Resource NN 23 - Breastfeeding within one hour of birth can reduce infant mortality

Resource NN 24 – Infant and young child feeding, WHO Fact sheet No. 342

Resource NN 25 – Early Initiation of Breastfeeding and Exclusive Breastfeeding

Resource NN 26 – Breastfeeding position & information pictures

Resource NN 27 – Breastfeeding position & attachment, with pictures

Resource NN 28 – Positioning mother and baby for breastfeeding

Resource NN 29 - Skills check list – Breast feeding basics

Resource NN 30 - Contents of colostrum

Resource NN 31 - Colostrum

Resource NN 32 - Size of new born baby's stomach in first week

Resource NN 33 - Promoting healthy growth and development of newborn

Resource NN 34 - Nutrition in lactation

Resource NN 35 - Nutrition in lactation and pregnancy

Resource NN 35 a - Nutrition condition of women and children in Bangladesh

Resource NN 36 - Counselling re rest and nutrition for mother, and infant feeding; India

References for today's lesson:

Blackburn, S. (2007). (Ed.). Maternal, fetal and neonatal physiology: A clinical perspective (3rd ed.). London: Saunders.

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Emergency Training (ETAT) and Essential Newborn Care (ENC), Bangladesh. (2010).

Fraser, D. M. & Cooper, M. A. (2009). (Eds.). Myles text book for midwives (15th ed.). Churchill Livingstone Elsevier. London.

Henderson, C., & MacDonald, S. (Eds.). (2004). Mayes midwifery. A textbook for midwives. (13th ed.). Bailliere Tindall: London.

Integrated Management of Pregnancy and Childbirth. (2006). Pregnancy, childbirth, postpartum and newborn care (2nd ed.). Geneva: World Health Organisation.

Klossner, N. J. (2006). Introductory Maternity Nursing. USA: Lippincott Williams & Wilkins

WHO/RHT/MSM/98.3. (1998). Postpartum care of the mother and newborn; Report of a Technical Working Group. World Health Organisation. Retrieved from https://extranet.who.int/iris/restricted/handle/10665/66439

Course: Normal neonate

Day 3: Topics: Drug calculations; Initial new born examination

Concept: Midwives need to have a clear understanding of how to calculate drug dosages accurately so that they can safely administer prescribed medications and fluids. It is always important that the dosage given is correct; a miscalculation could be damaging or fatal. When working with tiny newborn babies, the risks of a miscalculation are even greater.

Examination of the new born is a very important midwifery skill; the midwife must know the characteristics of the normal newborn very thoroughly, in order that she can recognise the abnormal and refer appropriately.

	Topics: **1. Drug calculations** **2. Initial Newborn Examination**	
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - explain the formula used for calculating drug calculations; - accurately demonstrate simple drug calculations using practice scenarios;	**Topic: Drug calculations** **Content:** **1. Drug calculations** Drug therapy often requires the midwife to calculate the amount of drug required, especially when dealing with newborns. The dosage that is required may not be exactly as the dosage of the medication – the patient may require several tablets, or a certain amount of liquid medication, for example. It is always important that the dosage given is correct; but it becomes even more vital when working with newborn babies when a miscalculation could be damaging or fatal. There are standard formulas used for calculating drug dosages so that calculations are accurately made. Medication dosage calculations must be checked by	

	another midwife also calculating and ensuring that the calculation is correct. Every midwife must learn the formula and be able to calculate it accurately so that patients are given the accurate dose as prescribed. The formulas, and practice calculations are set out in the resources.	
	Resource folder: **Resource NN 37 -** Drug calculations - formula and practise calculations **Resource NN 38 -** Drug calculations - Revision	
	Method: a. Teacher to write formula on board and explain it to students. b. Teacher to demonstrate one calculation of that formula on board, explaining her working. c. Teacher gives students several practice questions to work on in pairs. d. Teacher asks a student to come up and demonstrate her working on the board; class discuss if they agree or not. Teacher gives feedback, and ensures answer is correct. e. Teacher gives examples for student to work on individually. f. Teacher gives answers. This format to be repeated, while the calculations become more complex: - begin with simple oral tablet or capsule calculation - then simple liquid - oral or injectable - medication calculation - then introduce the formula for converting between metric units; grams to milligrams; milligrams to grams; micrograms to milligrams etc. Emphasise that this must be done first, so that your calculation is done using the same units. - practice just converting metric units first - then practice calculations for oral and then liquid medications when the unit has to be converted first. - Only move on to more complex calculations when students understand those basic concepts and can	a. Explain formula b. Teacher demonstrate calculation c. Pairs work d. Student demonstration & discussion; teacher checks answers e. Individual work f. Teacher gives answers

	accurately calculate medication dosages using those formula. - More complex calculations: - dosages based on body weight (e.g. mls per kg) - introduce concept of ratio and percentage Teacher must identify students who are struggling to understand the concepts. It is vital that students understand the formula, and are not just guessing. If a student is struggling, teacher must give them individual attention, or pair them with a student who has a clear understanding and can help them learn.	
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - explain the purpose of a newborn examination; - discuss the format for a systematic examination of newborn; - explain what examiner is checking for during each part of exam;	**2. Initial Newborn Examination** (full physical assessment) **Content:** When baby is first born, the midwife quickly checks the baby for obvious malformations or birth injury. This may show some obvious issues, but cannot be considered a full examination. Within the first 24 hours after birth, every newborn baby should be fully examined – a Newborn examination. • **Purpose of Newborn examination at or shortly after birth** - To determine satisfactory transition to - extra uterine life - To determine baseline growth parameters - To detect anomalies, illness, injury (in most cases) to reassure parents This is a screening examination, and any obvious problems need to be referred. Examination of the new born is a very important midwifery skill as the midwife must know the normal	a. Questions to check students prior knowledge, and ability to think and relate knowledge

	newborn so she can recognise the abnormal and refer appropriately Before examining the baby, it is important to know the history. **Method:** a. Ask students why it is important to know the history before examining baby. What examples can they think of that would be important for the midwife to know about before she examines the baby; what difference might that make? Examples: - What is maternal health history - What is the labour history - What is the colour of the liquor - What is the gestation - How long where the membranes ruptured - What is the gestation • **Preparation** - Informed consent from parents, and preferably have parent/s present during examination. This is a good chance for health education and health promotion, - Wash hands before and after examination - Baby completely undressed and warm room - Should be completed within 10-15mins. If necessary the baby can be re-examined later. - BE SYSTEMATIC in your examination! • **Examination:** Prepare lecture based on: ▪ **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh, Section 2. ▪ Fraser, D. M. & Cooper, M. A. (2003). (Eds.). Myles text book for midwives (14th ed.) (Pages 733 – 735).	

	Resource folder: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh, Section 2 **Resource NN 39 -** Newborn Examination guide list **Resource NN 40 -** Birth trauma, newborn head, with photos **Resource NN 41 -** Some common examples of normal skin variations observed in newborns **Resource NN 42 -** Newborn Exam - abnormal findings and action	
	Web resources: Here are some newborn examination videos available on YouTube: • Newborn examination (4 minutes). American video on Observation of Newborn. It is a bit too complex in places, but is a very good example of how you can learn a lot about a newborn baby just by observing it carefully, without even touching. A midwife must be a skillful observer. Nice explanations to mother, and positive messages given. http://www.youtube.com/watch?v=kD-tJefCoo4 • Neonatal Exam part 1 (5 minutes) http://www.youtube.com/watch?v=yAWEWfwyWBo • Neonatal Exam part 2 (5 minutes) http://www.youtube.com/watch?v=lhqC5TrAOT8 • Head to toe examination of the neonate: (9 minutes). American doctor examining baby; subtitles of systems examinations. Good especially on checking reflexes http://www.youtube.com/watch?v=hW3n9seV4SY • Examination of newborn: (9 minutes). Very good explanations of what Dr is doing, and what he expects to find. Shows first checking notes for history; hand washing clearly explained before starting. (Ignore his suggestion to do rectal temperature – don't do that!) http://www.youtube.com/watch?v=_ew93pEEdMY	

	Method: a. Teacher gives lecture on the purpose of newborn examination and the principles of it. b. Teacher provides hand-out to the students on a checklist for systematic newborn examination - **Resource NN 39 -** Newborn Examination guide list. Talk through each section. c. Teacher demonstrates examination using a doll; refers to guide list to show systematic approach. d. Class watch video of a newborn examination. Teacher can pause the video and make explanations as necessary. e. Discussion and questions. May watch another video as appropriate.	a. Lecture b. Hand-out c. Teacher demonstrates d. Video e. Discussion
Resources used in this lesson: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh **Resource NN 37 -** Drug calculations - formula and practise calculations **Resource NN 38 -** Drug calculations - Revision **Resource NN 39 -** Newborn Examination guide list **Resource NN 40 -** Birth trauma, newborn head, with photos **Resource NN 41 -** Some common examples of normal skin variations observed in newborns **Resource NN 42 -** Newborn Exam - abnormal findings and action		

References for today's lesson:

Blackburn, S. (2007). (Ed.). Maternal, fetal and neonatal physiology: A clinical perspective (3rd ed.). London: Saunders.

Davies, L. & McDonald, S. (2008). Examination of the newborn - a multi-dimensional approach. Edinburgh: Churchill Livingstone.

Emergency Training (ETAT) and Essential Newborn Care (ENC), Bangladesh. (2010).

Fraser, D. M. & Cooper, M. A. (2009). (Eds.). Myles text book for midwives (15th ed.). Churchill Livingstone Elsevier. London.

Henderson, C., & MacDonald, S. (Eds.). (2004). Mayes midwifery. A textbook for midwives. (13th ed.). Bailliere Tindall: London.

Integrated Management of Pregnancy and Childbirth. (2006). Pregnancy, childbirth, postpartum and newborn care (2nd ed.). Geneva: World Health Organisation.

Klossner, N. J. (2006). Introductory Maternity Nursing. USA: Lippincott Williams & Wilkins

WHO/RHT/MSM/98.3. (1998). Postpartum care of the mother and newborn; Report of a Technical Working Group. World Health Organisation. Retrieved from https://extranet.who.int/iris/restricted/handle/10665/66439

Course: Normal neonate

Day 4: Topics: Practice Skills: Initial Newborn Examination; Drug calculations

Concept: Midwives need to have a clear understanding of how to calculate drug dosages accurately so that they can safely administer prescribed medications and fluids. It is always important that the dosage given is correct; a miscalculation could be damaging or fatal. When working with tiny newborn babies, the risks of a miscalculation are even greater.
Examination of the new born is a very important midwifery skill as the midwife must know the normal newborn so that she can recognise the abnormal, and refer appropriately.

	Topics: **1. Practical skills: Initial Newborn Examination** **2. Practical skills: Drug calculations**	
Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - demonstrate competent beginner skills at examining a newborn;	**1. Practical skills: Initial Newborn Examination** **Content:** As per day 3 lesson plan. **Preparation:** - Gather equipment - Have as many models as possible - Teacher prepare a set of maternity notes for the 'baby' to be examined - Midwife/maternity page as used locally for documenting details of the examination – copy for each student - Students to bring their copy of the hand-out **Resource NN 39 -** Newborn Examination guide list	
	Resource folder: **Resource NN 6 -** Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh, Section 2 **Resource NN 39 -** Newborn Examination guide list	

	Method: a. Review the theory of how to perform initial newborn examination from day 3 lesson, by asking questions. b. Review more detailed specific technical skills such as checking red eye reflex, listening to heart and lungs, hip check. c. Begin the examination practice by having students 'teach' the teacher what to do, with explanations of how to do each aspect. d. Students to work in small groups around each model. One student to act as the mother; one as the midwife doing the examination; others to observe and to give reminders only if required. At the end, the group members give feedback. Each student take a turn to practice full newborn examination, explaining everything as they do it – speak aloud: - review the notes to determine important history; - give information and gain parent's consent; - gather equipment; - wash hands; - observe; - examine; - report findings to parents, and state what you will do if anything prompts a referral; - document findings. e. Class discussion Teacher to circulate and observe, give feedback, and assist as required. If appropriate, review video resource again.	a. Review of theory and purpose b. Review of specific techniques c. Students teach d. Small group work – each student takes a turn to do practical skill / observe and give feedback e. Class discussion

Objectives	Contents and Method	Learning Activities
At the end of the lesson, students will be able to: - accurately and correctly complete a quiz on drug calculations;	**2. Practical skills - Drug calculations** **Content:** As per day 3 lesson plan. **Preparation:** - Teacher has prepared a paper with a quiz of scenarios for drug calculations. - It should include at least 5 questions in each category as practiced yesterday. - Ensure the drugs used are ones the students may use in clinical placements locally.	
	Resource folder: **Resource NN 37 -** Drug calculations - formula and practise calculations **Resource NN 38 -** Drug calculations - Revision	
	Method: a. Review theory and formula from day 3 lesson plan. Opportunity for questions. **Drug calculations Practise Quiz** b. Students receive drug calculation quiz; to complete individually. c. Students swap papers with another student, and mark another student's paper. Teacher calls out answers. If any are not answered correctly, or many students found them difficult, teacher note down that question's number, to review it later. d. Review any difficult or tricky questions: either the teacher demonstrates it on the blackboard, and talks through what she is doing; or teacher asks a student to do	a. Review and questions b. Individual work c. Mark the quiz d. Review any questions which were difficult

	so. e. Class discussion. **Note**: This is a **practice** today, not an assessment. But it is important that all students can successfully do these calculations. Therefore teacher must identify: - if there are any questions / calculation which many students did not get right, then review that type of question and the formula, with the whole class; - if most students got the question correct, and just one or a few students are struggling, then that student needs some individual attention and support. - Teacher should spend time with that student/s if possible. If teacher does not have time, she should identify a named student who is doing very well with drug calculations, and appoint her to do some mentoring and tutoring with the struggling student.	d. Discussion

Resources used in this lesson:

Resource NN 6 - Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh

Resource NN 37 - Drug calculations - formula and practise calculations

Resource NN 38 - Drug calculations - Revision

Resource NN 39 - Newborn Examination guide list

Course: Normal neonate

Day 5: Topic: Neonatal resuscitation

Concept: Midwives in Bangladesh must be competent, confident and safe when carrying out resuscitation of the newborn. This skill is essential to ensuring the wellbeing and survival of babies in Bangladesh. It is a necessary step for Bangladesh to achieve Millennium Development Goal 4 – Reduce Child Mortality rates. .

Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - identify the newborn who needs resuscitation; - explain the theory of NNR; - explain the steps in the flowchart of NNR; - explain how the midwife's assessments of newborn will guide the NNR actions to be done;	**Topic: Neonatal Resuscitation (NNR)** **Content:** Approximately 10% of newborns will require some assistance to begin breathing at birth; about 1% will need extensive resuscitation measures to survive. **Note:** The manual **(Resource NN 6 -** Emergency Training (ETAT) and Essential Newborn Care (ENC), Bangladesh, 2010, Section 1**)** is the main resource for this lesson and course • The material for teaching of this topic comes from **NN Resource** 6 - Emergency Training (ETAT) and Essential Newborn Care (ENC), Bangladesh, 2010, Section 1; and • Fraser, D. M. & Cooper, M. A. (2003). (Eds.). Myles text book for midwives (14th ed.); Pages 719 - 723. **Teacher to prepare a lecture using these and other resources listed below.** **Include:** - Before every birth, what NNR preparation should be done - 'First steps' of NNR for all babies - dry, stimulate, assess - At birth, how do you determine whether the baby requires resuscitation – respirations - heart rate - colour	

	- Process of NNR – the A B C - Flow chart – from **Resource NN 6** - Calling for help - Position of baby - Warmth (review the Energy Triangle from Day 1) - Equipment – ventilation bag and mask - Skills - ventilation - Rate and speed - Problem solving - Skills – assessment - Indicators - Skills – chest compression - Techniques, placement, speed, rate - Decisions - Oxygen - Suction - Care after resuscitation	
	Resource folder: **Resource NN 6 –** Emergency Training (ETAT) and Essential Newborn Care, Bangladesh, 2010 **Resource NN 43 -** Neonatal resuscitation **Resource NN 44 -** NNR Flowchart **Resource NN 45** – EmOC Manual – NNR (21) **Resource NN 46** – Practical skill NNR scenarios	
	Web resources: • 8 minute video from UK; Student Midwives learn and discuss NNR. Good because it explains things very clearly; teacher asks the students questions. Simulates normal environment, baby kept warm, etc. https://www.youtube.com/watch?v=TWaZBcjmxu8 • 12 minute video of Indian Medical Students Association; Useful as he explains things, demonstrates equipment etc. https://www.youtube.com/watch?v=fpn_eiytBeE	

	• 2 ½ minute video of NNR - Dr is given a scenario and decides what to do, then demonstrates that. Baby model is uncovered on an open surface, so would get cold; teacher must explain to students why that is not good. https://www.youtube.com/watch?v=tPx65NvPGE0	
	Method: a. Teacher gives a lecture. b. Teacher show and demonstrate NNR equipment. c. Give students a hand-out of **Resource NN 44** - NNR Flowchart. d. Teacher 'step through' the flow chart, and slowly demonstrate each step. e. Discussion – all through, teacher to go slowly, and allow plenty of time for questions and discussion. f. If time permits, some students do a practice, with fellow students guiding them from the flowchart. (all students will do in Day 6 practical skills session). g. Teacher asks questions to check students understanding.	a. Lecture b. Teacher shows and demonstrates equipment c. Hand-out d. Teacher explains and demonstrated skills e. Discussion f. Student practice g. Questions

Resources used in this lesson:

Resource NN 6 - Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh

Resource NN 43 - Neonatal resuscitation

Resource NN 44 - NNR Flowchart

Resource NN 45 - EmOC Manual - newborn resuscitation (21)

Resource NN 46 - Practical skill Newborn Resuscitation scenarios

Course: Normal neonate

Day 6: Topic: Practice Skill - Neonatal resuscitation

Concept: Midwives in Bangladesh must be competent, confident and safe when carrying out resuscitation of the newborn. This skill is essential to ensuring the wellbeing and survival of babies in Bangladesh. It is a necessary step for Bangladesh to achieve Millennium Development Goal 4 – Reduce Child Mortality rates.

Objectives	Contents and Method	Learning Activities
At the end of the lesson, students will be able to: - identify the newborn who needs resuscitation; - discuss the theory of NNR; - explain the steps in the flowchart of NNR; - explain what assessments they will do; - demonstrate beginner level of deciding what NNR actions to do based on results of	**Topic: Practice Skill - Neonatal Resuscitation (NNR)** **Content:** As per day 5 lesson plan. Today is a chance to review that theory, explore using the equipment, and perform the practical skills in a simulated environment. **Preparation:** - Gather equipment - Have as many models as possible, and set up a NNR station per model - Teacher prepare a set of maternity notes for the 'baby' to be resuscitated - Midwife/maternity page as used locally for documenting details of the resuscitation – copy for each student - Students to bring their copy of the hand-out **Resource NN 44** - NNR Flowchart - Prepared NNR scenarios written for students to follow; there are 4 scenarios prepared in **Resource NN 46** – Practical skill NNR scenarios. Teacher could prepare some more also, if required. **Resource folder:** **Resource NN 6 –** Emergency Training (ETAT) and Essential Newborn Care, Bangladesh, 2010	

assessments; - demonstrate beginner skills in performing practical NNR;	**Resource NN 43** - Neonatal resuscitation **Resource NN 44** - NNR Flowchart **Resource NN 45** – EmOC Manual – NNR (21) **Resource NN 46** – Practical skill NNR scenarios	
	Web resources: • 8 minute video from UK; Student Midwives learn and discuss NNR:. Good because it explains things very clearly; teacher asks the students questions. Simulates normal environment, baby kept warm, etc. https://www.youtube.com/watch?v=TWaZBcjmxu8 • 12 minute video of Indian Medical Students Association; Useful as he explains things, demonstrates equipment etc. https://www.youtube.com/watch?v=fpn_eiytBeE • 2 ½ minute video of NNR - Dr is given a scenario and decides what to do, then demonstrates it. Baby model is uncovered on an open surface. https://www.youtube.com/watch?v=tPx65NvPGE0	
	Method: a. Teacher ask questions to review the theory of: - What preparation for NNR to do before every birth; - 'First steps' of NNR for all babies - dry, stimulate, assess; - At birth, how you determine whether the baby requires resuscitation (respirations - heart rate – colour) - Process of NNR (A B C) - Flow chart - Calling for help - Position of baby - Warmth (review the Energy Triangle from Day 1) b. Teacher to review the flow chart, with students having their own copy. c. Review the equipment, and have students become comfortable and familiar with the ventilation bag and mask d. Students divide into small groups for practical work; one	a. Lecture b. Teacher shows and demonstrates equipment c. Hand-out d. Teacher explains and demonstrated skills e. Discussion f. Student practice g. Questions

	group to work at NNR station together. Have as many work stations as possible, with a teacher at each work station. e. Each student practices full newborn resuscitation. Each student to practice: • First steps • Ventilation using bag and mask • Ventilation with another student doing chest compressions • Chest compressions f. When all students have practiced all the skills, have a class discussion for students to express how they are feeling, any questions or concerns. Teacher to clarify or explain anything as needed. g. Again in small groups, students to practice NNR scenarios (4 scenarios are given in **Resource NN 46** – Practical skill NNR scenarios). It is important that students can correctly perform NNR skills such as ventilation and chest compressions. However it is important that they then learn WHY and WHEN to perform each skill – and when to stop doing them. This means students have to learn to assess the newborn and make a decision based on the results of that assessment. When a student can learn to do that, to 'think on her feet' then she will be able to perform NNR in real life. Using scenarios makes the students begin to 'think on their feet'. Teacher/s to be at each work station to observe, give feedback, guide and assist as required. If there are not enough work stations, students who are waiting to perform practical skills could watch NNR video resources.	

	At the end of the day, again have a group debrief and discussion.	

Resources used in this lesson:

Resource NN 6 - Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh

Resource NN 43 - Neonatal resuscitation

Resource NN 44 - NNR Flowchart

Resource NN 45 - EmOC Manual - newborn resuscitation (21)

Resource NN 46 - Practical skill Newborn Resuscitation scenarios

Course: Normal neonate

Day 7: Topic: Growth and development of normal neonate

Concept: The midwife needs to understand the normal growth and development of a normal newborn baby in the early postpartum time, so that she is able to detect any variations from normal that may require care or referral. The postpartum time is usually a happy one for a family; and is often neglected by maternity health professionals. But the time after birth is a critical time for the health of both mother and baby. If a problem arises in the newborn and it remains untreated, ill-health or death can be the result.

Objectives	**Contents and Method**	**Learning Activities**
At the end of the lesson, students will be able to: - discuss normal newborn behaviour, and expected growth and development; - give advice about danger signs which mother should seek immediate help for baby;	**Topic: Growth and development of normal neonate** Ongoing assessment of the new born baby, including behaviour patterns, growth and development assessment, physical examination of baby including all body systems. **Content:** **Key areas of normal newborn development in the first month of life:** • **Physical development:** Newborn babies gain about 20 grams a day in the first month. They grow about 2.5 cm to 4 cm in length in the first month. • **Cognitive development:** Newborn thinking begins with simple inborn responses to needs. • **Language development:** A newborn listens to the sounds, patterns, and rhythms of language, which lay the foundation for speech development. • **Emotional and social development:** A newborn immediately initiates interaction with his mother for example, by moving his/her arms and legs, and expresses himself.	

	• **Sensory and motor development:** The five senses, reflexes, and nervous system all play a role in how a newborn acts and reacts to the world around them. Sight: by or before 6 weeks, baby – closes their eyes at a bright light; stares at people's faces when they are close; turns towards light; smiles at parents. Hearing: by or before 6 weeks, baby reacts if there is a sudden loud noise - startles or blinks, stirs in his sleep, looks up or cries, stops suckling for a moment. • **Sleeping and eating patterns:** Newborn babies seem to always be either asleep or feeding! But although babies usually sleep 18 to 20 hours a day in the first weeks, this can vary. From about 3 weeks of age, baby begins to socialize more. Encourage family to pay attention to baby's cues. Baby does begin to show their individual needs and preferences. • **Crying.** Newborn babies cry when they are hungry, tired, overstimulated, or otherwise uncomfortable. They may also cry for no apparent reason and be difficult to console. **Growth and development of normal neonate** Because of the baby's physiological limitations, the baby is dependent on his mother for his continued survival, growth and development. These will progress satisfactorily only if he is physiologically and neurologically normal; in a safe environment, with his nutritional needs met, and his psychological development promoted by appropriate stimulation and loving care. Abnormality of the infant's body systems, inadequate nutrition or emotional deprivation will compromise the baby's ability to grow and develop to his full potential. His relatively immature organ functions and his vulnerability to infection and hypothermia demand that his care must be designed to meet his needs and	

	capabilities. (Bennett & Brown, 1993). **Advise family when to return next with baby:** When the mother and normal neonate leave the health facility after birth, they should be advised to have another postnatal visit within the first week, preferably within 2 to 3 days and again at 7 days. **Baby should have another full newborn examination at the end of the first week of life to:** - check that nothing was missed or has changed since the first examination - ensure that baby's respiratory and cardiovascular system has successfully transitioned to external life - check colour and for signs of jaundice that may need monitoring or treating - check that breastfeeding has established successfully and that baby is well nourished - check that cord is clean, dry, and starting to separate - check for any signs of illness - health education **Review from previous lessons:** - normal breastfeeding behaviour - normal elimination and weight patterns - physiological jaundice and colour **At 6 weeks of age:** Baby should have immunisation visit and a postnatal check, including full newborn examination **Follow up care** Ideally baby should be seen and assessed by a health worker weekly for the first month, then monthly for 3 months, then 3 monthly till 1 year. **Advise the mother to seek care for baby immediately if baby has any danger signs:** For signs see **Resource NN 48** – 'Advise when to return with baby'; IMPAC manual K14	

	Resource folder: **Resource NN 6 –** Emergency Training (ETAT) and Essential Newborn Care, Bangladesh, 2010 **Resource NN 47** - Checklist for Newborn Care TABC FM FM CF **Resource NN 48** - Advise when to return with baby; IMPAC K14	
	Method: a. Teacher ask students what they know of normal growth and development of a healthy newborn. b. Teacher give lecture. c. Discussion. Ensure that students are clear about danger signs which mean the family should seek immediate help for baby.	a. Questions b. Lecture c. Discussion
Resources used for this lesson: **Resource NN 6 –** Emergency Training (ETAT) and Essential Newborn Care, Bangladesh, 2010 **Resource NN 47** - Checklist for Newborn Care TABC FM FM CF **Resource NN 48** - Advise when to return with baby; IMPAC K14		

References for today's lesson:

Davies, L. & McDonald, S. (2008). Examination of the newborn - a multi-dimensional approach. Edinburgh: Churchill Livingstone.

Emergency Training (ETAT) and Essential Newborn Care (ENC), Bangladesh. (2010).

Fraser, D. M. & Cooper, M. A. (2009). (Eds.). Myles text book for midwives (15th ed.). Churchill Livingstone Elsevier. London.

Henderson, C., & MacDonald, S. (Eds.). (2004). Mayes midwifery. A textbook for midwives. (13th ed.). Bailliere Tindall: London.

Integrated Management of Pregnancy and Childbirth. (2006). Pregnancy, childbirth, postpartum and newborn care (2nd ed.). Geneva: World Health Organisation.

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WHO/RHT/MSM/98.3. (1998). Postpartum care of the mother and newborn; Report of a Technical Working Group. World Health Organisation. Retrieved from https://extranet.who.int/iris/restricted/handle/10665/66439

Table of Resources for Normal Neonate (NN)

Resource No.	Title of Resource
NN 1	Trends of Neonatal Mortality
NN 2	Maternal & Neonatal Health, Unicef
NN 3	Country Health Profile - WHO Bangladesh
NN 4	Bangladesh - Basic health statistics, Unicef
NN 5	Bangladesh Demographic and Health Survey 2011
NN 6	Emergency Training **(**ETAT) & Essential Newborn Care, Bangladesh
NN 7	Association of Apgar scores with death & neurological disability
NN 8	Postpartum Care of mother and newborn, WHO manual
NN 9	EmOC Manual, Immediate care of the newborn at birth (20)
NN 10	Newborn Energy triangle
NN 11	Skin to skin treatment of Hypothermia.pdf
NN 12	Early skin to skin contact, WHO RHL
NN 13	Skin to skin contact - La Leche League
NN 14	Six reasons to be skin to skin with baby after birth
NN 15	The Importance of Skin to Skin Contact
NN 15 a	Kangaroo Mother Care.ppt
NN 15 b	WHO - Practical guide to Kangaroo Mother Care.pdf
NN 15 c	Kangaroo Mother Care report BD 2003.pdf
NN 15 d	KMC Implementation Guide, MCHIP.pdf
NN 15 e	Kangaroo Mother Care in Matlab.pdf
NN 16	Early parent-baby relationships - bonding
NN 17	Bonding and why it's important
NN 18	Bonding and attachment in babies and young children
NN 19	Attachment theory
NN 20	What is bonding - advice for parents
NN 21	Physiological Jaundice
NN 22	Benefits of breastfeeding

NN 22a	Benefits of breastfeeding two
NN 22b	Initiating breastfeeding within 1 hour
NN 23	Breastfeeding within one hour of birth can reduce infant mortality
NN 24	Infant and young child feeding, WHO Fact sheet No. 342
NN 25	Early Initiation of Breastfeeding and Exclusive Breastfeeding
NN 26	Breastfeeding position & information
NN 27	Breastfeeding position & attachment, with pictures
NN 28	Positioning mother and baby for breastfeeding
NN 29	Skills check list – Breast feeding basics
NN 30	Contents of colostrum
NN 31	Colostrum
NN 32	Size of new born baby's stomach in first week
NN 33	Promoting healthy growth and development of newborn
NN 34	Nutrition in lactation
NN 35	Nutrition in lactation and pregnancy
NN 35a	Nutrition condition of women and children in Bangladesh
NN 36	Counselling re rest and nutrition for mother, and infant feeding; India
NN 37	Drug calculations - formula and practise calcs.
NN 38	Drug calculations - Revision
NN 39	Newborn Examination guide list
NN 40	Birth trauma, newborn head, with photos
NN 41	Some common examples of normal skin variations in newborns
NN 42	Newborn Exam - abnormal findings and action
NN 43	Neonatal resuscitation
NN 44	NNR Flowchart
NN 45	EmOC Manual - newborn resuscitation (21)
NN 46	Practical skill Newborn Resuscitation scenarios
NN 47	Checklist for Newborn Care TABC FM CF
NN 48	Advise when to return with baby; IMPAC K14