

## New Born Physiology New Born Care

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**New Born or Neonatal Period** it is a period from birth during first 28 days



Two thirds of all deaths that occur during the first year of life occur in the neonatal period



### **Nursing assessment of a newborn or neonate**

- Review of the mother's pregnancy history
- Physical examination of a infant
- Analysis of laboratory reports such as hematocrit and blood type
- Assessment of parent-child interaction for the beginning of bonding

### **Newborn Measures**



### **Head Circumference 34 to 35 cm**



**Chest Circumference 32 to 33 cm**



**Length 46 to 54 cm**



**Weight 2.5 to 3.4 kg**



**Infant Breast Feeds Minimum of a 10 minutes every 3 hours**



**Weight Of The Newborn**



**Weight Of The Newborn should be not less then 2.5 kg and not more then 4.4 kg**



A newborn loses 5 % to 10 % of birth weight during the first few days after birth  
 A breast feed newborn recaptures birth weight within 10 days, a formula fed infant – 7 days  
 The 75 % to 90 % of new born weight is fluid

Ages of newborn	Weight plus in gram		Length plus in cm	
	For 1 month	For all term	For 1 month	For all term
1	600	600	3	3
2	800	1400	3	6
3	800	2200	2.5	8.5
4	750	2950	2.5	11
5	700	3650	2	13
6	650	4300	2	15
7	600	4900	2	17
8	550	5450	2	19
9	500	5950	1.5	20.5
10	450	6400	1.5	22
11	400	6800	1.5	23.5
12	350	7150	1.5	25

### Temperature of newborn is 37.2 C (99 F)

But the temperature falls almost immediately to below normal because the heat loss

The room temperature of birth room should be 21 – 22 C (68 – 72 F)

Newborns can conserve heat by constricting blood vessels and moving blood away from the skin. Brown fat a special tissue found in mature newborns, apparently helps to conserve or produce body heat by increasing metabolism

### Ways to lose the heat by newborn

- Convection is the flow of heat from the newborn's body surface to cooler surrounding air (windows or air condition)
- Conduction is the transfer of body heat to a cooler solid object in contact with a baby (baby placed in cold counter)
- Radiation is the transfer of body heat to a cooler solid object not in contact with a baby
- Evaporation is loss of heat through conversion of a liquid to a vapor

The head a large surface area in a newborn, can be responsible for a great amount of heat loss



Kangaroo care is a best one way to transfer heat from mother to a newborn



**All the uncovered procedures on newborn should be done under radiant. If chilling is prevented, a newborn's temperature stabilizes at 37 C (98.6 F) during 4 hours after birth. If the temperature did not stabilize shortly after birth, it can show to bacterial infection**

The pulse rate of fetus is 120 – 160 bpm. During and immediately after delivery it can jump up to 180 bpm. During 1 hour after birth it stabilizes at 120 – 140 bpm. When the newborn sleep his\her pulse rate can decrease till 90 to 110 bpm, but when the child crying the pulse rate increasing till 180 bpm

**Where we will palpate the pulse rate in newborn?**



**Better to palpate femoral pulse rate, than temporal and radial**



## **Respiration**

Respiration in the first minutes of life can be as high as 80 breaths per minute, after it settles to an average of 30 to 60 breaths per minute. The respiratory breathing irregular sometimes coming with apnea (without cyanosis)

**How we will calculate the respiratory in newborn?**



The respiratory rate counting by observing newborns abdomen movements or with stethoscope. Short period of crying can be beneficial to a newborn, but not the long one, which makes infant exhausted

**Blood pressure of newborn is 80\46 mm Hg at the birth. In ten days it rise to about 100\50 mm Hg**



**In the newborn during first several days the acrocyanosis is normal**



**Blood values in newborn's is 80 to 110 ml per kilo, around 300 ml total**



The erythrocyte in newborn is 6 million cells per cubic millimeter, Hemoglobin level – 17 to 18 g\100 ml of blood, Hematocrit is between 45 % and 50 %



### **Blood Coagulation In Newborn**

- The newborn birth with low level of vit K
- Vitamin K synthesized in the intestine flora
- Because the intestine of newborn is sterile, newborn immediately after birth needs IM Vitamin K
- Vitamin K will start to produce in intestine after 24 hours

## What is the function of vitamin K?



**Vitamin K is necessary for the formation of factor II, factor VII, factor IX and factor X**

## Respiratory System

- All newborns have some fluid in their lungs from intrauterine life
- About a third of this fluid is forced out of the lungs by the pressure of vaginal birth
- Additional fluid is quickly absorbed by lung blood vessels and lymphatics after the first breath

## Gastrointestinal system

- First stool as usually passed after 24 hours after birth
- **Meconium** – sticky, tarlike, blackish-green, odorless material formed from mucus, vernix, lanugo, hormones and carbohydrates
- **Transition stool** – in second or third day of life stool becoming green and loose
- On the fourth day of life breast-feed baby's stool became yellow with sweet smell 3-4 times a day
- The formula feeding baby's on fourth day stool 2-3 times a day bright yellow and more odor than stool of breast-feeding babies

The newborn's which under phototherapy lights stool has bright green color coz the increased bilirubin excretion



## Urinary System

- The average newborn voids within 24 hours after birth (if newborn taking enough fluid)
- The boys should voids with a small projected arc
- The urine as usually light color and odorless
- Voiding is 15 ml
- First 1 or 2 days is about 30 to 60 ml total
- By week 1, total daily volume rises to about 300 ml
- **The first voiding can be pink** coz uric acid crystals
- Small amount of protein can be in urine for first days

## Immune System

- During first 2 months newborns have difficulty forming antibodies, are prone to infection
- The most part of immunizations against childhood disease not given before 2 month
- Administered hepatitis B vaccine during the first 12 hours after birth

## Newborn Reflexes



## Blink Reflex



## Sucking Reflex (till 6 month)



## Rooting Reflex



## Palmar Grasp Reflex (till 3 month)



**Step (Walk)- in- Place Reflex (till 3 month)**



**Plantar Grasp Reflex (till 8-9 month)**



**Tonic Neck Reflex**



**Moro Reflex (till 8 month)**



**Babinski Reflex**





- A fetus is able to hear in utero even before birth
- Newborn can see before the birth light and darkness, after birth they cannot follow past the midline of vision
- From the birth the infant can taste difference
- Smell present

**First period of reactivity – first 30 min**  
**Resting period – 90 min (the baby as usually sleeping)**  
**The second period of reactivity – 2 – 6 hours after birth (baby wakes again and started interested in surrounding)**

### Color of the skin of newborn



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- Exist ruddy complexion coz increased concentration of red blood cells
- Hands, lips and feet have a cyanosis
- On the second or third day of life physiologic jaundice can be appears (like result of breakdown of fetal red blood cells). Feeding of newborns helping to evacuating the bowels, which decreasing level of jaundice. Jaundice starting usually from head and spreading to the rest of the body (above normal bilirubin level is dangerous for brain cell, it can cause it s permanent damage)



### Hemangiomas

Hemangiomas are vascular tumors on the skin

Types of hemangiomas:

- Nevus flammeus
- Strawberry hemangiomas
- Cavernous hemangioma
- Mongolian spots



### Vernix Caseosa

Lanugo – is the fine, downy hair that covers a newborn’s shoulders. Late birth babies has more lanugo

Within 24 hours after birth the skin of most newborns has become extremely dry

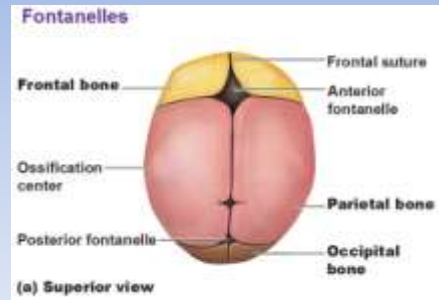
Milia – by 2-4 weeks of age sebaceous glands mature and drain. Teach parents to not squeezing the papules

### Erythema Toxicum (no treatment needed)

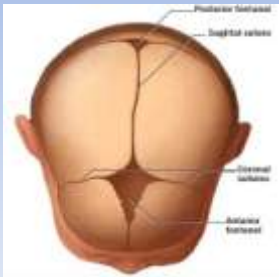
### Forceps Marks (disappears in 1-2 days)



### Fontanelles (anterior – 3 -4 and 2-3 cm, posterior 1 cm)



### Sutures (closing while 48 hours and should not be never while opened)



### Cephalohematoma (disappeared during 3 – 8 weeks)



### Molding



### Craniotabes – is localized softening of cranial bones



## Newborn's eyes

- Pressure during the birth can cause small subconjunctival hemorrhage
- The infant during first three months usually crying **tearlessly** (lacrimal duct do not fully mature)
- Edema around eyes as usually present during first 2-3 days (coz kidney capable not enough)

## Nose and Mouth

- Nose is always big
- Mouth is always opens while baby crying and opens symmetrical
- In the mouth of newborn as usually can be present candida infection

## Chest and Abdomen of newborn

- Till the 2 years the head of infant bigger than chest
- The breast of newborn can secrete fluid (witch's milk), because influence of mother hormones
- The alveols opens during 24 – 48 hours (in auscultation hearing sound of air passing the mucus)
- Bowel sounds should be present 1 hour after birth
- Liver and spleen palpable 1 to 2 cm below the costal margin

## The Umbilical Cord

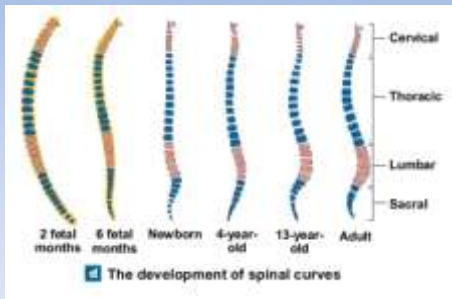


- Be sure that the umbilical cord was clamped good
- After first hours it will start to dry and by the second or third day it has turned black
- By 6 – 10 day it will fall of
- It s need to clean 2 times a day with the alcohol solution

## Androgenital Area

- In boys all two testes should be present in scrotum
- The vulva in girls can be swollen coz the maternal hormones
- Pseudomenstruation (some girls have a mucus vaginal secretion with blood)

## Back, arms and legs



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## Apgar Scoring

At 1 minute and 5 minutes after birth newborns are observed and rated according to an Apgar score. Less than 4 – serious danger and need immediate help, 4 – 6 means baby condition guarded and maybe need additional cleaning of the airways, 7 – 10 – considered good

## Apgar Scoring System

Indicator	0 Points	1 Point	2 Points
<b>A</b> Activity (muscle tone)	Absent	Flexed arms and legs	Active
<b>P</b> Pulse	Absent	Below 100 bpm	Over 100 bpm
<b>G</b> Grimace (reflex irritability)	Floppy	Minimal response to stimulation	Prompt response to stimulation
<b>A</b> Appearance (skin color)	Blue; pale	Pink body, Blue extremities	Pink
<b>R</b> Respiration	Absent	Slow and irregular	Vigorous cry

## Respiratory Evaluation

Using to estimate respiratory distress in newborn. Total score 0 indicated no respiratory distress, 4 – 6 – moderate distress, 7 – 10 – severe distress

## Do not forget about identification band





### Newborn's Foot Print



### Initial feeding and Bathing

The breast feed baby can be feed immediately after birth, that one who taking formula – 2 – 4 hours after birth

The babies from HIV positive mothers need to be washed immediately after birth

It s recommended to not full wash a baby before the umbilicus cord will fall down

### Sleeping Position for newborn



### Sleeping Position for newborn (on the back without pillow)



The All Newborn should be vaccinate for hepatitis B and taken the injection of vitamin K



**Thank You For Yours Attention**

