



# Evaluating the Newborn

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# Evaluating the Newborn



## Objectives :

By the end of this presentation you should be able to:

1. Mention the sources of newborns' medical history
2. Mention the important points in the history
3. Recall the timing of newborn physical examination
4. Explain the advantage of each physical exam encounter

# Evaluating the Newborn



## Objectives :

By the end of this presentation you should be able to:

1. Calculate Apgar score
2. Explain the advantage of Apgar score
3. Illustrate the peculiarities of newborns' exam

# Obtaining the history



Sources:

1. The parents
2. The obstetrician or family physician
3. The mother's antenatal health record
4. The mother's hospital chart



**TABLE 4-1** SIGNIFICANT ISSUES TO ASK ABOUT WHEN TAKING THE HISTORY FOR A NEWBORN

Mother's past pregnancies and their outcome	No. of pregnancies Stillbirths Abortions Neonatal deaths Cesarean sections Specific concerns that parents may have about current pregnancy because of past experiences
Preexisting systemic illness in mother and maternal medications	Hypertension Depression Diabetes Seizure disorder Thyroid disease Cardiac disease Metabolic disorder (phenylketonuria)
Genetic history	History of inherited disorders Consanguinity Unexplained neonatal deaths in the family
History of current pregnancy	Date of last menstrual period Use of assisted reproductive technologies or fertility treatments Estimated date of conception by dates (and by ultrasonography if early ultrasonogram [9–13 weeks] available) Results of ultrasonography, amniocentesis, cordocentesis, chorionic villus sampling Pregnancy-induced hypertension, gestational diabetes Note maternal weight gain and blood pressure, fetal growth, blood type History of alcohol use, drug use (prescribed or illicit), cigarette use Group B <i>Streptococcus</i> status (if known) History of maternal surgery during pregnancy Concerns about placenta (e.g., placenta previa or thickening) Use of magnesium sulfate, betamethasone
Current labor and delivery	Induced or spontaneous labor (if induced, why?) Time of rupture of membranes and quality of amniotic fluid (bloody, meconium-stained) Length of second stage Use of medications (analgesics and time prior to delivery) Intrapartum fever and antibiotics History of fetal distress Presentation (vertex, breech, transverse) Vaginal or cesarean delivery (if cesarean, why?) Use of forceps or vacuum extraction
Adaptation to extrauterine life	Apgar scores Resuscitation needed? If so, what and for how long? Need for naloxone

# Approach to physical examination



#172060764

# Approach to physical examination



- Who?

You!!!....yes you!! ( Experienced health care professional)

- What?

You !!!.....yes you!!

Stethoscope

Weighing scale

Measuring tape

Pulse oximetry

- How ? You will learn it during peds rotation



# Approach to physical examination: When ??



**Serial exams are needed**





# Approach to physical examination: When & Why ?



## First exam

### ***When ?***

at birth in the delivery room

### ***Why ?***

1. Assess for the presence of major and minor anomalies
2. Assess stage of maturity ( gestational age)
3. Determine how the baby is handling the transition from intrauterine to extra uterine life



# Delivery room exam: Apgar score



## Apgar score inventor

## Dr Virginia Apgar

**Virginia Apgar** (June 7, 1909 – August 7, 1974) was an American obstetrical anesthesiologist



# Apgar score



**TABLE 4-2** PARAMETERS OF EVALUATION USING THE APGAR SCORE

<b>Sign</b>	<b>0 Points</b>	<b>1 Point</b>	<b>2 Points</b>
Heart rate (beats/min)	Absent	Slow (<100)	>100
Respiratory effort (breaths/min)	Absent	Slow and irregular	Good, crying
Muscle tone	Flaccid	Some flexion of extremities	Active motion
Reflex irritability	No response	Grimace	Vigorous cry
Color	Pale	Cyanotic	Completely pink

# Apgar score



- *Aims to*
  1. Ensures a careful evaluation of the newborn
  2. Helps to assess for the presence and level of CNS depression
  3. It is a score of the newborn's condition at the first and fifth minute
  4. If the score is  $< 7$  at the fifth minute we keep scoring 5 minutes , usually not beyond 20 minutes

(semi-quantitative method of recording recovery)



# Apgar score



- Should not be used to guide resuscitation
- Calculated retrospectively
- Should not be used alone to define asphyxia
- Low Apgar score & neurologic abnormality later in infancy is not reliable



# Apgar score



- Premature infants score less
- Similar Apgar scores does not mean similar conditions

Pay attention to individual parameters



# The second exam: When & why & Where ?



## ***When ?***

within the first 12 hours

## ***Why?***

1. Identify congenital malformation
2. Adaptation to extra uterine life
3. Prenatally and Perinatally acquired illnesses

## ***Where ?***

In the mother's room:

More history details

Answer questions on the spot

Discuss normal variations /abnormalities

Educational



# ***Third exam: When, why & where ?***



## ***When ?***

within the first week of life

## ***Why ?***

1. Discover postnatally acquired problems  
(infection, severe jaundice)
2. Malformations: Cardiac (*why*)
3. Neonatal screening

## ***Where ?***

In the hospital unless early discharge  
( < 72 hours )





# Neonatal physical examination : Peculiarities




- No cooperation
- Can not examine in a systemic cephalocaudal

Baby control exam's flow !



# Neonatal physical examination : Peculiarities



- Findings are dynamic in a short period of time
- Normal finding might make the parents anxious
- Normal P/E  Normal newborn

# Observing the baby



- Exam environment : warm, well-illuminated
- Undress the baby gently , leave the diaper till the end
- Start your exam while the baby is held by parents
- Examine the baby ~2 hours post feed if possible
- Observe observe observe

**You Can Learn A Lot  
Just By Observing!**



# Questions while observing ??



- Does the baby look normal or abnormal ?
- Do the body proportions appear normal ?
- Are there any obvious deformities , or unusual appearance (look at the parents) ?
- Is the baby distressed or resting comfortably ?
- What color is the baby's skin, any cutaneous lesions ?

# Neurological examination by observation



- Judging the baby's level of alertness  
normal pattern ?
- Observing spontaneous movement/posture  
limbs are moving spontaneously  
above the exam surface  
then ?

# Neurological examination by observation



- Listening to the baby's cry

Needs experience (high/low pitched , repetitive inconsolable ,hoarseness, catlike cry.....

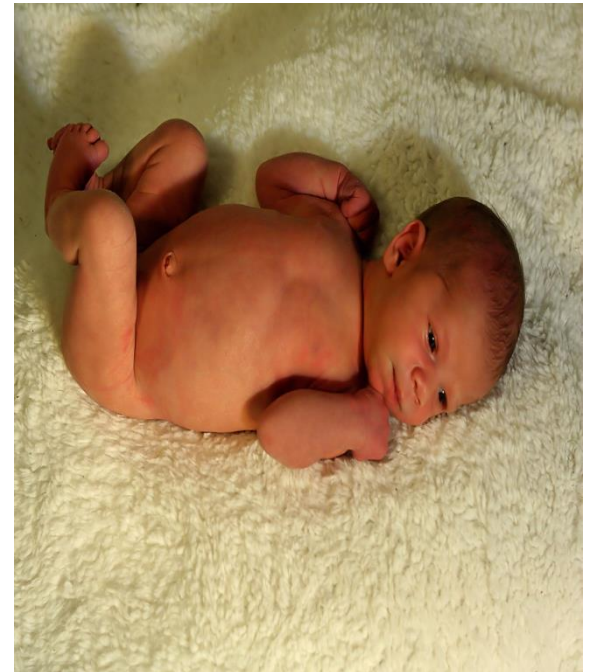
- Observing facial movement

closes both eyes, eyes move when opened,  
labial folds present , can suck normally , no mouth deviation when yawing or crying , grimacing present,  
no tongue deviation

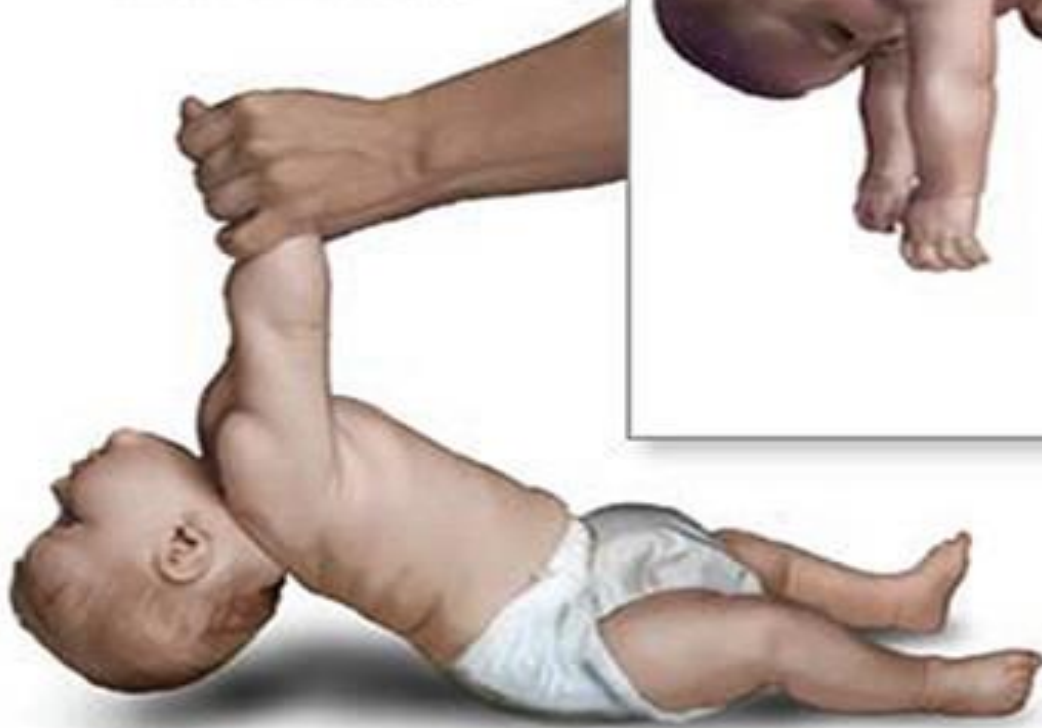
# Muscle tone



- Posture
- Pulling the baby to setting position
- Ventral suspension
- Vertical suspension



Hypotonia  
(decreased  
muscle tone)





# Ventral suspension



Normal Baby



Floppy Baby

# Vertical suspension



# Primitive reflexes



- Indicates normal general well-being & good CNS function
- Should be symmetrical
- Should not persist beyond 6 months

# Weighing and measuring



- HC : occipito-frontal

Measurement of head circumference



# HC



- 33-37 cm
- If abnormal measure parents' HC
- Interpret results in the context of history and P/E
- Plot on growth chart

# Length



# Length



- 47-55 cm
- Plot on growth chart
- 2 years

# Weight



- Average Weight at birth
- Definitions
- Low birth weight
- Very low birth weight
- Extremely low birth weight
- Small for age
- Large for age



# Gestational age estimation



## MATURATIONAL ASSESSMENT OF GESTATIONAL AGE (New Ballard Score)

NAME \_\_\_\_\_ SEX \_\_\_\_\_  
 HOSPITAL NO. \_\_\_\_\_ BIRTH WEIGHT \_\_\_\_\_  
 RACE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 DATE/TIME OF BIRTH \_\_\_\_\_ HEAD CIRC. \_\_\_\_\_  
 DATE/TIME OF EXAM \_\_\_\_\_ EXAMINER \_\_\_\_\_  
 AGE WHEN EXAMINED \_\_\_\_\_  
 APGAR SCORE: 1 MINUTE \_\_\_\_\_ 5 MINUTES \_\_\_\_\_ 10 MINUTES \_\_\_\_\_

### NEUROMUSCULAR MATURITY

NEUROMUSCULAR MATURITY SIGN	SCORE							RECORD SCORE HERE
	-1	0	1	2	3	4	5	
POSTURE								
SQUARE WINDOW (Wrist)								
ARM RECOIL								
POPITALE ANGLE								
SCARF SIGN								
HEEL TO EAR								
TOTAL NEUROMUSCULAR MATURITY SCORE								

### PHYSICAL MATURITY

PHYSICAL MATURITY SIGN	SCORE							RECORD SCORE HERE
	-1	0	1	2	3	4	5	
SKIN	sticky friable transparent	gelatinous red translucent	smooth pink visible veins	superficial pitting / or rash, flivveins	cracking pale areoles rareveins	parchment deep cracking noveasals	leathery cracked wrinkled	
LANUGO	none	sparse	abundant	thinning	bald areas	mostly bald		
PLANTAR SURFACE	heel-toe 40-50 mm: -1 <40 mm: -2	>50 mm no crease	faint red marks	anterior transverse crease only	creases ant. 2/3	creases over entire sole		
BREAST	imperceptible	barely perceptible	flat areola no bud	dimpled areola 1-2 mm bud	raised areola 3-4 mm bud	full areola 5-10 mm bud		
EYE / EAR	lids fused loosely: -1 tightly: -2	lids open pinna flat stays folded	sl. curved pinna: soft slow recoil	well-curved pinna: soft but ready recoil	formed & firm instant recoil	thick cartilage ear stiff		
GENITALS (Male)	scrotum flat smooth	scrotum empty faint rugae	testes in upper canal rare rugae	testes descending low rugae	testes down good rugae	testes pendulous deep rugae		
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TOTAL PHYSICAL MATURITY SCORE								

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### SCORE

Neuromuscular \_\_\_\_\_  
 Physical \_\_\_\_\_  
 Total \_\_\_\_\_

### MATURITY RATING

SCORE	WEEKS
-10	20
-5	22
0	24
5	26
10	28
15	30
20	32
25	34
30	36
35	38
40	40
45	42
50	44







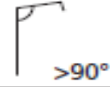
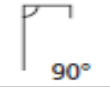

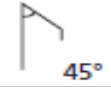
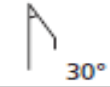
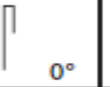


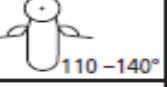
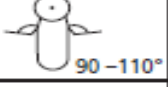
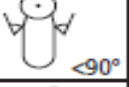
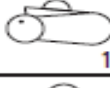
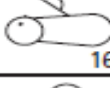


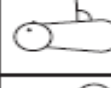
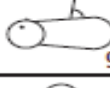
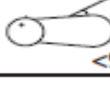
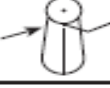
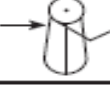
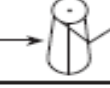
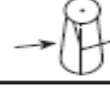

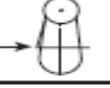

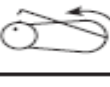
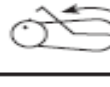
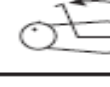
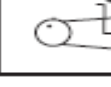

### GESTATIONAL AGE (weeks)

By date: \_\_\_\_\_  
 By ultrasound: \_\_\_\_\_  
 By exam: \_\_\_\_\_

# Gestational age estimation



## NEUROMUSCULAR MATURITY

NEUROMUSCULAR MATURITY SIGN	SCORE							RECORD SCORE HERE
	-1	0	1	2	3	4	5	
POSTURE								
SQUARE WINDOW (Wrist)	 >90°	 90°	 60°	 45°	 30°	 0°		
ARM RECOIL		 180°	 140-180°	 110-140°	 90-110°	 <90°		
POPLITEAL ANGLE	 180°	 160°	 140°	 120°	 100°	 90°	 <90°	
SCARF SIGN								
HEEL TO EAR								
TOTAL NEUROMUSCULAR MATURITY SCORE								

# Gestational age estimation



## PHYSICAL MATURITY

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# Gestational age estimation



## MATURITY RATING

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## GESTATIONAL AGE (weeks)

By dates \_\_\_\_\_

By ultrasound \_\_\_\_\_

By exam \_\_\_\_\_

# Gestational age estimation



Physical criteria is more accurate than  
neurological criteria  
(sickness, prematurity)



- Multiple history sources
- Multiple P/E
- Observation is important
- Unhealthy newborn might have normal P/E
- You need to practice !!!

