

PEDIATRIC PHYSIOLOG



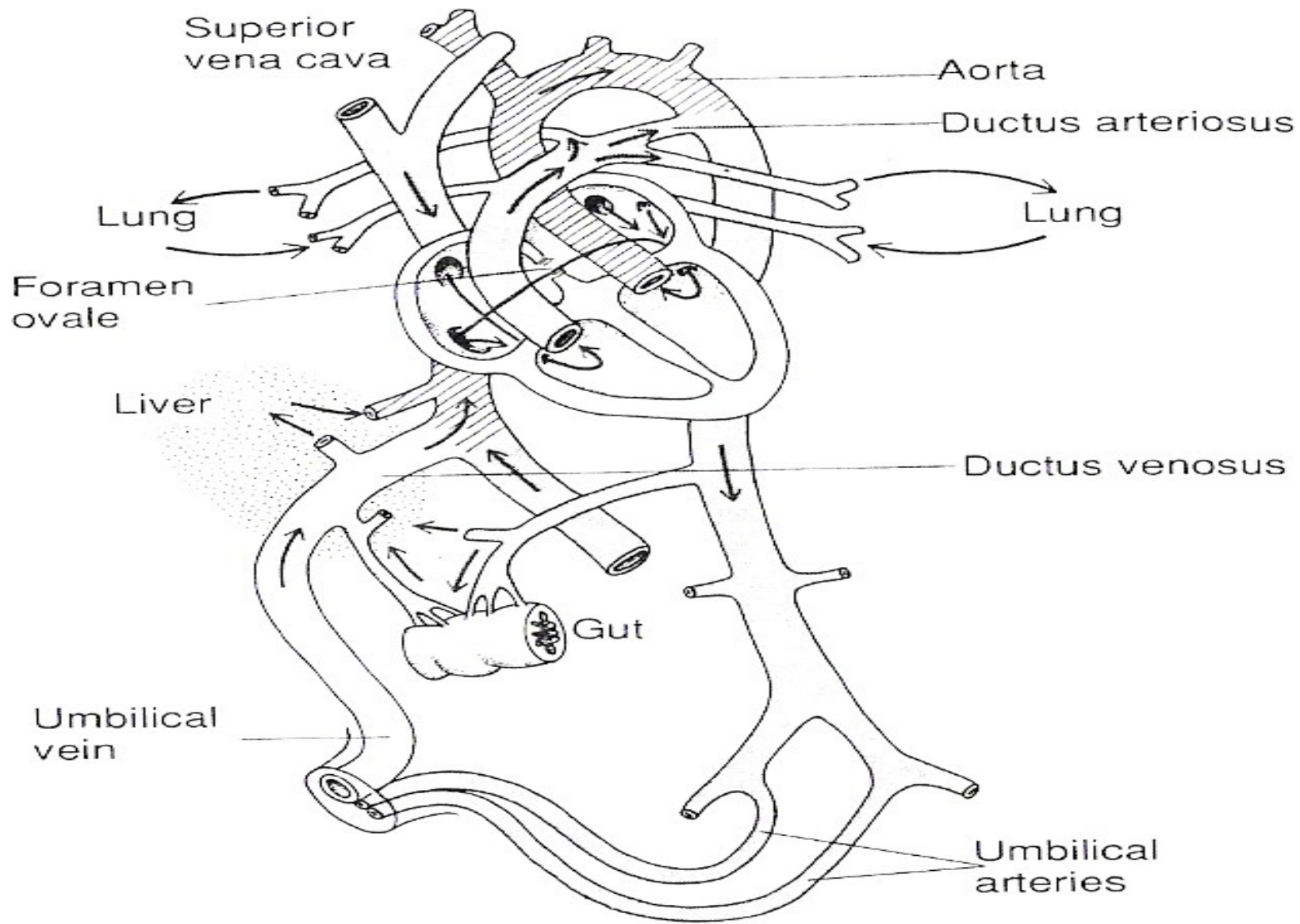


Figure 83-4. Organization of the fetal circulation. (Modified from Arey: *Developmental Anatomy*. 7th ed. Philadelphia, W. B. Saunders Company, 1974.)

State screening for metabolic disorder in neonate

- **Congenital hypothyroidism:** usually arises as a sporadic mutation which causes an insufficient production of thyroxine
 - ✓ The expected incidence of the disorder is as 1: 5 000 births
 - ✓ The initial screening test is the thyroxine radioimmunoassay, which may be done on a heel stick blood spot at the first week after birth

• Phenylketonuria (PKU)

- Hereditary disorder of phenylalanine (Phe) metabolism with a predominantly autosomal recessive type of heredity. The essence is a disorder of Phe conversion, which results in an increase in the level of Phe in tissues and serum. The result is the formation of abnormal Phe catabolites that damage brain tissue; without early detection and early treatment with a low Phe diet, mental retardation begins (IQ below 50)
- ✓ the annual incidence of this inborn error of metabolism is 1:16 000 live births. If the condition is not detected and treated during the first few month of life, severe or profound mental retardation occurs
- ✓ Screening provide by Guthrie inhibition assey test – blood spots specimen obtained from a heel stick
- ✓ As soon PKU is detected, a low phenylalanine diet is begun

GIT and NUTRITION

- In general, the ability of the neonate to digest, absorb, and metabolize foods is not different that of the older child, with the following 3 exceptions:
 - ✓ 1. Secretion of pancreatic amylase is deficient
 - ✓ 2. Absorption of fats from the gastrointestinal tract is somewhat less than that in the older child (milk with a high fat content - such as cow's milk, is inadequately absorbed)
 - ✓ 3. The liver function during at least the 1st week of life, the glucose concentration in the blood is unstable and low

Nutritional needs during the early weeks of life

- Need for calcium and vitamin D
- Necessity for iron in the diet
- The correct and natural nutrition:
 - ✓ **breast milk** and is necessary **supported breast feeding**



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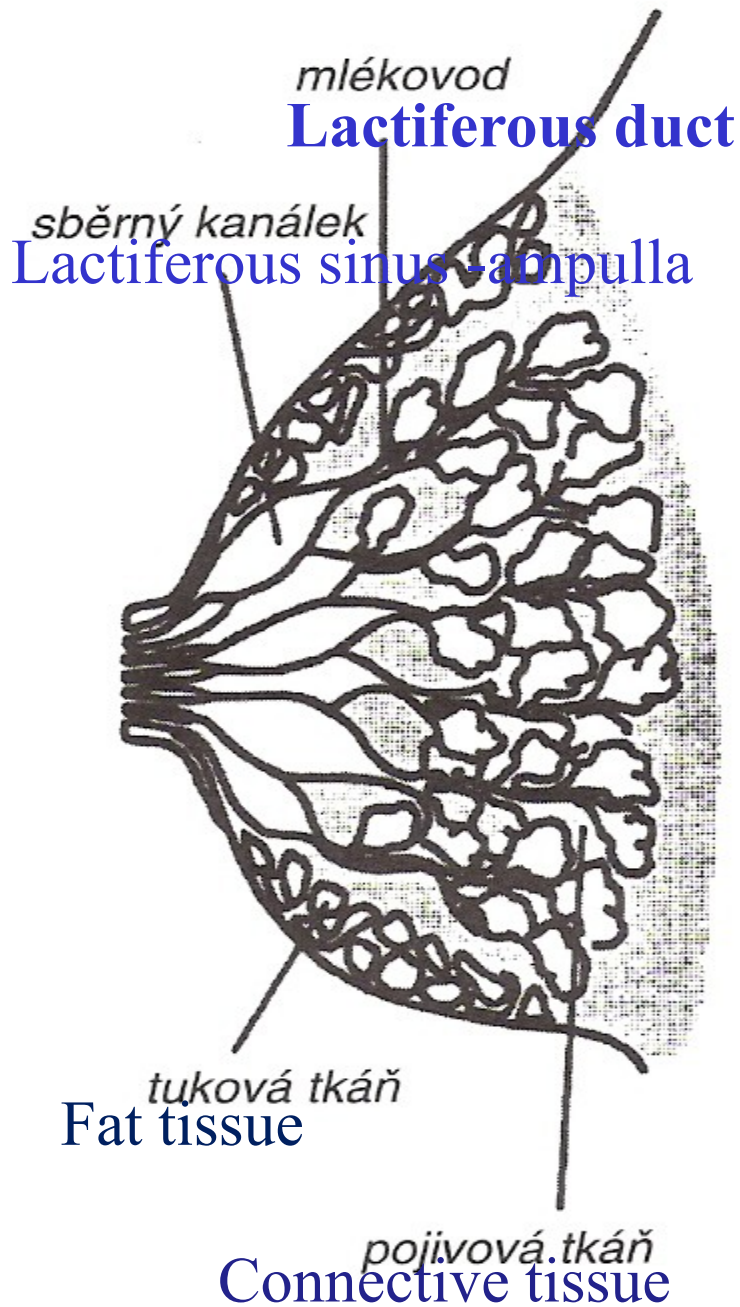
MATEŘSKÉ MLÉKO JE NEJLEPŠÍ -



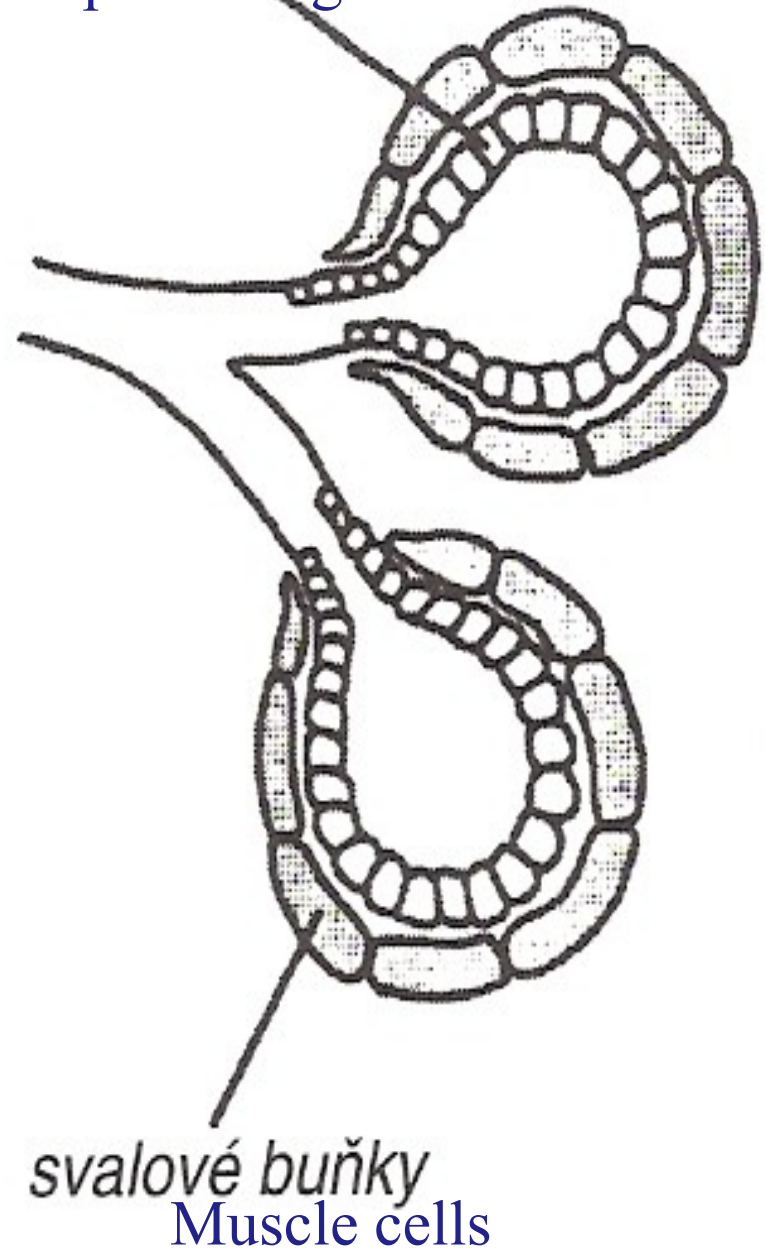
WHO / PAHO (1983)

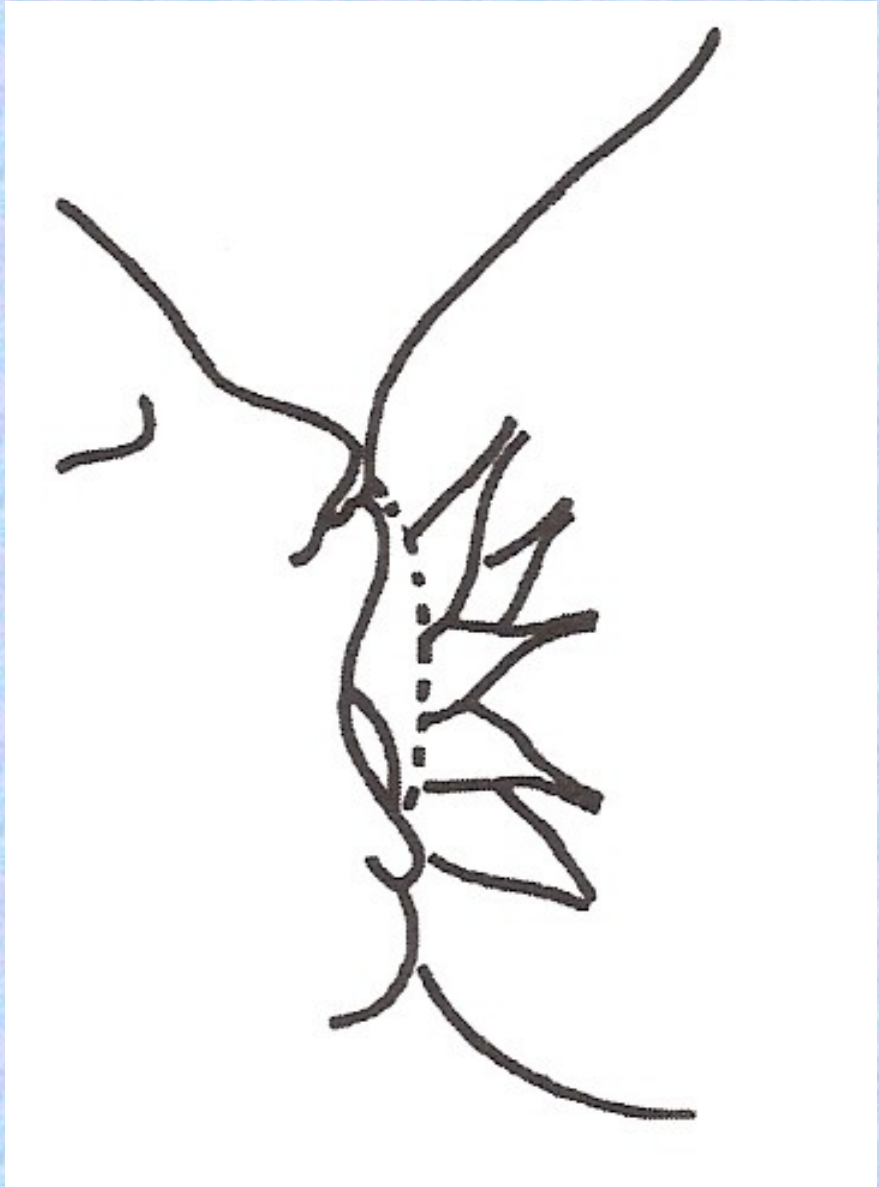
- NA CELÉM SVĚTĚ

The breast and its mammary gland

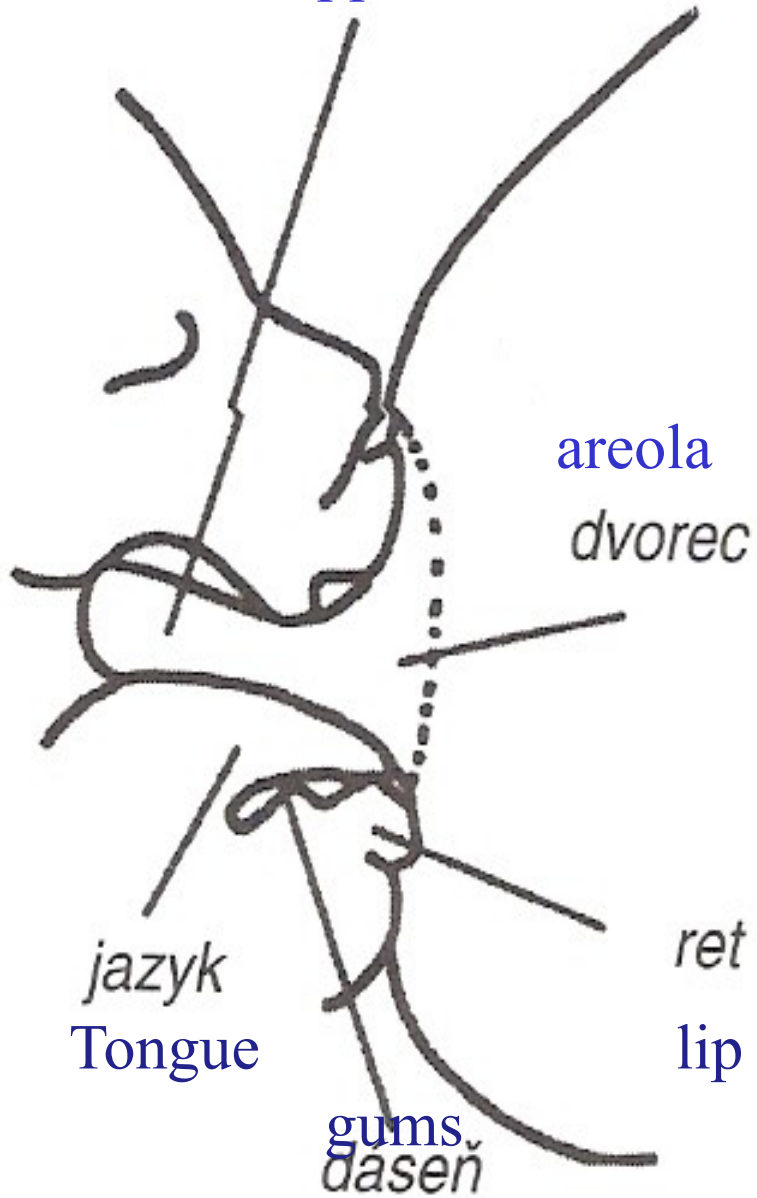


buňky produkující mléko
Milk producing cell





bradavka
nipple



bad grip of the nipple, only pacification with the possibility of damage to the nipple

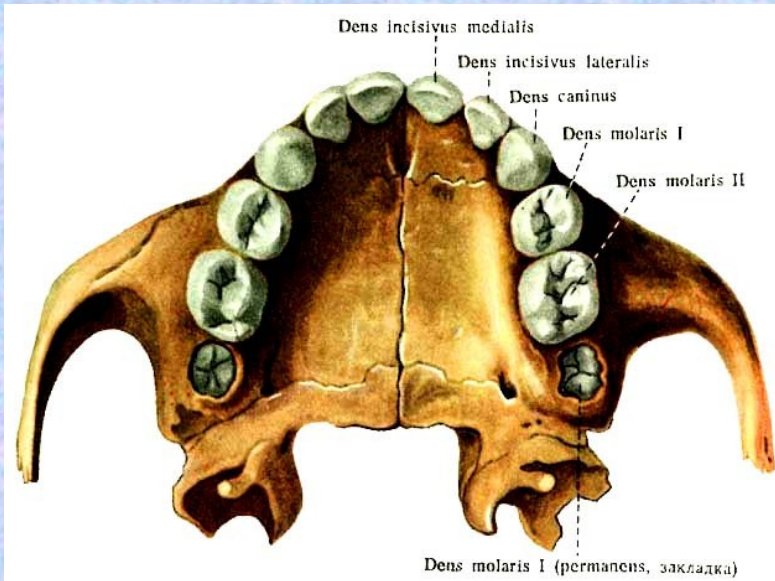
Period of non-milk additions in children nutrition: 5th – 7th month

- 5th month: vegetable soup – meat-vegetable supplement, boiled egg yolk 2/week (not eggwhite-albumen), vegetable oil 5-10g
- Replacement of breast milk (e.g. SUNAR, other products (Nutralon, Hipp...))
- 6th month: fruits-milk supplement , cottage cheese, yoghurt, mixed fruits, **sugar free**
- 7th month – cereals with gluten, pap, biscuits
- **milk period 0-6 month**
- **non-dairy period and transition period to a mix diet** (lunchtime is replaced with the soup)

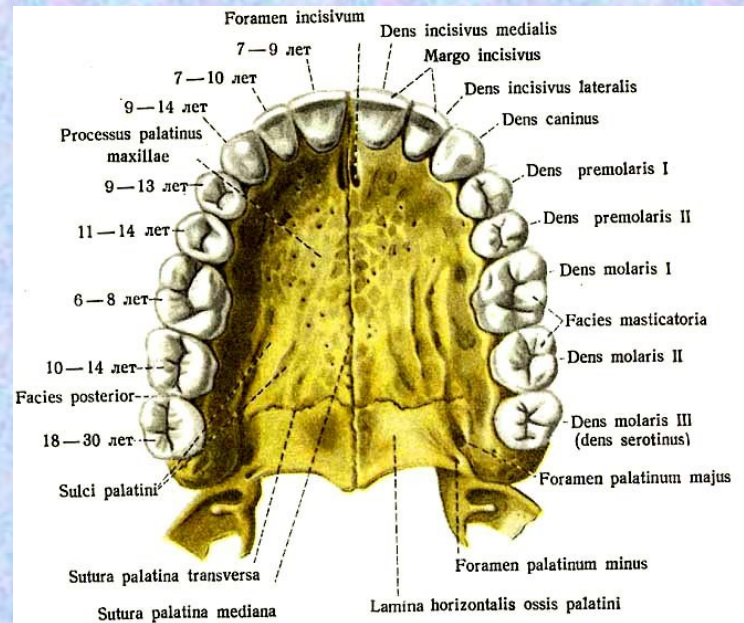
transition period to a mix diet 8th – 12th month

- The same diet as in the previous slide
- + from 9th month – a piecemeal, grainy diet
- **important fiber** (fruit juices, juices, oat flakes ...)
 - increases the water content of the intestinal contents
 - slows the passage time through the intestines
 - has a beneficial effect on microbiology (microecology) in the large intestine
- fibrous indigestible material in vegetable foodstuffs that aids the passage of food has a good influence to intestine function

Milk teeth



Permanent teeth



Psycho-motor development

- Gross motor control
- Fine motor control
- Language
- Personal – social control

PSYCHOMOTOR DEVELOPMENT

Neurological examination, based on the presence or absence of certain types of reflexes that reflect the proper development of the nervous system, is also helpful in assessing the child's proper well-being.

Newborn reflexes:

(primary neonatal reflexes - congenital)

- palmar grasp (grip)
- the rooting reflex as you touch the face of the newborn, he turns his head to the side of the touch... searches.....what about? ... eating.
- labial – suckling – swallow
- Moro-opening of the hands and extension and abduction of the arms is an example of positional vestibular reflex. Reaction (extension of the head and limbs and return of the upper limbs to the crossed position) to a fast and short linear jerk of the pad under the lying newborn, which simulates horizontal movement. The disappearance of this typical reaction by the 3rd month of life is evidence of the physiological development of the CNS

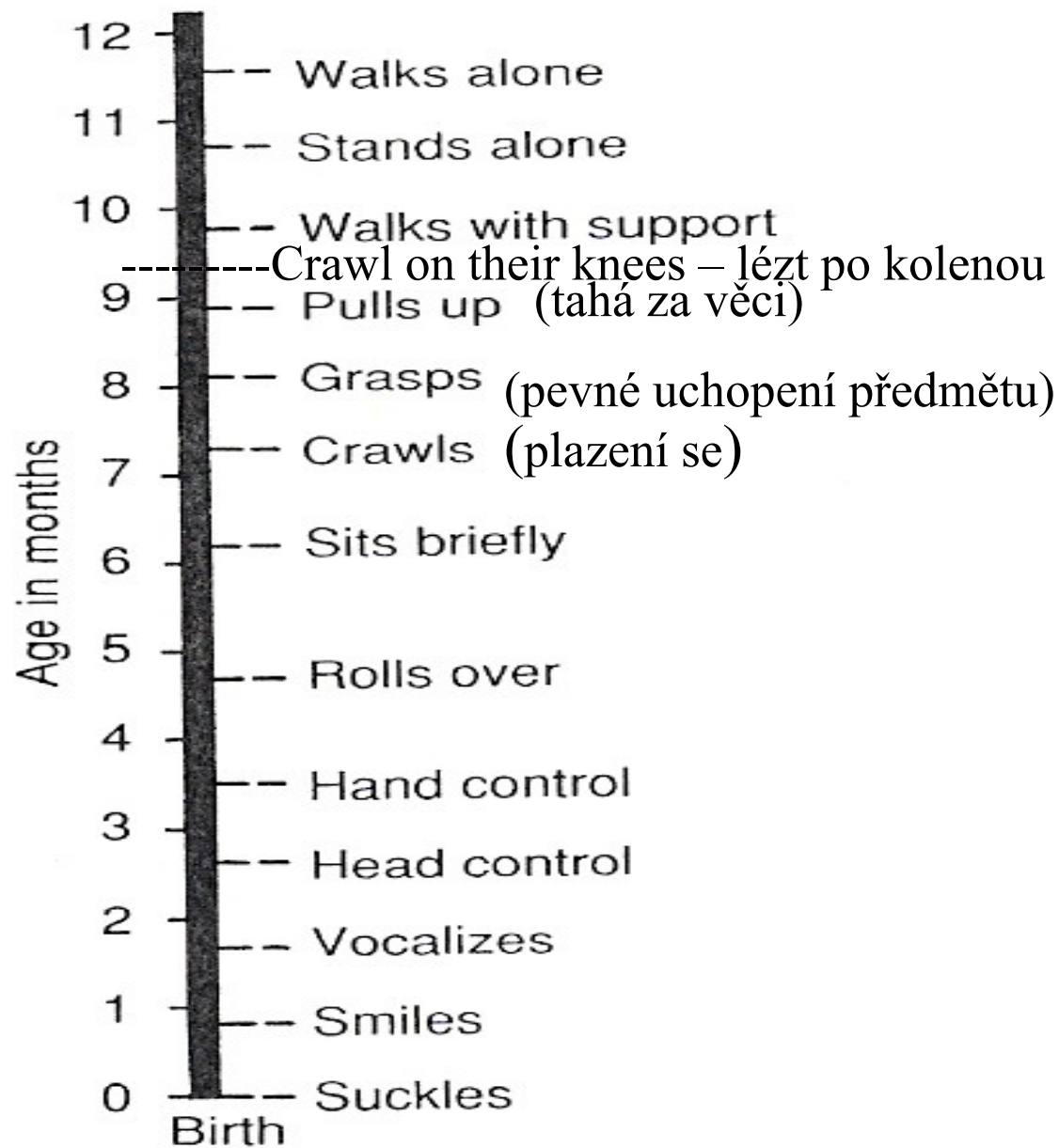


Figure 83-9. Behavioral development of the infant during the 1st year of life.















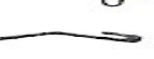






























NEUROLOGIC SIGN	SCORE					
	0	1	2	3	4	5
POSTURE						
SQUARE WINDOW	 90°	 60°	 45°	 30°	 0°	
ANKLE DORSIFLEXION	 90°	 75°	 45°	 20°	 0°	
ARM RECOIL	 180°	 90-180°	 < 90°			
LEG RECOIL	 180°	 90-180°	 < 90°			
POPLITEAL ANGLE	 180°	 160°	 130°	 110°	 90°	 < 90°
HEEL TO EAR						
SCARF SIGN						
HEAD LAG						
VENTRAL SUSPENSION						

Figure 5-4. Neurologic criteria to estimate gestational age to be used with physical findings. (From Dubowitz L, Dubowitz V: Gestational Age of the Newborn. Reading, MA, Addison-Wesley, 1977.)

RECOMMENDATIONS FOR PREVENTIVE PEDIATRIC HEALTH CARE

Committee on Practice and Ambulatory Medicine

Each child and family is unique; therefore these **Recommendations for Preventive Pediatric Health Care** are designed for the care of children who are receiving competent parenting, have no manifestations of any important health problems, and are growing and developing in satisfactory fashion. **Additional visits may be necessary** if circumstances suggest variations from normal. These guidelines represent a consensus by the Committee on Practice and Ambulatory Medicine in consultation with the membership of the American Academy of Pediatrics through the Chapter

Presidents. The Committee emphasizes the great importance of **continuity of care** in comprehensive health supervision and the need to avoid **fragmentation of care**.

A **prenatal visit** by the parents for anticipatory guidance and present medical history is strongly recommended.

Health supervision should begin with medical care of the newborn in the hospital.

AGE ²	INFANCY						EARLY CHILDHOOD					LATE CHILDHOOD					ADOLESCENCE		
	By 1 mo.	2 mos.	4 mos.	6 mos.	9 mos.	12 mos.	15 mos.	18 mos.	24 mos.	3 yrs.	4 yrs.	5 yrs.	6 yrs.	8 yrs.	10 yrs.	12 yrs.	14 yrs.	16 yrs.	18 yrs.
HISTORY Initial/Interval	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
MEASUREMENTS Height and Weight	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Head Circumference	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Blood Pressure										•	•	•	•	•	•	•	•	•	
SENSORY SCREENING Vision	S	S	S	S	S	S	S	S	S	S	○	○	○	○	S	○	○	S	○
Hearing	S	S	S	S	S	S	S	S	S	S	○	○	S ³	S ³	S ³	○	S	S	○
DEVEL./BEHAV.⁴ ASSESSMENT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
PHYSICAL EXAMINATION⁵	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
PROCEDURES⁶ Hered./Metabolic ⁷ Screening	•																		
Immunization ⁸		•	•	•			•	•	•			•					•		
Tuberculin Test ⁹	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
Hemocrit or Hemoglobin ¹⁰	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
Urinalysis ¹¹	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
ANTICIPATORY¹² GUIDANCE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
INITIAL DENTAL¹³ REFERRAL																			

Adolescent related issues (e.g., psychosocial, emotional, substance abuse, and reproductive health) may necessitate more frequent health supervision.

When a child comes under care for the first time at any point on the schedule, or if any items are not accomplished at the suggested age, the schedule should be brought up to date at the earliest possible opportunity.

At these points, history may suffice; if problem suggested, a standard physical method should be employed.

At other points, history and appropriate physical examination; if suspicious, by specific objective developmental testing.

At each visit, a complete physical examination should be performed.

9. For low risk groups, the Committee on Infectious Diseases recommends the following options: ○ no routine testing or ⊕ testing at least three times—infancy, preschool, and adolescence. For high risk groups, annual TB skin testing is recommended.

10. Present medical evidence suggests the need for reevaluation of the frequency and timing of hemoglobin or hematocrit tests. One determination is therefore suggested during each time period. Performance of additional tests is left to the individual practice experience.

11. Present medical evidence suggests the need for reevaluation of the frequency and timing of urinalyses. One determination is therefore suggested during each time period. Performance of additional tests is left to the individual practice experience.

STRANGERS

RESISTS TOY PULL

50% PLAYS PEEK-A-BOO

WORKS FOR TOY OUT OF REACH

FEEDS SELF CRACKERS

NEAT PINCER GRASP OF RAISIN

BANGS 2 CUBES HELD IN HANDS

THUMB FINGER GRASP

RAKES RAISIN ATTAINS

SIT TAKES 2 CUBES

SIT LOOKS FOR YARN

PASSES CUBE HAND TO HAND

CHES OBJECT

TOWER OF 4 CUBES

SCRIBBLES SPONTANEOUSLY

DUMPS RAISIN FROM BOTTLE DEMONSTR.

TOWER OF 2 CUBES

OPPOS 2 OF 3

RECOGNIZES

COMPREHEN PREPOSITIO

COMPREHENDS COLD TIRED HUNGRY 2 OF 3

GIVES 1ST & LAST NAME

USES PLURALS

FOLLOWS DIRECTIONS 2 OF 3

NAMES 1 PICTURE

COMBINES 2 DIFFERENT WORDS

POINTS TO 1 NAMED BODY PART

BALANC 10 SECA

HEEL

HOPS ON

3 WORDS OTHER THAN MAMA, DADA

BALANCE ON 1 F 5 SECONDS 2 OF

DADA OR MAMA SPECIFIC

BROAD JUMP

IMITATES SPEECH SOUNDS

BALANCE ON 1 FOOT 1 SECOND 2 OF 3

DADA OR MAMA NONSPECIFIC

PEDALS TRICYCLE

URNS TO VOICE

JUMPS IN PLACE

THROWS BALL OVERHAND

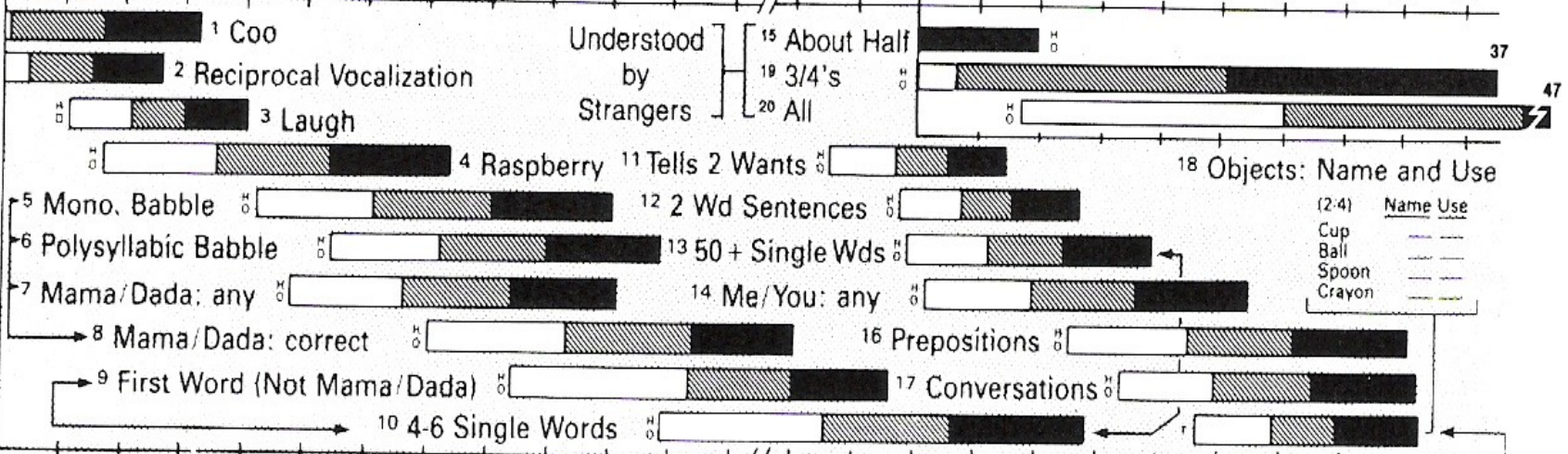
KICKS BALL FORWARD

ELM SCALE EARLY LANGUAGE MILESTONE SCALE

NAME _____
 DOB _____ DOE _____ CA _____
 Examiner _____ Loc. _____

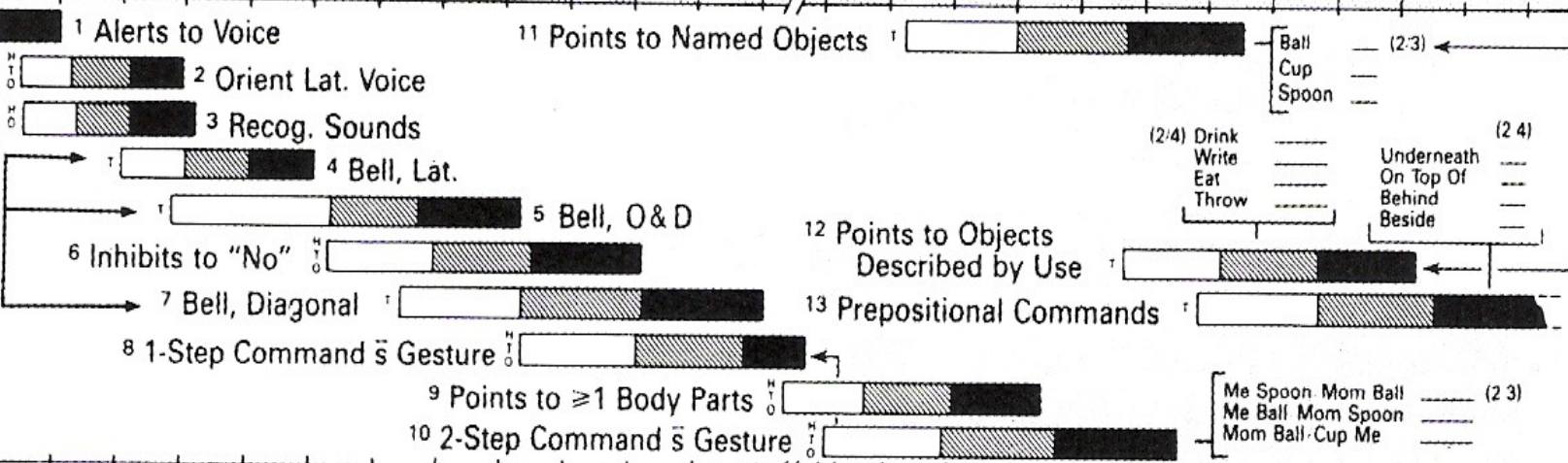
MONTHS 1 2 3 4 5 6 7 8 9 10 11 12 // 14 16 18 20 22 24 26 28 30 32 34 36

AUDITORY EXPRESSIVE



(2:4) Name Use
 Cup _____
 Ball _____
 Spoon _____
 Crayon _____

AUDITORY RECEPTIVE



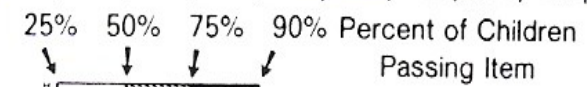
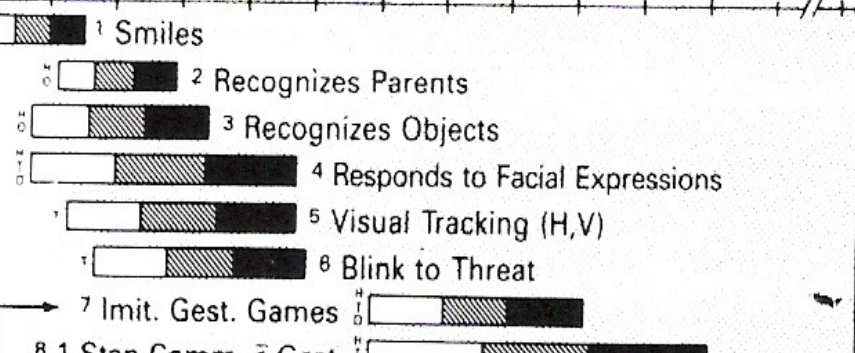
Ball (2:3)
 Cup _____
 Spoon _____

(2:4) Drink _____
 Write _____
 Eat _____
 Throw _____

(2:4)
 Underneath _____
 On Top Of _____
 Behind _____
 Beside _____

Me Spoon Mom Ball (2:3)
 Me Ball Mom Spoon _____
 Mom Ball-Cup Me _____

VISUAL



Item may be elicited by
 H = History
 T = Direct Testing
 O = Incidental Observation