DEVELOPMENT AND ASSESSMENT OF DEVELOPMENT
DEVELOPMENTAL RULES

• Development is a continuous process beginning in utero and progressing till maturity.
• Sequence of attainment of milestones is essentially the same in all children. (Variation only in time and manner of attainment)
• Development proceeds in a cephalo caudal direction-head control precedes trunk control which precedes limb control
DEVELOPMENTAL RULES

• Control of limbs in a proximo distal fashion where hand use is learnt before finger control.
• Certain primitive reflexes have to be lost before appropriate milestone is achieved.
• Initial disorganized mass activity is gradually replaced by more specific activity e.g. when shown a bright toy a 3 month old will excitedly move all 4 limbs and squeal loudly while a 3-4 year old will smile and ask for it.
REFLEXES

- **Palmar grasp** - appears 28 weeks, disappears 2-3 months
- **Rooting** - appears 32 weeks, less prominent after 1 month
- **Moro** - appears 28-32 weeks, disappears 5-6 months
- **Asymmetric Tonic neck reflex (ATNR)** - appears 35 weeks, disappears 2-3 months
- **Landau** - appears 3 months, disappears around 1 year
- **Parachute** - appears 6-9 months remains throughout life.
ATNR (FENCING REFLEX)
MORO’s REFLEX
GRASP REFLEX
ROOTING REFLEX
DEVELOPMENTAL DOMAINS

1. Gross Motor
2. Fine motor
3. Personal and social development and general understanding
4. Language
5. Vision and hearing
DEVELOPMENT FROM NEWBORN TO 6 WEEKS

**Pull to sit-**

- Newborn complete head lag, back rounded
- 6 weeks - head control begins

**Ventral suspension-**

- Newborn head flops down
- 6 weeks momentarily holds in horizontal plane
HEAD LAG

- Infant gently pulled to sitting position.
- In newborns, head completely lags behind.
PULL TO SIT
DEVELOPMENT AT 8 WEEKS

• Prone position face lifted up to 45 degree

• Ventral suspension –can maintain head in line with body

• Social- Social smile
DEVELOPMENT AT 4 MONTHS

- Pull to sit - head steady
- Prone position - face, head and chest off the pouch
- Ventral suspension - head above the plane of trunk
- Fine motor - Bidextrous approach
BIDEXTROUS APPROACH
DEVELOPMENT AT 6 MONTHS

• Prone position can lift chin and greater part of chest while supporting weight on extended arms.
• Sits with support (tripod sitting)
• Fine Motor- Holds cube crudely – Unidextrous
DEVELOPMENT AT 8 MONTHS

- **Gross motor** – sitting without support.

- **Fine motor** - grasp objects from radial aspect of hand.
DEVELOPMENT AT 9 MONTHS

- **Gross motor**: stands holds on (with support)
- **Fine motor**: immature pincer grasps
- **Social**: waves bye bye
- **Language**: says bisyllables (mama, baba, dada)
PINCER GRASP

• Pick things up with thumb and index finger.
• Immature- at 9 months
• Mature- at 1 year
PEEK -A-BOO
DEVELOPMENT AT 12 MONTHS

- Stands without support
- Walks alone but falls
- Mature pincer grasp
- Play simple ball game
- 1-2 words with meaning
DEVELOPMENT AT 18MONTHS

- Runs, explore drawers
- Domestic mimicry
- 8-10 words
DEVELOPMENT AT 2 YEARS

- Walks up and down stairs (2feet/step)
- Tower of 6 blocks
- Pulls people to show toys
- Sentences
DEVELOPMENT AT 3 YEARS

- Rides tricycle
- alternate foot going upstairs
- Tower of 9 blocks
- Copies circle
- Knows name and gender
DRAWING A CIRCLE
DEVELOPMENT AT 4 YEARS

- Hops on one foot
- Alternate foot going downstairs
- Copies cross
- Group play
- Says poem
DEVELOPMENT AT 4 YEARS

Hops on one foot 4 yrs

Fine Motor
- Can draw a rectangle
- Can copy a cross
DEVELOPMENT AT 5YEARS

- **Gross motor** - Play skipping rope
- **Fine motor** - Copies triangle
- **Social** - Dress and undress
- **Language** - Ask meaning of words
- **Identify 4 colors**
DEVELOPMENTAL EVALUATION

DETAILED HISTORY

A) Ask for risk factors affecting development

B) Attainment of milestones. Differentiate between delay and regression

C) Form a gross estimation of developmental age: Ask for attained milestones and ascertain if development age matches with chronological age.
DEVELOPMENTAL EVALUATION

EXAMINATION:

A. Physical examination: Look for stigmata of intrauterine infection, hypothyroidism.
A. Assess physical growth and head circumference.
C. Screen for vision and hearing
D. Neurological examination and primitive reflexes
EQUIPMENT FOR EVALUATION

KIT -
1. Red ring (diameter 6-7cm) tied to a string
2. Nine red cubes
3. Paper pellets
4. Spoon
5. Cup with handle
6. Book with thick pages
7. Picture book
8. Red pencil, paper
9. Doll, mirror
10. Developmental milestones list
DEVELOPMENTAL ASSESSMENT

Prerequisites -
1. Child should not be hungry or tired

2. Playful mood with mother around.

3. Adequate time to make the baby comfortable.

4. Observe for alertness, concentration and skills of the baby.
DEVELOPMENTAL QUOTIENT

• After evaluation ascertain the child’s developmental age.

• Check if development corresponds to chronological age. If not the developmental quotient can be applied for every sphere.

• DQ = [Developmental Age/Chronological age] × 100
UPPER LIMIT AGE OF ATTAINMENT OF MILESTONES
{RED FLAG SIGNS}

MILESTONE
• Visual fixation
• Vocalisation
• Sitting without support
• Standing with support
• Hands and knees crawling
• Standing alone
• Walking alone
• Single word
• Imaginative play

AGE
• 2 months
• 6 months
• 10 months
• 12 months
• 14 months
• 17 months
• 18 months
• 18 months
• 3 years
DEVELOPMENTAL SCREENING

Brief assessment procedure designs to identify children who require more intensive diagnosis or assessment viz.,

• Phatak’s Baroda screening tests
• Denver developmental screening test
• Trivandrum developmental screening tests
• Good enough screening tests
TRIVANDRUM DEVELOPMENT SCREENING CHART (TDSC)

This chart represents normal range of development milestones for children. Each milestone is marked with a step on the chart, and the age in months is indicated on the right side. The steps include:

- Point to parts of doll (3 parts)
- Walks upstairs with help
- Walks backwards
- Say two words
- Walks alone
- Throws ball
- Walks with help
- Pats a cake
- Fine prehension pellet
- Standing up by furniture
- Transfers objects hand to hand
- Raises self to sitting position
- Turns head to sound of bell/rattle
- Rolls from back to stomach
- Holds head steady
- Eyes follow pen/pencil
- Social smile

Note: To use this chart, keep a pencil vertically on the age of child. All milestones falling to the left of the pencil should have been achieved by the child.
DEVELOPMENTAL SCREENING

HIGH RISK CLINIC AT OUR HOSPITAL

WHO ALL TO BE SCREENED

Ideally all children should be screened at periodic intervals

At least

• Children with perinatal risk factors
• Children with red flag signs
Thank You