Ensuring Safe Newborn care

Dr. Arun Singh

The art of medicine consists in amusing the patient while nature cures the disease.

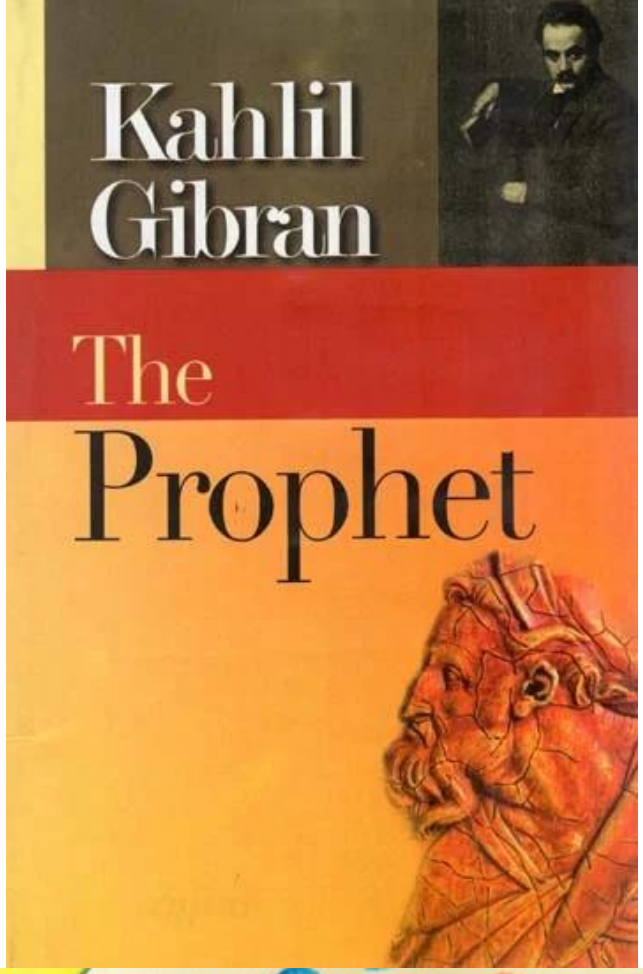
~ Voltaire

KAHLIL GIBRAN

On Children

Your children are not your children.
They are the sons and daughters of Life's longing for itself.
They come through you but not from you,
And though they are with you yet they belong not to you.

You may give them your love but not your thoughts,
For they have their own thoughts.
You may house their bodies but not their souls,
For their souls dwell in the house of tomorrow,
which you cannot visit, not even in your dreams.
You may strive to be like them,
but seek not to make them like you.
For life goes not backward nor tarries with yesterday.



Children do not move, think or speak in a straight line, and neither does imagination nor creativity. But sadly, our standardized pathways of education do.

What makes us Human?

ELEPHANT

GIRAFFE

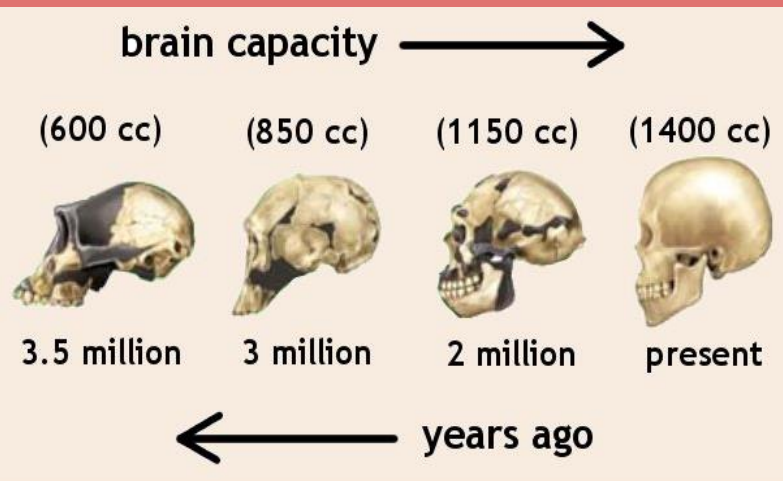
PEACOCK

HUMAN CHILD

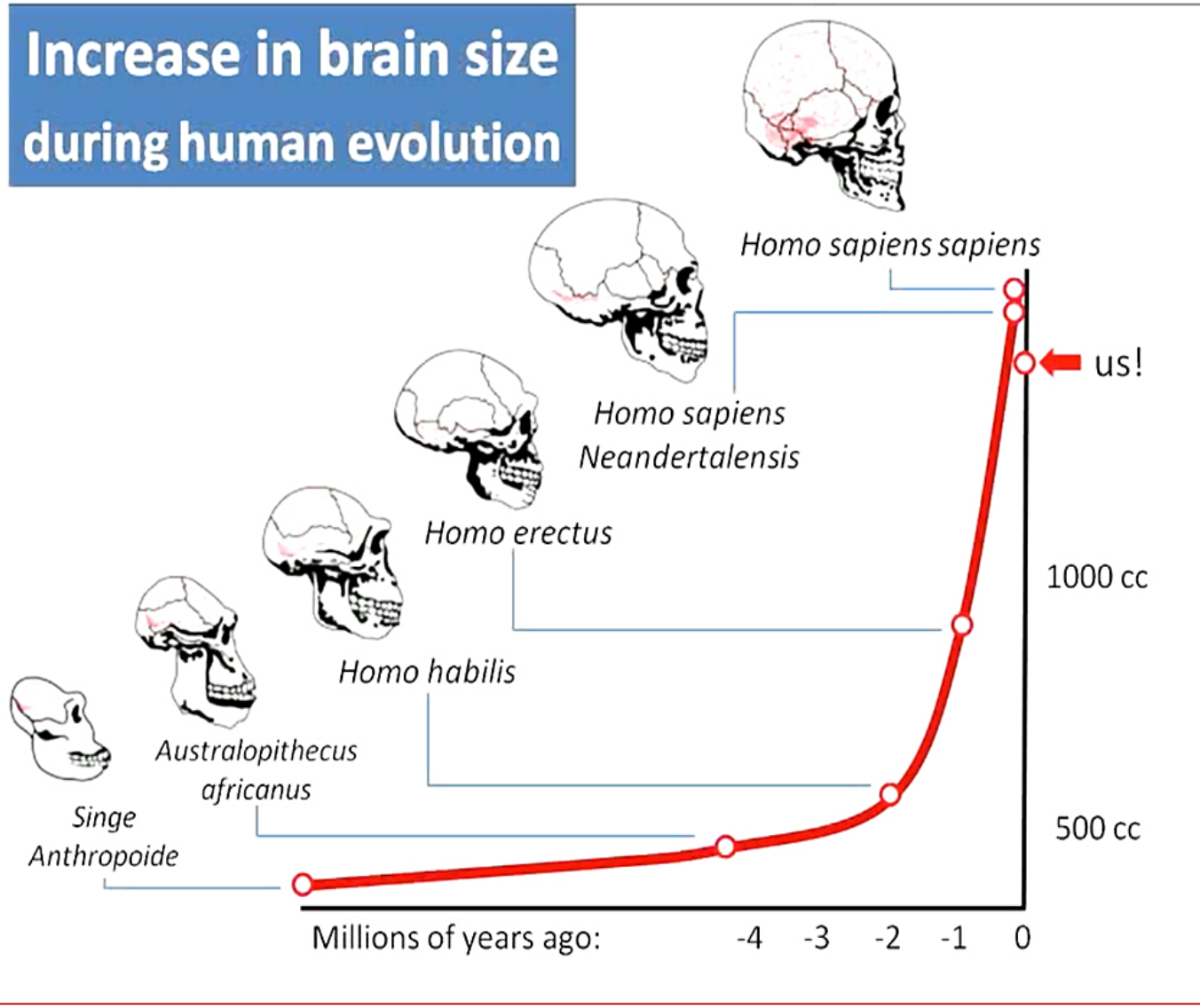
Journey of Human Life starts from a single cell.

From Single cell

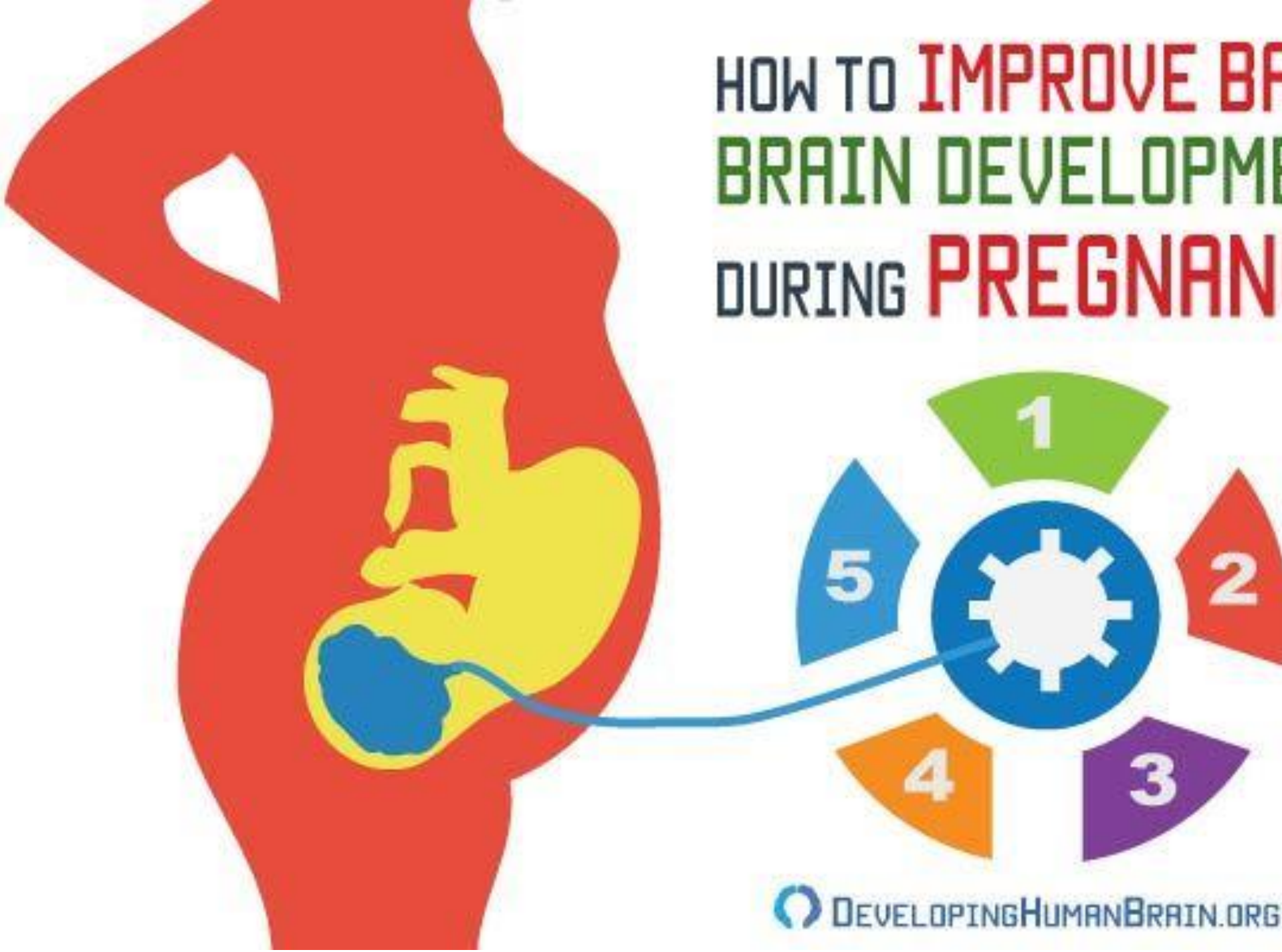
To Homo Sapiens



Prof. S. Hawkins



HOW TO IMPROVE BABY BRAIN DEVELOPMENT DURING PREGNANCY ?

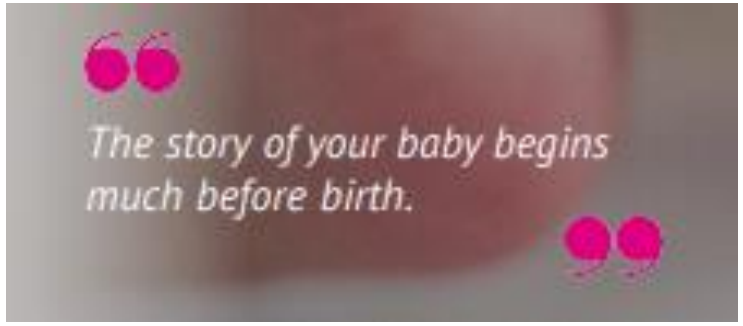


DevelopingHumanBrain.org

Preconception Care :

Important in conceiving a Healthy Baby

“ Allow every child **to reach** his/her full **genetic potential”**



- Maximizing the gains for the Newborn
- Women everywhere should keep their health as the first priority, regardless of whether they are planning to have a baby in the near future or not.
- Studies reveal that about half of all pregnancies are unplanned.
- Preconception health is critical to ensure a healthy full-term pregnancy for both the mother and the baby.

PREPARE FOR YOUR PREGNANCY

Ensure Optimal Pre-Pregnancy Health

- Use Adequate Contraception Until Ready for Pregnancy
- Learn about Hereditary Genetic Conditions and Related Risks
- Schedule Regular Preconception Checkups With Your Expert Medical Provider

RESTRICT USE OF HARMFUL SUBSTANCES

Reduce Exposure to Hazardous Substances

- Avoid Exposure to Pollutants
- Consume No More Than 2 Drinks a Day and 10 Drinks Per Week
- Avoid Radiation and Exposure to Chemicals like Lead or Mercury

ENSURE A HEALTHY LIFESTYLE

Healthy Mother = Healthy Child

- Balanced Nutrition with Folic Acid, Iron and Other Supplementations
- Ensure 150 Minutes of Moderate Physical Activity Per Week
- Achieve and Maintain an Optimum Body Mass Index (BMI)

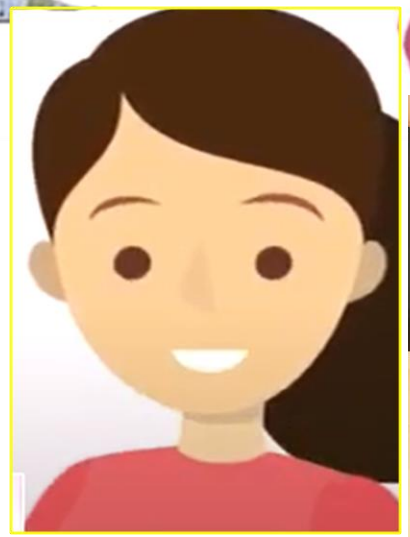
Maternal Obesity and Overweight Prior to Conception Are Directly and Indirectly Linked To Negative Outcomes In Pregnancy.

PLAN REGULAR HEALTH CHECKUPS

Understand Stages of Pregnancy

- Share Detailed Medical History with a Specialist
- Seek Counselling For Mental Health Issues
- Consult a Medical Expert for Advice

Preconception Care : Important in conceiving a Healthy Baby

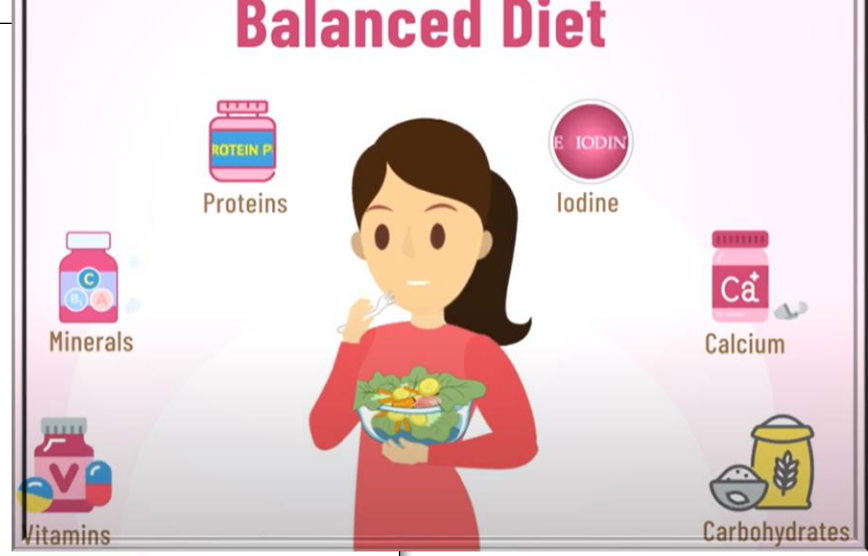


- *Pan (betel quid) with tobacco, Pan Masala with tobacco*
- *Tobacco, areca nut and slaked lime preparations, Manipuri tobacco, Mawa, Khaini, chewing tobacco, snus, gutkha*

- Tobacco products for application:

Nicotine patch, Mishri, Gul, Bajjar, Lal dantmanjan, Gudhaku, Creamy snuff, Tobacco water, Nicotine chewing gum.

Avoid Exposure to Pollutants.
Be Aware of Genetic Conditions
Avoid Adverse Environmental Impact



250 ml of milk or 2 katori of Dahi

10-12 glasses of water/day

Eat at least 2 katori (250 ml) of cooked green leafy vegetables per day along with other vegetables like lady finger/ brinjal/beans/ tomato etc. daily

Eat at least 75 gm. fish twice daily or 2 full boiled eggs or 3/4th cup cooked legumes (Kabuli chana; Rajma, Matar, Moong, Masur) at least twice daily

Use more than one source of fat /oil: mustard oil/ soya bean
+
Ground nut / rice bran/ Coconut oil

Protein

Whole grains, legumes and starchy vegetables

Non-starchy vegetables

Fruits

Eat at least 4 chapatti made of wheat/ Bajra /Maize or Makai or 2 katori (250ml) cooked rice or Ragi in form of roti/ laddu/ Rava upma or Dhosa

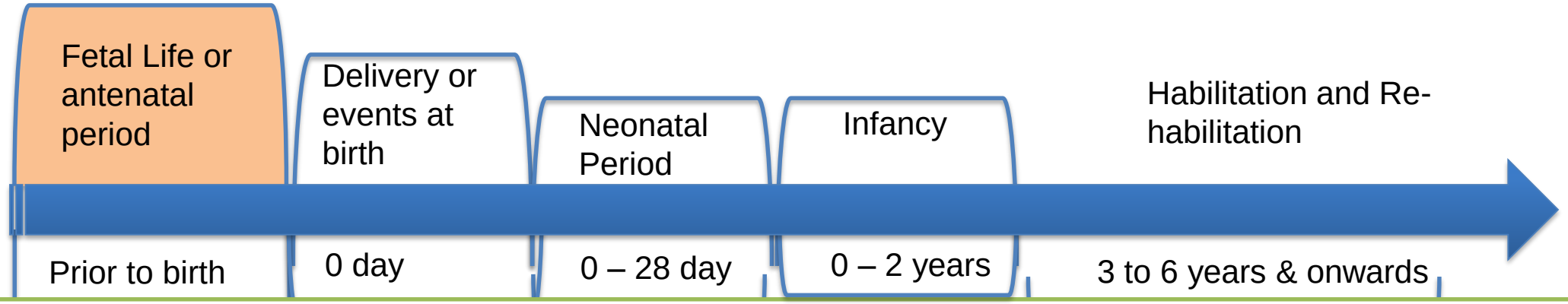
Eat at least 2 fruits per day

Eat at least 2 katori (175ml each) of starchy vegetables: potatoes/ sweet potato/ beet/ carrot etc.

Choose foods with low sugar

Messages for communication

Critical periods which impacts the cognitive trajectory and related interventions



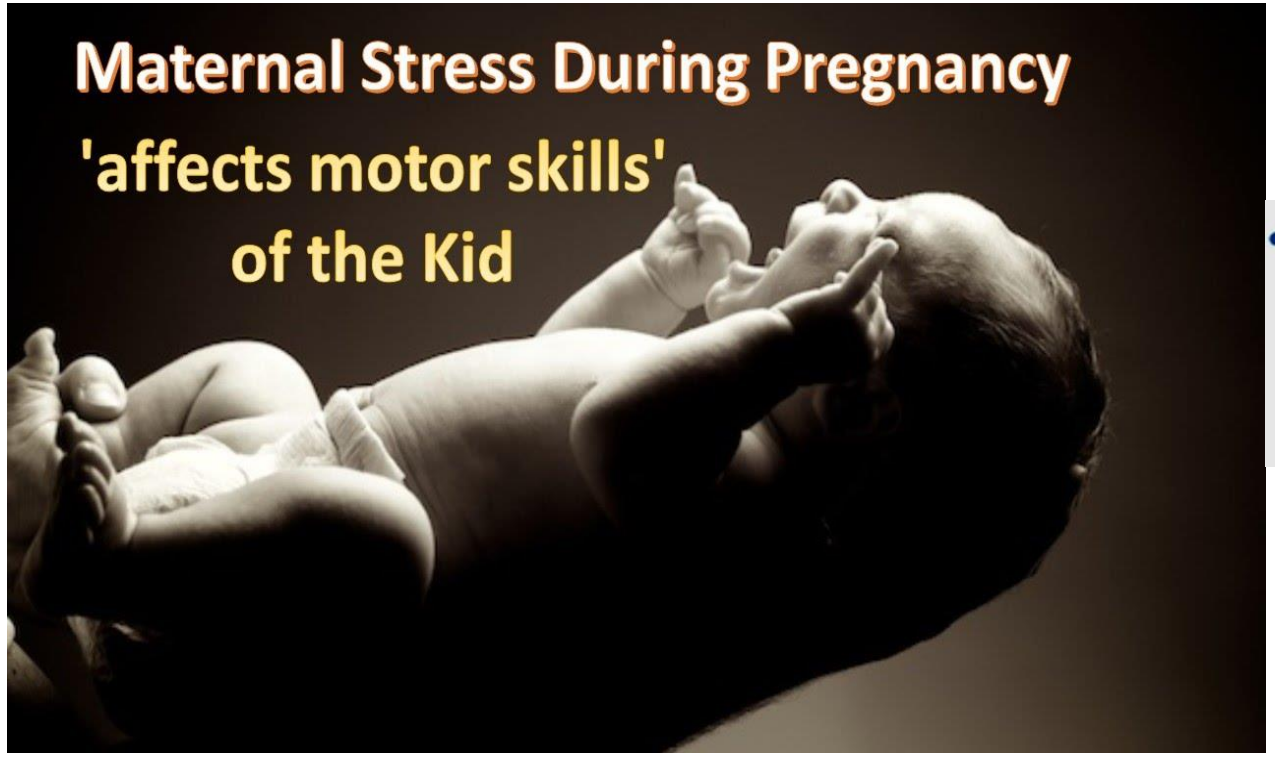
Interventions

1. **Avoid maternal stress during the antenatal period as it accounts for about 30% of preterm birth. Do not quarrel with a pregnant women even if she is wrong or commits a mistake.**
2. **Maintain Oral hygiene : Improving oral hygiene during pregnancy improves the outcome of pregnancy**
3. **Use concept of Flavour bridge i.e. Eat green vegetables so that child develops a flavour for it later**
4. **Interact with foetus; speak to it especially in third trimester as all the sensory organs are developed enough to interact with the mother. Such interactions help in learning languages.**
5. **Avoid infection by washing hands, soaking all foods especially green vegetables in hot saline water or white vinegar for 1 hour and then discarding the water to remove the pesticides before cutting it , and finally taking food well cooked. Avoid half boiled egg or raw milk or partially cooked meat**
6. **Allow pregnancy to complete 39 weeks as maturity of brain is only completed by 39 weeks**
7. Get Blood sugar checked in the 2nd trimester

Stress

Placenta

Avoid maternal stress as it accounts for about 30% of preterm birth.



This ***doubles*** the risk of behavioural problems in both boys & girls at 4 & 7 years of age

- The **chemical changes** associated with even mild anxiety leads to raised maternal cortisol levels- which are passed through the placenta → raised cortisol in foetus.

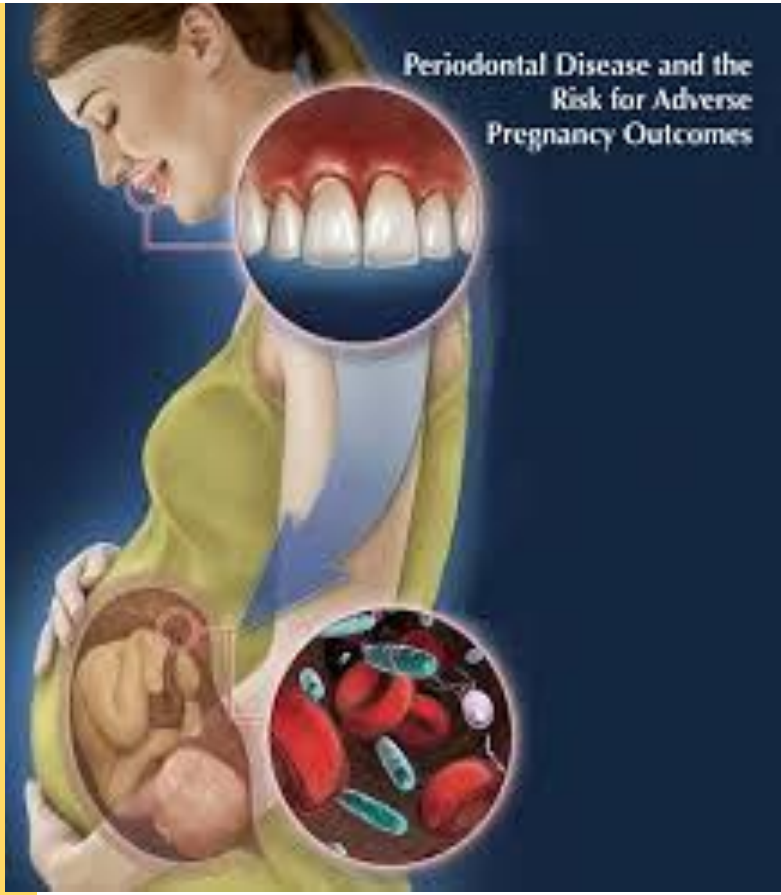
- Cortisol in baby's bloodstream is **a trigger for** premature delivery & causes intrauterine growth retardation

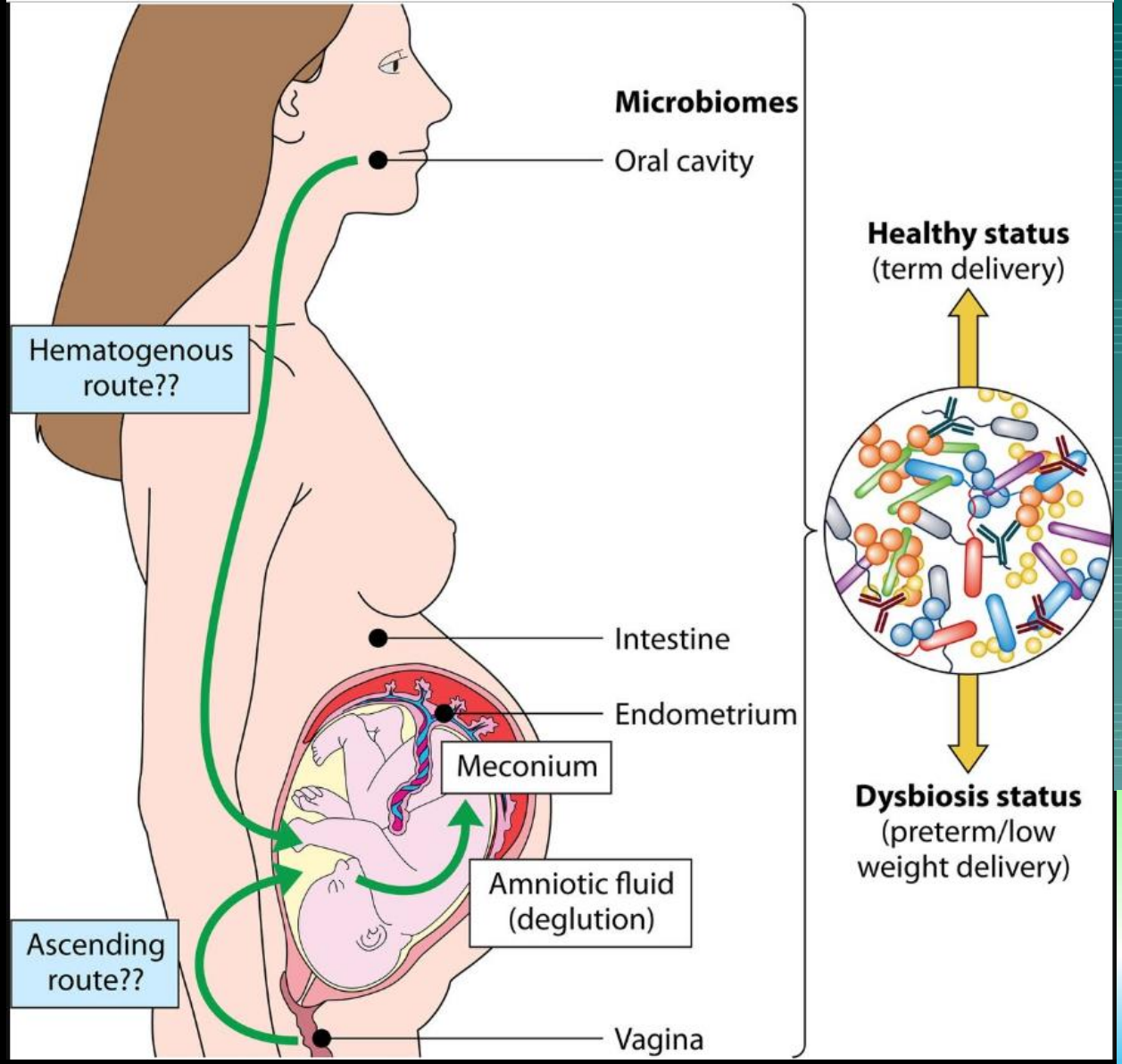
Evidence: *Caring for Tomorrow EFCNI "White Paper on Maternal and Newborn Health and Aftercare Services" prepared by experts in Europe as a part of policy paper for European countries*

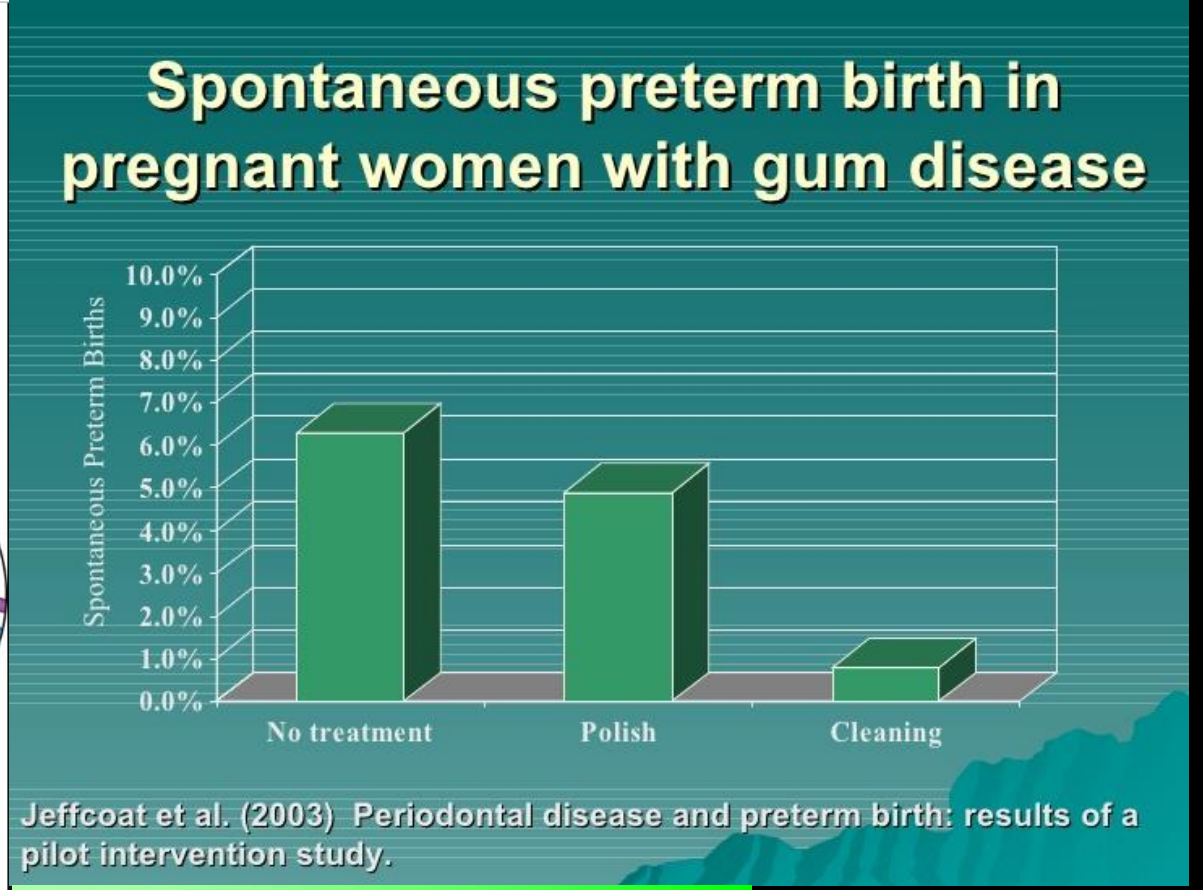
2)The Contribution of Maternal Stress to Preterm Birth: Issues and Considerations Wadhwa Pathik etal Clin Perinatol. 2011 September ; 38(3): 351–384.

Improving oral hygiene during pregnancy improves the outcome of pregnancy

- Reduces preterm birth by 45-65%.
- Preventing the child yet to be born suffering from early childhood caries.
- REF:
- Neonatal IMCI: evidence based Intervention in the context of the care continuum for mothers, Newborns and infants. Pan American Health Organization along with WHO
- Evidence: Periodontitis is associated with preterm birth and low birth weight, and high levels of cariogenic bacteria in mothers can lead to increased dental caries in the infant



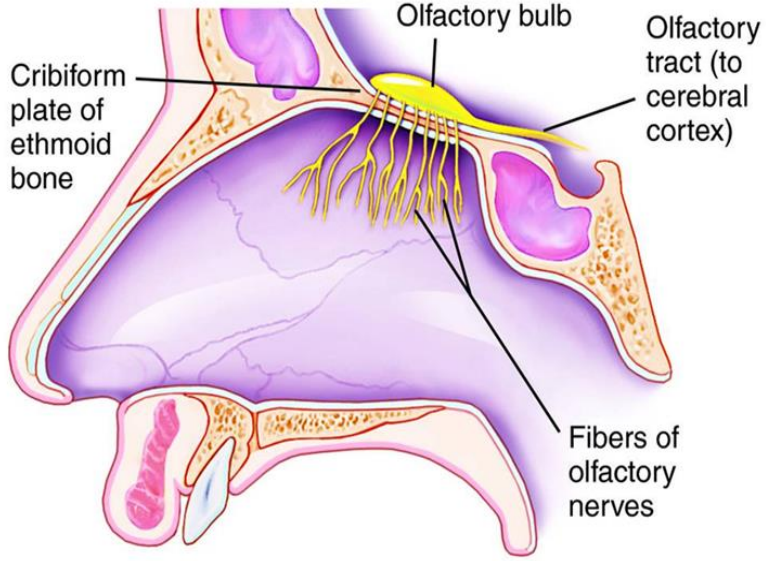

Microbiomes
Oral cavity
Hematogenous route??
Intestine
Endometrium
Meconium
Amniotic fluid (deglution)
Ascending route??
Vagina
Healthy status (term delivery)
Dysbiosis status (preterm/low weight delivery)

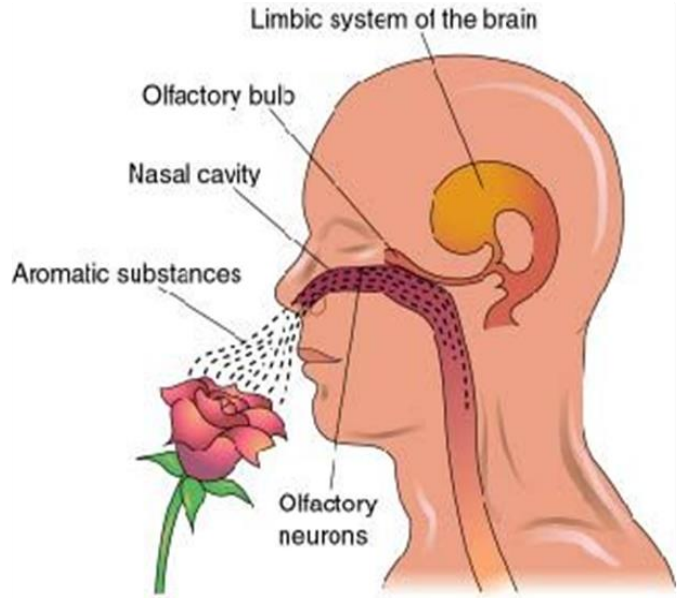

Spontaneous preterm birth in pregnant women with gum disease
Spontaneous Preterm Births
10.0%
9.0%
8.0%
7.0%
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
No treatment
Polish
Cleaning
Jeffcoat et al. (2003) Periodontal disease and preterm birth: results of a pilot intervention study.

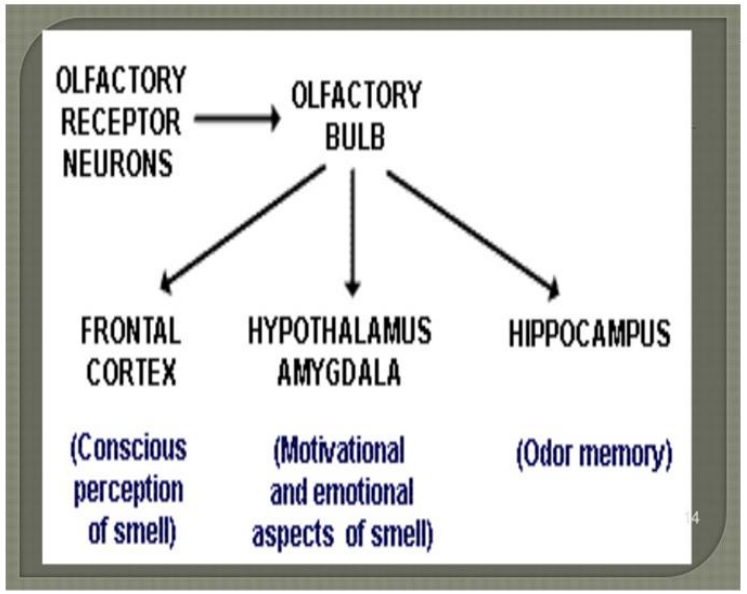

Pregnancy Related Oral Health Problems
Pregnancy Gingivitis
Pregnancy granuloma
Increased Tooth Mobility
Dental Caries
Erosion
Candidiasis

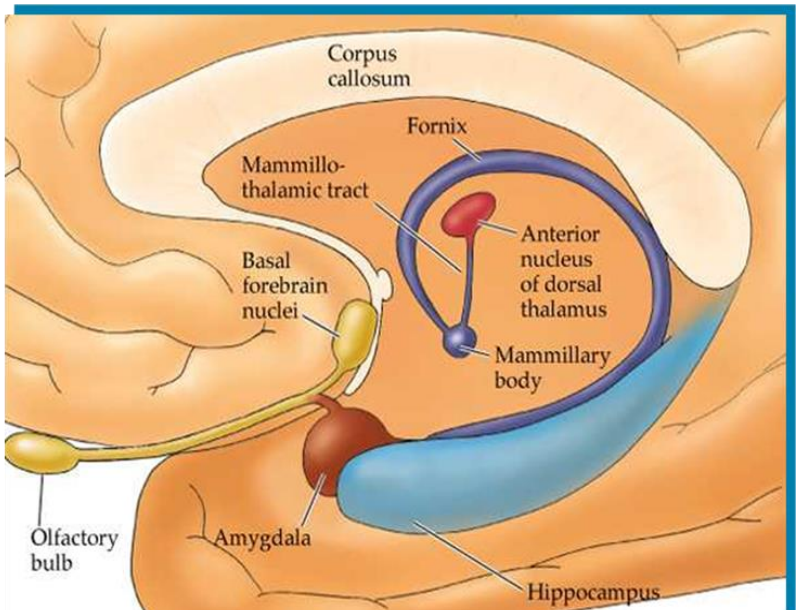
Flavour bridge during 1000 days of early life

Unknown to the mother, her food choices during pregnancy and even during breastfeeding would have influenced the infant palate.









Excessive Heat during first trimester and effect on fetus

- Hyperthermia is a well-known animal teratogen, and maternal fever has been associated with birth defects in human studies (*Edwards 2006; Edwards et al. 1995; Graham 2005; Graham et al. 1998; Warkany 1986).* Meta-analysis by Moretti et all 2005 significant odds ratio

- Associations with maternal fever were attenuated after adjustment for the use of antipyretics, suggesting that the fever was teratogen and not the underlying illness (*Czeizel et al. 2007; Hashmi et al. 2010; Oster et al. 2011; Vogt et al. 2005).*

- Exposure to excess heat at work could increase your chances of having a baby with a birth defect or other reproductive problems (your body temperature to become higher than 39°C (102.2°F)

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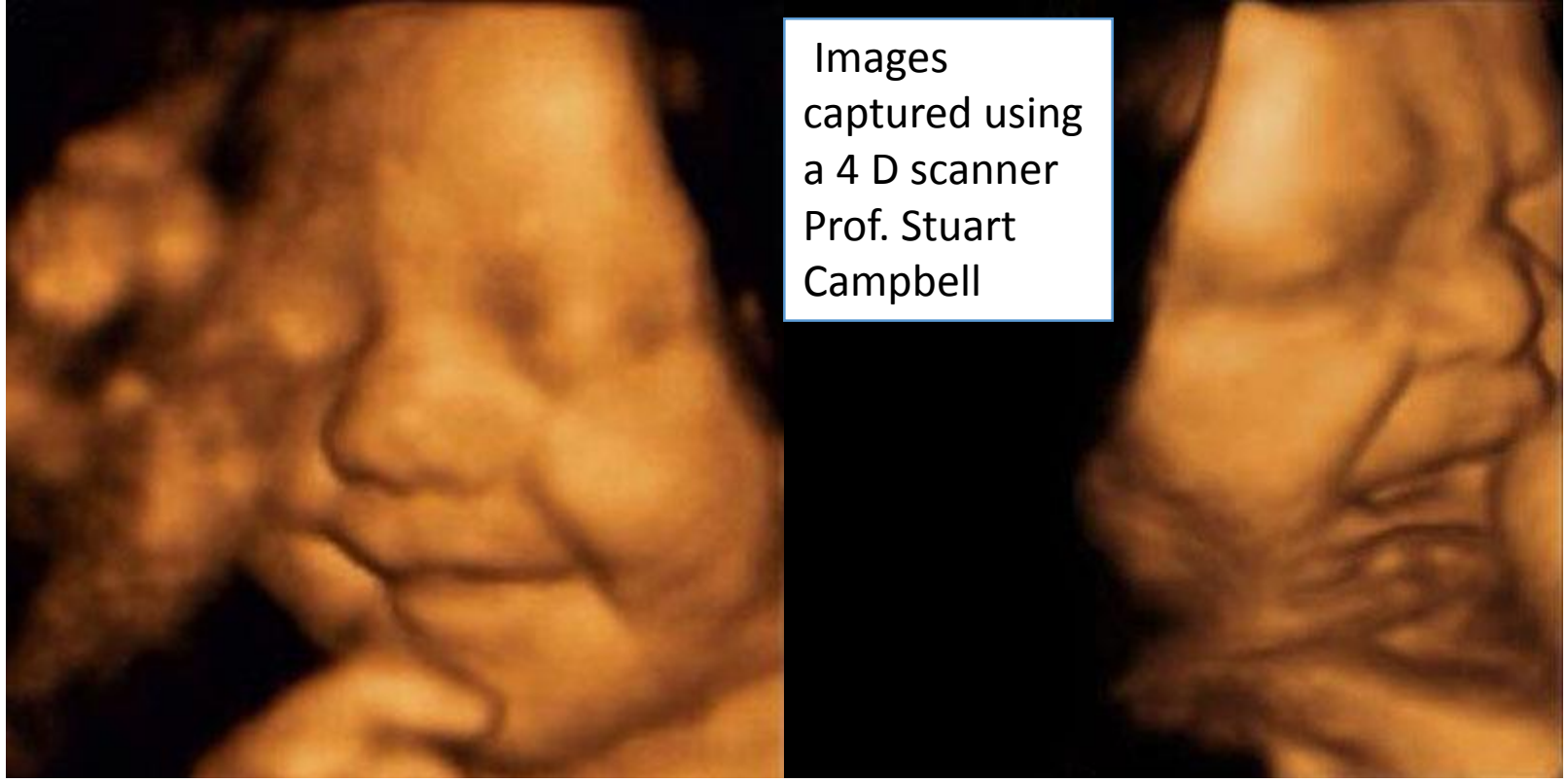
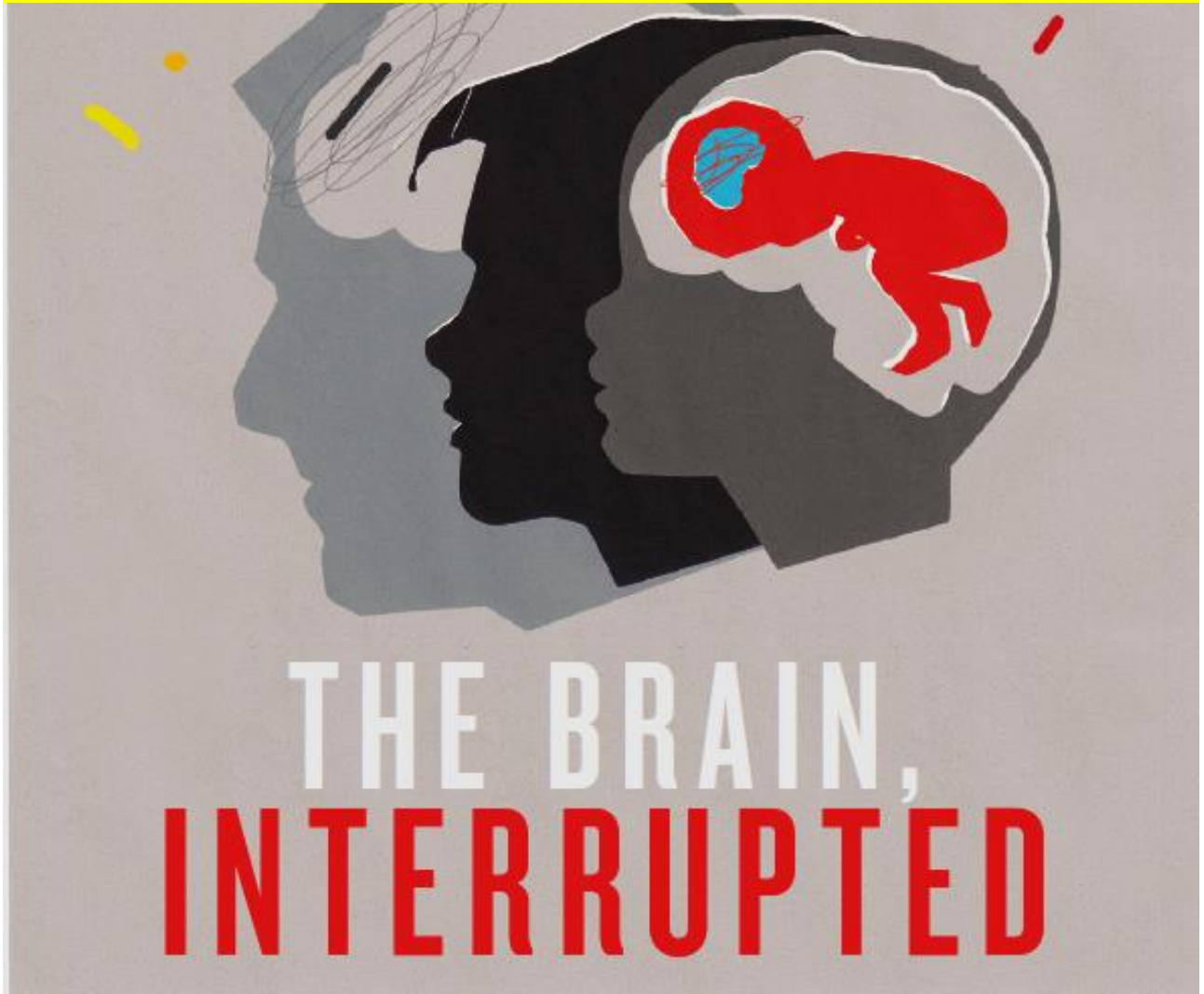


Images captured using a 4 D scanner Prof. Stuart Campbell

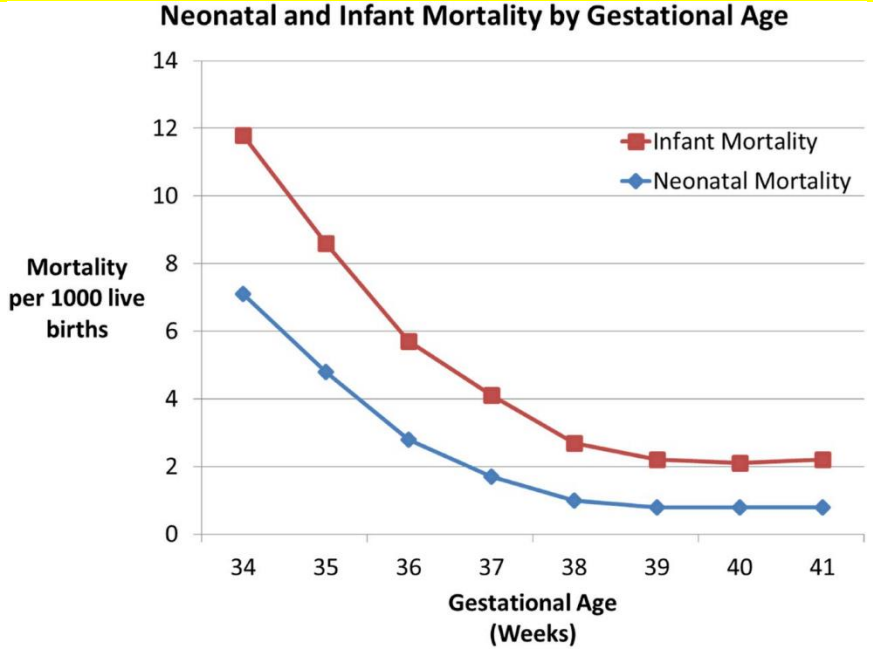
Foetus reaches out to Mothers hand

THE BRAIN INTERRUPTED

19% to 20% prevalence of behavior problems at age 8 in infants born between 35 and 37 weeks

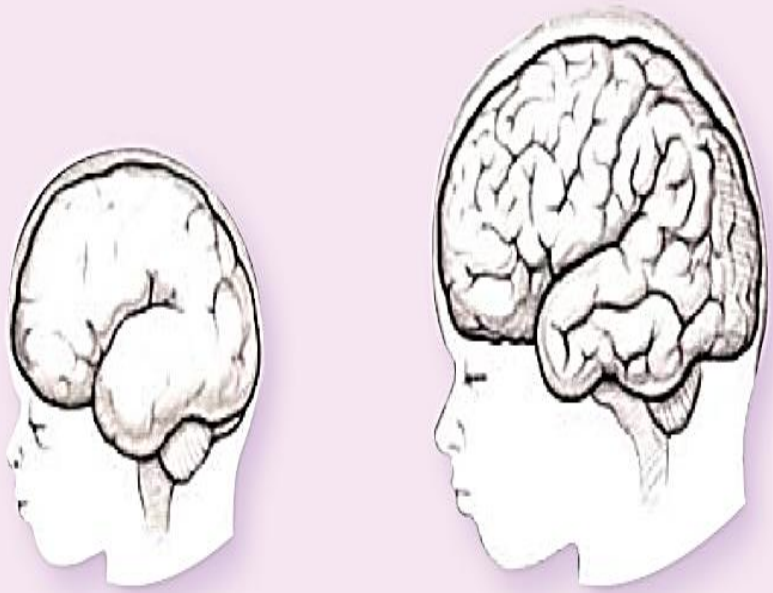


The last 6 weeks of gestation is a critical period of growth and development of the fetal brain. Brain weight at 34 weeks is only 65% of that of the term brain, and gyral and sulcal formation is incomplete. Cortical volume increases by 50% between 34 and 40 weeks' gestation, and 25% of cerebellar development occurs during this same period of time



Prevalence, stability, and predictors of clinically significant behavior problems in low birth weight children at 3, 5, and 8 years of age. Gray RF, Indurkhya A, McCormick MC Pediatrics. 2004 Sep; 114(3):736-43.

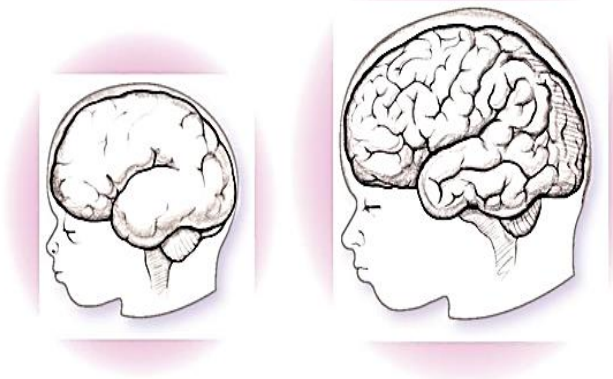
A baby's brain at 35 weeks weighs only two-thirds of what it will weigh at 39 to 40 weeks.



35 weeks 39 to 40 weeks

If your pregnancy is healthy, it's best to stay pregnant for at least **39 weeks.**

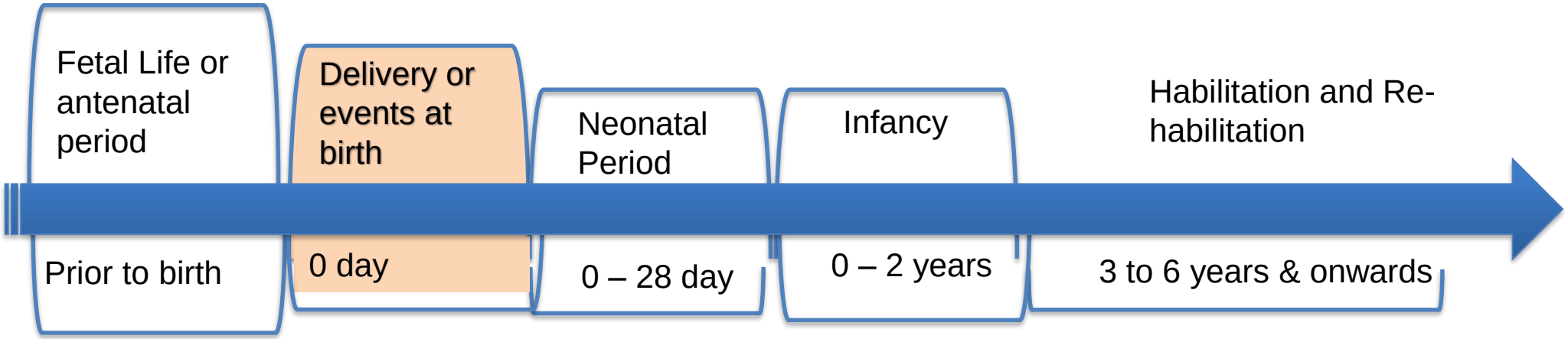
A baby's brain at 35 weeks weighs only two-thirds of what it will weigh at 39 to 40 weeks.



35 weeks 39 to 40 weeks

march of dimes®
pregnancy & newborn health education center®
marchofdimes.com

Critical periods which impacts the cognitive trajectory and related interventions



Interventions at Birth

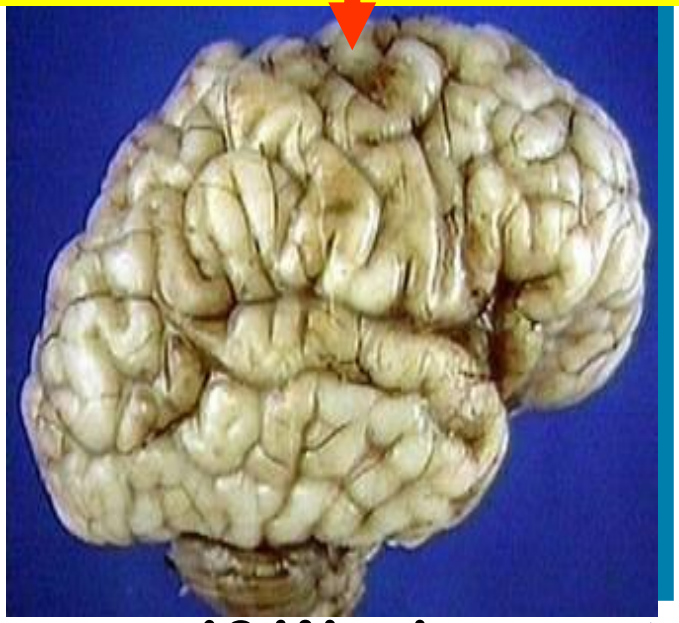
1. LDR concept : Privacy to help natural pulsatile oxytocin
2. Birth companion
3. Avoid induction or augmentation of labour
4. Zero separation
5. Immediate taking to breast
6. Resuscitate with umbilical cord intact if required
7. Skin to skin contact with hammock shaped mothers cloth
8. Dealing with empathy as shouting stops Natural oxytocin

Task to be completed in 40 weeks :

Smooth bilobed structure

23 Weeks Gestation

Complex gyrations or sulcations



40 Weeks Gestation

100 billion neurons formed (~100X the size of INDIA) over 40 weeks of gestation

250,000 neurons is formed per minute!!!!!!!

Each neuron again must have 15000 connections (INTELLIGENCE)

*British physiologist and pharmacologist **Sir Henry Dale** isolated the active brain chemical that was behind the contractions — a hormone he named oxytocin (derived from the ancient Greek words for "swift birth").*

American biochemist Vincent du Vigneaud found a way to manufacture synthetic versions of oxytocin in the laboratory. In the 1990s, researchers became curious about what role, if any, oxytocin plays in the bonds that form between couples

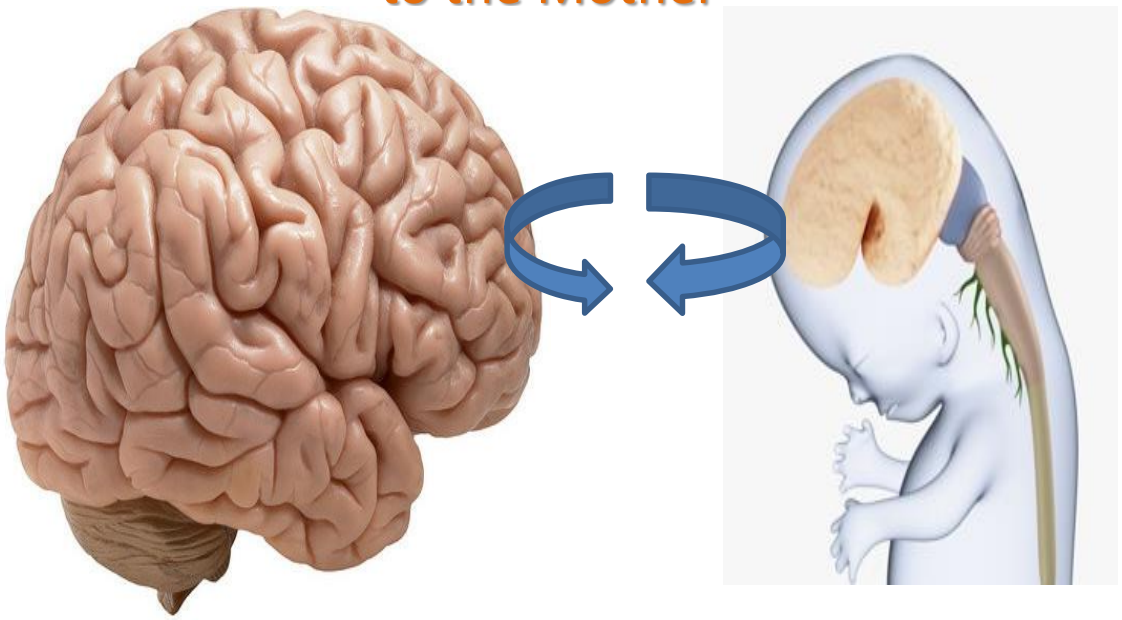
To understand the neuroscience of adult partnerships, researchers study prairie voles, a rare example of a species that mates for life. Several studies suggest that the hormone oxytocin cements the bonds that form between adult partners.

Oxytocin: Bonding, Birth, and Trust

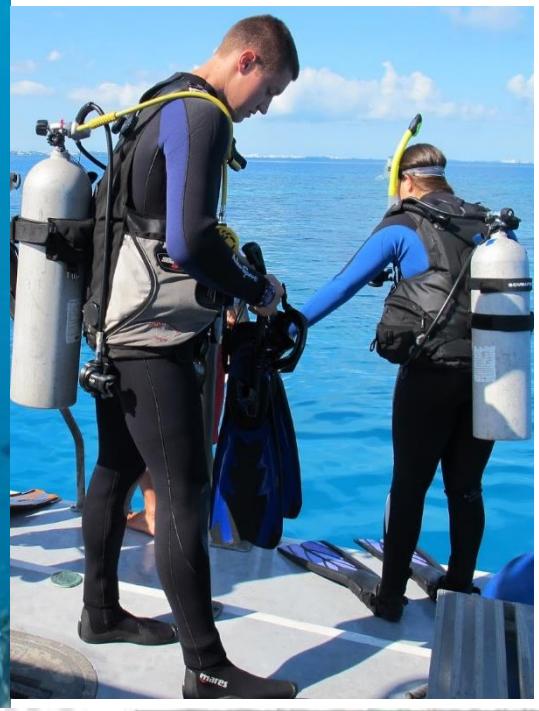
Who decides the time when the labour pain starts

Subtle talk between mother and child at Birth

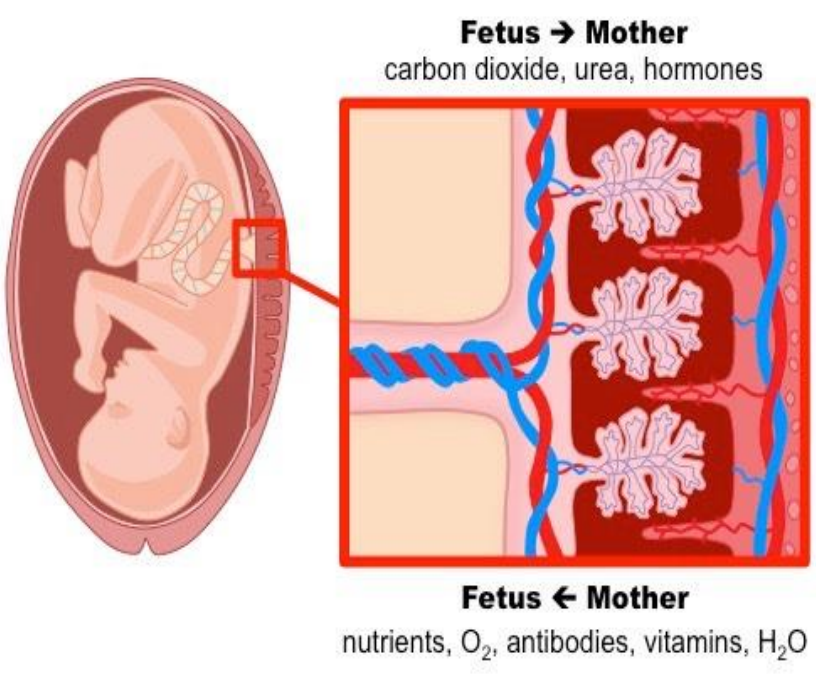
Birth is too important to be left entirely to the Mother

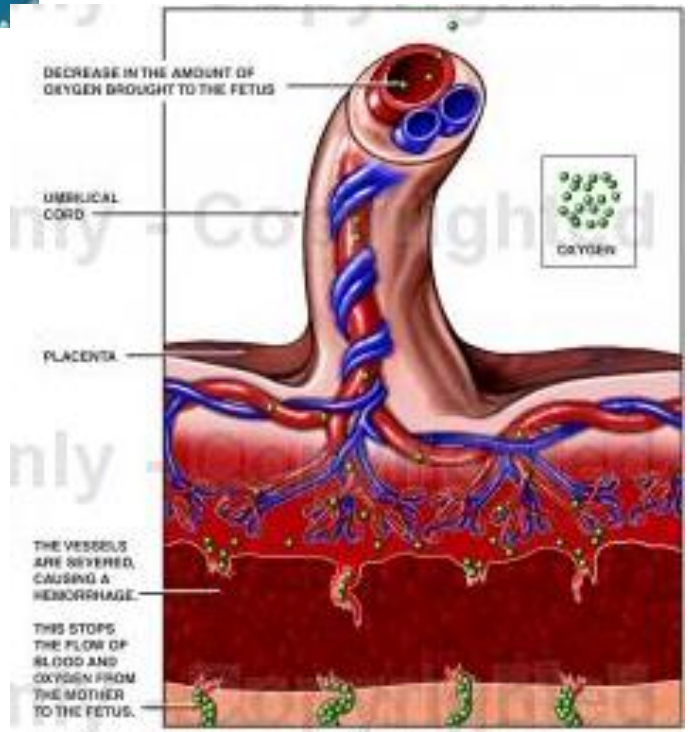


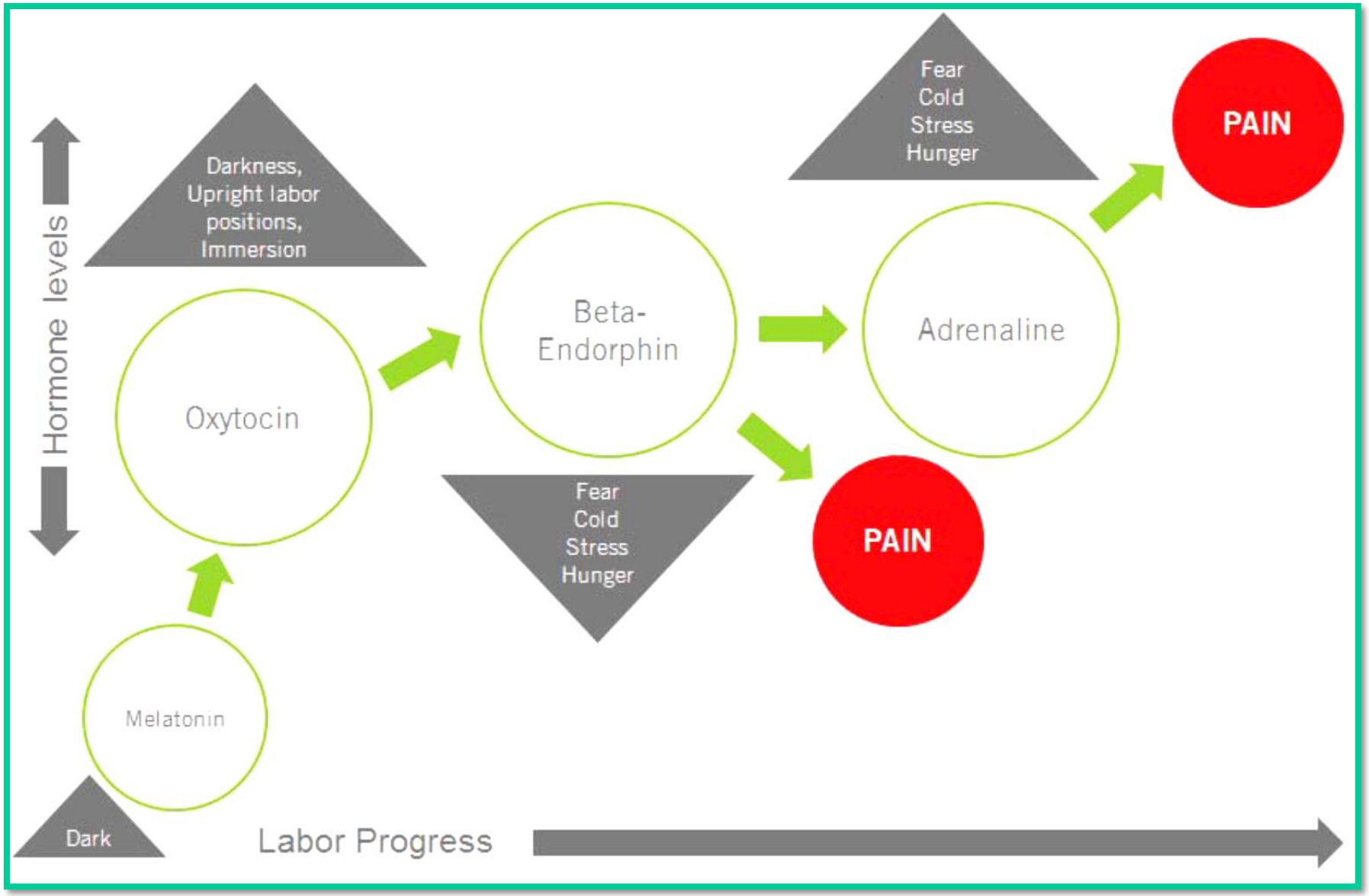
At Amsterdam scientists concluded that smooth childbirth requires good interaction between the brain of the mother and child .
Both brains play a key role in speeding up labour by secreting a hormone called Oxytocin




gettyimages
Henrik5000


Fetus → Mother
carbon dioxide, urea, hormones
Fetus ← Mother
nutrients, O_2, antibodies, vitamins, H_2O


DECREASE IN THE AMOUNT OF OXYGEN BROUGHT TO THE FETUS
UMBILICAL CORD
OXYGEN
PLACENTA
THE VESSELS ARE SEVERED, CAUSING A HEMORRHAGE
THIS STOPS THE FLOW OF BLOOD AND OXYGEN FROM THE MOTHER TO THE FETUS.


Hormone levels
Darkness, Upright labor positions, Immersion
Oxytocin
Beta-Endorphin
Fear Cold Stress Hunger
Adrenaline
PAIN
Fear Cold Stress Hunger
PAIN
Melatonin
Dark
Labor Progress





Zero separation : A timeline of a baby's first 10 minutes Zero interference. Learning from the Indian tribes

a) robust, angry birth cry

b)holding perfectly still on mothers' chest

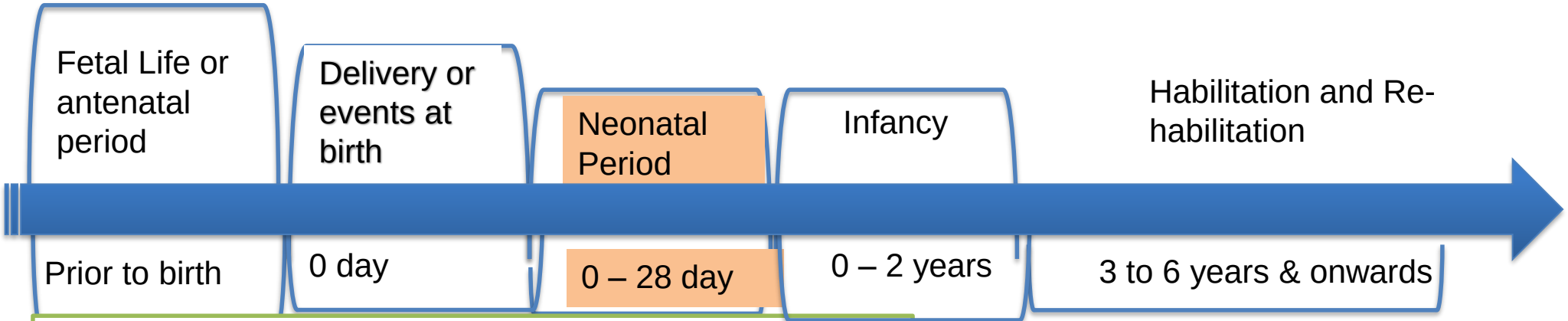
c)gradually start moving their heads and mouths

Key Patient Education Messages

1. Avoid stress
2. Improve Oral hygiene
3. Control Blood sugar
4. Talk to your baby
5. Micronutrients

Journey of first thousand days

Critical periods which impacts the cognitive trajectory and related interventions



Interventions at Neonatal period

1. Using mustard pillow
2. Exclusive breast feeding
3. Interacting with the child
4. No Body spray ; No change in the style of hair
5. Hammock from mothers cloth
6. Protect from string light , sound
7. No swaddling

EXAMINATION OF THE NEWBORN FROM HEAD TO TOE FOR COMMON BIRTH DEFECTS

RBSK

GENERAL OBSERVATION : If present, refer

- Looks ill
- Lethargic
- Abnormal cry
- Not Feeding
- **Colour of skin:** a) Pale b) Blue c) Yellow

Wash your hands, before touching the baby

❶ HEAD AND SPINE

1. Size too large > 38 cms (full term)
2. Size too small < 32 cms (full term)
3. Absence of skull cap
4. Swelling or protruding of the brain
5. Abnormal swelling of the spine


1 HYDROCEPHALOUS Q03 *


2 MICROCEPHALY Q02


3 ANENCEPHALY Q00


4 ENCEPHALOCELE Q01


5 SPINA BIFIDA WITH MENINGOMYELOCOELE Q05 *

❷ EYES, EARS, MOUTH AND LIPS

EYES

1. Eyelid – swelling
2. Eyelid – droopy
3. Gap in eyelid
4. Eyeball – absent
5. Eyeball – small
6. Inside the eye – corneal clouding
7. Inside the eye – opacity of lens/white reflex


1 HAEMANGIOMA D 18.01


2 PTOSIS Q 10.0


3 COLOBOMA OF EYELID Q10.2


4 ANOPHTALMOS Q11.1 ONE EYE OR BOTH EYES


5 MICROPHTALMOS Q11.2


6 CONGENITAL CATARACT Q12.0


CONGENITAL GLAUCOMA Q15.0 *

EAR

1. Absent
2. Abnormal shape


1 ANOTIA Q 16.0


2 MICROTIA II Q 17.2


2 MICROTIA III Q 17.2

MOUTH

1. Cleft (split) lip
2. Cleft (split) palate
3. Cleft (split) lip and palate


1 CLEFT LIP Q 36


2 CLEFT PALATE Q 35


3 CLEFT LIP & PALATE Q37

❸ ABDOMEN AND ANUS

ABDOMEN

1. Scaphoid (sunken and concave) with respiratory distress: X-ray chest
2. Distended: X-ray abdomen
3. Wall defect- gap with herniation of the gut


1 DIAPHRAGMATIC HERNIA Q 79.0 *


2 INTESTINAL OBSTRUCTION Q 41-42 *


3 GASTROSCHISIS Q 79.3 *


OMPHALOCELE Q 79.2 *

ANUS

1. Absent/Imperforate/ abnormally positioned


1 IMPERFORATE ANUS/ANORECTAL ATRESIA AND STENOSIS WITH OR WITHOUT FISTULA Q42.0-Q42.3 *

❹ GENITALIA

1. Ambiguous genitalia
2. Vaginal opening absent
3. Urethral opening away from the tip of the penis – look where the urine comes out


1 AMBIGUOUS GENITALIA Q 56.4 *


2 VAGINAL AGENESIS Q 52.0


3 HYPOSPADIAS Q 54

❺ URINARY TRACT

1. Bladder – not covered
2. Wrinkled abdominal wall
3. Urinary stream – check if male child


1 BLADDER EXSTROPHY Q 64.0-64.1 *


2 PRUNE BELLY Q 79.4


3 POSTERIOR URETHRAL VALVE Q 64.20 *

Distended bladder even after passing urine.

❻ LIMBS (UPPER & LOWER)

1. Absence of a whole or part of upper limb
2. Absence of a whole or part of lower limb
3. Fused digits
4. Absence of digits or split hand/foot
5. Extra digits
6. Club foot


1 LIMB REDUCTION DEFECT UPPER Q 71


2 LIMB REDUCTION DEFECT LOWER Q 72


3 SYNDACTYLY Q 70


4 ECTRODACTYLY Q 73.7



4 POLYDACTYLY Q 69



5 CLUB FOOT-TALIPES EQUINOVARUS Q 66.0

❼ CHROMOSOMAL - DOWN SYNDROME

1. Face: Upward slanting eyes, fold on the inner corner of the eye (epicanthal), flat nose, small ear, small mouth, excess skin at the nape of neck
2. Palm: Single crease
3. Foot: Increased gap between 1st and 2nd toe


1


2 DOWN SYNDROME Q90


3

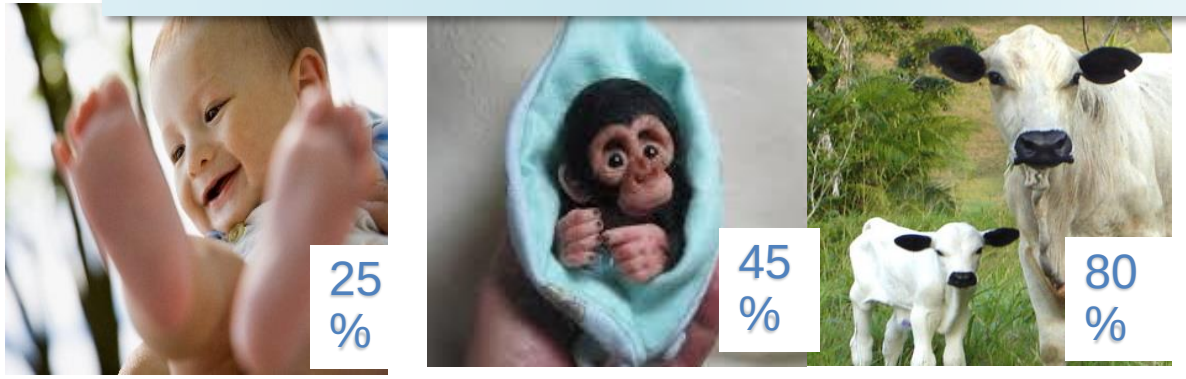
* Need urgent referral

→ If any of the above identified, record findings in RCH register and RBSK birth defect recording format along with MCTS details.

At birth the human infant is the least neurologically mature primate of all, and the most reliant on physiological regulation by the caregiver for the longest period of time.

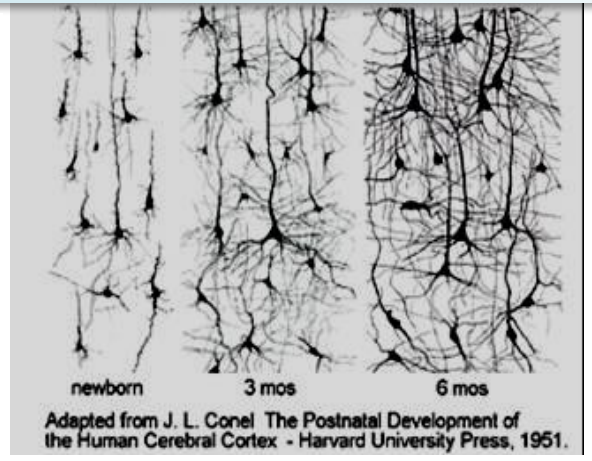
Reason for cognitive interventions

Brain weight at birth as percentage of eventual adult brain



- **75% of the human brain develops in the first 3 years**
- **100 Billion neurons developing 3 Trillion connections in first 3 years**
- **This is catalyzed by environmental stimuli**

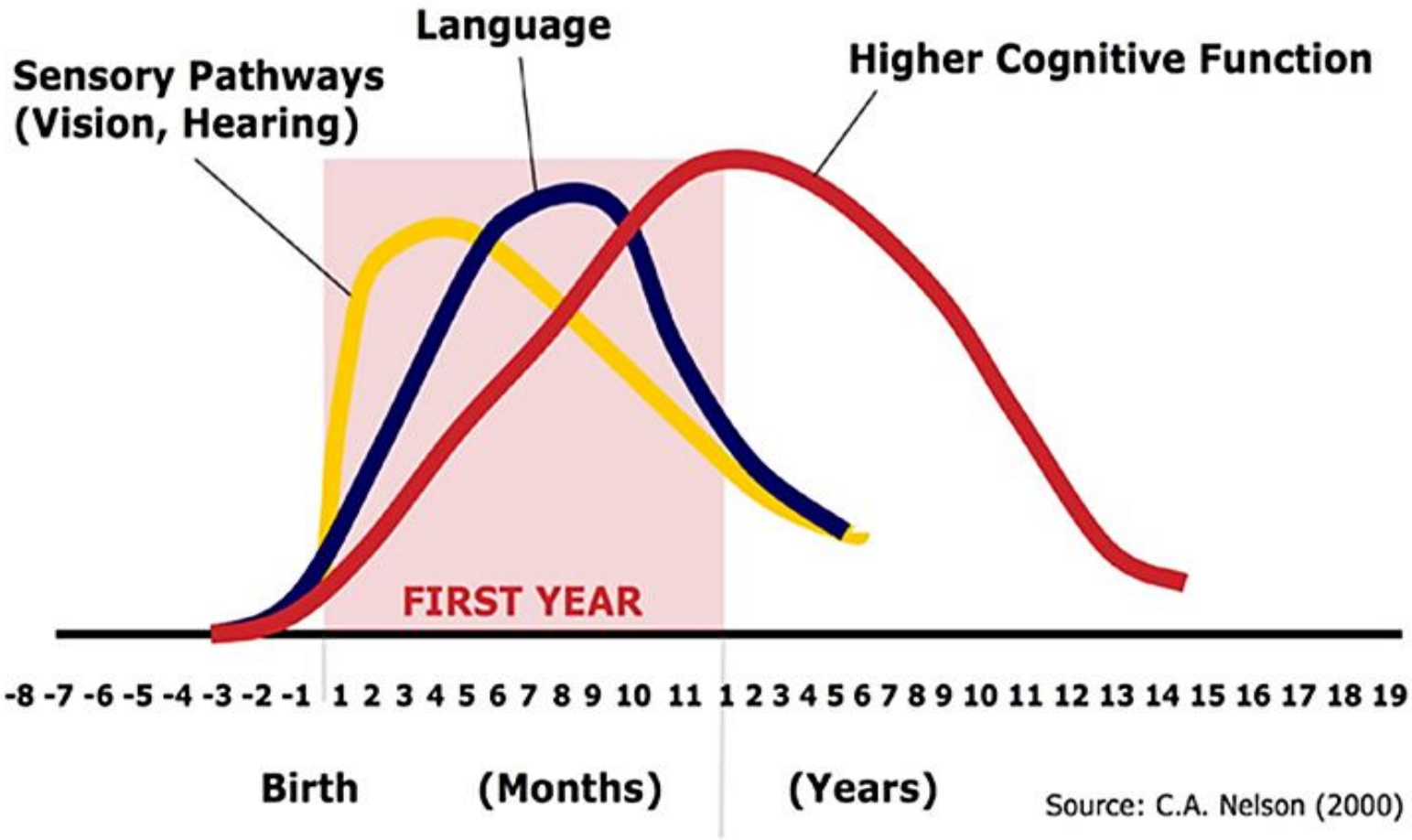
Dr . Bradd Shore of Emory University : Humans are born with remarkable undeveloped brain, "*a curious state of affairs for the brainiest of the primates* "



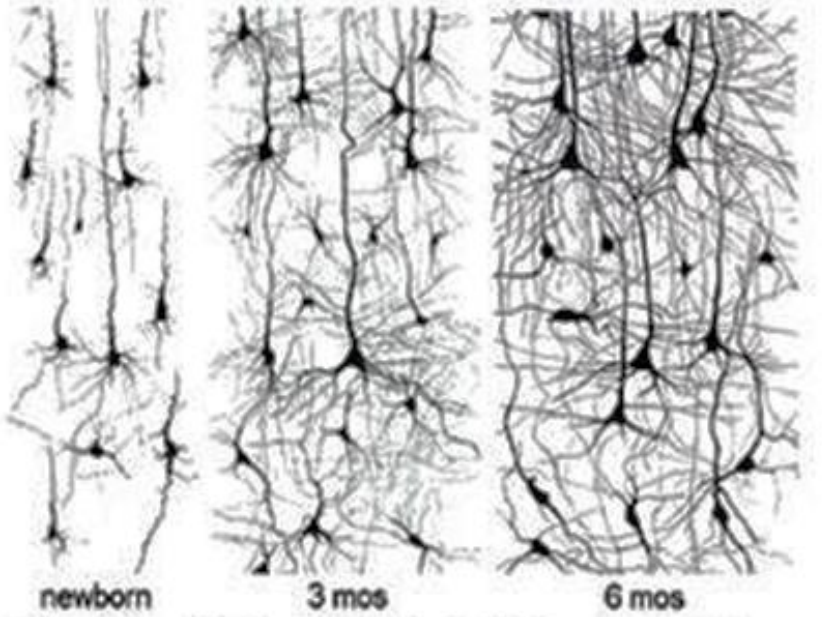
Center on the Developing Child
HARVARD UNIVERSITY

Human Brain Development

Neural Connections for Different Functions Develop Sequentially



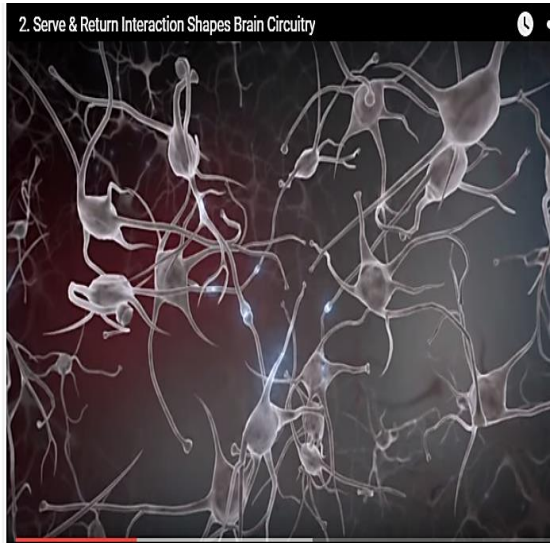
Source: C.A. Nelson (2000)

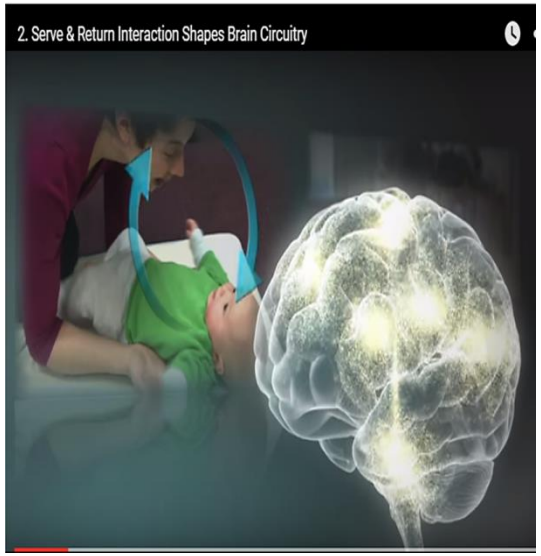


Adapted from J. L. Conel The Postnatal Development of the Human Cerebral Cortex - Harvard University Press, 1951.

Brain to skull size ratio a measure of intelligence


Motor Skills
Behavioral Control
Language
Visual
Memory
Emotion


2. Serve & Return Interaction Shapes Brain Circuitry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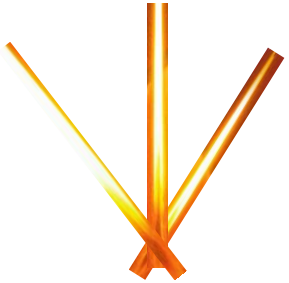
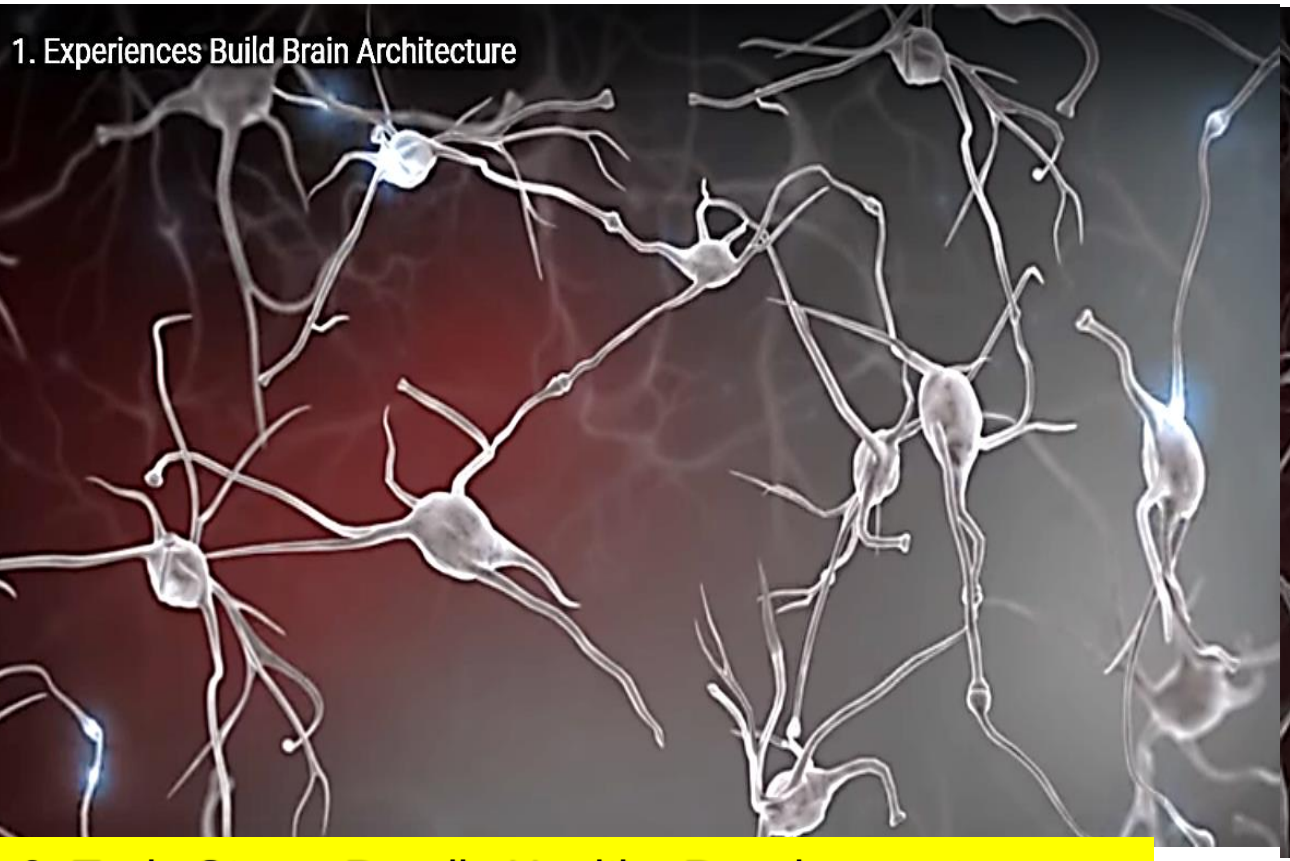
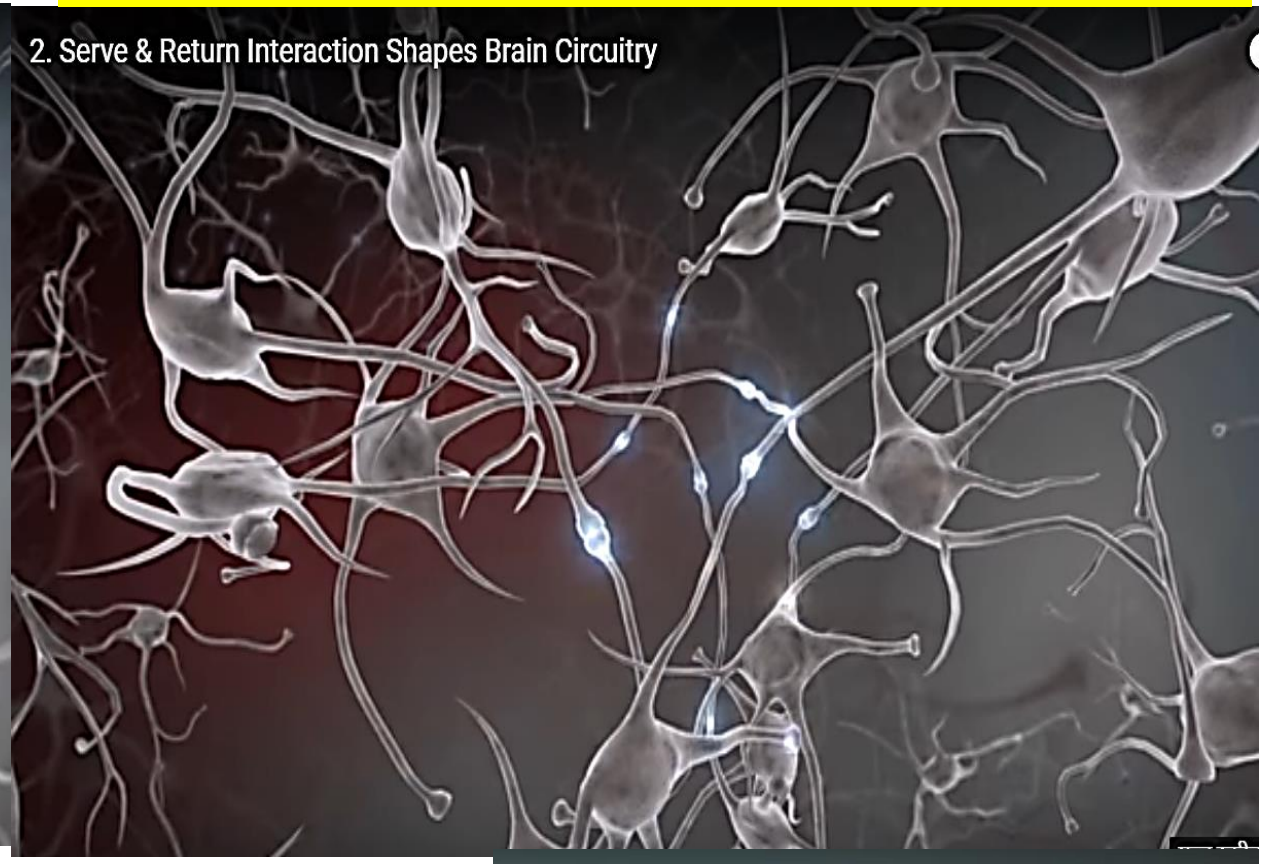


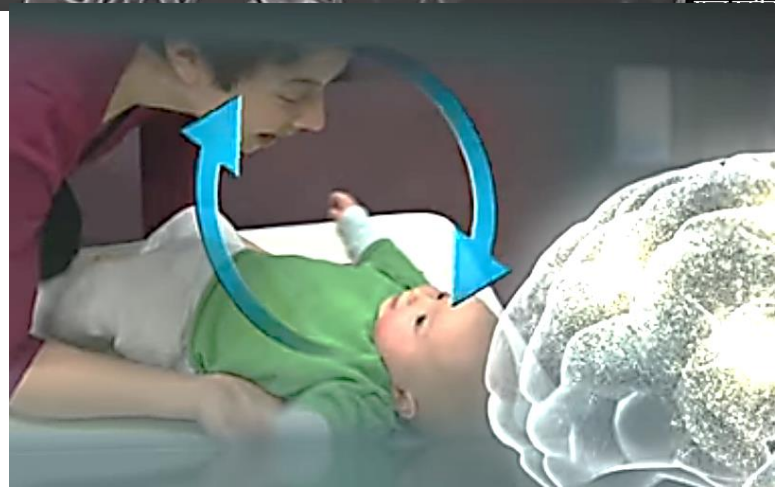
1. Experiences Build Brain Architecture



2.Serve and Return Interaction Shapes Brain Circuitry



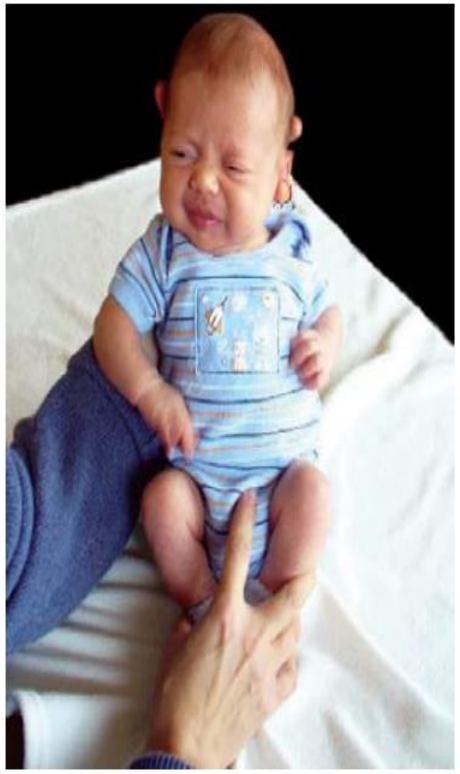
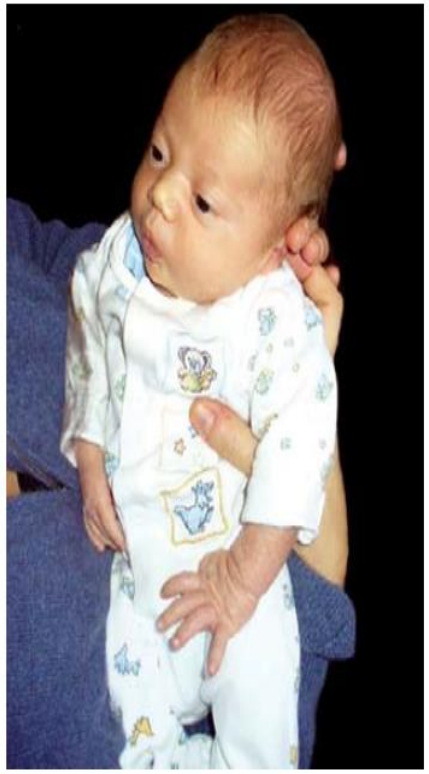
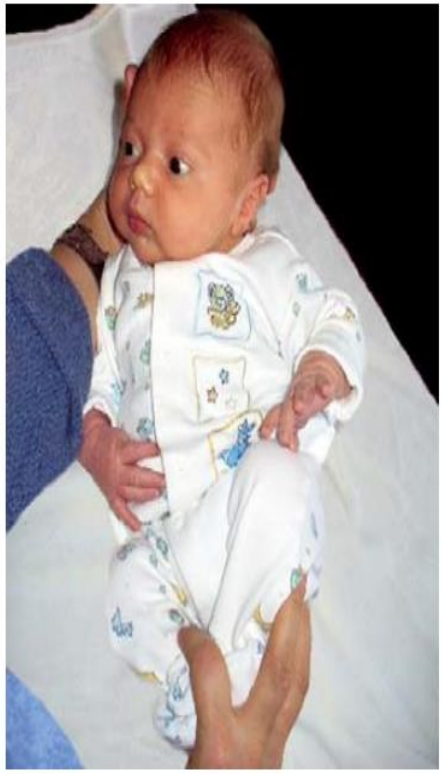
3. Toxic Stress Derails Healthy Development



Can Newborns Imitate ?

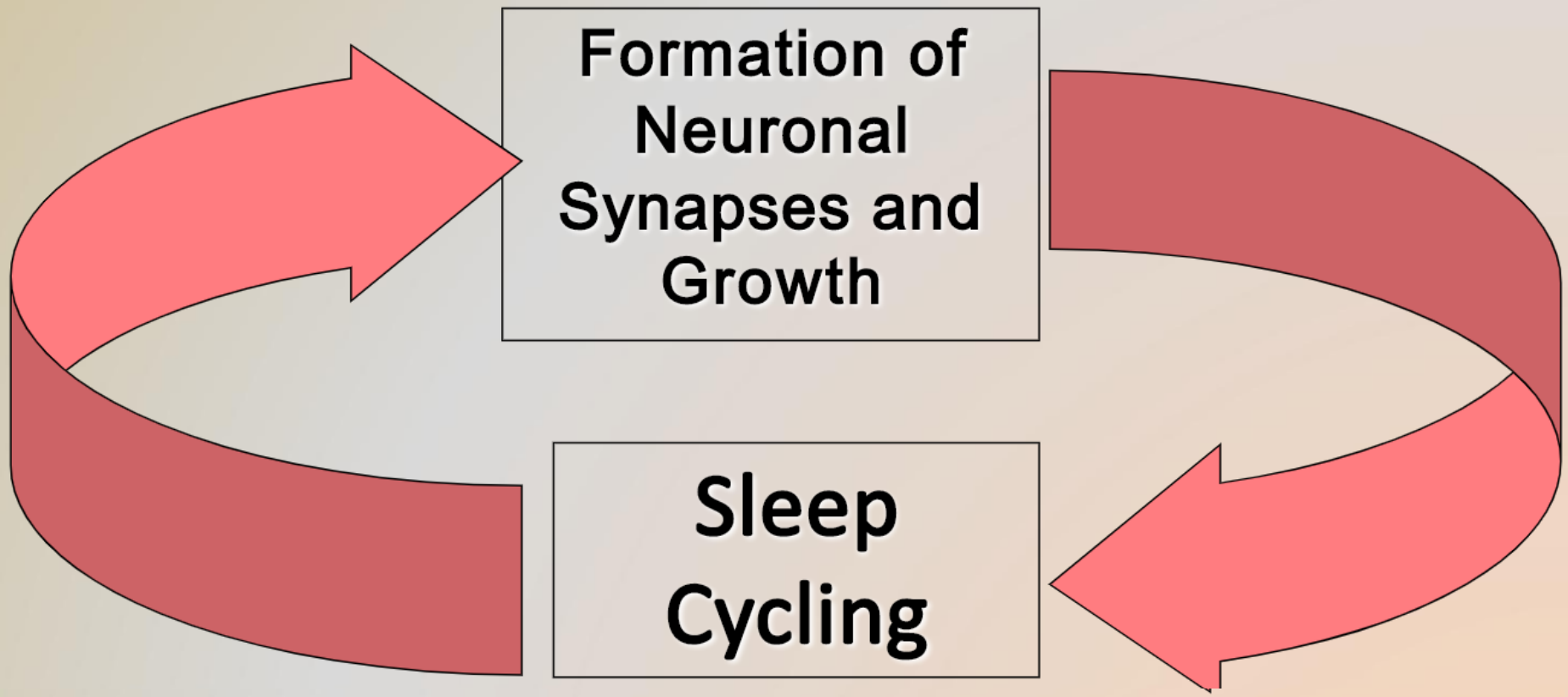




Support the neck and spine . Solicit the infants attention in a full term baby		
Initial stage : first few minutes Alertness : variable All limbs flexed Communication : Not yet	1) Flexor tone in the upper limb decreases hands open 2) Infants hand open 3) Peaceful expression	1) Suppression of jerking movement, Moro and grasp reflex 2) Communicates

Cycling is needed for Normal Growth



- Preemies in incubators demonstrate non-cycled sleep patterns throughout hospitalization
- Result of delay in sleep cycling affect post-discharge sleep for up to 2 yrs (Scher, 1997)

Sleep and sleep cycles begin at around 26 to 28 weeks' gestational age.

- Sleep and sleep cycles are essential for the development of the neurosensory and motor systems in the fetus and neonate.
- **They are essential for the creation of memory and long-term memory circuits.**
- They are essential for the maintenance of brain plasticity over the lifetime of the individual.
- They are critical for the fetus in utero and the preterm infant in the newborn intensive care unit (NICU)

Rapid eye movement sleep deprivation between 30 weeks' gestational age and 4 to 5 months post term results in delayed or disordered development of visual, auditory, touch & limbic (emotions) etc.

Sensory Systems That Require REM Sleep for Normal Development		
1.	Somatesthetic	Touch
2.	Kinaesthetic	Motion
3.	Chemosensory	Smell and taste
4.	Auditory	Hearing
5.	Vision	
6	Proprioception	Position
7	Limbic	Emotion
8	Social learning	
9	Hippocampus	Memory

Sleep and Sleep Cycles

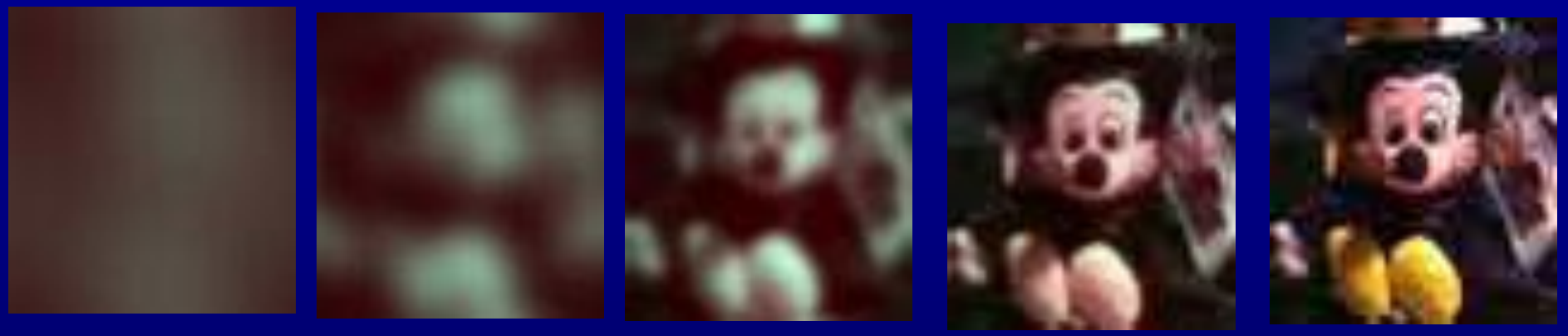
- Sleep and sleep cycles are essential for:
  - Sensory system development in the fetus and young infant
  - Creation of long-term memory and learning
  - Preservation of brain plasticity
- Sleep deprivation in foetus and neonate has profound effects on early sensory development and creation of permanent neural circuits for the primary sensory systems

Sleep Pattern in NICU

- In the NICU, infants demonstrate a very chaotic version of this cycling pattern
- Incubator Infants only have 10-20 seconds of quiet sleep. (HR and RR also does not change)
- Disrupted sleep due to
  - separation from mother
  - and care giving environment

Infant Vision Over 6 Months

Newborn	4 weeks	8 weeks	3 months	6 months



The new born does see light variation and movement. At 4 weeks the vision of the infant can detect some definition of elements but is predominantly a blur. When the infant reaches 8 weeks their vision can define some shapes and details, but everything is still not clear. By 3 months the infant can recognize detailed shapes, forms, depth and definition of color. At 6 months the infants full vision defines small details and coloring.

http://www.tinyeyes.com/tinyeyes/tryit2.php

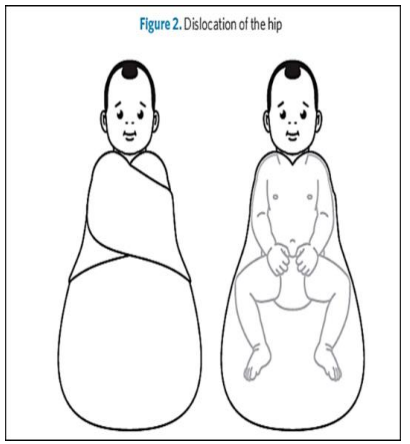


Figure 6. Cranial molding headband

Neurodevelopmental Implications of "Deformational" Plagiocephaly
BRENT COLLETT, Ph.D et al . J Dev Behav Pediatr. 2005 Oct; 26(5): 379–389.
In this study, infants averaging six months of age who exhibited positional plagiocephaly (flat head syndrome) had lower scores than typical infants in observational tests used to evaluate cognitive and motor development.

Infant's brain activity upon hearing his mother's voice, and then a stranger's voice.

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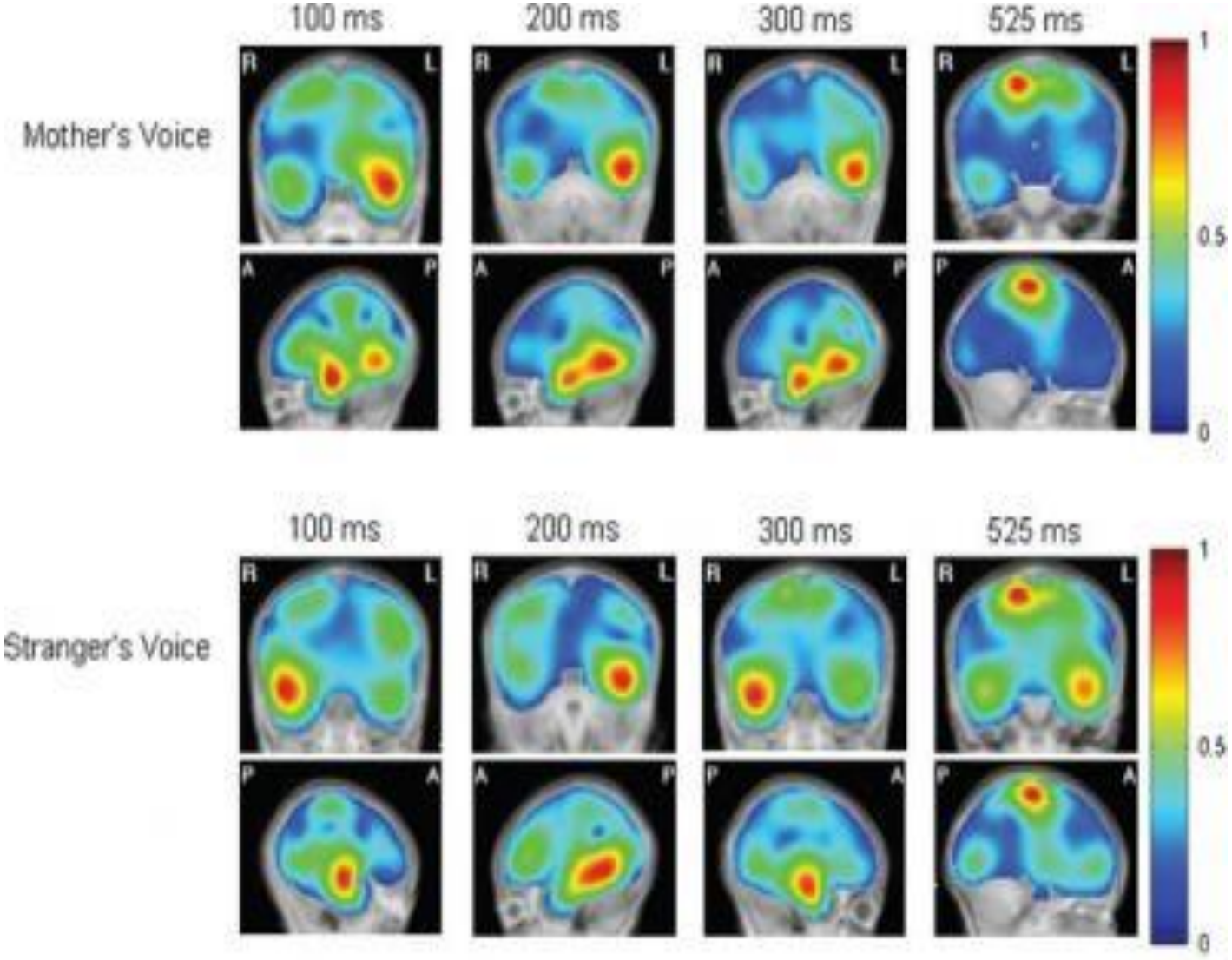
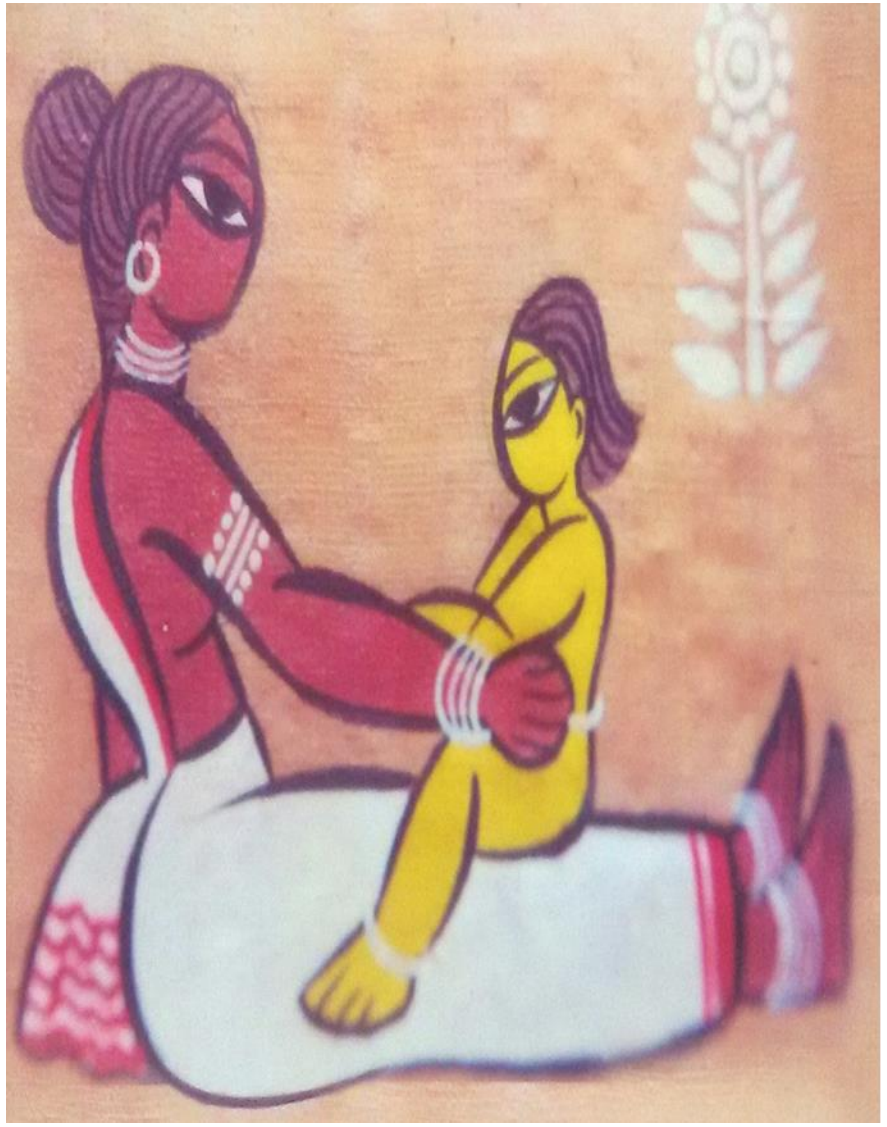
RASHTRIYA BAL SWASTHYA KARYAKRAM
राष्ट्रीय बाल स्वास्थ्य कार्यक्रम
FROM SURVIVAL TO HEALTHY SURVIVAL

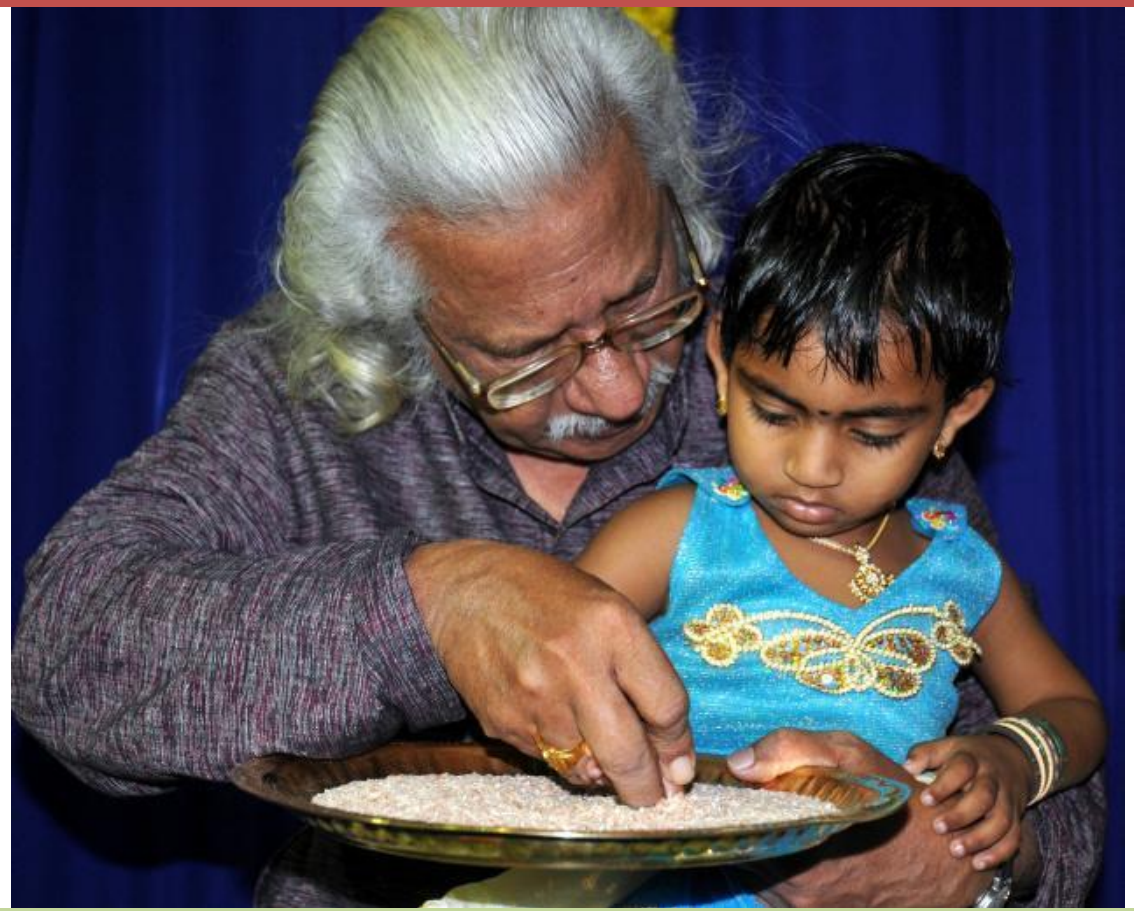


Activation of the left-side of the brain (responsible for language learning) on listening to the mothers voice , and the right-side of the brain (voice recognition) on listening to strangers voice

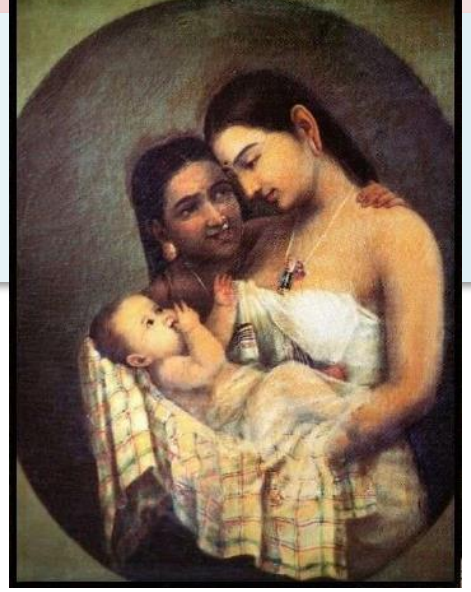


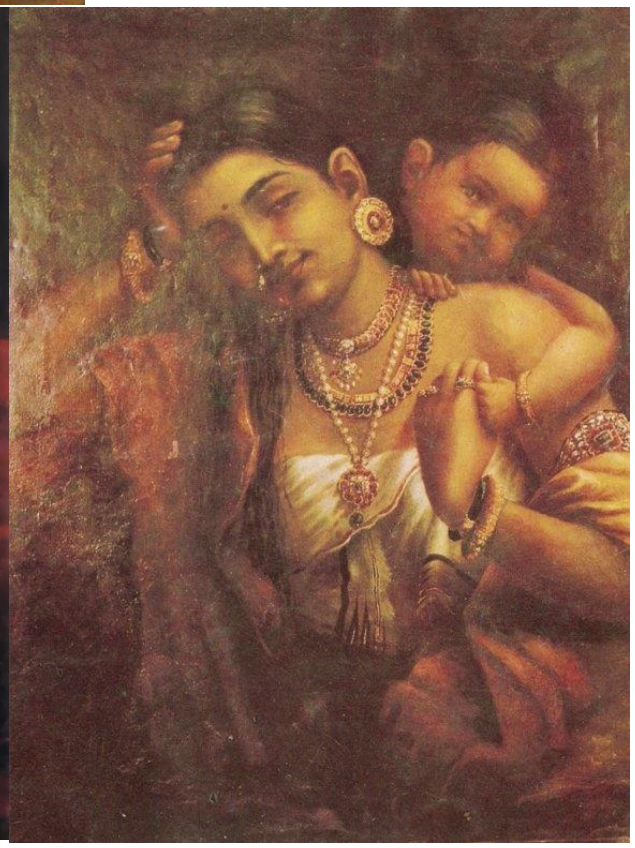
Opposable thumb : Opposable thumb is an extraordinary evolutionary characteristic . The eye–hand coordination made possible by both stereoscopic vision and a grasping hand with opposable thumb has allowed humans to manipulate the environment with great deal of dexterity

Vidyarambham



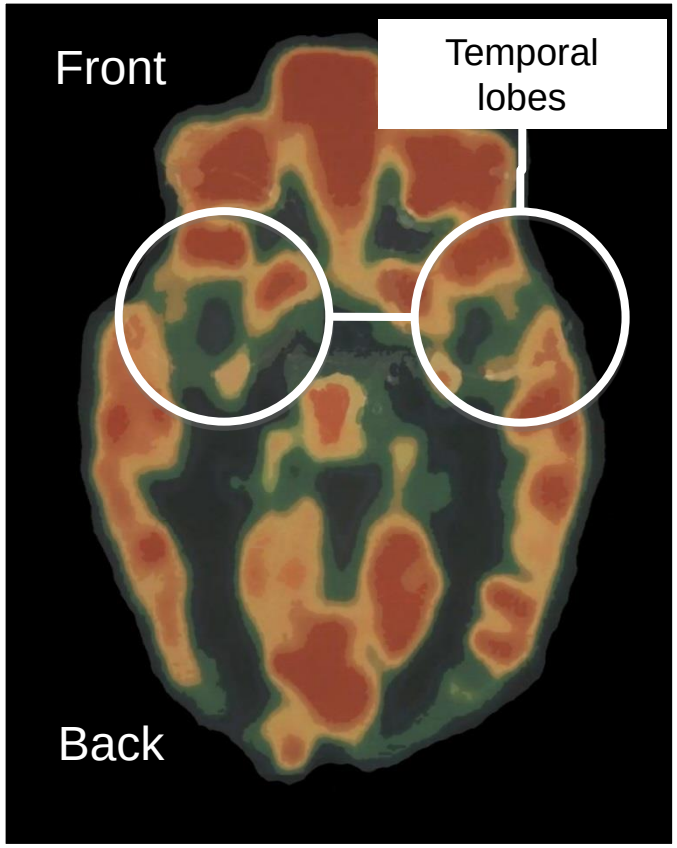
Film maker Adoor Gopalakrishnan initiates a child into the world of letters at a function organized , be it Hindus or Christians, thousands of children in Kerala will write their first letters on a plate of rice as they are initiated into the world of learning



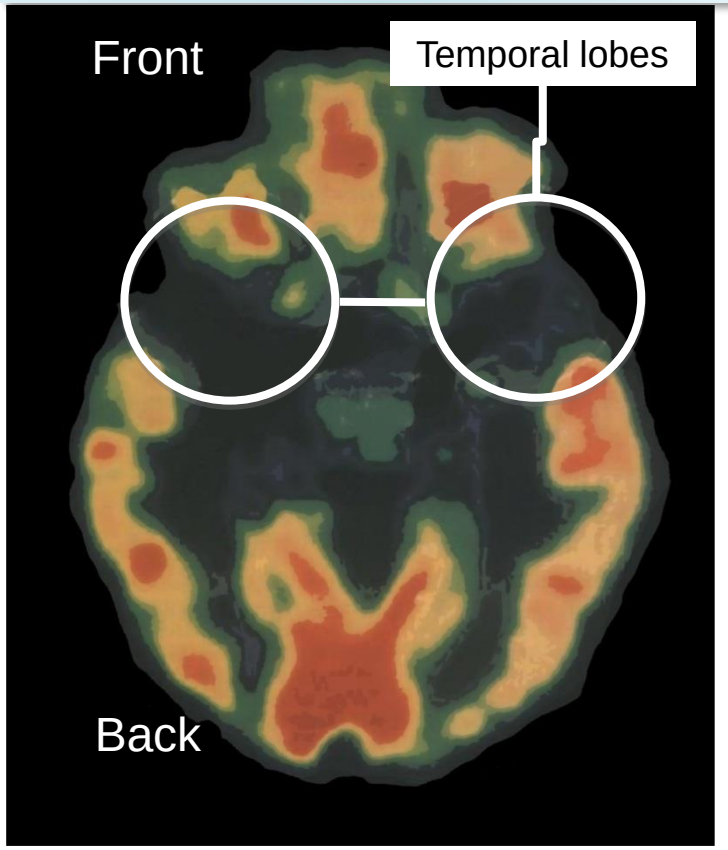


Brain activity with cognitive therapy in the critical period

Conjoint twins : received stimulation

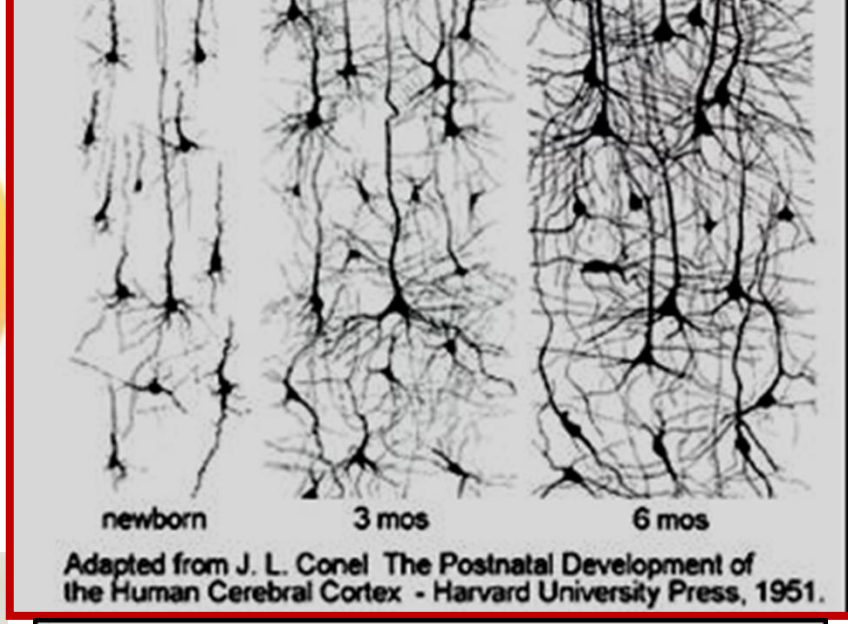


Conjoint twins : received no stimulation



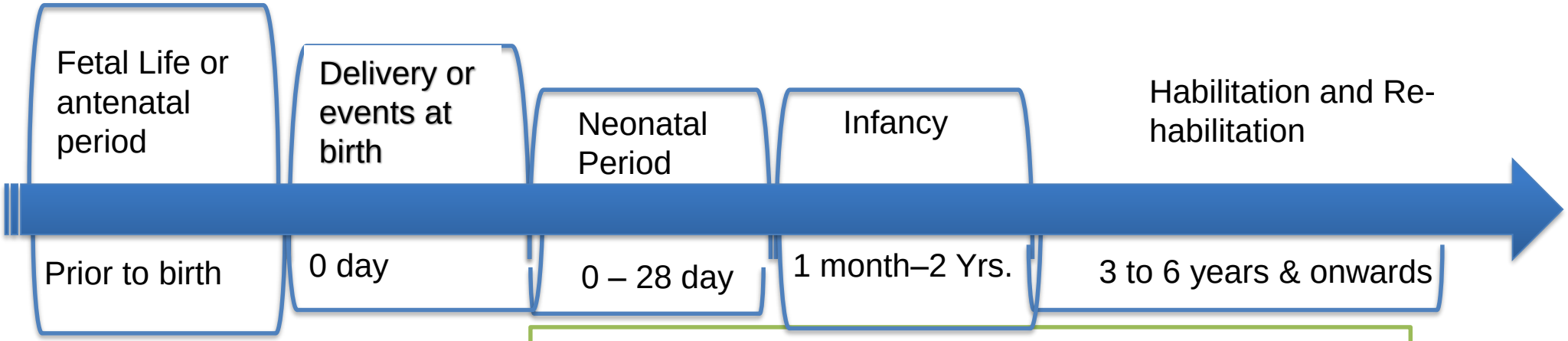
Most activity  Least activity

Illustration based on actual PET scan images - Center for Disease Control and Prevention



Adapted from J. L. Conel The Postnatal Development of the Human Cerebral Cortex - Harvard University Press, 1951.

Critical periods which impacts the cognitive trajectory and related interventions

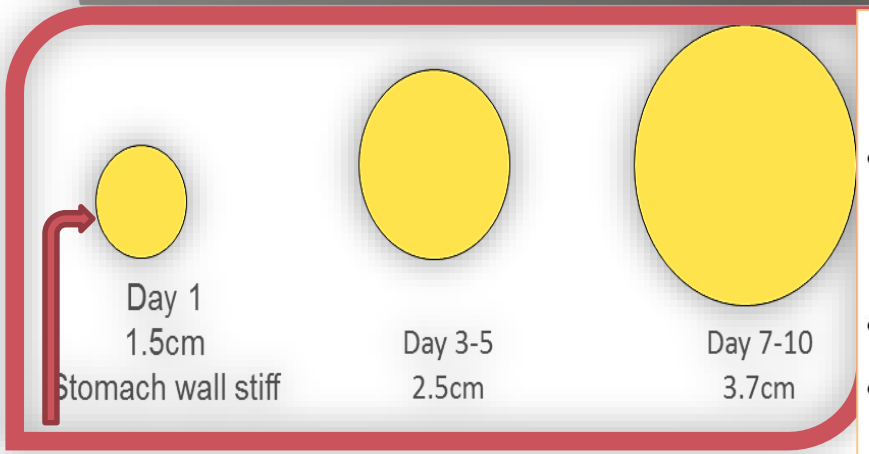


Interventions during infancy

1. Exclusive breast feeding and weaning at 6 months
2. Interacting with the child
3. Story telling
4. Avoid TV, Smart phone and Computer
5. Avoid walkers
6. Weaning food should be colourful , smell and finger foods

The new-born baby : Demand : Supply : Demand

- Has a tiny little stomach
  - Stomach size on day 1 about 1.5cm in diameter (
  - Stomach size on day 3 about 2.5cm in diameter (
  - Stomach size on day 10 about 3.7cm in diameter



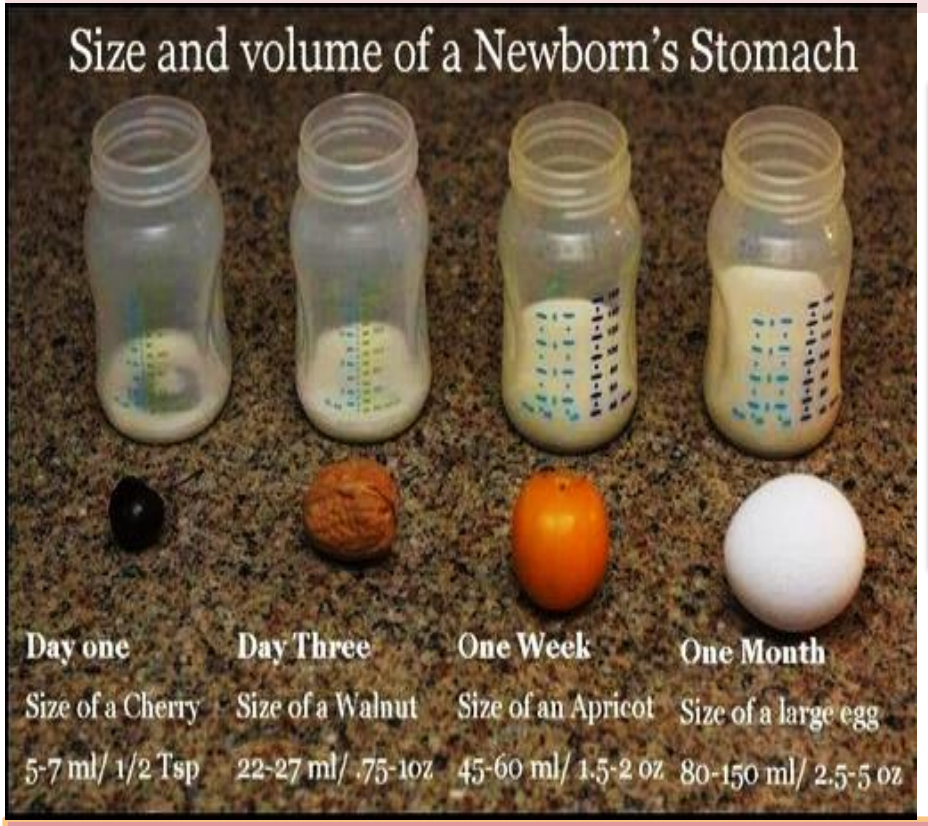
Colostrum Production

- Mothers produce 30-100 ml of colostrum in the first 24 hours, 2-10 ml per feeding on day 1 and 5-15 ml per feeding on day 2
- Newborn stomach does not stretch
- Time of transition to mature milk varies based on parity of mother:

5-7 ml ml 2ml/kg	20-25ml 8ml/kg	45-50 16ml/kg

2-10ml per feed 5-15ml/feed :
Colostrum Production
30-100ml per day

Natures way of balancing



Colostrum : Protein & Antibodies Duration : 1st 2 -3 days
Transitional milk @ 2nd -4th day
Mature milk : By 10th day
Hind Milk : More PUFA
Fore Milk : more thirst : high in Water

Total calories required is 110-120 kcal/kg/day

Protein : 2.2 g/kilogram of body weight. Essential fatty acid : Linoleic acid and DHA, AA

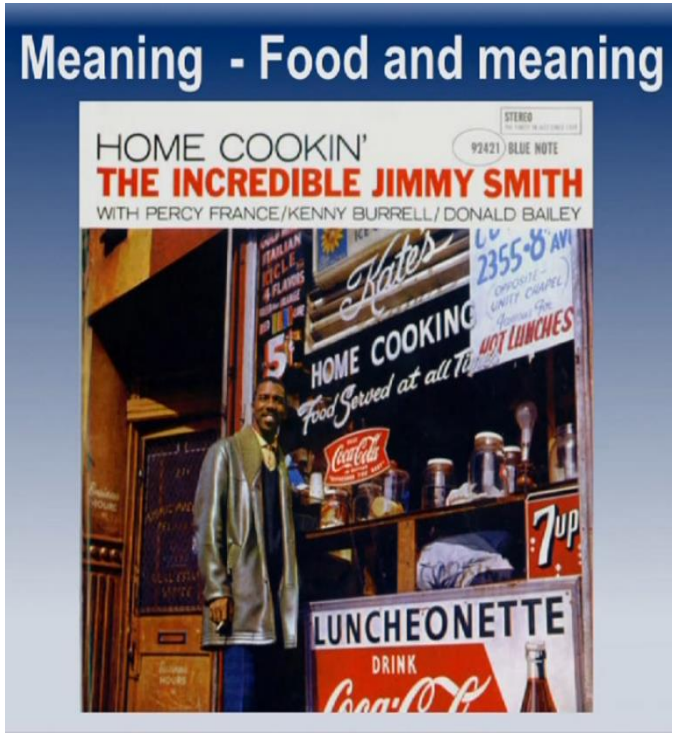
Food for the Brain Starts With Food for Small Tummies

What does nutrition mean to a child ?

Pediatricians were explained that Nutrition means : food with colors , food with smell , food with textures
They cooked it after the lecture and this to be offered to children whose mother had problem in feeding . Images of the food cooked and the way they were plated for children between 6 -24 months

Globalization is, in part, an economic force to bring about a closer integration of national economies.
Food globalization brings about nutritional transitions.

The most common transition today is the shift from a diet based on locally-grown, minimally refined vegetable foods supplemented with small amounts of animal food to the 'modern diet' of globally sourced foods, rich in saturated fat, animal products, and sugar, but poor in some nutrients and low in fiber.

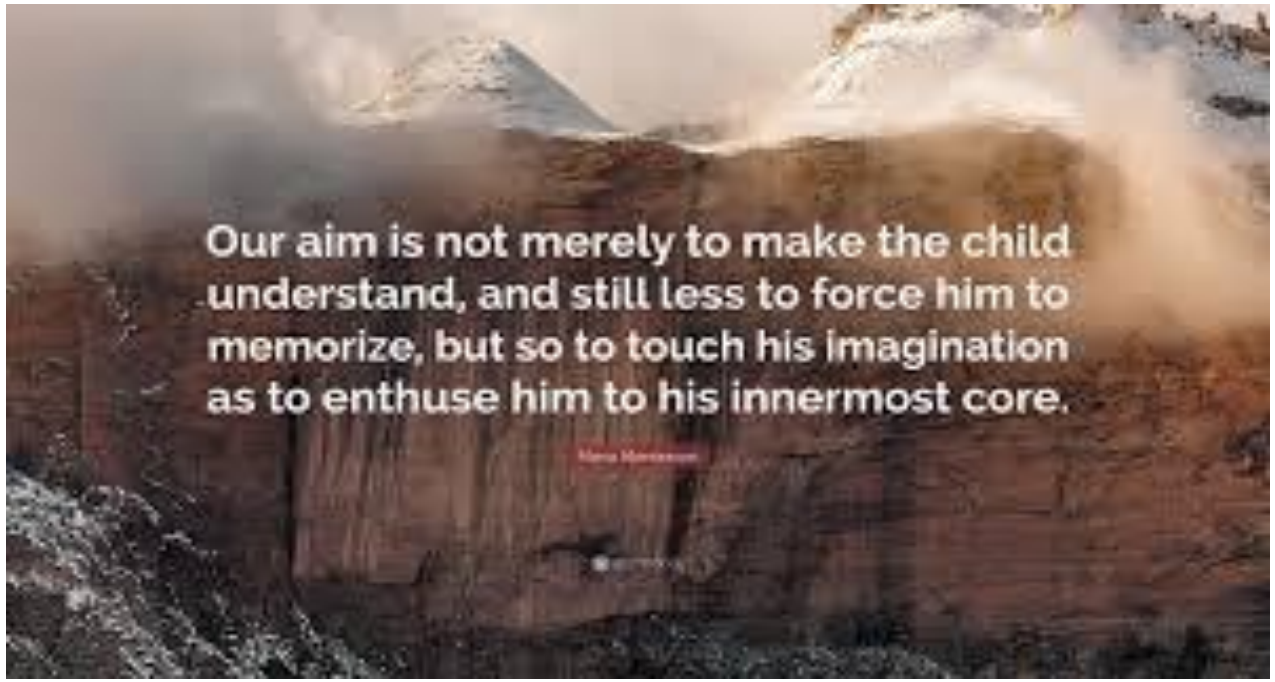


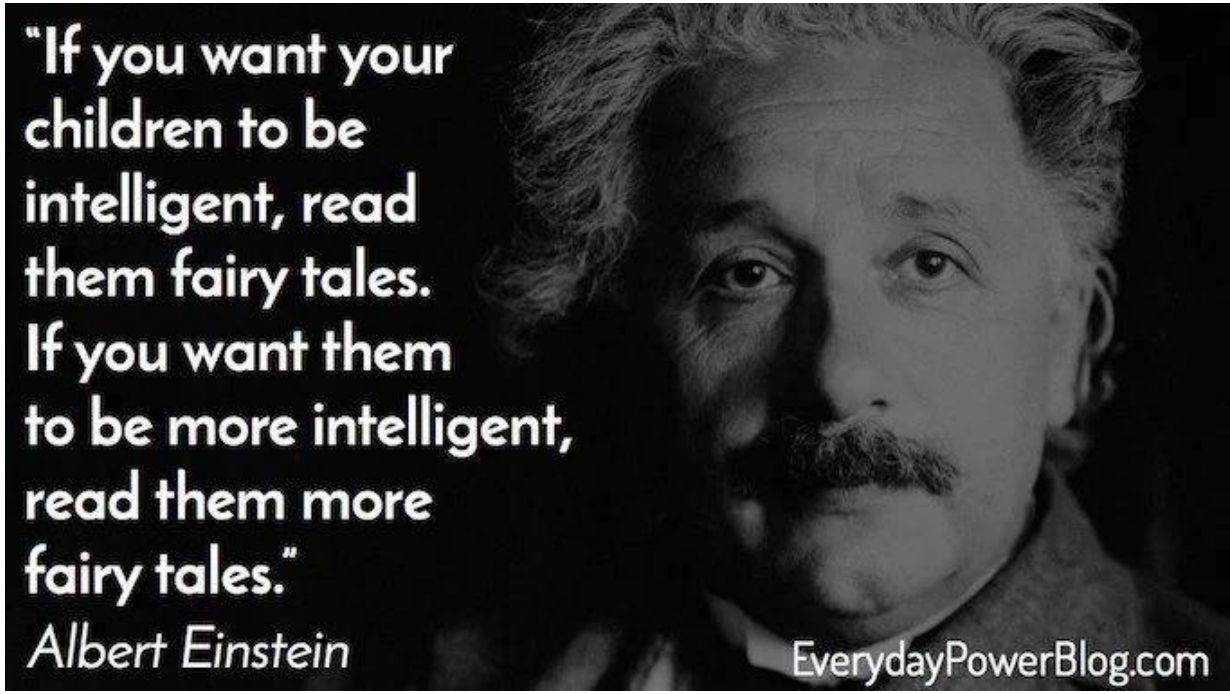
Do not tell them how to do it.
Show them how to do it and do not say a word. If you tell them, they will watch your lips move.
If you show them, they will want to do it themselves.

– *Maria Montessori*

The most **important period of life** is not the age of university studies, but the first one, the period **from birth to the age of six.**

– *Maria Montessori*





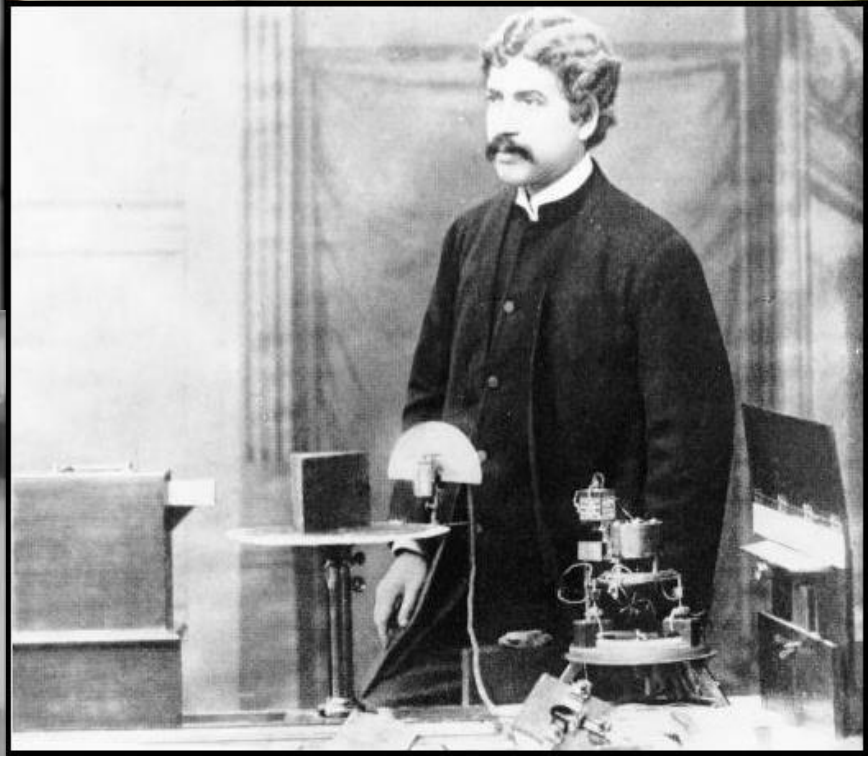
A man whose genius transcended boundaries, J C Bose was a quintessential polymath: a physicist, a biologist, a botanist, an archaeologist, an author, and a connoisseur of fine arts.

"What happens if you take a rich magistrate's son and make him learn in a village school sitting besides the sons of servants and fishermen? He'll hear tales of birds and animals that make him curious about Nature. And that makes him one of India's first scientists." – Jagdish Chandra Bose

An unfortunate creature is strapped to the table of an unlicensed vivisector. When the subject is pinched with a pair of forceps, it winces. It is so strapped that its electric shudder of pain pulls the long arm of a very delicate lever that actuates a tiny mirror. This casts a beam of light on the frieze at the other end of the room, and thus enormously exaggerates the tremor of the creature. A pinch near the right-hand tube sends the beam 7 or 8 feet to the right, and a stab near the other wire sends it as far to the left.

"Thus," the journalist concluded, "can science reveal the feelings of even so stolid a vegetable as the carrot." *1914, a journalist for The Nation wrote about an experiment he witnessed in a small private laboratory in Maida Vale in London:*

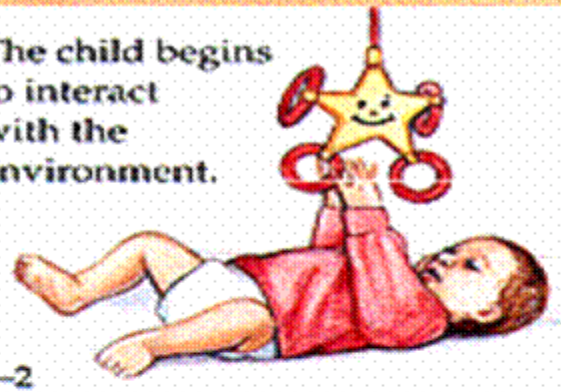
Elected Fellow of the Royal Society in 1920, becoming the first Indian to be honored by the Royal Society in the field of science.



To the infant who is in the early part of the sensorimotor stage, "out of sight" is truly "out of mind." Once a sheet of paper is placed between the infant and the toy monkey, the infant loses all interest in the toy. From evidence of this sort, Piaget concluded that the toy is not mentally represented. Children in a later part of the sensorimotor stage do mentally represent objects. This child pushes through the towel to reach the object that has been screened from sight.

SENSORIMOTOR STAGE

The child begins to interact with the environment.



0–2

PREOPERATIONAL STAGE

The child begins to represent the world symbolically.

2–6 or 7

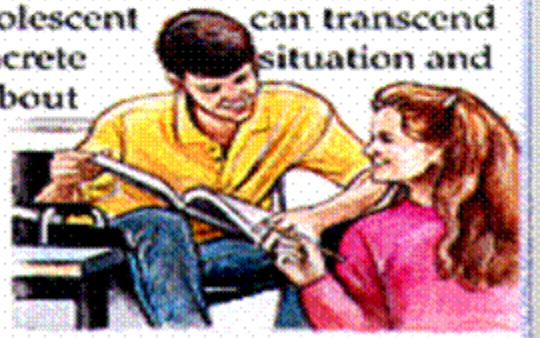
CONCRETE OPERATIONAL STAGE

The child learns rules such as conservation.

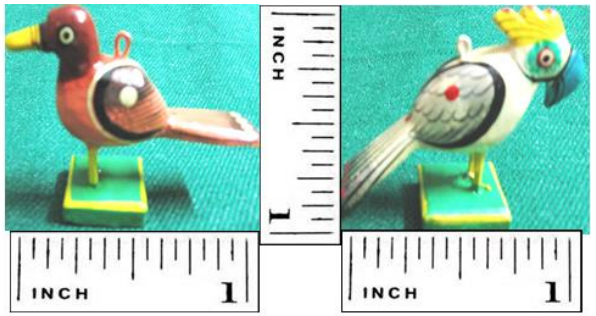
7–11 or 12

FORMAL OPERATIONAL STAGE

The adolescent can transcend the concrete situation and think about the future.



12–Adulthood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INCH
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RBSK

RASHTRIYA BAL SWASTHYA KARYAKRAM
राष्ट्रीय बाल स्वास्थ्य कार्यक्रम
FROM SURVIVAL TO HEALTHY SURVIVAL

Early Identification of Developmental delays in first 3 years of life

MCP card revised for age appropriate childhood development assessment

what the child does *(normative development)*

what parents need to do (ECD) and

when to seek help / refer

To be used by 8 lakhs ASHAs under HBYC

What most babies do (parents to ✓tick as per age)

By 2–3 months

- ☐ Begin to recognize the mother's face
- ☐ Develop social smile
- ☐ Make eye contact

☐ Raise head at times, when on tummy

- ☐ Move both arms and both legs, when excited
- ☐ Keep hands open and relaxed

☐ ASHA/AWW please examine and mark ☑ or ☒ on the card as per the age of the child

12

Parenting tips

- Massage gently, stretch and exercise arms and legs of babies
- Encourage babies to lie on tummy for some time every day

- Cuddle and play with babies daily. Cuddling or quickly responding to each cry does not spoil babies
- Talk to babies in your mother tongue daily

- Hang colourful moving objects 30cm (1 foot) away, for babies to focus on and follow
- Avoid use of digital media in children younger than 24 months

"Warning" signs : Contact ANM/AWW/health care provider immediately if you see any one of these

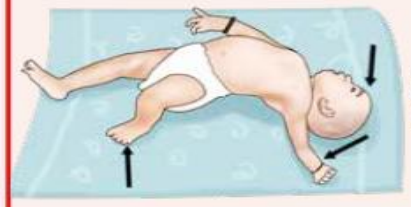
At 3 months

No social smile

Does not make any eye contact when being fed, cuddled or spoken to

Persistent squinting after 2 months

Does not startle/ wake up/ cry in response to sudden loud sound



Head pushed back, with stiff arms and legs

Persistently hold thumb inside the palm, with hands kept open or fisted

District Early Intervention Centre (DEIC)

Activities at Early intervention center for improving cognition and minimizing disability

Activities at Early intervention center for improving cognition and minimizing disability