



INDIAN ACADEMY OF PEDIATRICS - IAP

Tamil Nadu State Chapter - TNSC

Chapter of Neurodevelopmental Pediatrics - IAP



UPGRADED PARENTING AND CHILD DEVELOPMENT GUIDE

**(GUIDANCE FOR RAISING AN INTELLENT
AND CAPABLE CHILD WITH GOOD VALUES)**

**IAP Cuddalore, Villupuram - Puducherry Branches
(East Coast Pediatricians)**

◀ Detect Autism Early

For children of 36 months and above

Autism is a condition that affects three critical areas of development - Social, Communication and Cognition leading to impairment in all these areas.

An early diagnosis and appropriate training can show significant progress in the child's development.



1 Aloof in manner

Child stays withdrawn and does not interact or play with other children. They tend to spend time being alone.



5 Restricted / repetitive attachment to objects

Child may appear to be attached to certain toys or other objects. These attachments may seem inappropriate at times.



2 Appears deaf sometimes

Child does not respond when addressed or called.



6 Exhibits unusual behaviour

For instance, hand flapping or twisting, rocking, swaying, walking on tip-toes.



3 Uses adult's hand to indicate matter of interest

Takes an adult's help to indicate a desired object, but 'mechanically' or without an interaction / eye-contact



7 Prefers not to be touched, hugged or cuddled

Sometimes feels uncomfortable and prefers not to be hugged or touched by people.



4 Avoids eye contact

Child may avoid eye contact with the people interacting with them.



9 May not respond to "normal" teaching methods

The conventional teaching methods are not effective on the child's development



8 Lacks imaginative play

Play is often solitary and passive and not creative (e.g. kitchen set, doctor patient etc.)

10 Peculiar / Special Skills

Performs certain peculiar activities or showcase special skills, such as single word reading, music, art, puzzles, memory or calculations.



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GUIDANCE FOR RAISING AN INTELLENT AND CAPABLE CHILD WITH GOOD VALUES

This booklet is aimed at a noble cause of raising our country's children to be an intelligent and capable persons with good values. Immunization schedule, Developmental card and WHO Growth charts for girls and boys from 0 to 5 years of age have been provided in this booklet.

Immunization and Developmental Card help to identify the developmental delay early. The brain development stops approximately at 5 years of age. Hence we need to identify the delay early and to start early intervention so that we can prevent a delay from becoming a disability.

Parents can do evaluation by themselves to check if their children are having normal growth and development, and also identify if the child is having any delay if at all. It also contains evidence based medical facts regarding child's growth and development, good child rearing practices, maintenance of good health and values, for the parents to read, understand and to share with others, thus helping to raise an intelligent and capable child with good values. This will make our nation a powerful one.

Why

It is a dream for every couple to have a baby after marriage. Everyone feels, "It is God's grace" to have a baby. In our present scenario, 'We two, ours two' seems to be the trend, every Child is a precious Child. In our competitive world, each and every parent wants to raise an intelligent and capable child with good values. But many parents don't have access to correct evidence - based medical guidance and ways to achieve this.

How to get an Intelligent and Capable Child?

- **Pre-puberty:** Girls in the age group of 9-13 years need a balanced diet, iron and folic acid supplementation for the proper development of organs like uterus and ovary. This makes sure that they are healthy when they attain Menarche (onset of 1st menstruation / Vayadhuku varuvadhu).
- **Pre-pregnancy:** As soon as a couple start planning for pregnancy, the future mother-to-be needs to take iron and folic acid tablets to prevent neural tube defects. She should not take any tablets unnecessarily and must avoid X-ray exposure.
- **0-3 months:** After becoming pregnant or once pregnancy test is +ve, she should be very careful as this is the time of organogenesis in the baby (formation of important organs like brain, heart, kidney, liver, etc.).
 - No intake unnecessary tablets without medical prescription
 - No X-rays exposure ● No mental worries ● Regular antenatal checkup
 - To check for anemia, thyroid deficiency and correct it
 - Treatment for hyperemesis (excessive vomiting) to be taken, if present.

- ▶▶▶ **4-6 months:** Check for edema feet, high blood pressure, (PIH - Pregnancy induced Hypertension), high level of albumin in the urine (albuminuria), or all the three together - Pre Eclamptic Toxaemia - (PET), Diabetes (Gestational Diabetes) and take appropriate treatment for the same.
- ▶▶▶ **6-9 Months:** All the above need to be monitored. She needs to notice if movements of the foetus are adequate and needs to be rushed to the hospital if movements are reduced and take treatment.
- ▶▶▶ **Delivery:** Delivery needs to be conducted by a qualified Obstetrician in a well equipped hospital. A Pediatrician should be available near by for managing the baby. Pediatrician is a must for operative deliveries (LSCS).

If there are antenatal risk factors like Pre Eclamptic Toxaemia - (PET), Gestational Diabetes, Hypertension or natal risk factors like cord around the neck, meconium-stained amniotic fluid aspiration, baby not cried immediately after birth or respiratory distress; presence of a Pediatrician will ensure immediate management of the baby. If not the oxygen and glucose level will go down in the blood (Hypoxia & Hypoglycaemia), which will damage the brain and results in developmental delay or Neuro developmental diseases. All these high risk babies, preterm babies and small for date babies need Neonatal Intensive Care Unit (NICU) care.

Pediatrician will examine the new born baby completely for any congenital problems and record the weight, length, and head circumference and plot it in the WHO Growth charts.

Mother needs to start breast feeding with in ½ an hour after birth and continue Exclusive Breast feeding till 6 months. After 6 months, breast feeding should be continued along with homemade complementary feeds till 2 years of age. Tin milk and bottle feeding should be avoided. Breast milk contains factors for brain development which helps in normal brain development in the baby. We advice routine new born hearing assessment before 6 months of age.

Early stimulation right from birth helps to achieve normal development (maximum potential) in the baby.

Baby should make eye contact with the mother, baby should look at the mother's face and smile. Parents need to play with the baby and infant by using the age-appropriate toys to stimulate the normal development. Parents should feed the baby by showing the moon, encourage to point an object with one finger, sing lullabies (songs) to calm down the baby and put the baby to sleep.

- ▶▶▶ **Immunization:** The babies need to be immunized from birth with all the vaccines as per IAP Immunization schedule (ACVIP) to prevent all vaccine preventable diseases. Some of the organisms may cause CNS infections like meningitis, encephalitis, etc. which will affect the brain and its development.

Babies delivered in Government Hospitals need to be vaccinated in the same Hospital. But optional vaccines which are not given in the government institutions need to be taken in the private institutions. We call the child who received all the vaccines as per IAP Immunization schedule as "Fully Immunized Child".

- Developmental milestones: During Immunization visits the Weight, Length/Height and Head Circumference of the child will be recorded and plotted in the WHO Growth chart. This is physical growth. In the same way we need to assess the Development also, and record.

Gross Motor

Milestone	Age
Social Smile	2 months
Head Control	4 months
Sitting	8 months
Crawling	10 months
Standing alone	12 months
Throw a Ball	18 months
Crawl upstairs	15 months
Going up & down stairs 2 feet at a time	2 years
Going upstairs on alternate feet	3 years
Ride a Tricycle	3 years
Going downstairs on alternate feet	4 years
Hopping	4 years
Skipping	5 years

Fine Motor

Milestone	Age
Holding object with both hands	4 months
Immature pincer grasp	10 months
Mature pincer grasp	12 months
Exploring drawers	18 months
Scribbling with pencil / crayons <i>Tower of 4 cubes</i>	18 months
Drawing vertical / horizontal line <i>Tower of 6 cubes</i>	2 years
Drawing a circle, <i>Tower of 8 cubes / bridge</i>	3 years
Drawing a square / cross, <i>Steps of 6 cubes</i>	4 years
Drawing a Triangle, <i>Steps of 10 cubes</i>	5 years

Social Communication

Milestone	Age
Social Smile	2 months
Babbling	6 months
Playing peek-a-boo, Says Ta-Ta, Bye-Bye	9 months
Pointing to an object with 1 finger	12 months
Bringing and showing an object	15 months
During play responds to sound by looking towards the sound	18 months
Pulling to show desired object	2 years
Telling rhymes and stories	4 years
Dresses & Undresses	5 years

Language & Social Skills

Milestone	Age
Babbling	6 months
2 lettered words	9 months
2 meaningful words	12 months
Combining 2 words with meaning	2 years
Doing 2 step command	2 years
Combining 3 words with meaning	3 years
Knowing her/his gender & Age	3 years
Telling his/her name	3 years
Doing 3 step command	3 years
Group play	4 years
Asking meaning of words	4 years
Identifying 4 colours	5 years

Sensory

Vision	Follows dangling Toy / Red Bangle.
Hearing	Turns head to the sound of pooja bell.

The above mentioned milestones need to be attained in the child in the specified time. This indicates normal Brain development. If there is a delay in any milestone, it may indicate a Neuro developmental problem. If there is any delay, we can wait for 1 - 2 months and then consult a Developmental Pediatrician for further Assessment to arrive at a diagnosis and start Treatment. So parents need to monitor the developmental mile stones from birth, to pick up any delay early. If we provide good health, adequate nutrition, responsive care giving, security and safety, and early learning opportunities, the child will grow as an intelligent and capable child with good values and good character.

What is Immunization and Developmental Card?

IAP immunization card is used to provide regular vaccination to the babies according to the IAP recommended Immunization Schedule. This card has prepared to mark developmental mile stones during Immunization. It contains both Immunization schedule and list of developmental milestones for each Immunization visits.

The Development chart incorporated Immunization card is called Immunization and Developmental card which is prepared by a committee in IAP TNSC.

How to use this card?

It is very simple and easy. Mother needs to take the baby to a pediatrician for Immunization as per the Schedule. Mother needs to read the card before taking the baby for Immunization and verify that all the skills/milestones described in the card on that particular age of the child on that immunization day, is achieved. If it is achieved, she needs to make a tick mark near the description of the specific achieved milestone in the card.

Eg.: If the child is 12 months old and visits for the 12th month's vaccine, she need to read the Immunization and developmental card in the 12th month's column- Name of the vaccine is given, next to it the date of Immunization, followed by next due date. There will be photo of an infant showing the 12th month's mile stone - Standing alone, next to it will be the discription of milestones need to be achieved by the 12 months child. Mother needs to read it and verify that the appropriate milestones are achieved, mark it with a tic mark nearby. If there is any difficulty, she can ask the pediatrician. Mother's full concentration will be on the growth of the baby on the day of Immunization and she will ask the pediatrician about the health of the child, weight, height, whether the child is growing normally or not. She should never forget to ask about the development of the child also.

1. What is Neuro Development?

The baby will cry immediately after birth. After that the baby will cry when it is hungry. Step by step baby will learn to see, hear, taste, feel the touch, etc. He/she will recognize the face of the mother and smile, will attain head control, recognizes parents and grandparents with their face and relationship. There will be gradual unfolding of all the skills. For all these functioning we need normal brain development. Brain development starts from intra-uterine life.

Even at 18 weeks, a foetus can hear and feel the touch sensation. Brain development should continue normally to attain head control, to sit, stand, run, speak, to understand language, read, write, do maths, to learn grammar, to learn decision making and for skills development. This is called Neurodevelopment. For this, the child's brain needs sustained stimulation from the environment.

2. Why we need to Identify the Neuro Developmental Problems early?

If the adult brain has 2 crores brain cells, this number will reach by 5 years. The brain cell growth will reach maximum by 2 years of age. The brain weight of the child when compared to an adult brain :

- At birth - 36%
- At 1 year - 72%
- At 2 years - 88%

The brain development will complete approximately by 5 years of age. The size of the cells and its connections will increase as the age advances, but not the number. No new neurons (nerve cells) will be formed after 5 years of age.

Hence we **need to identify any brain problem (Neuro Developmental Problem) early, ideally before 2 years of life, so that we can correct it before the child reaches 5 years.** If there is reduction in the number of brain cells, it might result in low IQ, say 97-98 or some Neuro Developmental problems. If we **identify problems early, early intervention can be initiated which will help in replacing the damaged cells with new cells.** There will be an increase in the number of cells and the problem might get corrected completely. The child's IQ may become normal or even reach 110.

3. Why & How to Stimulate the Brain?

All babies are born good. A baby grows out to be good or bad depending on the mother's attitude and child rearing practices. There are millions of connections in the baby's Brain. The connections which are used by the baby were retained and the unused connections will be withered of. Early stimulation will keep the connections active and hence they are retained and the baby will grow with all potentials. The child's brain should be stimulated through all the five sense organs: eyes – seeing, ears – hearing, nose – smelling, tongue - tasting, skin – touching. This is called early stimulation.

Eyes

- Frequently showing the mother's face
- Moving a dangling toy in front of the baby (**Eg.:** a glittering ball)
- Looking in to the eyes of the baby (Eye to eye contact)
- Frequently talking to the baby

Ears

- Ringing a bell near the baby
- Replying / answering to the babbling sound of the baby
- Talking to the baby
- Singing a song to quiet the baby or for putting the baby to sleep

Tongue

- Introducing various tastes to the baby.

Skin

- Routinely doing oil massage before giving bath
- Passively moving both upper and lower limbs at all joints (flexion, extension, adduction, abduction; at hip knee, shoulder and elbow joints)

We need to create a stimulating home atmosphere (environment)

We need to provide age appropriate toys as the child grows and to play with them.

If we do this early stimulation to all babies, all children will grow out to be intelligent and capable.

3A. Will the Immunization and Developmental Card help for early stimulation?

Yes definitely. After each Immunization visits and marking the archived milestones by a tick mark, see the next visit column in the card and read the milestones to be archived. Try by all means to achieve it by appropriate early stimulation, preferably by play way method, before the next visit.

2-3 Months : 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.

4-6 Months : Communicate with babies; imitate their sounds and praise them when they imitate yours. Put interesting things on the floor for babies to reach out and explore.

Take children outdoors, and introduce them to the outside world. Children suck on their fingers and thumb for comfort. It is not a cause for concern. Do not stop this at an early age.

7-9 Months : Let children drop, bang and throw things repeatedly. Respond to the noise that children make in a gentle and patient manner. Give children clean, safe household utensils to play and explore. Play games like peek-a-boo. Hide the children's favourite toys under a cloth or box. See if children can find it.

10-12 Months : Place a toy slightly out of reach to encourage standing and walking while using support. While exploring, babies might hurt others accidentally. Show them how to touch gently. Do not shout at them.

Tell your babies stories and read picture books aloud. Show and name things in their environment.

18 Months : Provide push toy for babies to learn walking. Give some fruits, toys, etc. to children. Ask them to identify the objects, put them in and take them out of containers.

Ask your children simple questions. Encourage them to talk.

24 Months: Provide opportunities for children to walk, run and climb in safe environments. Allow children to imitate you and master their skills. Be patient with them if they make a mess.

Encourage children to follow a daily routine such as sleeping and waking up at a fixed time. Read aloud to children, often repeating stories. Provide books and paper, chalk, colours, etc. for scribbling.

3 Years : Play outdoor games with your children which require movement and physical activity. Give variety of materials (including blocks, puzzles, rings, etc.) to children. Allow children to use their hands and fingers in different ways to improve their skills.

Mark your Vaccine Details here

Name :

Sex : M / F

Date of Birth :



IAP TNSC & Chapter of Neurodevelopmental Pediatrics IAP IMMUNIZATION CUM DEVELOPMENT CARD



Vaccine	Due Date	Given Date	✓ Tick the milestones attained	Wt. - kg	Ht. - cm	HC. - cm
At birth BCG OPV Hep B - 1 (BD)				<ul style="list-style-type: none"> • Pull to sit - Newborn complete head lag, back rounded • Ventral suspension - Newborn head sags down • Startle to sound (Do OAE hearing screening) 		
6 weeks DTwP/DTaP-1 Hib - 1 Hep B - 2 PCV - 1 IPV - 1 Rota -1*				<ul style="list-style-type: none"> • Momentarily holds the head in horizontal plane • Head control begins • Social : Social smile 		
10 weeks DTwP/DTaP-2 Hib - 2 Hep B - 3 PCV - 2** IPV - 2 Rota - 2				<ul style="list-style-type: none"> • Responds by smile • Responds to bell • Follows dangling toy at 180 degree • Coos & gurgles • Make eye to eye contact • Turn head towards direction of sound • Begins to recognize the mother's face 		
14 weeks DTwP/DTaP-3 Hib - 3 Hep B - 4 PCV - 3 IPV - 3 Rota - 3				<ul style="list-style-type: none"> • Pulled to sit, head steady • Prone position, face, head and chest off the Couch • Ventral suspension - head above the plane of trunk • Turns over by 3-5 months • Fine motor: Bi-dexterous approach • Full head control 		
6 Months Influenza - 1 6 - 9 months Typhoid TCV 7 Months Influenza - 2				<ul style="list-style-type: none"> • Prone position - lifts the chin and chest, while supporting weight, on extended arms. • Sits with support (tripod sitting) • Like to look itself in a mirror • Babbles - oh, eh, oo (sounds) • Fine Motor : Transfer objects Holds cube crudely - Uni-dexterous 		
9 Months MMR - 1				<ul style="list-style-type: none"> • Gross motor: Sits well, stands holding on (with support) • Fine motor: immature pincer grasp • Social: waves bye - bye Plays - peek a boo, claps • Language: says bi-syllables (mama, baba, dada) • Look for hidden toys • Respond to name being called • Crawl to get desired object 		

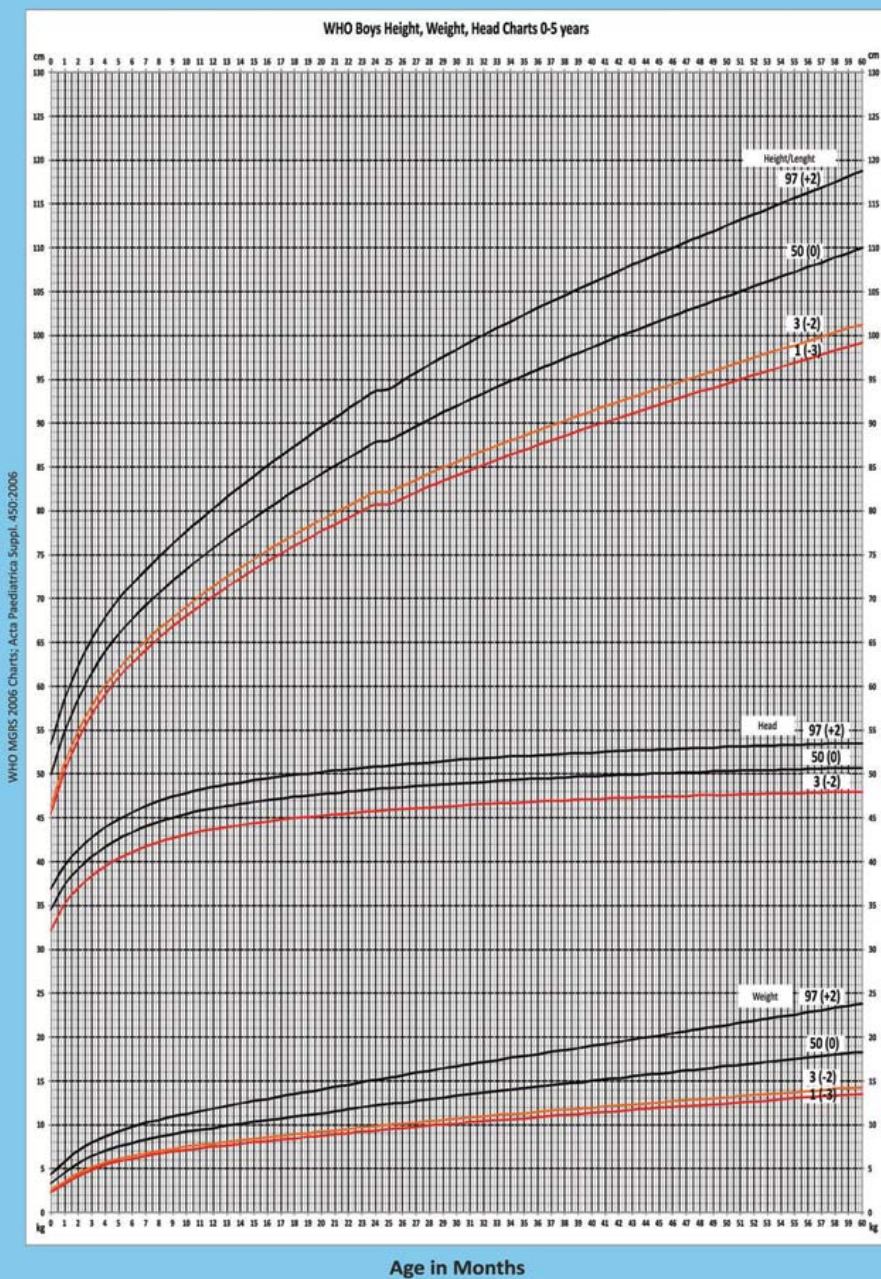
* For RV₁ Two doses 6 and 10 weeks. • Influenza vaccine-annual.

**PCV Vaccine Government Recommendations - 2, 4 and 9 months.

0 to 5 Years : WHO Boys Length/Height, Weight and Head Circumference Charts (Z Scores are in Parenthesis)

Name : _____

DOB : _____



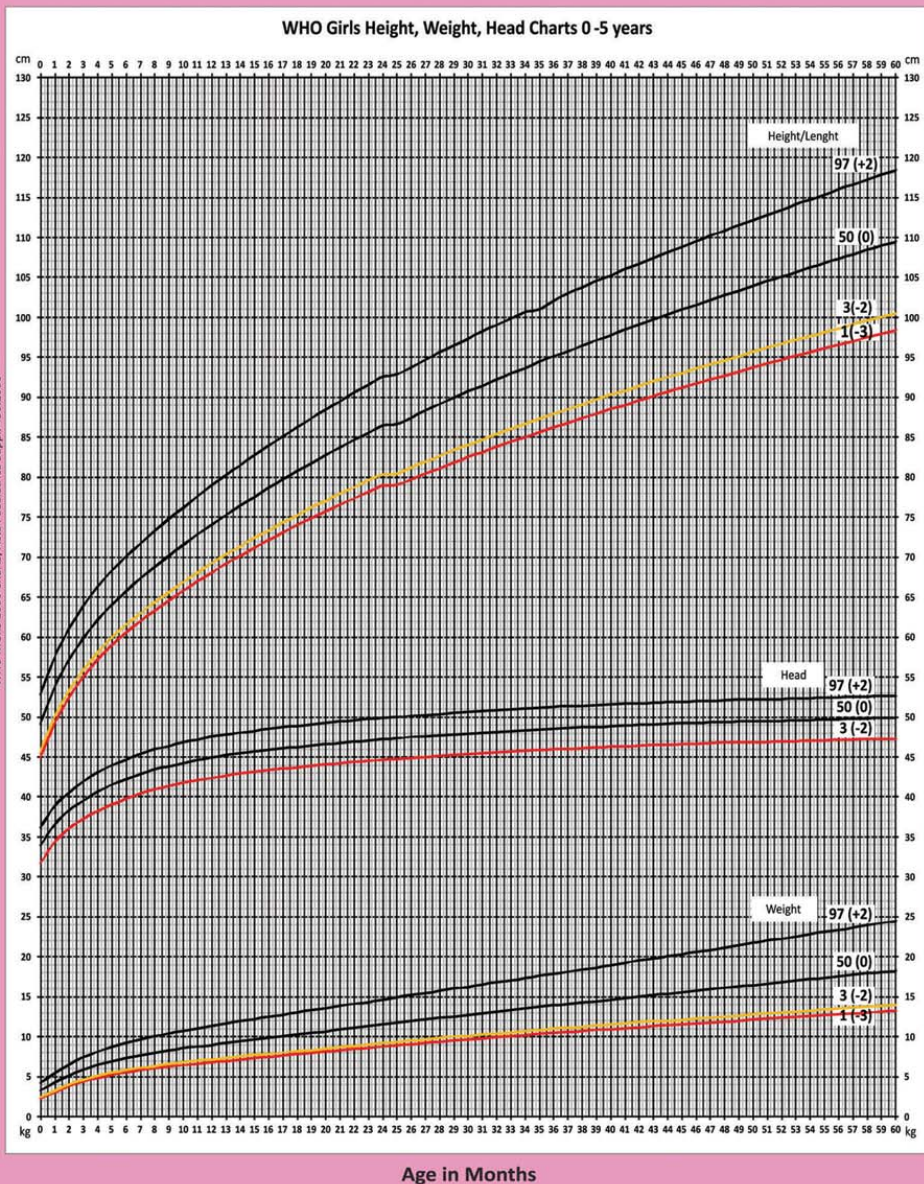
WHO MGRS 2006 Charts; Acta Paediatrica Suppl. 450:2006

0 to 5 Years : WHO Girls Length/Height, Weight and Head Circumference Charts
(Z Scores are in Parenthesis)


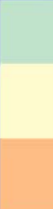

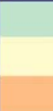

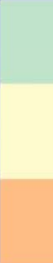




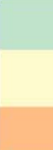

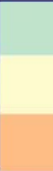

Name : _____

DOB : _____

WHO MGRS 2006 Charts; Acta Paediatrica Suppl. 450:2006



Address :

<p>1 year Hepatitis A</p>				<ul style="list-style-type: none"> • Stands without support • Walks alone, but falls • Mature pincer grasp • Plays simple ball game • 2 words with meaning • Points an object with one finger • Respond to simple request No, come here 	
<p>15 months MMR - 2 Varicella - 1 PCV booster</p>				<ul style="list-style-type: none"> • Walks alone • Crawls upstairs • Imitates as taking by phone • Brings and Shows Toys of interest • Tower of 2 cubes 	
<p>18 months DTwP - B1/ DTaP - B1 IPV - B1 Hib - B1 Hep - A 2 (Inactivated) varicella - 2</p>				<ul style="list-style-type: none"> • Runs, explores table drawers • Domestic mimicry • 8-10 words • Throws a ball without falling • Recognizes parts of the body • Tower of 4 cubes • Name and identify common objects in the picture book • Puts pebbles, small objects in a container 	
<p>2 years Influenza vaccine</p>				<ul style="list-style-type: none"> • Walks up and down stairs(2feet/step) • Tower of 6 cubes • Pulls people to show desired object • Two-word Sentences • Able to do two step command 	
<p>3 years Influenza vaccine</p>				<ul style="list-style-type: none"> • Rides tricycle • Alternates feet going upstairs, • 3 word sentences • Tower of 8 cubes, making a Bridge / Gate of 3 cubes • Copies a circle • Knows name & gender • Identify 1 - 2 colours and shapes • Able to do three step command 	
<p>4 years Influenza vaccine</p>				<ul style="list-style-type: none"> • Hops on one foot • Alternates feet going downstairs • Copies cross & square • Steps of 6 cubes • Group play • Says poem, Able to tell A B C D, 1 2 3 4 letters & Simple Story 	
<p>5 years DTwP / DTaP - B2 IPV - B2, MMR - 3 Influenza vaccine</p>				<ul style="list-style-type: none"> • Plays skipping rope • Copies a triangle • Steps of 10 cubes • Count up to 10 • Social : Dresses and undresses • Language : asks for meaning of words • Identify & write letter A B C D, 1 2 3 4 • Identifies 4 colours 	
<p>9-14 years</p>			<p>• T dap : 10-12 y followed by Td every 10 y • HPV : 9-14 years 2 doses 0, 6-12m (2 doses at 6 months interval) • >15 years - 3 doses -HPV 0-1-6 mo for HPV2, 0-2-6 mo for HPV4</p>		

Ref.IAP - ACVIP Recommendations 2020-21

4. What happens if Brain and Nerve Cells (Neurons) are affected?

Brain development will be affected. Developmental delay or deviation can occur. IQ may be reduced. There is a chance of developing neurodevelopmental diseases.

5. What are Neuro Developmental Diseases?

- a. Autism Spectrum Disorder - ASD
- b. Attention Deficit Hyperactive Disorder - ADHD
- c. Learning Disability - LD (Specific Learning Disability - Dyslexia)
- d. Intellectual Disability (Low IQ - Previously called as Mental Retardation (MR))
- e. Cerebral Palsy - CP
- f. Global Developmental Delay (GDD)

The above-mentioned diseases are called Neuro Developmental Diseases (NDD).

6. How to pick up Neuro Developmental Problems?

It can be identified by screening. All babies need to be screened at 9, 18 and 24 months by Neurodevelopmental screening. The Immunization and Developmental card helps the parents to identify these problems by themselves and pick up any delay early. It is usually done by a pediatrician during regular Immunization and well child visits.

7. What are all the risk factors? Who are all the babies likely to get, neuro developmental Problems?

Antenatal Period / During Pregnancy: (High Risk Pregnancy)

- Excessive vomiting – Hyperemesis gravidarum
- Giddiness
- Swelling of the limbs (Oedema feet)
- High blood pressure – Pregnancy Induced Hypertension (PIH)
- High blood pressure and albumin in the urine - Pre Eclamptic Toxaemia (PET)
- Pregnancy induced diabetes - Gestational Diabetes Mellitus (GDM)
- Anaemia
- Diminished foetal movements
- Maternal fever - Rubella and other TORCH infections
- Mental worries for the mother / Maternal depression.
- Genetic problems – defects in the chromosomes – Trisomy 21, etc.

Natal Problems / During Delivery:

- Cord around the neck (umbilical cord)
- Meconium-Stained Amniotic Fluid aspiration (MSAF)
- Perinatal depression / Not cried immediately after birth

- Breathing difficulty immediately after birth - Respiratory Distress Syndrome (RDS)
- Baby delivered by surgery – LSCS
- Preterm babies - born before due date
- Low Birth Weight babies (LBW) - Small for Gestational Age (SGA)
- Yellowish discolouration of the baby - Neonatal Jaundice - Rh & ABO Incompatibility
- If Glucose level in the blood goes down - Hypoglycaemia
- If Oxygen level in the blood goes down - Hypoxia
- If temperature of the baby goes down - Hypothermia

Post-natal Problems / After Delivery:

- Brain fever before 2 years of age – Meningitis, Encephalitis
- Lack of environmental stimulation
- Poor Nutrition

Babies born to mothers with High Risk Pregnancies' and those having Problems during delivery and in the postnatal period are called High Risk babies. They are prone to develop Neuro Developmental Problems.

8. In a family if 1st baby is having brain problem or any one in the family had brain problem whether all babies born in that family will get brain problem?

No. It is not necessary that all babies will be affected, but the risk is high. We need to carefully watch the child and do screening every month till 2 years and then every 6 months till 5 years. If we identify a problem, we need to consult a Pediatrician or developmental pediatrician and do complete assessment and start early intervention.

9. Will it be possible to prevent the problem?

Yes, definitely! We need to take care of girls from the age of 9 years, provide a balanced diet, Iron + folic acid supplementation, proper antenatal care (care during pregnancy), delivery should be conducted in a well-equipped hospital and by an OG specialist, in the presence of Pediatrician. A Pediatrician's opinion should be obtained at least after delivery. Developmental surveillance by a pediatrician during immunization, using Immunization and developmental card, if possible. Providing early stimulation and simulating environment to all babies. If all the above criteria are followed diligently, we can prevent neurodevelopmental problems as far as possible. Even if such a problem occurs, we can identify the problem early and start early intervention.

If we **identify even one risk factor** mentioned above (High Risk Babies) we **need to start early stimulation**. These babies should be enrolled in regular and periodic neuro developmental follow up. Assessment should be done every month till 2 years and then every 6 months till 5 years.

Even if **these babies are developmentally normal during follow-up, they should be started on early stimulation so as to prevent occurrence of developmental problems or at least to reduce the severity** of the problem. If we identify the problem early we can solve the problem early and expect maximum improvement.

10. How do Pediatricians Identify Neuro Developmental Problems?

Pediatricians will use routine surveillance technique in each well child visit and perform simple testing and screening. For high-risk babies, regular neurodevelopmental follow up will be done. Weight, length/height and head circumference will be marked in the growth chart routinely. They may use the Immunization and Developmental Card.

Other Tools:

- TDSC - 0 - 3 Y - Trivandrum Development screening Chart 0 - 3 years
- TDSC - 3 - 6 Y - Trivandrum Development screening Chart 3 - 6 years
- LEST - 0 - 3 Y - Language Evaluation Scale Trivandrum 0 - 3 years
- DDST - Denver developmental Screening Tool
- M-Chat -R- Modified Check List for Autism in Toddlers Revised

These Tools will help to identify normal development and any delay in development.

11. What will the Pediatrician will do if any Brain Problem is Identified?

If there is any problem, the pediatrician will confirm the diagnosis by doing specific screening tests depending on the diagnosis and refer the child to a developmental Pediatrician for further management. The Developmental Pediatrician will do more specific screening tests like:

- M-Chat-R - Modified Check List for Autism in Toddlers Revised (Recheck) and M-Chat-R - Follow up.
- CARS - Childhood Autism Rating Scale
- INCLIN Diagnostic Tool – Indigenously developed tool for the assessment of Indian children with ASD, ADHD

Then they will do some investigations to identify the cause of the problem:

- CT Scan
- MRI
- Karyotyping (Chromosome testing)
- Metabolic screening
- TORCH Screening

After that a Team of Specialists will sit, discuss and decide an Individual Education Plan- IEP for that particular child. They will plan short term and long-term Goals and refer for specific early Intervention to a Multidisciplinary Therapy centre. They periodically review the child.

12. What can Parents do?

Parents need to know the importance of the monitoring the development of the child. It can be easily done with the help of Immunization and developmental card.

Brain grows fast in the 1st 2 years and almost completed by 5 years of life. Hence any problem in brain development needs to be identified before 2 years so as to start treatment early to get the maximum improvement.
Like polio drops prevented polio, early stimulation to high-risk babies will prevent brain problems.

The average age of presentation of a child with speech delay is 4-5 years (JIPMER Study). Parents assume that it is normal for the child to have speech delay if the child's parents or grandparents had speech delay. This is wrong. A child needs to speak 2 words at one year. If the child is brought at least by 2½ years, we can intervene early and the child might show remarkable improvement by 5 years of age. This is because of brain plasticity (capacity of the brain to mould /modify by increasing the number of cells and connections to restore the function). ***If there are risk factors – High Risk babies, parents need to enrol the child for Neurodevelopmental follow up and provide Early stimulation to prevent /reduce the severity of NDD.***

13. How can Parents pick a Brain Problem?

Parents can use the Immunization and developmental card which will be given in their local language to pick up developmental problems like delay / deviation early.

They can use **DOC - Development Observation Card:**

Social smile	2 months	Sitting	8 months
Head control	4 months	Standing	12 months

(Provided baby can see, hear and listen normally)

5 Way Test for Normal Development

- ❖ Social smile - 2 months
- ❖ Eye to Eye contact 2 months
- ❖ Respond to name being called - 9 months.
- ❖ Points an object with one finger - 7 - 15 months
- ❖ Speaks two words with meaning - 12 months

Others Ways

- No babbling at 12 months
- Not showing Ta-Ta, Bye-Bye at 12 months
- Not speaking even a word by 16 months
- Not speaking 2 worded sentences by 2 years
- Not speaking vowels by 2 years
- No intellectual speech by 3 years
- Not able to converse clearly with others by 4 years
- Loss of any language or social skill at any age

If any one of the above is noticed, parents can suspect a problem and consult a Developmental pediatrician / Pediatrician immediately, for complete evaluation of the child to arrive at a diagnosis and to start treatment.

14. How to get an Intelligent and capable child?

- No TV or any electronic device like tablet, mobiles, laptops till 2 years of age. Restrict screen time to 1 hour/day after 2 years. (Not allowing them to watch)
- Nutritious diet - Balanced diet
- Allowing them to play. Parents need to play and spend quality time with the child.

"The best toy your child can have is YOU - the parent
The best gift you can give your child is your time".
- Physical exercise - 1 hour/day
- Encourage painting, drawing, paper cutting and pasting work, puzzle solving, olden games like Pallankuzhi, Dhayam, Kittipul, Pamba Palliya, outdoor games like basket ball, cricket, shuttle, etc., according to their likes and preferences.

15. How to know / assess the growth of the child?

Growth of the child is monitored by measuring the height, weight, Head circumference periodically since birth during immunization and well child visits. It can be done by parents also. It will be plotted in the Growth charts. The normal newborn has weight 3 kg, length 50 cm, and Head circumference 35 cm approximately. These measurements will increase approximately as the child grows as per the table given below.

Items	At birth	At 1 year (12 m)	At 2 years (24 m)	2- 12 years
Weight	3 kg	10 kg	12.5 kg	Increase by 2 kg /year
Height	50 cm	75cm	87 cm	Increase by 6 cm /year
Head circumference	35 cm	47 cm	48 cm	Increase by 0.5 cm /year

16. How to raise a child with good values?

We need to teach good manners and values to our children. A child should learn the importance of love and affection, kindness, truthfulness, honesty, respect, hospitality, simplicity, politeness, gratitude and so on. Even an one year child can learn good habits and good qualities by observing the behaviour of the people around him/her. If the child fails to learn all these by 5 years of age, he / she cannot learn these at 50 years. So, it is better to 'strike the iron when it is hot'.

A child learns good habits and good qualities from parents and other family members. We need to be the role model for the child. A child learns by observing, seeing, hearing, listening what we do and say. Parents need to teach the child what is good and what is bad according to the age of the child (age appropriate teaching).

We need to be firm in certain things like lying, stealing, fighting, quarrelling, antagonizing every conversation and gossiping. These qualities must be strictly discouraged and child should be reprimanded for the same. If the child is not disciplined properly in the beginning, he / she will be face direct consequences (punished) later in life. We need to teach the child to accept his/her mistake and to say sorry. We can be firm, but need not punish the child.

On the child's birthday, parents can take the child to an orphanage or old age home to celebrate the day by providing food and distributing gifts to the children or old people, so that child learns kindness, sharing and the joy of giving. The habit of Story Telling (moral stories like Ramayana, Mahabharata) during bedtime will help to instil good qualities and values in the child.



If these recommendations are followed, such as proper care during pregnancy, delivery in a hospital in the presence of Pediatrician, ***breast feeding as per recommendations, regular immunization, regular developmental assessment, by Parents and Pediatrician during Immunization days using IAP TNSC Immunization and Developmental Card and following regular stimulation technics,*** good nutrition, proper love and affection, parents spending quality time with the child (playing, storytelling, encouraging good habits), the child will definitely grow to be an intelligent and capable child with good values.



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NEW-BORN HEARING SCREENING

- Dr. Abraham K Paul

1. What is New-born Hearing Screening?

The assessment of Hearing adequacy as a routine for all babies in new-born period is called New-born Hearing Screening.

2. When we need to do it?

The goal is to screen new-born babies before one month of age, diagnose hearing loss before three months of age and start intervention before six months of age. (IAP Recommendations)

3. Why we need to do it?

Hearing impairment is one of the most critical sensory impairments with significant social and psychological consequences. It is occurring in 1 to 2 new-borns per 1000 in the general population, and 10 per 1000 in new-borns admitted to neonatal intensive care unit. As normal hearing is critical for speech and language development, it is recommended that during first 6 months of life. Clinicians identify infants with hearing loss, preferably before 3 months of age. If we identify the hearing loss early (before 3 months) we can do Cochlear replacement if needed to achieve maximum vocabulary.

4. What happens if we delay the Identification of Hearing loss?

If we delay the identification, we will miss the hearing loss and the child can't have a normal vocabulary even after appropriate intervention. Critical period for identification and remediation of hearing loss is before the age of 6 months.

Vocabulary of a 3-year-old child with hearing impairment if remediated at birth is 300-700 words; if remediated at 6 months is 150-300 words and if remediated at 2 years is 0-50 words, respectively; as compared to vocabulary of a 3-year-old child with typical hearing which is 500-900 words.

5. How the Test is done?

The test is done by a very simple 'OAE instrument'. Otoacoustic emissions (OAEs) are quicker methods (as compared to electrophysiologic methods like ABR) for assessing hearing in new-borns via a simple set-up. It is non-invasive and takes only 10 minutes to complete the test.

Otoacoustic emissions (OAEs) are sounds of cochlear origin, recorded in the auditory meatus (ear canal), produced by the action of healthy outer hair cell. OAE test is performed via a small probe placed in the child's ear canal; click sounds are delivered and response is detected. The child must be quiet.

6. Who are all the children likely to get (at risk for) hearing loss?

- Family history of hereditary childhood sensorineural hearing impairment.
- Intrauterine infection (TORCH).
- Craniofacial anomalies.
- Birth weight less than 1500 gram.
- Hyperbilirubinemia at high serum level.
- Ototoxic medications used in multiple courses, or in combination with loop diuretics.
- Bacterial meningitis.
- APGAR scores 0-4 at 1 minute or 0-6 at 5 minute.
- Mechanical ventilation for 5 days or longer.
- Stigmata of other findings associated with a syndrome known to include sensorineural and/or conductive hearing loss.

7. What we need to do?

We need to ask for New born Hearing screening at birth or at least by 6 weeks and start intervention before 6 months, with the help of attending Pediatrician.

Detect Early Autism

Autism is a condition that affects three critical areas of development: Social, Communication and Cognition leading to impairment in all these areas. An early diagnosis and appropriate training can show significant progress in the child's development.

1 Does not look towards pointed direction



Child may not follow pointing gestures shown by others and may not look at the object that's been pointed.

2 Does not share



Child may not comprehend the joy of sharing. He does not give or handover. Does not point.

3 Does not imitate your actions



May not follow the actions or gestures shown to them.

4



Does not smile back or smiles less

Does not smile back/when smiled at; smiles less

5



Avoids Eye Contact

Makes no eye contact and looks away when trying to do so

6



No response to picking up gesture or name call

Does not respond to picking up gesture. They do not seek to be hugged or caressed.

7



Prefers to be alone

Prefers not to mingle/play with others.

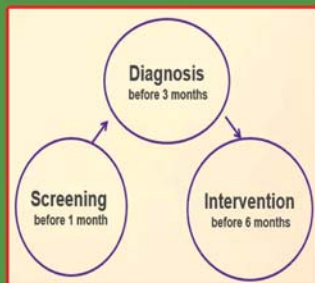
For 18 months or above infants

1 2 3 are the crucial signs which are noticeable in a child with autism

ASSAM AUTISM FOUNDATION
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New-born Hearing Screening Goals

OAE - Instrument

One of the Infant have Hearing Loss



Incidence of congenital hearing impairment well baby nursery Tin 1000 NICU 10 in 1000

AGE APPROPRIATE TOYS



0-6 months :
Multicoloured hanging toys
(hangs at one foot height)

3 months :
small hand operated toys

6 months :
Sound producing toys-when pressed
Light weight rattle

9 months :
Soft dolls -puffed toys

12 months :
Singing and moving toys

18 months :
Large size building Toys

24 months :
Train set

30 months :
Construction toys -Building set

36 months :
Out door toys - cricket set, shuttle,
ring ball, basket ball



Youtube link

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