Early Childhood Development – 1 Month to 1 Year

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Burden of the Problem:

- 200 million children under 5 years fail to reach their potential in cognitive development.[1]
- Over 43 per cent of children under the age of 5 are at risk of not fulfilling their full developmental potential.[1]
- ECD is part of the transformative agenda for 2030, making it an international priority for the 21st century.[1]
- Early Childhood Development is a smart investment.[2]
- ECD investments give back almost 13 per cent annually.[3]
- Quality integrated ECD programs have the potential to boost individual adult earning by almost 25%.[3]
- Child development is a dynamic process of optimally utilizing the genetic potential of a baby, within the context of the environment made available, so as to enable him / her to achieve the full potential. Although a continuous process, first year of life and pre-school years form the most critical period in the child's development. The difficult part is identifying babies at-risk for poor development.[4]
- Survival of high-risk neonates has improved considerably in the past three decades due to improved perinatal care. However, mere survival is not enough; it is the quality of survival that is more important. For the parents and the physicians taking care of these high-risk babies, it is of vital importance to know if these babies are going to be normal.

The current areas of concern are early detection of high risk babies and intervening them to catch up with their normal peers.

- Every child is said to be the interplay between genetic and environmental factors, the genes setting the limits of achievement and the environment determining whether he/she achieves it or not.[5]
- Early detection and intervention with the stimulation programs that mother can understand helps the high risk babies to reach their maximum potential. Parental involvement seems to be warranted as early as possible. Parents may benefit in being allowed to interact, respond to and learn what to expect from their tiny infant while being under the guidance of professional staff members. The probability that stimulation should be individualized and contingency based also seems suggested.

Basic Science:

- A developmental delay is any significant lag in a child's physical, cognitive, behavioral, emotional, or social development, in comparison with norms for the age and sex.
- The development delay could be global delay where 2 or more areas of development are delayed as per the specified norms for the child's age and sex or have isolated delay in a particular area of development which needs attention.
- Isolated delay could be motor delay, language delay or social or adaptive function delay.
- Delay refers to a significant lag in one or more areas of development.
- Dissociation is the difference between the developmental rates of two domains — one being more delayed.
- Deviancy refers to non-sequential unevenness in achieving milestones in one or more domains of development.

Early Identification: High Risk Infant Selection Criterion for Community Based Follow Up NNF 1990[6]

- Birth weight < 2 kg.
- Asphyxia : Did not cry for 15 minutes after birth
- Hypotonia : Looseness , Limpness , Floppy
- Feeding Difficulties : not sucking well in first 2 days
- Respiratory distress in First 2 days
- Jaundice within First 2 days
- Neonatal Seizures

Developmental red flags (1 to 3 months):	Developmental red flags (4 to 7 months):
1. Doesn't seem to respond to loud noises.	1. Head lag when body is pulled to sitting position (by 5 months still exhibits head lag).
2. Doesn't follow moving objects with eyes by 2 to 3 months	2. Shows no affecti on for the person who cares for him / her.
3. Doesn't smile at the sound of your voice by 2 months	3. Doesn't respond to sounds around him.
4. Doesn't smile at people by 3 months	4. Doesn't turn his head to locate sounds by 4 months.
5. Doesn't reach for and grasp toy s by 3 to 4 months	5. Doesn't roll over (stomach to back) by 6 months.
	6. Doesn't actively reach for objects by 6 months.

Developmental red flags (8 to 12 months):

- Does not say a single word ("mama" or "dada").
- Does not sit steadily by 10 months.
- Does not stand when supported.
- Does not babble by 8 months.
- Does not show interest in "peak–a–boo" or "pat–a –cake" by 8 months.

Developmental Observation Card (D.O.C.) - Dr. M.K.C. Nair[7]

- Social Smile – 2 Months
- Hold head steady – 4 Months
- Sits alone – 8 Months
- Stands alone – 12 months

Make sure that baby Sees, Hears and Listens

Simple clues for detecting hearing problem:[8]

- Baby stiffens , blinks , screws up eyes , extends limbs or cries with a sudden noise
- Response of the baby when you clap hands at about 12 Inches distance
- The child quietness, turns with widening of eyes , or changes breathing pattern when you shake a rattle / a bell about 6 inches away from the ear
- By 6 months the child is sensitive to sound , turn his head towards the sound
- The best age for formal hearing tests : 6-9 months

Warning Signs:

- Absence of babbling and cooing even at 1 year
- No spontaneous vocalization , inability to understand simple commands at 18 months

Simple clues for detecting poor vision:[9]

- Eye fixation Test
- Window Test
- Baby's eyes wander from one corner of the eye to the other.
- White spot seen in the pupil (cataract)?
- Does he have a strong family history of visual problems?
- Does the baby have a squint in one of his eyes after 6 months of age?
- Does the child hold objects very close to the face while reading or examining something?

What Exactly Is Early Intervention? Early intervention consists of identifying a baby who already has a disability or is at a potential risk for developing one, providing services to lessen the effect of that condition. The term encompasses a range of stimulation and training activities over and above the minimal care traditionally provided for all babies.[10] Early intervention means stimulation plus therapies given since birth or earliest contact.

But can Intervention be really effective? Synapses are re generable, neurons are not re generable. The concept of synapse sculpturing indicates that neurotransmission can be improved by selectively stabilizing one type of impulse at the expense of others. This modifiability of the brain at the molecular level forms the basis of early intervention in high risk infants.[11]

Who Needs Intervention? Ideally all graduates of NICU's are candidates for early intervention program

Medical and Environmental Intervention: Traditionally the term intervention implies developmental intervention in the form of stimulation and therapist oriented programs. However, for such programs to be meaningful and successful it is necessary to be backed up by intensive medical, social and environmental monitoring.

Developmental Intervention: The monitoring would help the infants and their families (early identification of problems and hence early rehabilitation services) as well as the physicians involved in their care (to improve the quality of care provided and for research purposes). There is a common perception that high risk follow-up mainly concerns with detection and management of neurosensory disability. In fact growth failure and ongoing illnesses are equally, if not more important issues in high risk follow up. Adequate emphasis must be placed on these. Programs were given to prevent disability and reduce abnormality.

Early Intervention: Providing the right stimulation at the right time is the key for development

Aims of Early Intervention:

- Stimulation of the child through the Neurodevelopmental channel.
- Prevention of developmental delay
- Prevention of asymmetries and abnormality.
- Detection of transient abnormalities & minimization of persistent abnormality.
- Development depends upon the biological inheritance & environmental stimulation or learning.
- Stimulation programs: Important role in child development.
- Mother is best therapist
- Age appropriate toys
- Optimum environment for stimulation
- The best time for stimulation is when the child is most active and playful.

Interventions - Early Infant stimulation:

- By early "Infant stimulation" we mean early interventional therapy for babies at-risk for developmental delay and periodic development assessment.
- A team of professionals consisting of development pediatrician, developmental tester, developmental therapist and developmental teacher was used.
- Intervention is given by physiotherapist, speech therapist, occupational therapist done as per requirements of babies.
- Multidisciplinary approach
- We chalk out programs of various activities including play, passive exercises and also taught the same to the mother, to help her to do the therapy at home.
- Improvement in one functional area helps the child to improve functions in other areas.

Standardized stimulation program:

- Portage Education by Education Dept. University of Chandigarh by Dr. Tehel Kohli Hindi version was used There are six areas in the program.[12]
- Shishu Prostahan, [Stimulating The Child]
- Sanchalan Vikas [Motor Development]
- Bhashik Vikas [Language Development]
- Samajik Vikas [Social Development] ,
- Dynanatmak Vikas[Mental Development]
- Swavlamban [Personal Social]
- Parents Can Use This Program As Check List And Plan Stimulations At Home.

Used CDC Model of Early Intervention in 6 areas:[13]

- Gross motor
- Fine motor
- Mental
- Personal social
- Expressive language
- Receptive language were included in the program

Neonatal developmental intervention:

1. **Visual Stimulation:** Decoration of surroundings, with mobile and brightly colored objects.
2. **Auditory Stimulation:** Talking, singing, radio, television, recorded mother's voice, recorded heart beat and musical toys.
3. **Tactile Stimulation:** Non–nutritive sucking, stroking, flexing, massaging, rubbing, handling, positioning.
4. **Vestibular–Kinesthetic Stimulation:** Rocking, oscillating beds; e.g., water beds.

Indian Intervention Programs:

1.Trivendrum Balvikas program 0 – 6 years
2.Upnayan for Mental Retardation
3.Sanvahan Pradarshika (Portage Education) 0 – 6 years
4.The learning Tree KG to 5th STD.
5.Towards Independent Series N.I.M.H.
6.NVM Early Intervention Developmental Profile

Early Intervention & Parents:

- Increasing the knowledge, skills and experience of parents by improving parental perceptions of their infant's abilities and by improving parenting skills.
- Parents can utilize the developmental care framework long after the child has been discharged from the neonatal intensive care unit.
- Parents need the skills to understand and interact with their small infant appropriately.
- Longer term positive effects have been seen on the ways that mothers may interact with their infants and on the infant's cognitive development.
- Interventions require individualized care plans centered on the infant's behavioral organization, the mother-child interaction, and the parent's needs.
- Parent participation in decision-making and actual hands-on experience in caring for their child in preparation for their role as full – time parents is recommended as essential and is the key to successful developmental intervention.

Take Home Messages:

- Very easy to detect and treat developmental delay
- Just spend 5-10 minutes
- Approach properly
- Know the Indian work
- Use simple methods
- Consider "Mother as a best therapist"
- Referral at appropriate time

After climbing the steps of Intervention, You will definitely get the ray of hope

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