
RECOMMENDATIONS

Consensus Statement of Indian Academy of Pediatrics on Early Childhood Development

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Justification: Early Childhood Development (ECD) has lifelong impact on learning, education, productivity, socio-emotional functioning, health and disease. A Consensus Statement for promoting ECD is needed to improve patient care and promote research. **Process:** Indian Academy of Pediatrics convened a National Consultative Meeting on 20 September, 2019 at Surat to discuss the way forward for pediatricians in ECD and form a consensus advisory statement. Experts from Chapters of Infant and Young Child Feeding, Neurodevelopmental Pediatrics, Neonatology, Growth Development and Behavior, Adolescent Health Academy, Parenting for Peace and UNICEF participated. **Objectives:** To formulate, endorse and disseminate a consensus advisory statement of working at current levels of resources and to build future framework for ECD from Indian perspective. **Conclusions:** Interventions for ECD should begin from conception to adolescence, prioritized in first 3 years, inclusive and equitable for all, especially for high risk, vulnerable and marginalized families. Pediatric clinics can play a pivotal role as cost effective delivery points for guidance and interventions. Age appropriate approaches, active care giver's involvement, advocacy and integration with different sectors, community and policy makers should be done to enable supportive environment. Research should be promoted into finding cost effective novel scalable interventions.

Keywords: *Intervention, Management, Screening, Surveillance.*

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Early Childhood (up to 6 to 8 years) is the time of formation of base of all lifetime learning, education, productivity, socio-emotional functioning, health and disease. A slight shift in trajectory of child development in its initial journey can make a huge drift in its adulthood outcomes. Adversities and support during pregnancy, early childhood to adolescence have potential to change the whole life of the individuals and the society.

The first 1000 days (conception to 2 years age) are most sensitive and crucial in development [1]. Neuroplasticity declines after early childhood. Thereafter less stimulated synapses during first 1000 days get pruned and will be lost for a life time [2]. Science has also begun to decipher the impact of environmental factors and parenting quality on genetic expressions spreading

over more than one generation [3]. Children's developing brain needs nurturing care [4] in the form of: good healthcare; enriching nutrition with responsive feeding [5]; stimulating experiences with responsive positive parenting (prompt, consistent and appropriate child-caregiver interactions with play, talk and love); early learning provided by parents and family members [6]; and security and safety. They should be supported by an environment enabling such needs. It is also evidenced that deficits in ECD (Early Childhood Development) cannot be effectively repaired when interventions are done after 24 to 36 months age [7,8].

Accompanying commentary: Pages 793-94.

The prevalence of improper child development is much higher than generally estimated. The four risk factors

are recognized as eligible for prompt actions are: stunting, low cognitive stimulation, iodine deficiency, and iron deficiency anemia. With majority childhood adversities being manageable and preventable the interventions in ECD are far more warranted as cost effective. ECD has far reaching implications in development of nation and inactions in ECD are very costly [9].

IAP has long recognized the importance of a focus on brain development. There are dedicated chapters to the cause of specific areas of ECD. Assimilation of currently published guidelines related to ECD and bridging the gaps in view of needs of ECD should be done as a detailed module. From amongst these some guidelines are already in place and published by IAP and its sub-chapters on topics of neonatal resuscitation, different aspects of nutrition and feeding, child safety, immunization, disabilities, etc [10-22].

Pediatric clinics and hospitals are point of care opportunities for ECD care. High risk assessment, anthropometric monitoring, treatment of illnesses, immunization, diet counseling and therapeutic ties with families are routine for them. Busy practices frequently miss developmental surveillance and screening, anticipatory guidance including safety and tips for responsive nurturing parenting care. They can be developed to work comprehensively for ECD to improve patient care and promote research (*Web Table 1*) [23].

OBJECTIVES

Increasing importance and evidences of ECD mandates the need for formulation of consensus guideline statement on it for the Indian pediatric facilities to work comprehensively, based on WHO (World Health Organization) - UNICEF (United Nations Children's Fund) framework on Nurturing Care for ECD. To gather the currently available resources published by IAP (Indian Academy of Pediatrics) backing up the ECD; and gaps where pediatric facilities can work better or do advocacy or liaison with other faculties in improving ECD. To formulate and disseminate a comprehensive advisory for pediatric facilities in contributing to ECD, and to make a framework for future actions in ECD. The consensus guideline would help achievement of Sustainable Development Goals (SDGs) and global targets set in Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition; and The Global Strategy for Women's, Children's, and Adolescents' Health.

PROCESS

IAP organized a National consultative meeting of experts on 20 September, 2019, during the West zone PEDICON

at Surat. Experts from United Nations Children's Fund and Indian Academy of Pediatrics from fields of developmental pediatrics, neonatology, nutrition and feeding, neurology, public health, child safety and general pediatrics from different parts of India were present at the discussion. Discussion took place for development in different age groups. Detailed articles were submitted later on them to formulate a module. This consensus statement is formed as an excerpt of the discussions and contents of the draft module. Search was made in databases of MEDLINE through Pubmed, Google Scholar, Cochrane library, and recent systematic reviews using combination of keywords *viz.*, early childhood development, stimulation, early intervention, nurturing care, responsive feeding, child nutrition, child safety, parenting, care for development, preschool learning. Child development, infant and young child feeding, parenting nurturing care, india, first 1000 days, and further expanded through related articles and reference lists of the articles.

RECOMMENDATIONS

General Recommendations

- WHO-UNICEF guidelines on Care of development [24,25] be adapted as reference for care development frame, till new Indian research-based evidence is available.
- IAP should join global partnership for ECD – The ECD Action Network (ECDAN).
- Psychosocial interventions to support maternal mental health should be integrated in early childhood health and development services [25]. All mothers should be screened for depression between 1 and 3 months postnatally. Parenting interventions improves maternal depression also [26]. During routine visits for child, mothers should be guided and reminded to take iron and calcium supplements and healthy diet; and visit obstetrician/family physician for general health, contraception, family planning, reproductive and sexual health.
- Pediatricians should lead awareness generation in care givers and the development of training module for frontline workers.
- Family focused care with adequate involvement of fathers is a must. The health and leave policies should be family friendly [24].
- Gender equity and female education should be propagated.
- Identification and attention to specific needs of vulnerable, at risk and marginalized children during routine care should be done with extra efforts [24].

- Promote early responsive caregiving (positive parenting) and early learning. Support for it should be included as part of interventions for optimal nutrition of infants and young children as responsive feeding strategies. Parents and other caregivers should be supported in doing so [5,24,25]. Encourage and support combined play times, life skill education and emotionally healthy home and school environments. Promote age-appropriate play and cultural toys. In resource-poor settings delivery of parenting interventions by trained non-professionals through local community organizations should be promoted [26].
- Pediatricians should routinely talk to parents and caretakers of children under 5 years of age regarding adequacy of physical activity, sedentary behavior and sleep [27].
- Care takers should be routinely guided about regulations and guidelines for use of screens and digital devices right from the delivery rooms, to TV programs and internet availability for children in school and homes, especially background running of television before the age of 2 years [28].
- ECD needs a structured approach at pediatricians' clinics using a comprehensive checklist.
 - o Age group-wise single page content health file should be made in line of MCP (mother child protection) card to include each domain of ECD viz., standardized nutrition, development, parenting tips, stimulation, preschool learning and safety advices.
 - o Display of public information of ECD domains in waiting rooms including audio visual formats should be done.
 - o A parent friendly IAP digital app for comprehensive approach to ECD should be made and disseminated.
- Advocacy and integration be done with other sectors like obstetrics, education, social welfare, child safety, politics, international, national and local - social or governmental agencies and media at large *etc.* Facilitate formation, funding, implementation, coordination and monitoring-evaluation of high quality intervention programs and public policies [4,24].
- Expert inputs are needed to finalize the preschool learning & education advises by pediatricians:
 - o Awareness among caretakers of early childhood including school teachers and policy makers, about all aspects of child development, emotions and behavior at different ages, guidance on safety-security, sleep, nutrition and screen viewing.
 - o Awareness in preschool teachers in age appropriate activities, pre-reading, pre-writing and attention skills, should be universal [29].
 - o School / daycare crèche policies, guidelines and trainings should be developed in consultation with IAP for age, development, behavioral and emotion appropriateness. Guidelines for school entry with readiness and age appropriate activities at schools.
- Curriculum for graduate and postgraduate medical students should also include socio-emotional, speech-language, and social communication domains of development.
- Promote research in developing local and innovative methods in ECD science and delivery of care.
- Anganwadis need an additional trained worker in early stimulation and care for child development for under-3 children in addition to current practice of only pre-school education of 3-6 years.
- Pediatric facility staff needs to be trained to sensitively facilitate identification and referral for safety and security issues of children. Facilities should display/ disseminate relevant awareness material [20,22].

Recommendations in Neonatal Period

- Early identification and treatment of perinatal asphyxia in delivery room.
- Identifying high risk newborn following birth and at hospital discharge.
- Stratification of newborn based on risk factors (**Table-I**) [30]. Other risk factors for neuro developmental delay are preterm babies with any one or more of: PDA (patent ductus arteriosus, NEC (necrotizing enterocolitis, CLD (chronic lung disease), recurrent apnea, EUGR (extra uterine growth restriction), shock, PPHN (persistent pulmonary hypertension in newborn), complex congenital malformations, need of significant resuscitation, need for postnatal steroids, post surgery of CDH (congenital diaphragmatic hernia) and TEF (tracheo-esophageal fistula).
- Metabolic and hearing screening for all normal newborns.
- Identification of 'high risk' newborns and screening for significant hyperbilirubinemia (BIND Score and

Table I Risk Factor-based Stratification for Follow-up Care

<i>At risk</i>	<i>Risk factors</i>	<i>Care by</i>
Mild	>37 week, >2.5 kg, HIE stage I, Transient hypoglycemia, Suspected sepsis, Jaundice in preterm, Grade I/II IVH (intraventricular hemorrhage)	Pediatrician
Moderate	33-36 weeks, 1500-2500 gms, HIE stage II, Sepsis, jaundice with exchange transfusion, >Grade II IVH, Prolonged encephalopathy, Uncomplicated course on ventilation, Hypoglycemia >3 days, Need for some resuscitation	Neonatologist / developmental pediatrician
Severe	<1500 gms, <33 weeks, Multi organ injury, HIE stage III, >7 days ventilation, meningitis, kernicterus, abnormal neurologic exam at discharge, PVL (periventricular leucomalacia) or hydrocephalus, low Apgar at 5 min., Symptomatic hypoglycemia	Developmental Early Intervention Centre (DEIC)

Modified from reference 30; HIE: Hypoxia ischemic encephalopathy.

use of Bhutani's hour specific nomogram chart [31,32]

- Optimizing nutrition: Ensuring lactation by breastfeeding, helping maintenance of lactation in mothers of babies admitted in NICU and early detection and support for breastfeeding problems.
- Screening for hypoglycemia: Identify 'at risk' and screen all 'high risk' and sick newborns for glucose at 2 hours of age and every 4-6 hourly till first 48 hours of age and full feeds.
- Detection and management of postnatal hypoxia (for preterm newborn - Silverman Anderson Score, for full term newborn – Downes and Vidyasagar Score).
- Developmentally Supportive Care (DSC) in NICU including promotion of KMC (Kangaroo Mother Care) as comprehensive maternal care for development and nutrition.
- Follow up of NICU graduate using checklist. 'At risk' neonates may seem healthy and NICU graduates need a structured follow up, as they are at risk of significant neuro morbidity [33].

Interventions in the Neonatal Unit

The core objective of management of high risk babies is to have a 'brain protective' management strategy throughout the course of stay in NICU. Common brain protective strategies that need to be kept in mind include [34]:

- *Care during resuscitation:* Use room air / low oxygen up to 30%, for babies >32 weeks of gestation, tailoring oxygen delivery based on recommended target oxygen saturation in the first minutes after birth, labor room CPAP (Continuous Positive Airway Pressure) stabilization for preterm [10].
- *Optimizing nutrition:* EUGR is associated with poor neuro developmental outcomes [35]. Use mother's

own milk (MOM), donor human milk (DHM), TPN (total parenteral nutrition), early trophic feeds. Use of MOM/DHM for its benefits in reducing late onset sepsis, NEC and ROP (retinopathy of prematurity) [12,13,15].

- *Gentle Ventilation:* Non-invasive ventilation/gentle ventilation/volume targeted ventilation to reduce incidence of BPD (broncho pulmonary dysplasia) and related morbidity [36].
- *Maintaining hemodynamic stability* to minimize post-natal ischemic brain injury [37].
- *Therapeutic hypothermia:* For babies with HIE (hypoxic ischemic encephalopathy), if facilities exist [38].
- *Neuro-protective care/Brain sensitive care/DSC* [39,40]: Protect sleep cycles, especially REM (rapid eye movement) sleep; quiet environment (<45 dB); protecting eyes from bright lighting; clustering of care; hourly 'no touch' rounds; reduction of positional deformities by maintaining infants in a midline, flexed, contained, comfortable position with nesting, hand containment, swaddling and gentle handling; and prolonged KMC [41].
- *Skin care:* Minimize use of tape, moisten adhesive skin interface before removal [42].
- *Promote self-regulation and neurodevelopmental organization:* 'cue based care giving' by identifying stress cues, stability cues and self-help cues for autonomic, motor and state stability.
- *Tactile stimulation:* Touch, gentle massage.
- *Minimizing pain:* Non-pharmacologic and pharmacologic pain relief, containment, hand holding, KMC, breastfeeding/breastmilk use, non-nutritive sucking, oral sucrose [43].

- Involvement of family members in care of baby and decision-making.

Neonatal Developmental Intervention by Family Members at Home

- *Visual stimulation:* Decoration of surroundings, with moving and brightly colored objects. Black and white contrast sends the strongest signals to newborn brain.
- *Auditory stimulation:* By talking, singing, recorded mother's voice, recorded heart beat and musical toys. Radio, television *etc* sounds should be avoided in first two years.
- *Tactile stimulation:* Non-nutritive sucking, stroking, flexing, massaging with or without oil or cream, rubbing, positioning and giving bath. Massage advices are not recommended in high risk neonates with increased muscle tone. Massage should be done very carefully in preterm babies and term babies having asymmetric reflexes or neurologic compromise.
- *Vestibular-kinesthetic stimulation:* Rocking, oscillating beds e.g., water beds.
- *Carry in arms:* Avoid use of baby pods and cots. They interfere with the proprioceptive sensory input which the baby gets when carried in the arms of the caregiver.
- Avoid overstimulation.

Recommendations in Post-neonatal Period

- Age appropriate development surveillance using red flags checklist at each routine healthy baby visits. Problems found during it should be addressed with screening test [44].
- Display of red flags and basic stimulation tips at different ages in waiting areas.
- All children should undergo developmental screening using standard tools at 9, 18, 24 and 36 months [44,45].
- Detailed assessment to be undertaken of high risk children and screening positive cases.
- Early intervention for the high risk and developmentally delayed children.
- Stimulation and parenting advices to be delivered in waiting rooms by trained health care workers. Use CDC (Centers for Disease Control and Prevention) milestone tracker app till evidence based Indian app on public domain is available.
- The international prescriptive standards designed by WHO multi-centric study are recommended for growth monitoring. Each well baby visit should

incorporate nutrition monitoring and advices.

- Use Child Behavior Checklist (CBCL) for early pick up of problems like attention deficit.
- School readiness screening should be encouraged at pediatric clinics before the child is placed in preschool or kindergarten [46].
- Mapping of facilities for detailed diagnostic, therapeutic and supportive medical and nonmedical services will be done by the NDP (Neuro developmental pediatrics) and GDBP (Growth development and behavior) chapters and published in the module.

For purpose of including in routine practice, the recommended actions are arranged age-wise as a checklist (*Table II*).

CONCLUSIONS

This consensus statement is envisaged to guide Indian pediatric fraternity to improve practices and advocacy in ECD as per view of experts from across the country. There is urgent need to act fast in this subject in consideration of low awareness towards combined efforts in its divergent areas. Convergence of efforts with other medical and nonmedical faculties will bring newer aspects of promoting ECD. Newer evidences are building up fast in this subject, which will lead to update of this consensus with the feedbacks from field gather.

Disclaimer: This consensus statement is prepared for assisting pediatricians in accordance with current scientific evidence and guidelines for acting in early childhood development as a whole; however, many areas are still not clearly defined. These statements cannot establish a standard of care, and decisions about treatment should be based on the judgment of the clinician on the merits of the individual cases dealt by them.

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Table II Checklist for Working in Early Childhood Development at Pediatric Clinics

Age*	NBB	6 wk	10 wk	6 mo	9 mo	12 mo	18 mo	2 y	3 y	4 y	5 y
Health	Date										
	Growth#	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Vaccination	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Anomalies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Genitals / hernia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Murmur	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Abdomen mass	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Hips	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Umbilicus	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Teeth	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nutrition	Biochemistry	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Blood pressure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Nutrition	BF	BF	BF + CF	BF + CF	BF + CF	BF + CF	BF + CF	BF + CF	Diet	Diet
	Supplementation**	D	D	Fe + VD + VA	Fe + VD	Fe + VD + VA	Fe + VA	Fe + VA	Fe + VA	Fe + VA	Fe + VA
	Rickets	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Reflexes and Tone\$	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Development	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Special Senses	Hearing\$\$	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Eyes##	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Red reflex	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	NLD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Squint	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Optic atrophy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Stimulation and	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Caregiving advice	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Safety advice	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Maternal depression screen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Correction for gestational immaturity at birth should be done till 24 months age for all preterms. Use corrected age for wearing and milestone screening. Use postnatal age for vaccination; # At every visit check weight, height using boys/girls growth chart. Interpret head circumference with total length till 12 months of age. (HC=TL/2 + 9.5 + 2.5 cm); \$ Amiel Tison Angles till 12 months of age; **Early iron supplementation for well preterms from 2-3 weeks of age; calcium and phosphorous for LBW <1800g, till 4 kg weight; ## ROP Screening at 1 month age for birth at <34 weeks or birth weight <2 kg; \$\$\$ Universal OAE screening at discharge and BERA for abnormal OAE screens and in all high risk babies, screen clinically at each visit; Checklist for preterm and high risk neonates: Use Intergrowth 21/ Fenton's chart till 40 weeks gestation, for preterm. Thereafter use WHO Growth chart (2006) as for term infants.

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ANNEXURE

Participants at the National Consultative Meeting for IAP Consensus Guidelines on ECD (in alphabetical order):

Dr. Abraham Paul, Developmental Pediatrician, Ernakulam; *Dr. Amola Patel*, EB member GDBP Chapter of IAP, Ahmedabad; *Dr. Antony Kollanur R*, Consultant, Public Health, Child Survival and Development, Ernakulam; *Dr. Arun Phatak*, Baroda; *Dr. Bipin Desai*, Surat; *Dr. Chetan B Shah*, Surat; *Dr. Chhaya Prasad*, Developmental Pediatrician, Chandigarh; *Dr. Digant Shastri*, President Central IAP; *Dr. Hariprakash Hadial*, Newborn Care Consultant, UNICEF Gujarat; *Dr. Hitesh Jariwala*, President SPACT Surat; *Dr. Hitesh Shinde*, Secretary SPACT, Surat; *Dr. Jeeson Unni*, President NDP Chapter, Ernakulam; *Dr. Kamlesh Parekh*, 'Parenting for Peace' Surat; *Dr. Kanaksinh Surma*, Surat; *Dr. Ketan Bharadva*, President IAP-IYCF Chapter, Surat; *Dr. Kirit Sisodiya*, Pediatrician, Surat; *Dr. Leena Srivastava*, Secretary NDP Chapter, Pune; *Dr. Mahesh Patel*, Pediatrician, Surat; *Dr. Milind Wadekar*, President SOG-FOGSI, Surat; *Dr. Nandini Mundkur*, Developmental Pediatrician, Bangalore; *Dr. Nirav Jariwala*, Pediatrician Surat; *Dr. Parul Valia*, Developmental Pediatrician, Baroda; *Dr. Prashant Kariya*, Secretary AHA-Surat, Surat; *Dr. Rakesh Desai*, Pediatrician Surat; *Dr. Ravindra Bagal*, Health Officer, UNICEF, Gujarat; *Dr. Rhishikesh Thakre*, Neonatologist, Vice President NNF, Aurangabad; *Dr. Ritesh Shah*, Pediatric Neurophysician, Surat; *Dr. Ruchi Nanavati*, Neonatologist Mumbai; *Dr. Salim Hirani*, President AHA-Surat, Surat; *Dr. Samir Dalwai*, Developmental Pediatrician, Mumbai; *Dr. Somashekhar Nimbalkar*, Neonatologist, Karamsad; *Dr. Suchit Tamboli*, Developmental Pediatrician, IPP GDBP Chapter of IAP, Ahmednagar; *Dr. Sushma Desai*, EB member AHA, Surat; *Dr. Swati Vinchurkar*, Developmental Pediatrician, Gujarat Coordinator NDD Chapter, Surat.

Invited but could not attend the meeting: *Dr. MKC Nair* (Trivandrum), *Dr. Vibha Krishnamurthy* (Mumbai), *Dr. Roopa Srinivasan* (Mumbai), *Dr. Pankaj Buch* (Jamnagar), *Dr. Jayashree Mondkar* (Mumbai) and *Dr. VP Goswami* (Indore).