



Indian Academy of Pediatrics
Chapter of Neurodevelopmental Pediatrics

- Acquired injuries to the central nervous system
- Congenital malformations of the nervous system
- Common genetic conditions affecting development
- Neuromuscular disorders
- Toxin exposures
- Pre- and perinatal insults/exposures
- Comprehensively describe the approach to identification and management of the following conditions/situations related to children with developmental conditions/disabilities:
 - Atypical behaviors, including mood, anxiety, self-injury, pica, and disruptive behaviors
 - Child abuse and neglect
 - Crises and changes in families/family dysfunction
 - Feeding and eating problems
 - Sleep problems
 - Somatic symptoms such as chronic pain
 - Substance use
 - Temperamental variation
- Recognize and manage behavioral dysfunctions
 - Be able to describe the behavioral concerns of parents and analyze them to reach a management plan.
 - Apply different behavioral modification plans and theories to manage behavioral problems in children.
 - Support families to establish proper parenting and behavior modification.
- Describe the effects of ethnicity, culture, and family diversity on coping and management of developmental and behavioral problems.
- Describe the effects of social and community influences such as poverty and geography on service delivery
- Perform a complete and appropriate assessment of a child:
 - Obtain complete detailed developmental history appropriate to the complaint of the patient.
 - Gather information from multiple resources to formulate a comprehensive idea about the child's condition.
 - Elicit complete pediatric history relevant to the child's condition.
 - Perform complete and comprehensive physical examination inclusive of detailed neurological examination.
 - Perform a developmental assessment that is appropriate and adapted to the child's age, developmental level, and behavior.
- Select medical investigations (lab works, radiology, etc.) that are relevant to each child's condition and are evidence-based.
- Integrate information effectively from a variety of sources in order to formulate a comprehensive case study for the child and build a management plan.
- Counselling- process and technique
- Create a management plan that is evidence-based and appropriate to the child's condition, taking into consideration:



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- Family composition and dynamics
- Access to care
- Short- and long-term management plan- Provide counselling to patients and their families for establishing short- and long-term plans.
- Collaborate with the patient's family to create a management plan.
- Maintain clear, concise, accurate, timely, and appropriate records of clinical encounters and plans.
- Demonstrate proficient and appropriate use of diagnostic skills.
 - Demonstrate the effective, age-appropriate, and timely performance of developmental informal assessments that observe and/or elicit skills in different developmental domains.
 - Demonstrate the ability to select, administer, and interpret standardized tools (psychometrically valid) used in the scope of practice of developmental pediatrics depending on evidence-based literature and/or best practice guidelines.
 - Demonstrate the ability to **administer** the following standardized tools:

Domain assessed	Tool
Developmental screening	TDSC, LEST
Developmental assessment	Bayley, DASII
Cognition assessment	Weschler's Intelligence Scales for Children, Binet Kamat Test (<i>Interpret</i>)
Adaptive skills assessment	Vineland Adaptive Behaviour Scale, Vineland Social Maturity Scale
Learning assessment	Dyslexia screening tools, NIMHANS SLD assessment (<i>Interpret</i>)
Autism diagnostic assessment	Indian Scale for Assessment of Autism (ISAA), Childhood Autism Rating Scale (CARS), INCLEN ASD tool INDT-ASD
Behavioural checklists- Broadband	CBCL
Behavioural checklists- specific	ADHD specific scales- INCLEN ADHD tool INDT-ADHD, Vanderbilt/ Conner's rating scales
Language assessment	REELS(<i>Interpret</i>)
Visuo-motor integration	Bender Gestalt test, Beery Buktenika test(<i>Interpret</i>)
Other tools	Nursery Evaluation Scale of Trivandrum (NEST)
Neurological assessment of infants	Hammersmith Infant Neurological examination, Hammersmith Neonatal Neurological examination



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Multidisciplinary team rotation in the unit: DBP postings

- Work collaboratively with other team members, while demonstrating the ability to accept and respect opinions and work efficiently with coworkers and colleagues
 - Speech therapy and audiology
 - Occupational therapy
 - Special educator
- Demonstrate a sound knowledge of the assessment tools used in each service.
- Demonstrate appropriate knowledge of the therapeutic modalities used in each service.
- Observe and discuss formulation of an IEP plan for child with learning needs
- Observe various remedial education strategies being provided for children with SLD

Child Psychology:

- Interpret results of psychometric tools used for a child's evaluation, such as:
 - Intelligence quotient tests:
 - A. Stanford–Binet Intelligence Scale
 - B. Wechsler Intelligence Scales
 - Adaptive behavior tests: Vineland Adaptive Behavior Scales
- Describe common theories of child development and behaviour- Knowledge of the cognitive and developmental theories- Piaget's theory, Freud's Psychodynamic theory, Erikson's theory, Vygotsky's theory, Bandura's theory, Bronfenbrenner ecological theory
- Describe behavioral therapy processes commonly used in children
- Perform parent counselling for common behavioural problems
- Observe/ perform behavior modification techniques for common behavioral problems

High-risk neonate posting:

- Observe the Developmentally supportive care being provided in the NICU, observe/ Participate in the high-risk infant follow-up clinic
- Perform and interpret HINE/ HNNE, AmielTison angles
- General Movements- Be aware of a brief overview of GMs
- Formulate/ observe as Early intervention plan is given for the neonate based on identified needs
- Early stimulation measures and early interventions of high risk infant- counseling the parents
- Demonstrate assessment and interpretation of Primitive reflexes and Postural responses

Pediatric Neurology rotation:

- Learn to obtain a comprehensive pediatric neurology history.
- Perform competently detailed neurological examination appropriate for a child's age and development.
- Gather information from multiple sources and analyse it to reach a provisional diagnosis and formulate a management plan.



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- Utilize medical investigation efficiently following evidence and best practices.
- Recognize areas of interaction between developmental, behavioral, and neurological problems.
- Clinical approach to degenerative neurological problems.
- Recognize patterns of presentation of neurometabolic disorders and interpret evaluation reports of common neurometabolic disorders- Phenylketonuria, Mucopolysaccharidoses
- Evaluation and care plan for children with neuromuscular disorders
- Management and follow-up of children with epilepsy- developmental and behavioural aspects, understand and manage interactions and side effects of medications- an overview- Representative case studies and discussion
- Demonstrate efficient communication with patients and families regarding the illness, its etiology, management plan, and available resources.
- Present/ Attend at least 1 presentation on a topic related to both specialities.

Medical genetics:

- Recognise the dysmorphisms associated with the most common genetic disorders- Down syndrome, Fragile X syndrome, Rett syndrome, Angelman syndrome, Prader Willi syndrome, 22q11.2 deletion syndrome, Williams syndrome
- Multidisciplinary management of children with genetic problems- focus on developmental and behavioral needs
- Describe the behavioral phenotypes of common genetic disorders.
- Demonstrate the ability to take a detailed extended family history and draw an expanded pedigree/family tree.
- Perform comprehensive and accurate clinical examination with special emphasis on the standards of dysmorphology.
- Request proper investigations that are cost-effective and related to the child's problem.
- Manage the basic pharmacological needs of the patient.
- Prenatal diagnostic methods and therapies in genetics
- Attend/ Present at least 1 presentation on a topic related to both specialities

Child and Adolescent Psychiatry:

- Obtain comprehensive patient history with specific focus on on common behavioural conditions in children- externalizing behaviours like aggressive behaviour, Oppositional defiant disorder/ Conduct disorder and internalizing behaviours like Anxiety disorder, Depression, Obsessive Compulsive behaviours.
- Gather information from multiple resources.
- Perform mental status examination appropriate for child's age.
- Become oriented to psychiatric diagnostic methods.
- Describe risk factors, etiology, clinical presentation, and management of mental health/ behavioural conditions in children with developmental needs, including the following disorders:
 - Anxiety disorders



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- Depression
- Self-injurious behaviour/ aggression
- Tic disorders
- Restrictive Repetitive behaviours
- Initiate psychopharmacotherapy for uncomplicated mental health problems.
- Recognize and manage interactions and side effects of psychopharmacotherapy.
- Recognize the basics of behavioral therapy for children with behavioural needs.
- Interpret reports of tools used for mental health assessment- Representative case studies for examples- brief overview.
- Communicate and collaborate with mental health professionals and ensure to consider different opinions to reach optimum evidence-based patient care.
- Conduct/ Attend at least 1 presentation on a topic related to both specialties.

DEIC/ Govt Liaison: Community Developmental Pediatrics

- Knowledge of the social support schemes related to neuro-disability in India
- Knowledge of the concessions provided for children with Developmental needs
- Be aware of the Disability certification process- RPWD 2016, Disability act 2024
- Be aware of the framework of identification and management of developmental delays under the Rashtriya Bal SwasthyaKaryakram- functions of the DEIC
- Knowledge of community-based Rehabilitation for various developmental problems
- Organize or participate in awareness days, creating community directed awareness materials
- Knowledge of the Sarva Shiksha or the Samagra Shiksha Abhiyan- SSA- NEP 2020

Rehabilitation rotation:

The fellow will join different rehabilitation services including:

- Physiotherapy
- Prosthetics and Orthotics

By the end of the rotation, the fellow should be able to:

- Recognize the devices used in each service, the theory behind them, objectives, expected benefits, expected side effects, and harms.
- Conduct/ attend at least 2 presentations on a topic related to the specialities in each rotation

Pediatric Ortho:

- Knowledge of the Hip surveillance of a child with CP- interpreting the Hip X-rays
- Knowledge of the indications for surgery in a child with CP and follow-up of child after surgical interventions
- Gait analysis- brief overview



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Assessment

Learning domain	Formative assessment tools	Specification	Frequency
Knowledge	Examination	Written examination	at the end of DBP fellowship program
	Structured academic activities	Journal clubs	Once every 3 months- Total of 4 in a year
		Topic presentations	Once every month excluding first and last month (10 months) Total of 10 in a year
	Case based discussion	detailed history, examination, and developmental assessment, followed by formulation of a differential diagnosis and a comprehensive management plan.	Atleast 6 in a year
In-Training evaluation report	Competency evaluation form	Filled by guide every 3 monthly 4 evaluations in the year	

Learning domain	Formative assessment tools	Specification	Frequency
Knowledge	Clinical Examination	Case presentation exercise under supervisor observation	Every 3 monthly once- 4 in a year At the end of DBP fellowship program
		Volunteer and community services	Once in the year
	Volunteering in community projects	Visit atleast 1 charitable association or school- participate in awareness campaigns, create one community	



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			directed awareness material
	Research project	Thesis	At the end of the year, must present the paper or poster at NCDP or other national conferences
	Scholarly work	Recommended to submit articles from Thesis or any case series during the fellowship tenure to IJDBP	
	Logbook	Daily work log Minimum number of 30 children case studies compiled Log of assessments done Log of 5 children whom the trainee will longitudinally follow up	Submitted at the end of the year
Attitude	In-Training evaluation report	Form	Filled by guide every 3 monthly 4 evaluations in the year
Communication skills	Direct observation and feedback from Supervisor	Form	Family counselling, participation in multi-disciplinary meetings, patient advocacy

Logbook should have an attendance completion certificate from the supervisor. The guide's in-training evaluation report can also be added to the logbook.



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Suggested journals for reading

- ❖ IAP NDP Chapter Consensus statement guidelines on ASD, LD, ADHD, Hearing impairment, Down Syndrome, and GDD published in Indian Pediatrics
- ❖ Indian Journal of Developmental and Behavioural Paediatrics
- ❖ Developmental Medicine and Child Neurology
- ❖ Journal of Developmental and Behavioural Pediatrics
- ❖ Journal of Autism and Developmental disorders
- ❖ Autism: Autism research, Autism, Molecular Autism
- ❖ ID: Journal of Intellectual Disabilities
- ❖ Pediatric Neurology: Seminars in Pediatric Neurology, Epilepsia, Pediatric Neurology, Neuropediatrics
- ❖ Journal of Inherited Metabolic Disease
- ❖ Genetics: American Journal of Medical Genetics, Journal of Human Genetics
- ❖ General Pediatrics: Pediatrics, Journal of Pediatrics, Pediatric Clinics of North America, JAMA Pediatrics, Archives of Diseases in Childhood, Indian Pediatrics, Indian Journal of Pediatrics
- ❖ New England Journal of Medicine
- ❖ Neonatology: Seminars in fetal & neonatal medicine, ADC fetal and neonatal edition, Neoreviews
- ❖ Infant behaviour and development
- ❖ Brain and Development
- ❖ Psychology: Developmental Cognitive Neuroscience, British Journal of Developmental Psychology, Development and Psychopathology, Developmental science, Child neuropsychology
- ❖ Special Education: Journal of Learning Disabilities
- ❖ Occupational therapy: Physical and Occupational Therapy in Pediatrics
- ❖ Speech therapy- Journal of Speech, language, and Hearing Research, Seminars in Speech and Language, American Journal of Speech-Language Pathology, International Journal of Language & Communication Disorders

Suggested books for reading

1. IAP Handbook of Developmental and Behavioral Pediatrics. Samir H Dalwai et al. Jaypee Publishers
2. Developmental-Behavioural Pediatrics. Fifth edition. Feldman et al. Elsevier
3. AAP Developmental and Behavioural Pediatrics 2nd edition, Voigt et al. AAP
4. Illingworth's The Development of the Infant and Young Child- Normal and abnormal. 11th edition. Naveen Jain et al. Elsevier
5. Morgan and King Introduction to Psychology- Eighth edition
6. Developmental Pediatrics. MKC Nair. Noble publications
7. Swaiman's Pediatric Neurology: Principles and Practice. Sixth Edition. Elsevier publications
8. IAP Textbook of Pediatric Neurology. Anoop Verma et al. Jaypee Publishers
9. Nelson's Textbook of Pediatrics 22nd edition. Elsevier
10. PG textbook of Pediatrics. Piyush Gupta. Jaypee Publishers



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In-Training evaluation- 360 degree assessment by the guide- Model

Interest in Work				
<input type="radio"/> High interest in job .Very enthusiastic	<input type="radio"/> More than average amount of interest and enthusiasm for job	<input type="radio"/> Satisfactory amount of interest and enthusiasm for job	<input type="radio"/> Interest spasmodic. Occasionally enthusiastic	<input type="radio"/> Little interest of enthusiasm for job
<i>Comment</i>				
Initiative				
<input type="radio"/> Self-starter. Asks for new jobs. Looks for work to do	<input type="radio"/> Acts voluntarily in most matters	<input type="radio"/> Acts voluntarily in routine matters	<input type="radio"/> Relies on others. Must be told frequently what to do	<input type="radio"/> Usually needs to be told what to do next
<i>Comment</i>				
Organization and Planning				
<input type="radio"/> Does an excellent job of planning and organizing work	<input type="radio"/> Usually organizes work well	<input type="radio"/> Does normal amount of planning and organizing	<input type="radio"/> More often than not fails to organize and plan work effectively	<input type="radio"/> Consistently fails to organize and plan work effectively
<i>Comment</i>				
Ability to Learn				
<input type="radio"/> Exceptionally quick	<input type="radio"/> Quick to learn	<input type="radio"/> Average	<input type="radio"/> Slow to learn	<input type="radio"/> Very slow to learn
<i>Comment</i>				
Quality of Work				
<input type="radio"/> Very thorough in performing work. Very few errors if any	<input type="radio"/> Usually thorough. Good work with few errors.	<input type="radio"/> Work usually passes review. Has normal amount of errors	<input type="radio"/> More than average amount of errors for a trainee	<input type="radio"/> Work usually done in a careless manner. Makes errors often.
<i>Comment</i>				
Quantity of Work				
<input type="radio"/> Highly productive in comparison with other students	<input type="radio"/> More than expected in comparison with other students	<input type="radio"/> Expected amount of productivity for a student	<input type="radio"/> Less than expected in comparison with other students	<input type="radio"/> Very low in comparison with other students
<i>Comment</i>				
Judgement				
<input type="radio"/> Exceptionally good. Decision based on thorough analysis of problem.	<input type="radio"/> Uses good common sense. Usually makes the right decision.	<input type="radio"/> Judgement usually good in routine situations.	<input type="radio"/> Judgement often undependable	<input type="radio"/> Poor judgement jumps to conclusions without sufficient knowledge
<i>Comment</i>				
Dependability				
<input type="radio"/> Can always be depended upon in any situation	<input type="radio"/> Can usually be depended upon in most situations	<input type="radio"/> Can only be depended upon in routine situations.	<input type="radio"/> Somewhat unreliable, needs above average checking	<input type="radio"/> Unreliable
<i>Comment</i>				



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Interaction with team				
<input type="radio"/> Always works in harmony with others. An excellent team worker	<input type="radio"/> Congenital and helpful works well with associates	<input type="radio"/> Most relations with others are harmonious under normal circumstances	<input type="radio"/> Difficult to work with of times sometimes antagonizes others	<input type="radio"/> Frequently quarrelsome and causes friction
Comment				
Verbal Communication Skills				
<input type="radio"/> Very Good	<input type="radio"/> Good	<input type="radio"/> Satisfactory	<input type="radio"/> Needs improvement	<input type="radio"/> Unsatisfactory
Comment				
Written Communication Skills				
<input type="radio"/> Very Good	<input type="radio"/> Good	<input type="radio"/> Satisfactory	<input type="radio"/> Needs improvement	<input type="radio"/> Unsatisfactory
Comment				

Interaction with patients:

Acceptance of Criticism and Suggestions	
<input type="radio"/> Satisfactory <input type="radio"/> Unsatisfactory	Comments
Professionalism	
<input type="radio"/> Appropriate <input type="radio"/> Inappropriate	Comments
Attendance	
<input type="radio"/> Satisfactory <input type="radio"/> Unsatisfactory	Comments
Punctuality	
<input type="radio"/> Always on time <input type="radio"/> Irregular time keeping	Comments

Overall Performance grade:

+ A -	+ B -	+ C -	+ D -	+ E -
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Guidance to grades: A: Outstanding (consistently exceeded the standard expectations), B: Very Good (frequently exceeded the standard expectations), C: Good (always achieved [at least] the standard expectations), D: Satisfactory (achieved [at least] the minimum accepted standards), E: Unsatisfactory (did not achieve the minimum accepted standards)

Signature of the guide

Date: