

Diagnostic Tool for Neuromotor Impairment for Primary Care Physician

Health Policy Perspective

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Developmental delay refers to children who experience significant variation in the achievement of expected milestones for their actual or adjusted age. Developmental delays are caused by poor birth outcomes, inadequate stimulation, malnutrition, chronic ill health and other organic problems, psychological and familial situations, and other environmental factors. While developmental delay may not be permanent, it can provide a basis for identifying children who may experience a disability [1]. The average global prevalence of moderate and severe disability is about 5% in children aged 0-14 years; it is more common among children in the low- and middle-income countries [2]. As the Millennium development goal era comes to an end, the health policy focus post-2015 is widening beyond survival to include wellbeing and human capital, with increasing importance of disability, non-communicable diseases and mental health [3]. Early identification of children with developmental delay or disabilities allows for timely referral for developmental interventions as well as diagnostic evaluations and treatment planning [4]. It also has the potential to provide much needed epidemiological data for development of policies, strategic planning, identification of key interventions, and service provision.

The Ministry of Health and Family Welfare, Government of India, in 2013, launched the national programme for 'Child Health Screening and Early Intervention Services', referred to as *Rashtriya Bal Swasthya Karyakram* (RBSK). This program aims to screen children – throughout the ages 0-18 years – for 4Ds: defects at birth, deficiencies, diseases, and developmental delays and disabilities. Neuromotor impairment is included as one of the thirty health conditions for which identification and early intervention services are to be provided. Currently, the approach is to conduct screening for children aged between 6 weeks and 6 years, twice a year, at the community level (*Anganwadi* Center) by District Mobile Health Team, comprising of *AYUSH*-qualified medical officer and paramedics.

Children requiring confirmation of diagnosis and further treatment are referred to District Early Intervention Centers (DEIC) that are currently in the process of being established at the level of district hospitals [5]. DEIC is envisaged as first referral unit where a team of service providers – consisting of a pediatrician, medical officer, dentist, staff nurses, technicians and paramedics – is positioned to respond to child's immediate needs, conduct diagnostic tests feasible at secondary level of care, facilitate linkages to tertiary level facilities where required, and ensure follow up.

A number of screening tools for assessment of developmental delay and disability in children in various settings have been described in literature [6,7]. Under RBSK, tools for screening children for 4Ds have been included [8]. The INCLIN Diagnostic Tool for Neuromotor Impairment (INDT-NMI) [9] is a welcome addition to the limited armamentarium available with providers involved with the identification and management of children with developmental delays and disabilities, and has the potential for use 'at scale' in the national program.

INDT-NMI has been validated for use amongst 2-9 year-old children presenting to pediatric neurology outpatient clinic at tertiary care centers, most likely after screening and referral by public and private providers. A similar context exists at the DEIC where medical graduates and/or pediatricians are positioned to carry out basic level of assessment (tests for neurological impairment, hearing, vision) and provide physical, occupational and/or speech therapies and rehabilitative care. Thus, INDT-NMI is timely and relevant in the programmatic setting as a tool to assist in diagnosis and categorization of neuromotor impairment at first referral center (DEIC) with high degree of specificity, making early commencement of interventions possible. Other merits of the tool developed by INCLIN are short duration of training, administration time of 20-25 minutes, and no requirement for special equipment. These are important considerations given that a large

number of primary care physicians and pediatricians are likely to be involved in provision of services under RBSK.

However, it may not be feasible to use INDT-NMI tool at community level with the existing level of skills of District Mobile Health Team and paucity of time due to large number of children (150-200) screened at one or more sites in a single day. Also INDT-NMI has been evaluated in tertiary care settings, where graduate physicians are likely to be better informed and motivated than primary care physicians in the peripheral public health system. Therefore, a pragmatic trial, with INDT-NMI being administered by primary care physicians in field settings with less intense supervision, would provide a realistic assessment of its application and training requirements. The results can be used to advocate its use as the standard diagnostic tool within the national program.

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Indigenous Diagnostic Tool for Neuromotor Impairments for Primary Care Physician *Pediatric Neurologist's Perspective*

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Many children who have neuromotor impairments are often seen only in primary care settings. Early identification of motor delays enables timely referral for developmental intervention as well as diagnostic evaluation and treatment. Although parents are reliable in reporting their child's gross motor development, it is up to the primary care physician to use the parent's report and his or her own observations to detect a possible motor delay. A child with suspected neuromotor delay needs referral for early intervention or special education

resources. Concurrent referrals to physical and/or occupational therapists should also be initiated [1].

The appropriate use of any standardized screening instrument requires skill and experience in testing as well as familiarity with the specific screening tool used. Despite national efforts to improve developmental screening in the primary care setting, few pediatricians use effective means to screen their patients for developmental problems. Limited availability and access to pediatric neurologists, development pediatricians and therapists in low-resource