

- Immunity to meningococcus: The role of humoral antibodies. *J Exp Med.* 1969;129:1307-26.
8. Santos GF, Deck RR, Donnelly J, Blackwelder W, Granoff DM. Importance of complement source in measuring meningococcal bactericidal titers. *Clin Diag Lab Immunol.* 2001;8:616-23.
 9. Aggarwal M, Manchanda V, Talukdar B. Meningitis due to *Neisseria meningitidis* serogroup B in India. *Indian Pediatr.* 2013;50:601-3.
 10. Halperin SA, Bettinger JA, Greenwood B, Harrison LH, Jelfs J, Ladhami SN, et al. The changing and dynamic epidemiology of meningococcal disease. *Vaccine.* 2012;30(Suppl.2):B26-36.
 11. JCVI Interim Position Statement on Use of Bexsero® Meningococcal B Vaccine in the UK. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224896/JCVI_interim_statement_on_meningococcal_B_vaccination_for_web.pdf. Accessed May 19, 2014.
 12. Pizza M, Tora LD, Wassil J. Advances in meningococcal vaccines. *Clin Pract.* 2012;9:101-17.
 13. Novak RT, Kambou JL, Diomandé FVK, Tarbangdo TF, Ouédraogo-Traoré R, Sangaré L, et al. Serogroup A meningococcal conjugate vaccination in Burkina Faso: analysis of national surveillance data. *Lancet Infect Dis.* 2012;12:757-64.
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The New INCLEN Diagnostic Tool – A Comment DEVELOPMENTAL PEDIATRICIAN'S PERSPECTIVE

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With modernization comes associated pressure on children to achieve ever higher academic standards. It is therefore important to identify children who are struggling to meet expectations but could respond to intervention. Attention deficit hyperactivity disorder (ADHD) is one of the commonest reasons for academic under-attainment worldwide [1], and the prevalence rates in India are comparable to other countries [2]. As ADHD is a treatable condition, the need for accessible diagnostic instruments – that are appropriate for use in local setting – is readily apparent. Lack of universal education and established pathways of communication with schools, combined with poor awareness, make establishing the diagnosis a real challenge.

The INCLEN Trust has adapted the diagnostic criteria of the American Psychiatric Association (DSM-IV TR) by rewording them to make them more applicable to an Indian setting [3]. The development of such a tool based on the DSM-IV TR criteria, and validation in the local population, are major advancements to assist in diagnosis. This should translate into increased awareness of ADHD, and ultimately to better management of these children. The INCLEN diagnostic tool is divided into sections A and B; section A derives directly from the DSM diagnostic criteria. However, the fundamental principle of diagnosing ADHD is not that the child meets the diagnostic criteria, but rather the presence of

pervasive functional impairment deriving from the core symptoms. This is addressed in Section B of the tool. Recognition of the way that the particular symptoms can lead to impairment would need to be emphasized in the follow-through training in the use of the tool to prevent overdiagnosis. This is particularly important when considering section B item 4, that lists some modalities of functional impairment. For example, the failure to form stable friendships may result from a child not attending or listening to a playmate and therefore being bossy. A short attention span may mean that the child gets bored and tries to change the rules of the game. Alternatively a bored child may try to make life more interesting by being deliberately annoying or playing for attention. Children with ADHD tend to live in the present and not consider the future. They may be prone to injury through not stopping to consider the risks or consequences of an action. Their short term view of life can place unreasonable stress on parents and teachers. For example, a child may try to put off a task for as long as possible, on the basis that every minute spent arguing is time well spent because they are not doing the task. The fact that in the end it still has to be done may not appear to have any relevance to the child. Similarly, when punished the child may not be interested in the reason for the punishment, which therefore takes away its effectiveness. Academic underachievement may result from a short attention span and difficulty with sustained concentration. When assessing the acuity of ADHD it is

also important to consider its impact on the child and the child's self esteem. In the absence of any biomarkers for ADHD, the diagnosis relies on accurate history using multiple sources of information, including parents, school and other caregivers. It is important to rule out significant hearing loss, language impairment or intellectual disability which in themselves can cause attentional problems and frustrations in a child and result in disruptive behaviour. A large number of rating scales – both paid and free – are currently available as screening tools for ADHD and its co-morbidities. Within the Western world, the diagnostic pathways rely on accurate information from the school teachers and school counsellors through formal reports and rating scales. These are combined with information from parents or carers during history taking or through more objective parent rating scales.

Frequent association with significant co-morbidities like learning difficulties, oppositional defiant disorder, conduct disorder, anxiety, mood disorders, depression and sleep disorders, can also aid in early recognition and

treatment of ADHD. Hence, the importance of accurately diagnosing the condition and intervening early cannot be overemphasized. Management may involve a combination of behavioral interventions, extra help with learning, and in some cases medications. We look forward to further validation studies on the use of the INCLEN Diagnostic Tool in the general Indian population, including children, preschoolers and adolescents.

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REFERENCES

1. Polanczyk G, de Lima MS, Horta BL, Biederman J, Rohde LA. The worldwide prevalence of ADHD: a systematic review and metaregression analysis. *Am J Psychiatry*. 2007;164:942-8.
2. Juneja M, Sairam S, Jain R. Attention deficit hyperactivity disorder in adolescent school children. *Indian Pediatr*. 2014;51:151-2.
3. Mukherjee S, Aneja S, Russell P, Gulati S, Deshmukh V, Sagar R, et al. INCLEN diagnostic tool for attention deficit hyperactivity disorder (INDT-ADHD): Development and validation. *Indian Pediatr*. 2014;51:456-62.

INDT-ADHD as a Diagnostic Tool for ADHD in Indian Children

PEDIATRIC NEUROLOGIST'S PERSPECTIVE

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Attention deficit hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders affecting approximately 5% of children and adolescents worldwide [1]. Core symptoms include age inappropriate inattention, hyperactivity, and impulsivity [2]. Epidemiological studies from India have reported a prevalence of 1.7% in children under 14 years of age [3]. It is important to realize that ADHD persists into 50 to 80% of the affected, during adolescence [4], and the residual symptoms are noted in 18 to 30% of adults [5,6]. ADHD causes significant functional impairments, such as social and family life problems, poor education and school dropout, low self-esteem, impairment in emotional development, occupational problems, and divorce [2]. Unfortunately, the disorder is still poorly recognized and treated, especially in developing countries like India, and there is a lack of public policies

developed to address this condition. This could be due to low level of awareness and expertise among pediatricians and general practitioners in the community. Early detection and intervention is the need of the hour for reducing the burden of this disorder for the individuals, families, and the society.

While ADHD has attracted attention because of its high prevalence, it has attracted argument and controversy as a diagnostic entity because the construct of ADHD and its diagnostic criteria continue to evolve. Like most psychiatric disorders, the reliance on a set of criteria for ADHD – that require a subjective clinical judgment in different societies and cultures – has led to varied assessment of the prevalence and symptom presentations. It could also be due to the varied acceptance of externalizing behavioral traits by members of that socio-cultural group. In such scenarios, the properties of