

Review Article

IAP Immunization and Developmental Card - An Easy way to Monitor Development and Identify Neurodevelopmental Problems Early

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Abstract

A simple and quick method to assess development of children brought for routine interventions is needed in a busy office practice. With this objective, this "new development assessment chart incorporated immunization card" has been designed. The routine immunization visits should be utilized as an opportunity for the developmental assessment of children and documentation, by using this card. It is a very simple and user- friendly card and takes only 5 minutes to complete the assessment. It can be translated in to regional languages and hence mothers can also use it. It is anticipated that if all doctors use this card leading to early detection of neurodevelopmental disorders achieving 50% reduction in an year, from the present morbidity. With early detection, early intervention possible at District Early Intervention centres, free of cost.

INTRODUCTION

Developmental screening and assessment in infants and children is getting more attention in recent days. The reporting of autism, intellectual disability, global developmental delay and Attention Deficit Hyperactivity Disorder (ADHD) is apparently increasing mainly because of increased awareness. Brain growth is very fast in the first 5 years of life. Total brain volume is 83% of adult brain by 2 years of age. Good developmental card is available in government institutions but lacking in private sector.

Immunization is an important preventive measure against vaccine preventable diseases among infants and children. Paediatricians need to assess the growth and development during the immunization visits. Immunization schedule is recommended

by the Indian Academy of Paediatrics (IAP) Advisory committee on Vaccines and Immunization Practices (ACVIP) and periodically updated as per the requirement [1]. Different studies reported developmental delay in 2-3% of infants and children below 3 years of age [2-4]. We need to identify the delay by a simple method at an early age. Due to lack of time in the busy paediatric office practice, the developmental assessment is often not given priority. With a view to remind the busy paediatricians to quickly assess the salient aspects of development, immunization schedule incorporated with a development chart was designed and tried as a pilot project.

Importance of Regular Immunization

We need to prevent all vaccine preventable diseases. Small

pox and polio have been eradicated already. Now there is an attempt to eradicate measles and rubella. Immunization is an essential role of any physician particularly paediatrician. IAP has given guidelines for immunization schedule which is followed by most of the paediatricians in day-to-day practice. We need a very simple and quick method to assess development in a busy paediatric office practice. By keeping this in mind designed this "new development assessment chart incorporated immunization card" has been designed with the inputs from many paediatricians from Tamil Nadu and released this card in a dIAP (digital platform) organized Zoom meeting in 2020. The strategy is to make use of the opportunity of immunization visits to educate the parents on developmental aspects with this "development assessment chart incorporated immunization card", which gives the developmental milestones child is expected to achieve on that particular age of the child. If it is printed in regional language, the mother or the father can read it and check the achieved milestones by themselves as far as possible, and draw some reasonable conclusion about the development of their children by themselves which can be confirmed with the family paediatrician.

Growth and Development

Growth is an increase in the size or mass of tissues which is largely due to multiplication of cells and increase in the intracellular substance. It is measured by weight, height, and head circumference [5] and plotted on growth charts for routine assessment and adequacy of child's growth and also for nutritional counselling. Development is maturation of functions associated with maturation and myelination of nervous system. It is acquiring new knowledge and acquisition of skills. Growth and development should go hand in hand for a child to realise his/her optimal potential.

Importance of Regular Growth and Developmental Monitoring

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO). For a child, physical health is measured by normal growth. If an infant or a child gains weight, height and head circumference, as per age and sex, we conclude that the child is growing normally [5]. When there is a shortfall in these parameters, we need to identify the cause for the failure and intervene. So, Growth monitoring is the key step in identifying deviations and problems in growth. Developmental Observation Card (DOC) is used by health care workers in the field level [6-8]. To monitor development in the field level. Parents will always be anxious about their child's growth and development and would like to know whether the child's growth as per recommendation. We make use of this curiosity to educate the parents to monitor development by using this novel Immunization and Developmental Card.

How The Immunization and Developmental Card was Evolved and Developed

The IAP immunization schedule [1] was incorporated with

some important developmental milestones appropriate for the age of immunization in a single card with the inputs from the paediatricians engaged in the office practice and from academic side (Figure 1) This model card was distributed to Medical Officers under Rashtriya Bal Swasthya Karyakram (RBSK), practicing paediatricians, mothers with infants and older children and care takers like fathers and grandparents for trial in the field and their feedback for updating the card further. It was discussed in IAP-Tamil Nadu State Chapter (TNSC) forum and appropriate modifications were made based on the suggestions from office bearers of many district IAP branches of Tamil Nadu. Final formatting was done by the authors of this article and this New Immunization and Developmental Card was released in IAP-TNSC webinar in November 2020 organized over dIAP platform (a digital forum).








How to use this card?

It is very simple and easy. Mother needs to read the card before taking the vaccines and verify that all the skills /milestones described in the card are achieved by her child. Some items may be difficult to understand or identify regarding the milestones in the child. For those, they can consult the paediatrician before getting the vaccination. For the paediatrician it will be a simple, easy and pleasant job to do. He needs to observe what the child is doing, behaving and whether the child is doing age-appropriate simple tasks like using cubes, copying a circle, square or triangle, drawing a man, asking his/her name and so on, he can mark the achieved skills by putting a tick mark in the card. He can complete the assessment within 5 minutes and check it on the side of the given milestones.

What to do if we Identify a Delay?

Once any delay or deviation is identified, the child needs further evaluation to confirm any neuro developmental problem. The child can be referred to a developmental paediatrician for further assessment with appropriate tools and management. Regular follow up is to be carried out by the primary paediatrician with periodic inputs from the developmental paediatrician. The parents should not be frightened and need not be told any specific diagnosis like Autism Spectrum Disorders (ASD) or intellectual disability in the first few visits till the evaluation is completed and reviewed a few times. Initially it is better to just say that there seems to be some delay which may be a normal variation but anyhow the child will be followed up for next few weeks and further action or referral will be decided. If the child is within normal range of development, a close watch for any small issues is needed. If these issues are identified in time, early stimulation [9,10] can be given and get them corrected in short time due to the young age and brain plasticity. RBSK scheme [2,11,12] provides early identification and early intervention for the identified children in the District Early Intervention Centre (DEIC) in all the districts. If the child's delay or deviation is persisting, it indicates a warning signal. We need to refer for further Assessment by a Developmental Paediatrician using Specific tools like Denver 3, Trivandrum Developmental Screening Chart 0-3years,








Address :

1 year Hepatitis A				<ul style="list-style-type: none"> • Stands without support • Walks alone, but falls • Mature pincer grasp • Plays simple ball game • 2 words with meaning • Points an object with one finger • Respond to simple request No, come here 	
15 months MMR - 2 Varicella - 1 PCV booster				<ul style="list-style-type: none"> • Walks alone • Crawls upstairs • Imitates as taking by phone • Brings and Shows Toys of interest • Tower of 2 cubes 	
18 months DTwP - B1/ DTaP - B1 IPV - B1 Hib - B1 Hep - A 2 (Inactivated) varicella - 2				<ul style="list-style-type: none"> • Runs, explores table drawers • Domestic mimicry • 8-10 words • Throws a ball without falling • Recognizes parts of the body • Tower of 4 cubes • Name and identify common objects in the picture book • Puts pebbles, small objects in a container 	
2 years Influenza vaccine				<ul style="list-style-type: none"> • Walks up and down stairs (2feet/step) • Tower of 6 cubes • Pulls people to show desired object • Two-word Sentences • Able to do two step command 	
3 years Influenza vaccine				<ul style="list-style-type: none"> • Rides tricycle • Alternates feet going upstairs, • 3 word sentences • Tower of 8 cubes, making a Bridge / Gate of 3 cubes • Copies a circle • Knows name & gender • Identify 1 - 2 colours and shapes • Able to do three step command 	
4 years Influenza vaccine				<ul style="list-style-type: none"> • Hops on one foot • Alternates feet going downstairs • Copies cross & square • Steps of 6 cubes • Group play • Says poem, Able to tell A B C D, 1 2 3 4 letters & Simple Story 	
5 years DTwP / DTaP - B2 IPV - B2, MMR - 3 Influenza vaccine				<ul style="list-style-type: none"> • Plays skipping rope • Copies a triangle • Steps of 10 cubes • Count up to 10 • Social : Dresses and undresses • Language : asks for meaning of words • Identify & write letter A B C D, 1 2 3 4 • Identifies 4 colours 	
9-14 years • T dap : 10-12 y followed by Td every 10 y Tdap & HPV • HPV : 9-14 years 2 doses 0, 6-12m (2 doses at 6 months interval) >15 years - 3 doses -HPV 0-1-6 mo for HPV2, 0-2-6 mo for HPV4					

Ref.IAP - ACVIP Recommendations 2020-21

Blue : Vaccines provided for all Children in the Government set-up.**Red : Vaccines recommended in private practice, for all Children (IAP Recommendations).**

Address :

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Figure 1

Trivandrum Developmental Screening Chart 3-6 years language Evaluation Scale Trivandrum, INCLIN Diagnostic Tool for Autism Spectrum Disorder, INCLIN Diagnostic Tool for Attention Deficit Hyperactive Disorder, etc. for confirming the diagnosis [4,7,9]

PROJECT

Aim: Early identification of NDD and increase the number of children coming to early intervention

Period: January 2021-June 2022

Inclusion Criteria: Only newly diagnosed children between 0-5 years were included in the study

Exclusion Criteria: Intellectual disability and cerebral palsy

METHODS

Zoom training given to Selected paediatricians and their Nursing assistants in Cuddalore District, Tamil Nadu to use the Immunization and developmental card and provided the booklet which contains the card. It was given to all eligible children. DAME-Developmental Assessment Made Easy work shop conducted for Paediatricians and Developmental assessment Kit provided to all participants. Public program by Zoom, organized every Tuesday evening for 4 weeks along with rotary to create awareness among parents and Public. Free booklets were distributed to all mothers delivered in GH, Chidambaram.

Children identified by paediatricians, Practitioners and parents were screened and final diagnosis made. Functional age assessment also made for ASD children using Scope profile. Referred to suitable nearby Therapy centres in their own place. Parent oriented therapy advised to all and willing parents got registered for the same. All children reviewed periodically for assessment and monitoring of improvement.

RESULTS

100 children were identified in 18 months using the card by the paediatricians out of which 5 children identified by parents themselves. The age at which the diagnosis of ASD is made is reduced from 4 years to 15-24 months in this study Breakup of the conditions identified among these 100 children were - ASD 80, ADHD 9, early signs of SLD 6, GDD 5.75% come for regular follow up, 75% children have screen time more than 2 hrs, 40% have Insufficient Breast feeding, 25 % have antenatal, natal or postnatal problems. The age at which the diagnosis of ASD is made is reduced from 4 years to 15-18 months.

In yet another survey, to study the feedback from the practitioners, the following were the observations: All the doctors surveyed, opined that the card is found to be useful for assessing the child's development and improves their Knowledge regarding child's developmental skills. 95% enquire parents about growth and development of their child routinely and 91% assess the practiced developmental assessment routinely in their OP mainly on Immunization days. 99% were able to understand

the developmental stages given in the card and 97% Doctors felt the card can be used routinely. 89% doctors are in favour of using the card for assessing the development of children. 91% of doctors reported that they did not come across and difficulty in using the card except for small letters (11%) not interested but says no difficulty (8%) Difficult to apply (5%) one doctor commented he needs to get more experience (1%) Feedback given were that It is very illustrative and easy to follow, card is easy to understand, user Friendly. 99% doctors showed interest to recommend this card to other doctors recommend this card to other Doctors.

NEED OF REGULAR ASSESSMENT

We need to identify the delay and deviations (which is 2-3% of children in under 3 years of age) [2,13] of developmental skills and milestones, which would aid in early stimulation. This card, if used by all the paediatricians throughout the country, the possibility of failure to identify neuro developmental diseases will be reduced to 50 % of what it is now, within one year.

Consensus Statement of Indian Academy of Paediatrics on Early Childhood Development clearly states "Age-appropriate development surveillance using red flags checklist at each routine healthy baby visits. Problems found during it should be addressed with screening test. Detailed assessment to be undertaken of high-risk children and screening positive cases. Early intervention for the high risk and developmentally delayed children has to be undertaken. Stimulation and parenting advices have to be delivered in waiting rooms by trained health care workers" [14]. Once the delay and deviation are identified early, these children can be started on early intervention [14-16] which is available in district early intervention centres free of cost. Moreover, by the routine use of this card, high risk babies 3 babies born to mothers with Pre eclamptic Toxaemia, Pregnancy Induced Hypertension, Gestational Diabetes, Small for Gestational age, Preterm Babies, Meconium Aspiration Syndrome, instrumental deliveries, birth asphyxia, neonatal hypoglycaemia, neonatal convulsions, etc. (may have 45% risk of developmental delay) can be effectively screened [3].

Pre-school children with language disorders are at higher risk for language-based learning disorders and social and behavioural problems [9]. Early stimulation [13,17] can be started to high-risk babies before they develop for developmental delay to a large extent there by bringing down the cost and emotional burden of managing these kids. National Health Mission (NHM) came out with a beautiful developmental card with diagrams given to the antenatal mothers who are coming for check-up in government sector. That simple facility is not available for the infants and children coming to consult a paediatrician who is an IAP member. We need to provide an equivalent facility to the private sector.

CONCLUSION

This card can be used by any physicians working in PHC, RBSK scheme, all paediatricians and health care workers, nursing assistants in private hospitals, clinics, and even the

parents and grandparents. It will be very simple and easy way to monitor development, to pick up developmental delay and early signs of autism spectrum disorder, intellectual disability, learning disability, language delay, ADHD, etc. It also helps to start early stimulation to normal babies to archive maximum developmental potential. Early identification will help to start early intervention and gives a benefit of maximum improvement in functioning. It is anticipated that all paediatricians will start developmental assessment by any simple way and help for the early identification of the neurodevelopmental problem and reduce the incidence and severity of the problem. It will help our nation to progress to a powerful nation as per our past president Abdul Kalam's dream!

What is already Known?

Developmental Screening Tools are available and used by all Medical Persons Doctors Nurses and Health workers.

What is New?

Combining Immunization schedule and Developmental milestones in one card as ready and easy to use. It is user friendly, can be used by all Medical Persons, Parents and public.

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