

DEVELOPMENTAL SURVEILLANCE AND SCREENING IN GENERAL PEDIATRIC PRACTICE

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Developmental and behavioral problems are relatively common conditions, with a prevalence of approximately 10%-25% in general pediatric practice (Council on Children with Disabilities, 2006; Glascoe and Marks, 2011; Lipkin, 2011). In which early detection and appropriate management of such problems can lead to better developmental and behavioral outcomes in children (Council on Children with Disabilities, 2006; Glascoe and Marks, 2011; Lipkin, 2011). However, these problems frequently remain undetected or are even overlooked by primary pediatric healthcare professionals, particularly in settings where there are major time constraints (Council on Children with Disabilities, 2006; Glascoe and Marks, 2011; Leppert, 2011; Lipkin, 2011).

Developmental surveillance, generally recommended to be performed at every well child visit, is a flexible, longitudinal, continuous and cumulative process aimed at identifying children who may have developmental problems (Council on Children with Disabilities, 2006; Lipkin, 2011). This is in contrast to developmental screening, which is the administration of a brief, standardized tool for the identification of children at risk of developmental disorders at specific ages (Council on Children with Disabilities, 2006; Glascoe and Marks, 2011; Lipkin, 2011). Children with positive developmental screening should be referred for

developmental evaluation, which is aimed at identifying specific developmental disorders with related medical etiologies and/or associated medical problems (Council on Children with Disabilities, 2006; Leppert, 2011; Lipkin, 2011).

Currently, only approximately 25%-30% of children with developmental delay are detected prior to school entry by primary care providers (Glascoe and Marks, 2011). In practice, brief well-child visits to healthcare facilities have several agendas, such as physical examination, anticipatory guidance, safety and prevention counseling, and developmental promotion. Therefore, developmental problems are likely to be undetected at such visits. In 2002, the AAP periodic survey found that developmental surveillance was done by pediatricians in 71%; however, in only 23% of those reported that developmental screening was formally assessed, which may have been due to time constraints, lack of staff, or inadequate reimbursement for performing the screening (Lipkin, 2011).

Furthermore, the reasons that developmental problems are undetected in primary care in the US include: non-standard administration of standardized screening and informal milestone checklists, failure to continually check on developmental progress, clinical judgment mainly based on cases' dysmorphology, requirement of repeated screening test failure prior to



Fig 1—Cover of the *Anamai 55* handbook. Source: http://hp.anamai.moph.go.th/ewt_dl_link.php?nid=318

making referrals, and false optimism about outcomes, such as assumption that children will outgrow their problems (Glascoe and Marks, 2011).

Similar problems are also encountered in Thailand. In the screening and surveillance of child developmental health, the AAP recommends doing developmental surveillance on every child at every well child visit, and using a standardized screening tool at least at ages 9, 18, 24; or 30 and 48 months of age, as well as in addition to whenever parents have developmental concerns (Lipkin, 2011). It also recommends that autism-specific screening should be performed on every child at ages 18 and 24 months (Robin *et al*, 2001; Council on Children with Disabilities, 2006; Johnson, 2008; Soares and Patel, 2012). If screening results are concerning, it advises referral for developmental and medical evaluations, and, if appropriate, early intervention should be considered (Hauser-Cram and Warfield, 2009; Lipkin,

2011). Ideally, each child should have their developmental status continually followed such that the Royal College of Paediatricians of Thailand are also making efforts to implement this in their residency training program and also in all health care maintenance visits in Thailand.

During developmental surveillance, parents' concerns are elicited and attended to, a developmental history is taken, observations of the child's development and behaviors are made, risk factors and protective factors for developmental status of the child are determined, and these findings are documented (Council on Children with Disabilities, 2006; Glascoe and Marks, 2011; Lipkin, 2011). This entire process should normally take 5-10 minutes. In looking at parental concerns, parents are questioned on whether they have concerns about their child's development, behavior, or learning (Council on Children with Disabilities, 2006). It should be noted, however, that an absence of parental concern

does not preclude the presence of serious developmental delay.

Pediatric residents are trained to identify children with abnormal developmental patterns, such as delay, dissociation, deviancy and/or regression (Leppert, 2011). Accurate observations of the child are challenging to perform such that healthcare professionals are trained to observe fine and gross motor skills, speech, language, and social engagement, as well as related neurological function on physical examination. Each child will have protective influences in their development, such as temperament, prenatal, perinatal, and postnatal factors, as well as temperament (Johnson and Blasco, 1997). Environmental factors also influence child development, particularly parenting style and parental education. High parental education, for example, increases the likelihood parents will read to the child and discipline the child appropriately, promoting child development. However, if the child is subjected to living conditions in poverty, lack of health services, and family discord, this may have negative effects on their development (Council on Children with Disabilities, 2006; Glascoe and Marks, 2011; Lipkin, 2011).

Anamai 55 is a project developed by the Bureau of Health Promotion under the Ministry of Public Health in 2012, which provides a structured developmental surveillance program for children aged 1, 2, 4, 6, 9, 12, and 18 months, 2, 3 and 4 years conducted by primary healthcare providers during routine health maintenance visits (Fig 1). Most items in this survey were derived from the Denver II developmental screening test (Frankenburg *et al*, 1992). If the child fails once on any item, their

parents are counseled for developmental promotion for 1 month and then the child will be retested. If, following retesting the child fails again, they are referred for developmental screening. The correct way to carry out developmental checks on children for each item is provided on a video (Ministry of Public Health Thailand, 2013).

Normally, the standards for screening test accuracies should be at least 70%-80% sensitivity and specificity, or a sum of >150 for both (Lipkin, 2011). Tools that rely on information from parents, and tests that take less than 15 minutes to administer are ideal. The test should evaluate multiple areas of development, for example, similar to the Denver II test. There should also be specific tests available, such as domain-specific tests to evaluate one domain of development (for example, motor, language), (Hoon *et al*, 1993) as well as disorder specific tests aimed at identifying specific developmental disorders (for example, M-CHAT for autism) (Robins *et al*, 2001).

Developmental screening in Thailand in general follows AAP guidelines. At age 9 months, children are assessed for visual and motor development, and early communication skills. At 18 months, children are assessed for communication or intellectual disabilities, and mild motor problems, such as gait or coordination abnormalities seen in mild cerebral palsy (Council on Children with Disabilities, 2006; Lipkin, 2011). Specific tools are used to look for autistic spectrum disorders.

There remains the need in Thailand to train more medical staff to be competent in performing such assessments. At ages between 24 and 30 months, children are screened for communication or intellectual

disabilities, along with autism spectrum disorders. At ages 4-5 years children are screened to determine their school readiness, to identify those at risk for academic problems (Lipkin, 2011).

The 2006 AAP guideline is generally what forms the basis for practice in Thailand. If a child is found to have risk factors for developmental problems or come for their 9-, 18-, or 30-month visit, they will have a screening tool administered. If the assessment is normal, an early return visit is scheduled. If the assessment is abnormal, they will be referred for further evaluation (Council on Children with Disabilities, 2006).

In children with normal screening results, child development health promotion guidance is given. If screening reveals an abnormality, it should be explained to the parents, and the child is referred for comprehensive developmental evaluation and early management (Glascoe and Marks, 2011; Leppert, 2011; Lipkin, 2011). Management involves initiation of a medical home program and chronic condition management of the child with special health care needs (Council on Children with Disabilities, 2006).

There are several developmental and behavioral screening tests used in Thailand. This includes the Denver II, ADHD rating scales, and many other tests used by specific groups of professionals with expertise, such as the Ages and Stages Questionnaires (ASQ) and the Parents Evaluation of Developmental Status (PEDS) (Council on Children with Disabilities, 2006; Glascoe and Marks, 2011; Lipkin, 2011). Thailand uses a translated version of the M-CHAT questionnaire that

is available online. This test utilizes a quick to administer set of 23 questions that help to identify a child at risk of autism.

Despite there being many developmental screening tests available, in practice there will be limitations in their use; as there are language and cultural differences depending on where the test is used. More research still needs to be conducted on what is considered the norm for particular populations. Many tests do not meet standards in reliability, validity, sensitivity, and specificity. Although parent-completed developmental questionnaires fit for the population are ideal, more research on this issue is still warranted. As often experienced, there may be time constraints in the proper administration of certain tests, and the quality of their detection may also vary in accordance to the expertise of the healthcare professionals who administer the test.

It is hoped that in the future, practical guidelines for implementation on developmental surveillance and screening will be incorporated into general pediatric practice in Thailand. Unique national guidelines should be implemented, with adequate training of office and medical staff, and an appropriate network of medical consultants mobilized for medical evaluations and referral. Ongoing close developmental surveillance need to be ensured and research should be continued in the field of child development, with adequate funds allocated to the field.

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