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Child development – issues in early detection

Child development is a complex, non-linear process affected by multiple factors. In addition, there is a large degree of individual variation. Developmental delay is present when a child does not reach developmental milestones at the expected age (with adequate leeway for the broad variation among normal children). Although delay may result primarily from a biological factor such as a chromosomal disorder, or an environmental factor such as maternal depression, the principal model for the causes of developmental delay is a 'transactional' one. The process of development is viewed as a transaction between the child and the environment, in which each can have profound effects on the other.

About 15% of children have developmental delay. Many, however, are not detected before commencing school, mainly because the disabilities are mild or because they relate to tasks only then attempted by the child. Of the 15%, a much smaller proportion has more severe disability. This group is more likely to present earlier because of the severity of their problems, because there is more often an associated medical condition, and because a number of them (such as those with extreme prematurity) are picked up by at-risk screening programs.

Measurement of child development centres on the measurement of abilities and aptitude, comparing the child to other children of the same chronological age (or corrected age in the first 2 years for premature infants).

A child's development is usually described in terms of the developmental tasks he/she can or cannot perform, and the way in which these tasks are carried out. There are innumerable tasks of development, though a smaller number form the basis of commonly used developmental milestones. Developmental milestones are often considered within a number of categories such as language, gross motor, fine motor, and personal/social. Often the measurement and description of development is presented in these categories.

In some screening areas, such as hypothyroidism, only one parameter is measured and it is possible to develop clear cut-off levels. In contrast, child development has multiple parameters, and there is considerable individual variation within each



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parameter. It is therefore difficult to find a simple and quick way of identifying children with developmental delay.

In health care and educational settings, parents often raise concerns about their child’s language, behavior or other areas of development. Deciding on the best response is often challenging:

- Are these concerns potentially serious so that diagnostic testing is needed?
- Do parents simply need advice?
- Should a developmental or behavioral screening test be administered?
- Should a child be monitored carefully over time to detect any emerging problems?
- Are reassurance and routine monitoring sufficient?

Some parents do not readily share their concerns. Others share them at times when it is difficult for professionals to respond such as raising “Oh by the way ... ” comments at the end of a visit. Some parents need help carefully appraising how their child is developing compared to others. It is therefore challenging for professionals to detect and address developmental problems. All this contributes to the finding that fewer than 30% of children with serious developmental and behavioral difficulties are identified before they start school.

The subtle and emerging nature of children’s problems also contributes to under-detection. For example, almost all children begin to talk at the usual time, but those with problems may have trouble learning new vocabulary or combining words. Nevertheless, failure to detect subtle difficulties means that children do not receive the benefits of early intervention.

A recent National Health and Medical Research Council report on Screening and Surveillance in Children concluded that the early identification of developmental delay/disability (or of significant risk factors for their occurrence) and subsequent early intervention can improve developmental and other social outcomes. However, no high quality evidence was found to demonstrate the effectiveness of universal developmental screening programs – either for global development or for specific developmental areas. It recommended that:

- Developmental screening tests have a role when used as part of a broader program of preventive services

for children and families. In this context, developmental screening tests would be only one specific part of a methodology to identify and intervene for suspected developmental delay and disability.

- Individualised checklists of milestones or other non-validated measures should not be used as developmental screening tests.

In other words, developmental screening tests should not be used on their own to provide reliable early identification of developmental delay.

The Parents’ Evaluation of Developmental Status (PEDS) is a brief (10-item) questionnaire that elicits parents concerns about their child’s development or behaviour.

Its great strengths are that it:

- is brief and simple to use,
- covers the age span birth to 8 years,
- is as reliable and valid as any of the other developmental screening tests, and
- facilitates a dialog with parents about their child. This dialog allows discussion with parents about areas that are of concern whether or not a significant problem is identified. In addition, this dialog fits very well with the broader family-centred approach to practice in primary care.

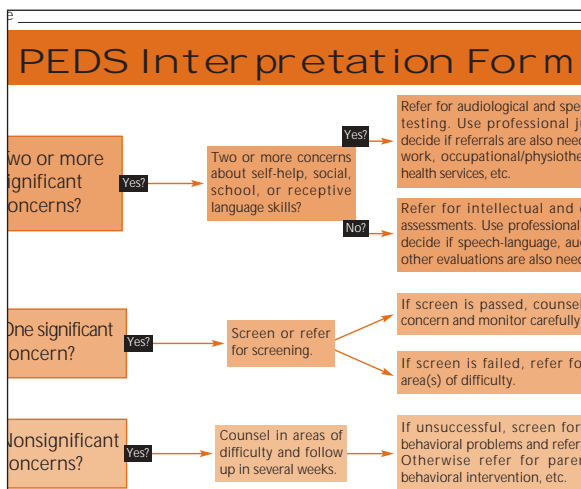
Brief description of PEDS

Parents are asked to record concerns about their child’s development and behaviour in response to 10 simple questions on the PEDS Response Form. The PEDS can be completed prior to being seen or read out to the parent. It usually takes about 2 minutes to complete.

PEDS Response Form		
Parent's Name _____		
y _____	Child's Age _____	Today's Date _____
any concerns about your child's learning, development, and behaviour.		
e any concerns about how your child talks and makes speech sounds?		
Yes	A little	COMMENTS:
e any concerns about how your child understands what you say?		
Yes	A little	COMMENTS:
e any concerns about how your child uses his or her hands and fingers to		

Concerns can be quickly categorised into “Significant” (more predictive of developmental delay), and “Non-significant” (not predictive of developmental delay, but warranting further discussion with the parent). Depending on the number of “Significant” concerns, instructions are to either refer for assessment (70% in this group will have a substantial delay or disability), perform a second stage screen (or refer for screening if unable to undertake this), or to counsel in the areas of difficulty and follow up in several weeks.

Peds Score Form						
						Birthdate
a checkmark in the appropriate box to show each concern on the significant predictors of difficulties. Non-shaded boxes are non-significant.						
11 mos.	12-14 mos.	15-17 mos.	18-23 mos.	2 yrs.	3 yrs.	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



Second stage screens

Carrying out a second stage screen for children with one “Significant” concern improves the specificity of the process, i.e. helps minimise the number of children referred for detailed assessment who do not have a developmental delay or disability. A child who fails a second stage screen requires referral for assessment. A child who passes the second stage screen needs developmental promotion, patient education, and careful follow-up.

In determining which screens might be suitable, characteristics such as accuracy, ease of use and acceptability to the client need to be considered. The table on the following page provides details of the PEDS and two suitable second stage screens. Which second stage screen is chosen depends on the situation, the resources, and the training of the practitioner. In general it is best to be proficient in one and use that when required.

Note: Denver II is not recommended because it does not perform as well as a screening test as those listed, requires considerable training, takes longer to administer, and is more expensive to purchase.

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The complete NHMRC report on *Screening and Surveillance in Children*

can be accessed from

www.nhmrc.gov.au/publications/pdf/ch42.pdf

Tools for developmental screening

Name	Age range	Description	Scoring	Time frame	Availability
Parents' Evaluation of Developmental Status	0 – 8 years	10 questions eliciting parents' concerns. Written at a 5th Grade reading level. Through the use of the PEDS Score and Interpretation Forms it advises when to refer, provide a second screen, provide patient education, or monitor development, behaviour, and academic progress.	Identifies children as low, moderate, or high risk.	2 minutes	Centre for Community Child Health Royal Children's Hospital, Melbourne Parkville Vic 3052 Ph: 03 9345 6150 Fax: 03 9345 5900 Email: enquiries.cch@rch.org.au
Ages and Stages Questionnaire	0 – 60 months	Parent report questionnaire. Clear drawings and simple directions help parents indicate children's skills. Separate copyable forms of 25-35 items for each age range.	Single pass/fail score for each developmental domain and a summary score.	7 minutes	MacLellan & Petty Suite 405 152 Bunnerong Rd Eastgardens NSW 2036 Ph: 02 9349 5811 Fax: 02 9348 5911
Brigance Screens	0 – 90 months	Uses direct elicitation and observation. There are 4 screening books available with 9 separate forms, one for each 12-month range. Taps speech – language, motor, readiness and general knowledge at younger ages and also reading and math at older ages. In the 0 – 2 year age range, can be administered by parent report.	Cut off and age equivalent scores for motor, language, readiness and a summary score.	10 – 15 minutes	Hawker Brownlow Education 1123a Nepean Hwy Highett Vic 3190 Ph: 1800 334 603 Fax: 03 9553 4538



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