

**ABSTRACT**

**Developmental delays and disorders are not uncommon and affect 10 to 20% of children under the age of 5. Early identification of children with delays allows referral for assessment and appropriate intervention, which can influence the child's developmental trajectory, allowing optimisation of his potential.**

**The family physician has a very important role to play in monitoring the development of children under his care. He is well placed to do this in a longitudinal sense, as he already has an ongoing relationship with the family, and has many opportunities repeated contact with the child in the first few years of life.**

**Developmental surveillance using the checklists, limit milestones and red flags in the Child Health Booklet is described.**

**Keywords: Child development, developmental screening, developmental surveillance, developmental delay, family physician**

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**INTRODUCTION**

It has been estimated that developmental delay occurs in about 15% of children under 5 years of age<sup>1</sup>. It is therefore not uncommon. One out of perhaps 6 children in your practice may have a developmental delay or disorder.

The monitoring of development in young children is an important component of family practice, as family physicians have the opportunity to

1. Know the whole family and its particular strengths and risk factors – there is an existing relationship of trust.
2. See the child and family for routine visits such as for immunisation as well as for acute illnesses – there is the possibility of regular, frequent contact.

If there are concerns about a child's development, an early referral for diagnostic assessment will expedite appropriate early intervention. This can make a significant difference to outcomes for both the child and the family. It has been well documented that healthy early child development is crucial, not only for long-term development for learning, but also for physical, emotional and mental health throughout one's

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lifetime. The evidence for early intervention, though somewhat limited in a medical sense, shows that it confers long term benefits for these children.

Research has shown that identifying developmental delays may be erratic if physicians rely solely on clinical judgement and informal milestone reviews<sup>2</sup>. We aim to discuss ways of increasing the likelihood of identifying children who need help, in the context of a busy family practice.

**OVERVIEW OF CONCEPTS & TERMINOLOGY****Normal development**

Developmental progress is about gaining functional skills, which will over time, allow a child to become independent of its adult caregivers. Developmental skills are achieved sequentially following a remarkably consistent pattern, though there may be a wide variation in the time frame. This development reflects the interaction of the child's developing neurological system with the environment. Each developmental phase builds on previous ones and allows for further aspects of development to take place. Hence, difficulties within one domain can lead to delays in acquiring skills in another field. For example, a child who has a hearing impairment that is left untreated, will likely be delayed in acquiring language and speech. This may in turn limit play opportunities and affect the child's social development.

- Developmental milestones: Age at which a specific and important developmental skill is achieved
- Median age: Age at which 50% of children acquire a specific skill
- Limit age: Age at which a specific skill should have been achieved (reflects 2 S.D. from the mean)

**Typical developmental trajectories**

Development has been described to involve a progression of emphasis from neurologic → motor → sensorimotor → cognitive function. It has been proposed that development proceeds from a basic skill to a function, to an integrated functional unit. This last step blends skills and functions and may form the basis for later 'intelligence'. For example, reaching or grasping can be considered a skill. Reaching grasping and bringing an object to the mouth is a function. Overcoming a barrier to obtain an object that could then be brought to the mouth involves integration and coordination of various functions (problem solving, object permanence, motor planning); by blending skills and functions, this would become an integrated functional unit.

Motor development occurs in the following patterns:

1. From head to toe (cephalo-caudal) – a child will acquire head control, then truncal control and eventually be able to walk.
2. From inner to outer (proximal to distal) – the muscles of the face and trunk are the first to develop, followed by muscles controlling large limb movements and finally moving out distally

to the fingers controlling finger movements.

3. From simple to complex movements - a child must stand, before he walks, and subsequently, runs, skips, jumps, hops.
4. From general to specific – a child progresses from general stimulus-based reflexes to specific goal-oriented reactions that become increasingly precise – e.g. from a palmar grasp to a pincer grasp of a small object to pencil control to handwriting skills.

The separation of cognitive, language and social-emotional domains into separate categories is somewhat artificial, as these domains are inextricably linked. While most of us are quite aware of the chronological sequences for gross motor, fine motor and speech-language skills, knowledge of the less visible domains of cognitive and personal-social development is often limited, for both physicians and parents. There is a need for physicians to be familiar with the early signs of social and/or cognitive difficulties, as they might be the first indicators of conditions such as autism or intellectual disability, so they can refer such children for further assessment and intervention.

**Abnormal Development**

Development should be a process of progression. The following ‘abnormal’ or ‘atypical’ patterns may be seen.

- **Developmental Delay:** in which a child is not developing and/or achieving skills according to the expected time frame. A developmental delay may be specific (only 1 domain is affected) or ‘global’ (defined as 2 or more domains affected). There is the implication that development has occurred in the typical order or sequence, but not by the typical time, and that there may be

‘catch-up’ later.

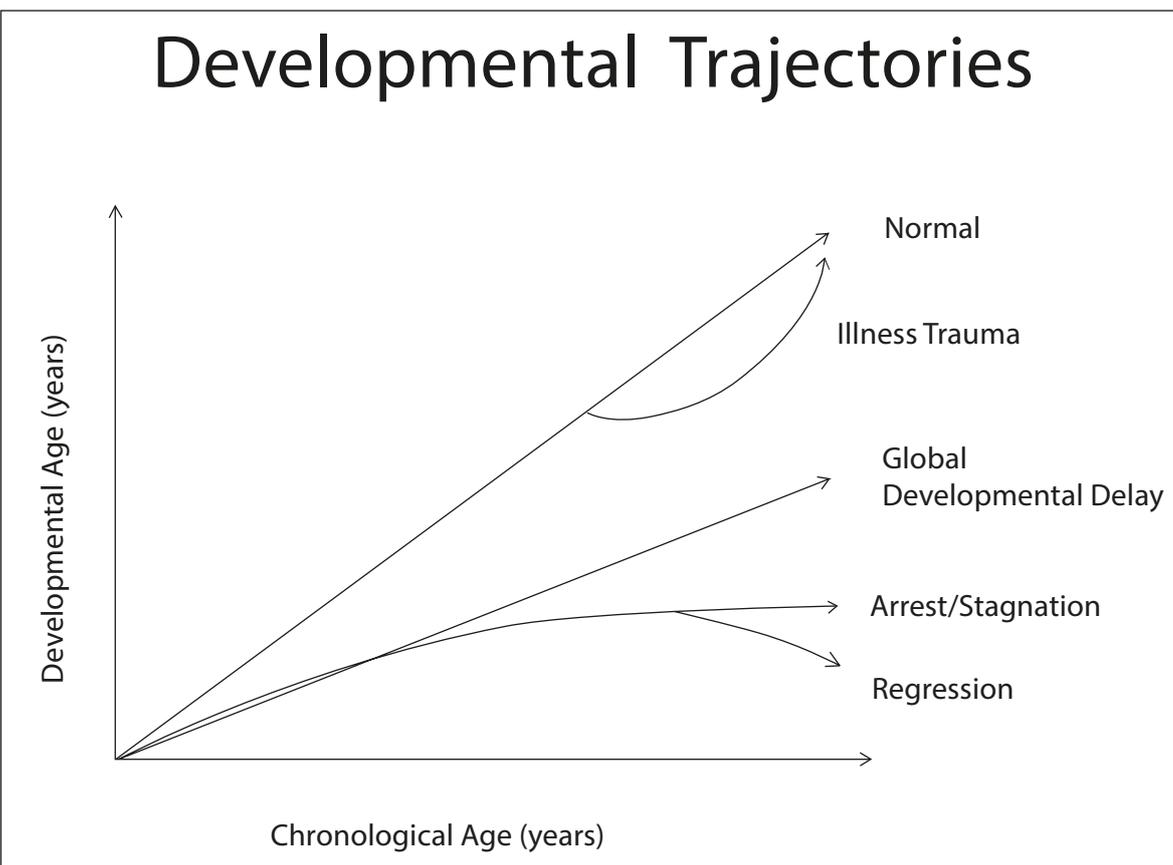
- **Developmental Disability/Disorder:** refers to a childhood mental or physical impairment or combination of mental and physical impairments that result in substantial functional limitations in major life activities. The implication is that development does not follow the typical pattern or sequence and timing, and that the child may not achieve ‘catch-up’ with his same aged peers.
- **Developmental Arrest/Stagnation:** There is a standstill in developmental progress for a longer period than expected
- **Developmental Regression:** There is loss of previously attained skills. This is always a cause for significant concern, and should always be investigated.

**Factors Influencing a Child’s Development and Learning**

Genetic and environmental influences continuously interact with and alter each other in a dynamic manner. These can be classified into:

- **Influences within the Child** – these include the child’s genetic inheritance, temperament, gender, physical health
- **Influences within the Family** – family relationships, parenting styles and values, the family’s financial situation, parents’ level of education/occupation, parents’ physical and mental health, siblings
- **Influences within the Community** – children’s services, support for parenting, housing
- **Influences within the Culture** – for example, when children are weaned off the milk bottle, when children are expected to feed themselves etc.

**FIGURE 1. DEVELOPMENTAL TRAJECTORIES**  
(adapted from Tervo: Red Flags and Rules of Thumb 2009)<sup>3</sup>.



As the child and family’s physician, you are aware of many of these environmental and family factors.

**METHODS OF EARLY IDENTIFICATION**

It has been estimated that only about half of the children with developmental problems are detected before they begin school. This means that developmental problems commonly escape detection in the first 5 years of life, despite frequent well child visits <sup>4</sup>.

Disorders on the more severe end of the spectrum, such as cerebral palsy and profound intellectual disability, are clearly recognisable and have well-known consequences. These are identified early as the children present with significant delay, and the appropriate referrals for intervention and education are made.

Mild to moderate problems such as language impairment, mild intellectual and learning disabilities, and high functioning autism spectrum disorder are more subtle and difficult to identify in the early years. However, these conditions are associated with poorer health status, higher rates of school failure, and poorer adult long-term outcomes – academic achievement, criminal behaviour, long-term employment and income level <sup>5</sup>.

Parents are usually the first to pick up signs of possible developmental delay – any concerns that parents have about their child’s development should always be taken seriously; on the other hand, the absence of parental concerns does not necessarily mean that all is well. If parents suspect a delay, they may first seek reassurance from their family physician. Hence, the physician will need to have an understanding of normal

development, a strategy to detect the likelihood of problems, and a system to whom children can be referred when necessary and appropriate <sup>6</sup>.

Physicians generally acknowledge that screening for developmental disabilities is important, but most rely on clinical judgement and milestone review. There is evidence to suggest that relying on clinical judgement and/or developmental milestone review does not allow timely identification of developmental delay <sup>2,4</sup>.

**Developmental Surveillance, Developmental Screening, Developmental Assessment**

Surveillance and screening are complementary but distinct processes. Table 1 attempts to distinguish these 2 concepts <sup>7</sup>.

Developmental surveillance is a much broader concept than developmental screening. It is a longitudinal process that relies on repeated purposeful review of the child and family. It aims to not only detect delays early, but also identify risk factors for child development. It involves eliciting any parental concerns, making skilled observations of the children, and giving parents information and guidance on health and developmental issues relevant to the child’s age and parents’ needs <sup>6</sup>.

Hence, surveillance does not only rely on monitoring developmental milestones, which should be anchored in the best available evidence, but it also needs to be grounded by a good understanding of the role of the gene-environment interaction that makes every child unique. Observing and documenting these findings at each health maintenance visit is critical to the delicate balance between continued monitoring or referral for

**TABLE 1. DIFFERENTIATING DEVELOPMENTAL SURVEILLANCE AND DEVELOPMENTAL SCREENING**

<b>Developmental Surveillance</b>	<b>Developmental Screening</b>
Monitoring of development over time	Monitoring of development at specific age
Longitudinal - flexible, continuous, cumulative process	Cross-sectional, administered at specified time points
Aim is to recognise children who may be at risk of developmental delays	Aim is to identify and refine that recognised risk, decide who needs further evaluation. It lets us know who in the population is at risk for a disorder, but it does not make the diagnosis.
Less time taken	More time intensive
Universally implemented, for all children	2 types of screening tests: 1. Children flagged by developmental surveillance to have risk of DD 2. All children (e.g. M-CHAT), but at specific time points
Opportunistic, should take place at all well child visits, such as immunisation visits. Also at other visits, if parents have a concern.	At specific ages or time points
Uses ‘an informal collection of age-appropriate tasks’	Uses a validated standardised screening instrument with published sensitivity and specificity and targeted at specific ages.
Can be viewed as a ‘video’ which may have a lower resolution and is grainy – longer term, less specific	Can be viewed as a detailed high resolution ‘snapshot’, at a particular point in time.
Few clear cut directives	Clear screening guidelines by AAP

further evaluation.

Developmental surveillance alone lacks the sensitivity and specificity of validated screening tools, but both methods could complement one another when there is a robust developmental surveillance in place. In this regards, the 'red flag' approach (upper limit of attainment of the specific skill) increases the quality of surveillance and could enhance its validity. This approach needs the support of evidence-based milestone acquisition timelines<sup>8</sup>.

**Developmental Assessment/Evaluation** is, on the other hand, a complex process aimed at identifying specific developmental disorders that are affecting a child. Validated tools for developmental assessment are used, with standardised tools, such as Bayley Scales of Infant Development, Griffiths Mental Development Scales, and Gesell Developmental Schedules. These assessments are formally administered and are an in-depth evaluation of a child's abilities, giving a detailed understanding of a child's strengths, weaknesses and attainment levels. They will answer the question "at what level is this child functioning and why?" A developmental assessment is usually part of a process of establishing a developmental diagnosis. It will yield a score in the form of a developmental quotient, a percentile and/or age equivalents.

### **Rationale for Monitoring Development: Why repeated surveillance or screening is necessary**

- Development is malleable.

Children's language, social and other developmental skills are influenced in positive directions by healthy environmental forces. This means that developmental progress can be changed, for better or for worse. To monitor changes in developmental status, repeated screening is necessary.

- Development manifests with age.

Developmental problems arise as children develop. Children whose skills appear typical at one age, may still demonstrate developmental problems later on. E.g. a child with good motor, communication and social skills at age 3, may nevertheless manifest a reading disability by age 6, but this condition cannot be readily observed or measured until later in life, the age which most children are beginning to read.

The concept of 'age-related developmental manifestations' means that every child has an increasing risk of disabilities. Only 1-2% of children between 0-24 months of age have developmental problems, while the prevalence increased to 8% when children up to age 6 are included<sup>2</sup>.

### **WHAT HAVE OTHERS BEEN DOING?**

Currently, recommendations vary for the use of developmental surveillance and/or developmental screening in different countries.

In Asia, Hong Kong has a very well developed and well utilised Integrated Child Health and Development Programme

(ICHDP) which is a population based, health promotion and disease prevention programme for children 0-5 and their families, delivered through their network of 31 Maternal and Child Health Centres. This programme covers about 90% of Hong Kong children. It utilises a systematic developmental surveillance system by trained MCH nurses and doctors<sup>9</sup>.

The Taiwan Birth Cohort Study (TCBS) included all babies born between October 2003 and January 2004. Child development was measured using an age-appropriate TBCS Development Instrument, a parental report instrument measuring the children's daily performance. This was evaluated and found to be a valid and reliable developmental screening instrument in the Taiwanese population and recommended to be used in continuous surveillance of children's development in community and clinical settings from 6 months to 5 year of age<sup>10</sup>.

In Japan, public health examinations for infants and young children conducted under the Maternal and Child Health Law (Boshi Hoken Ho) include 3 principal health check-ups at the following times: infancy, 1½ years old and 3 years old. Developmental examination is part of these check-ups<sup>11</sup>.

Closer to home in Malaysia, a developmental screening checklist is administered at 3 months, 4-5 months, 12-15 months and at 4-5 years. Autism screening using the Modified Checklist for Autism in Toddlers (M-CHAT) is recommended to be carried out at 18 months<sup>12</sup>.

Most European countries focus on child development surveillance and do not recommend routine developmental screening. This includes the United Kingdom where 8 month, 2 year, and 3-4 year developmental and health reviews are no longer recommended as a routine part of the core programme for all children, and there is a shift of emphasis from 'Child Health Surveillance' to 'Child Health Promotion', where primary health care teams will take a flexible approach and offer health reviews and health promotion advice for children and families most in need, or most 'at risk'.<sup>13</sup>

The Australian National Health and Medical Research Council (NHMRC) last published 'Child Health Surveillance and Screening: A Critical Review of the Evidence' in 2002. Current advice states the importance of developmental surveillance, and the broader concept that it now encompasses, including "eliciting parental concerns, performing skilled observations of the child, and providing guidance on health and development issues that are relevant to the child's age and the parent's needs"<sup>6</sup>.

Canadian guidelines have not yet been established, but the Canadian Paediatric Society has endorsed the Rourke Baby Record recommendations. These include developmental surveillance at all well baby or well child visits, with further assessment of development recommended if there is either a lack of attainment of any 'red flag' milestones or parental or caregiver concern about development<sup>14</sup>.

In direct contrast to the above, the American Academy of Pediatrics recommends developmental surveillance at all well child visits, and the routine use of formal developmental screening at the 9, 18 and 24 or 30 month well child visits and in addition, at all other well child visits should concerns arise during developmental surveillance at any visit<sup>15</sup>. The screens that have been recommended include the Ages and Stages Questionnaire, Parents Evaluation of Developmental Status (PEDS) and the Denver Developmental Screening Test –II (DDST-II). The response in the United States to these AAP recommendations, which were made in 2006, has been inconsistent, and physician acceptance as well as time-resource concerns, are believed to be partially responsible for this. Revisions have been recommended to optimise early detection, prevention, and monitoring<sup>16</sup>.

### What have we been doing?

Locally, we have gone through a cycle of sorts. The Denver Developmental Screening Test (DDST), Singapore was developed in 1989 to fulfil the need for a locally suitable developmental screening test, for early detection of developmental problems in Singapore children. It was derived from both the original DDST and the Denver II and was standardised on 2194 Singapore children aged 4 weeks to 6 years 11 months. There are 115 test items for the 4 developmental sectors (gross motor, fine motor-adaptive, speech-language and personal-social domains). Maternal and Child Health (MCH) nurses were trained to administer the DDST, Singapore to the children who attended the MCH clinics for their well baby and child visits. In the early to mid-1990s, there were 17 MCH clinics providing developmental screening services for approximately 50% of each year's birth cohort of children. With the integration of MCH services into the main Polyclinic system, as well as changing demographics, the polyclinics were no longer the main providers of immunisations and developmental screening for children. At this point, the DDST, Singapore remains the only standardised developmental screen for Singapore children<sup>17,18</sup>.

The ASQ and PEDS are both parent filled questionnaires. The ASQ has been used in a number of local research projects and as a triage tool in our clinic at KKH. Local parents have not found the language in the ASQ to be easily understandable, and assistance to fill the form is often required. Over- and under-reporting are also concerns<sup>19</sup>.

The Parents Evaluation of Developmental Status (PEDS) was also evaluated by Kiing et al, to explore its potential roles and utility in the Singapore context. 1806 parents, teachers and child care workers participated. Only parent results were analysed. The reporting of significant parental concern was considerably higher than US norms and Australian pilot figures when western cutoff scores were applied. Parents' interpretation of the concept of 'concern' varies across language and culture. Findings highlight the importance of evaluating a screening tools' use in the local context before its widespread implementation to yield clinically meaningful results<sup>20</sup>.

### What is being suggested?

Both developmental surveillance and screening are important in order for children with special needs to be identified early so that they can receive intervention promptly. The Enabling Masterplan 2011-2016 recommends strengthening the national developmental surveillance and screening system by establishing a network of early detection touch points in the community with the support of different stakeholders. This network will comprise primary health care professionals, child care centres, preschools and family service centres. Professionals at these critical touch points will be equipped with skills to detect children who are displaying signs of developmental problems, as well as at-risk children from disadvantaged social backgrounds<sup>21</sup>.

To address the current gap in developmental surveillance, the Enabling Masterplan 2011-2016 proposes that the Child Health Booklet be used as a main tool for routine developmental surveillance. That is a reasonable plan. Work with what we have. The Health Booklet does have parts of the DDST, Singapore embedded in it, and the current Health Booklet has recently been updated to reflect some of the 'Red Flags'. Best of all, every child in Singapore has a copy of the Health Booklet. If not, it is readily available from the nearest Polyclinic or at the Health Promotion Board, at a nominal cost.

This concept of surveillance via age-specific milestones is not new. Dosman et al describes the format for a valid, reliable and practical mechanism for monitoring child development. They have published a clinically relevant 'red flags' milestone chart, which uses the uppermost published age limits for items (as opposed to median age) so that a missed milestone will usually be clearly delayed and require further action. They propose that milestone ages used during surveillance be evidence-based, with evidence most robust for milestone acquisition for fine and gross motor development, less so for speech and language, and least robust for cognitive and social-emotional development<sup>8,14</sup>.

5 components of developmental surveillance are described in the AAP Policy Statement on Developmental Surveillance and Screening 2006<sup>15</sup>. These are:

- Eliciting and attending to the Parents' Concerns
- Obtaining/maintaining a Developmental History
- Making Accurate and Informed Observations of the Child
- Identifying the Presence of Risk and Protective Factors
- Documenting the Process and Findings

### Strategy!

Every child who is born in Singapore will have a Health Booklet, which will be with him from birth through school. Parents should be encouraged to bring the health booklet whenever the child visits the doctor, for any reason.

Infants have many opportunities for developmental surveillance. If they come for all the recommended immunisations, they would be expected to have at least 6 visits before the age of 2

years. That makes 6 opportunities for developmental surveillance!

Apart from the all-important immunisation record, which is needed for registration into primary school, the Health Booklet can hold a wealth of important information. The child's birth records and perinatal history, as well growth charts and developmental progress, any significant medical information, can be found in there. Please refer to Table 2.

There are 3 areas relating to red flags for child development to note in the developmental and health screening pages.

1. **Child Developmental Screening** (pages 5-6) Figure 3  
This has some questions for parents at 3, 6, 15 months and 3 years – these are meant to directly elicit Red Flags. It also gives a framework for the visits. Please refer to Table 3.

2. The **Developmental and Health Screening pages appropriate to the child's age**

These are colour-coded according to age, for ease of reference: Pink 4-8 weeks, Blue 3-5 months, Yellow 6-12 months, Green 15-18 months, Orange 2-3 years, Purple 4-6 years

Red flags for ASD are boxed in the age-appropriate colour above the developmental checklist for ages 12-18 months, 2-3 years

**TABLE 2. STRATEGY FOR SURVEILLANCE**

<b>Strategy</b>
<b>When:</b>
<ol style="list-style-type: none"> <li>1. At every well child or immunisation visit</li> <li>2. When parents have concerns</li> <li>3. When you have concerns</li> </ol>
<b>If seeing a child for the first time:</b>
<ol style="list-style-type: none"> <li>1. Birth Record (page 3-4) Figure 2.                     <ol style="list-style-type: none"> <li>a. Place of delivery</li> <li>b. Duration of gestation</li> <li>c. Mode of delivery</li> <li>d. Apgar Score</li> <li>e. Weight/length/Head Circumference at birth</li> <li>f. Significant events during pregnancy and delivery</li> <li>g. Jaundice/phototherapy/exchange transfusion</li> <li>h. Newborn screening                             <ol style="list-style-type: none"> <li>i. G6PD deficiency</li> <li>ii. TSH</li> <li>iii. IEM screening</li> <li>iv. Hearing screening</li> </ol> </li> <li>i. Investigations done (if any)</li> <li>j. Information on discharge from hospital</li> </ol> </li> <li>2. Summary of Clinic/Hospital Medical Records (page 59-63)</li> </ol> <p>Discharge summaries (patient version) are sometimes clipped to the back cover of the health booklet – this is especially pertinent if the child was a premature baby</p> <ol style="list-style-type: none"> <li>3. Growth Charts are in the middle of the health booklet (page 26-49)</li> </ol> <p><i>The above pages will assist with identifying some of the risk factors which predispose a child to developmental delay and disorders.</i></p>
<b>Next:</b>
<ol style="list-style-type: none"> <li>1. Weight/Height/Head Circumference</li> <li>2. Plot in growth charts, fill in Growth on health screening page (if age applicable)</li> <li>3. Ask parents about any concerns they may have</li> <li>4. Check Red Flags (page 5-6)(Table 3)</li> <li>5. Check Red Flags (age appropriate)(Table 4)</li> <li>6. Go through developmental checklist (age appropriate) (summarised in Table 5) – Limit Age(s)</li> <li>7. Physical examination                     <ol style="list-style-type: none"> <li>a. Tick boxes (age appropriate)</li> <li>b. Check on findings in developmental checklist</li> </ol> </li> <li>8. Observe child's behaviour, parent and family interactions and responses</li> <li>9. Fill in Outcome of Examination</li> <li>10. Speak with Parents about the Outcome of Examination                     <ol style="list-style-type: none"> <li>a. Findings</li> <li>b. Anticipatory Guidance                             <ol style="list-style-type: none"> <li>i. information on current and expected development</li> <li>ii. how to promote health &amp; development</li> <li>iii. need for further review or referral</li> </ol> </li> </ol> </li> </ol> <p><i>If red flags for ASD are present, please consider administering the M-CHAT-R</i></p>

FIGURE 2. BIRTH RECORD

## BIRTH RECORD AND PARTICULARS OF CHILD

Name of child (in BLOCK LETTERS) \_\_\_\_\_

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Birth Certificate No.:

Date of Birth:       Time of Birth:     hrs

Address: \_\_\_\_\_

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Place of Delivery: \_\_\_\_\_

Sex:  Male  Female Ethnic Group: \_\_\_\_\_

Duration of Gestation:   Weeks

Mode of Delivery:  Normal  LSCS  Vacuum extraction  Forceps  Other

Apgar Score:  1 min  5 min

Weight at Birth:     gm

Length at Birth:   cm

Head Circumference:   cm

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### PARTICULARS OF PARENTS

**MOTHER**

Name: \_\_\_\_\_ NRIC/Passport No.: \_\_\_\_\_

Occupation: \_\_\_\_\_

Tel (RES): \_\_\_\_\_ Tel (OFF): \_\_\_\_\_ Tel (HP): \_\_\_\_\_

**FATHER**

Name: \_\_\_\_\_ NRIC/Passport No.: \_\_\_\_\_

Occupation: \_\_\_\_\_

Tel (RES): \_\_\_\_\_ Tel (OFF): \_\_\_\_\_ Tel (HP): \_\_\_\_\_

**3**

**SIGNIFICANT EVENTS DURING PREGNANCY / DELIVERY**

\_\_\_\_\_

\_\_\_\_\_

Jaundice  No  Yes      Phototherapy  Yes      Exchange Transfusion  Yes

**NEWBORN SCREENING**

G6PD Deficiency  No  Yes

TSH: \_\_\_\_\_ mIU/L      FT4: \_\_\_\_\_ pmol/L      Date: \_\_\_\_\_

\*IEM Screening Done  No  Yes      Date: \_\_\_\_\_

**Hearing Screening**

\*\* OAE Date: \_\_\_\_\_       \*\*\* ABAER Date: \_\_\_\_\_

Left Pass:  No  Yes      Left Pass:  No  Yes

Right Pass:  No  Yes      Right Pass:  No  Yes

Needs further evaluation:  No  Yes

Remarks (if any): \_\_\_\_\_

**INVESTIGATION(S) DONE (if any)**

Serum Bilirubin (highest level) : \_\_\_\_\_  $\mu$ mol/L      Date: \_\_\_\_\_

Blood Group: \_\_\_\_\_      Date: \_\_\_\_\_

Other Tests: (please specify) \_\_\_\_\_      Date: \_\_\_\_\_

\_\_\_\_\_      Date: \_\_\_\_\_

**INFORMATION ON DISCHARGE FROM HOSPITAL**

Date: \_\_\_\_\_ Weight:     gm      Breast Feeding:  Yes  No

Serum Bilirubin (if done) before discharge : \_\_\_\_\_  $\mu$ mol/L

**Instructions to doctors and nurses:**

All weight, length and head circumference measurements are to be entered on the charts on pages 26-41  
Please document additional medical findings in the summary of clinic/hospital medical record section on pages 59-63  
\*IEM =Inborn Errors of Metabolism, \*\* OAE= Oto-Acoustic Emission, and \*\*\*ABAER= Automated Brainstem Auditory Evoked Response.

FIGURE 3. CHILD DEVELOPMENTAL SCREENING

## CHILD DEVELOPMENTAL SCREENING

AGE	TYPE OF SCREENING	IMMUNISATION						
1 month	<ol style="list-style-type: none"> <li>1. Growth monitoring : weight, length, OFC*</li> <li>2. Feeding history</li> <li>3. Hearing screening if not done at birth</li> <li>4. Physical examination and developmental check on page 7-8</li> </ol>	BCG, Hep B-1 at birth Hep B-2 1 month after Hep B-1						
3 months	<ol style="list-style-type: none"> <li>1. Growth monitoring : weight, length, OFC*</li> <li>2. Feeding history</li> <li>3. Hearing screening if not done at birth/4-8 weeks</li> </ol> <p style="margin-top: 10px;"><b>1. Parents/Caregivers please answer the questions below***:</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">• Can your child keep his/her head upright when held in a sitting position?</td> <td style="text-align: right; padding: 5px;">Yes/No</td> </tr> <tr> <td style="padding: 5px;">• Can your child respond to the parent’s/caregiver’s voice by quietening down if crying or smiling?</td> <td style="text-align: right; padding: 5px;">Yes/No</td> </tr> <tr> <td style="padding: 5px;">• Can your child visually follow the parent’s/caregiver’s movements, including turning his/her head from side to side?</td> <td style="text-align: right; padding: 5px;">Yes/No</td> </tr> </table> <ol style="list-style-type: none"> <li>2. Physical examination and developmental check on page 9-11</li> </ol>	• Can your child keep his/her head upright when held in a sitting position?	Yes/No	• Can your child respond to the parent’s/caregiver’s voice by quietening down if crying or smiling?	Yes/No	• Can your child visually follow the parent’s/caregiver’s movements, including turning his/her head from side to side?	Yes/No	DTaP-1, Polio-1, PCV-1
• Can your child keep his/her head upright when held in a sitting position?	Yes/No							
• Can your child respond to the parent’s/caregiver’s voice by quietening down if crying or smiling?	Yes/No							
• Can your child visually follow the parent’s/caregiver’s movements, including turning his/her head from side to side?	Yes/No							
4 months	<ol style="list-style-type: none"> <li>1. Growth monitoring : weight, length, OFC*</li> <li>2. Feeding history</li> </ol>	DTaP-2, Polio-2						
5 months	<ol style="list-style-type: none"> <li>1. Growth monitoring : weight, length, OFC*</li> <li>2. Feeding history</li> </ol>	DTaP-3, Polio-3, PCV-2						
6 months	<ol style="list-style-type: none"> <li>1. Growth monitoring : weight, length, OFC*</li> <li>2. Feeding history</li> </ol> <p style="margin-top: 10px;"><b>3. Parents/Caregivers please answer the questions below***:</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">• Can your child roll over?</td> <td style="text-align: right; padding: 5px;">Yes/No</td> </tr> <tr> <td style="padding: 5px;">• Can your child turn towards a sound?</td> <td style="text-align: right; padding: 5px;">Yes/No</td> </tr> <tr> <td style="padding: 5px;">• Can your child reach out for things?</td> <td style="text-align: right; padding: 5px;">Yes/No</td> </tr> </table> <ol style="list-style-type: none"> <li>4. Hearing screening</li> <li>5. Physical examination and developmental check on page 12-14</li> </ol>	• Can your child roll over?	Yes/No	• Can your child turn towards a sound?	Yes/No	• Can your child reach out for things?	Yes/No	Hep B-3**
• Can your child roll over?	Yes/No							
• Can your child turn towards a sound?	Yes/No							
• Can your child reach out for things?	Yes/No							
9 months	<ol style="list-style-type: none"> <li>1. Growth monitoring : weight, length, OFC*</li> <li>2. Feeding history</li> <li>3. Hearing screening</li> <li>4. Test for squint</li> <li>5. Physical examination and developmental check on page 12-14 (if not done at 6 months)</li> </ol>							

Legend: \* OFC - Occipital - Frontal Circumference  
 All height, weight and OFC measurements must be charted into the appropriate growth charts  
 \*\* The 3rd dose of Hepatitis B vaccination can be given with the 3rd dose of DTaP and Oral Sabin (DTaP-3, Polio-3) for the convenience of parents.  
 \*\*\* **If the answer to any of these questions is ‘No’, please refer to your doctor.**

## CHILD DEVELOPMENTAL SCREENING

AGE	TYPE OF SCREENING	IMMUNISATION
12 months		PCV Booster MMR-1*
15 months	<ol style="list-style-type: none"> <li>Growth monitoring : weight, height, OFC</li> <li><b>Parents/Caregivers please answer the questions below***:</b> <ul style="list-style-type: none"> <li>Can your child walk a few steps? Yes/No</li> <li>Can your child wave bye-bye or clap hands? Yes/No</li> <li>Can your child say Papa or Mama? Yes/No</li> </ul> </li> <li>Physical examination and developmental check on page 15-17</li> </ol>	MMR-2**
18 months	<ol style="list-style-type: none"> <li>Growth monitoring : weight, height, OFC.</li> <li>Physical examination and developmental check on page 15-17 (if not done at 15 months)</li> </ol>	DTaP Booster, Polio Booster,
3 years	<ol style="list-style-type: none"> <li>Growth monitoring: weight, height, OFC, BMI</li> <li>Test for squint</li> <li><b>Parents/Caregivers please answer the questions below***:</b> <ul style="list-style-type: none"> <li>Can your child climb stairs without assistance? Yes/No</li> <li>Can your child speak spontaneously in sentences with 4 syllables? Yes/No</li> </ul> </li> <li>Physical examination and developmental check on page 18-21.</li> </ol>	
4 - 5 years	<ol style="list-style-type: none"> <li>Growth monitoring: weight, height, BMI</li> <li>Visual acuity and test for squint</li> <li>Stereopsis</li> <li>Physical examination and developmental check on page 22-25</li> </ol>	

Legend: \* Babies who turn 12 months of age on or after 1st December 2011 should receive 2 doses of MMR vaccine as per new schedule on page 55.

\*\* MMR-2 can be given at 18 months with DTaP Booster and Polio Booster for the convenience of parents.

\*\*\* **If your answer to any of these questions is 'No', please refer to your doctor.**

and 4-6 years. Please refer to Table 4.

**3. The age-appropriate Developmental Checklists**

Ideally parents would have filled these in and brought up their concerns, but in reality they rarely are.

Please do consider running through and ‘counter-checking’ the screening checklists which are appropriate for the child’s age. The age (in months) which is in the right hand column next to the yes/no boxes indicate the age at which 90% of children in Singapore would have achieved that milestone. Hence attention should be paid to any child who is past that age and still not achieved that milestone. Checking with other skills that the child should have reached at a younger age would be helpful in this situation. Please refer to Table 5.

**If there are Red Flags for ASD, the doctor may want to consider administering the Modified Checklist for Autism in Toddlers, Revised with Follow-Up (M-CHAT-R)** which is a 2 stage parent-report screening tool to assess risk for Autism Spectrum Disorder (ASD). It is available as a free download for clinical, research and educational purposes from <https://www.m-chat.org/>. Figure 4.

The M-CHAT-R can be administered and scored as part of a well-child care visit. There are 20 questions. Scoring takes less than 2 minutes, and will indicate if a child is at low, medium or high risk of ASD. There is a high false positive rate, so as not miss any cases of ASD. Also, although a significant number of

**TABLE 3. QUESTIONS TO ELICIT RED FLAGS**

Age	Red Flag
<b>3 months</b>	Can your child keep his/her head upright when held in a sitting position? Can your child respond to the parents'/caregivers' voice by quietening down if crying or smiling? Can your child visually follow the parents'/caregivers' movements, including turning his head from side to side?
<b>6 months</b>	Can your child roll over? Can your child turn towards a sound? Can your child reach out for things?
<b>15 months</b>	Can your child walk a few steps? Can your child wave bye-bye or clap hands? Can your child say Papa or Mama?
<b>3 years</b>	Can your child climb stairs without assistance? Can your child speak spontaneously in sentences with 4 syllables?

**TABLE 4. RED FLAGS FOR ASD**

Age	Please inform your dr if your child:
<b>By 12 - 18 months</b>	Does not babble, point or use gestures by 12 months Does not speak a single word by 18 months Has lost any language skills Does not respond readily to affection
<b>By 2 – 3 years</b>	Does not use spontaneous (non-echoed/non-imitated) 2-word phrases by 24 months Has lost any language or social skill Does not point to show things he is interested in Does not follow when someone is pointing something out to him Does not respond readily to affection Prefers to play alone
<b>By 4 – 6 years</b>	Does not follow when someone is pointing something out to him Does not respond readily to affection Is not interested in playing with others Seems to be in his own world Is unable to sit through, follow instructions and take turns when playing Becomes very upset/anxious/clingy when separating from you, e.g. when dropping him off at school or when he is going to a new place Has great difficulty controlling his temper or gets very moody/physically aggressive when upset Finds it hard to make friends

**TABLE 5. SUMMARY OF LIMIT AGES FOR MILESTONES (BASED ON DDST, SINGAPORE)**

Please refer to Health Booklet for details

AGE	GROSS MOTOR	FINE MOTOR-ADAPTIVE	SPEECH-LANGUAGE	PERSONAL- SOCIAL
<b>4-8 weeks</b>	Equal movement [1 month] Lifts head [1 month]	Follows to midline [1.5 months] Follows past midline [2.5 months]	Responds to a bell [1 month] Vocalises [1.5 months]	Regards face [1 month] Smiles spontaneously [1 month]
<b>3-5 months</b>	Head up 45 degrees [3 months] Head up 90 degrees [5 months] Sits, head steady [5 months] Rolls over [5 months]	Hands together [3.5 months] Grasps rattle in hand [4 months] Follows 180 degrees [4.5 months] Regards a raisin [5.5 months]	Laughs [4.5 months]	Excites at a toy [5.5 months]
<b>6-12 months</b>	Bears weight on legs [6 months] Holds chest up, arm support [7 months] Sits, no external support [7.5 months] Stands holding on [9 months] Pulls to stand [10 months] Stands alone [14.5 months]	Reaches for an object [6 months] Looks for a fallen object [7 months] Passes a cube from hand to hand [7.5 months] Finger-thumb grasp [10 months] Bangs 2 cubes held in hands [10.5 months] Pincer grasp [13.5 months]	Responds to sounds [7.5 months] Says single syllables [10 months] Imitates speech sounds [10 months] Says Papa/Mama specifically [14.5 months]	Works for a toy out of reach [6.5 months] Reacts to stranger [10 months] Waves bye-bye [10.5 months] Claps hands [11 months] Indicates wants by gestures [13.5 months]
<b>15-18 months</b>	Stoops to recover [15.5 months] Walks well [16 months] Walks up steps [21.5 months]	Scribbles [16 months] Builds a tower of 2 cubes [17 months]	Points to own body – 2 parts [19 months] Says 3 words other than Papa/Mama [21 months]	Imitates household activities [16 months] Drinks from a cup [18.5 months] Uses spoon [22 months]
<b>2-3 years</b>	Walks down steps [24.5 months] Kicks ball forward [26 months] Jumps up [32.5 months] Balance on each foot – 1 second [37 months] Pedals tricycle [41.5 months]	Builds a tower of cubes [4 blocks – 23 months, 6 blocks – 29 months, 8 blocks – 35.5 months] Imitates a vertical line [38.5 months] Picks longer line [46.5 months]	Points to pictures [2 pictures - 25.5 months, 4 pictures – 28.5 months] Combines 2 words [27 months] Names pictures [2 pictures – 30 months, 4 pictures – 37 months] Knows age/sex/name [40 months]	Removes garment [24 months] Combs doll's hair [24.5 months] Puts on clothing [34 months] Names friend [45.5 months]
<b>4-6 years</b>	Hops [53.5 months] Balances on each foot, 5 seconds [57 months]	Copies a circle [47 months] Copies a cross [50 months] Copies a square [56 months] Draws person [3 parts - 57.5 months, 6 parts – 62.5 months]	Rote counts to 10 [52 months] Knows functions of objects – cup, pencil, chair [55.5 months] Names 3 colours [63.5 months] Place and count [64 months]	Brushes teeth [51cm] Dresses, with no help [54 months] Brushes teeth, no help [69 months]

The age-appropriate health screening pages follow the developmental checklists. The child's weight, height and head circumference may be filled here, and charted in the appropriate Growth Charts (page 26-49). A quick physical examination will give the information needed for the health screening. Opportunistic observations of the child's behaviour and responses, as well as of the parent, can also be made.

children who screen positive on the M-CHAT-R will not be diagnosed with ASD, these children are at high risk for other developmental disorders or delays, and therefore, evaluation is warranted for any child who screens positive<sup>22</sup>.

For these children, a referral for further developmental evaluation would be necessary.

**When to Refer**

Please refer to Table 6. If red flags are present for ASD, or if there are any concerns regarding speech, language and communication or motor development, the child should theoretically be administered a developmental screen. In our

local context, we currently have the DDST, Singapore, which has been standardised locally, but perhaps not many of us are trained to use it, at this time. Currently, in our setting, a referral to the Child Development Programme at either KKH or NUH may be appropriate.

For children who present quite equivocally, you may want to consider reviewing the child soon, perhaps in the next 1-3 months, to monitor developmental progress. This may help to clarify their developmental status. A decision on whether to make the referral could be made after the review.

**FIGURE 4. M-CHAT**



www.m-chat.org

Child's name \_\_\_\_\_ Date \_\_\_\_\_  
 Age \_\_\_\_\_ Relationship to child \_\_\_\_\_

**M-CHAT-R™ (Modified Checklist for Autism in Toddlers Revised)**

Please answer these questions about your child. Keep in mind how your child usually behaves. If you have seen your child do the behavior a few times, but he or she does not usually do it, then please answer **no**. Please circle **yes** or **no** for every question. Thank you very much.

- |  |     |    |
|--|-----|----|
| 1. If you point at something across the room, does your child look at it?<br>( <b>FOR EXAMPLE</b> , if you point at a toy or an animal, does your child look at the toy or animal?)  | Yes | No |
| 2. Have you ever wondered if your child might be deaf?   | Yes | No |
| 3. Does your child play pretend or make-believe? ( <b>FOR EXAMPLE</b> , pretend to drink from an empty cup, pretend to talk on a phone, or pretend to feed a doll or stuffed animal?)                                      | Yes | No |
| 4. Does your child like climbing on things? ( <b>FOR EXAMPLE</b> , furniture, playground equipment, or stairs)   | Yes | No |
| 5. Does your child make <u>unusual</u> finger movements near his or her eyes?<br>( <b>FOR EXAMPLE</b> , does your child wiggle his or her fingers close to his or her eyes?)   | Yes | No |
| 6. Does your child point with one finger to ask for something or to get help?<br>( <b>FOR EXAMPLE</b> , pointing to a snack or toy that is out of reach)   | Yes | No |
| 7. Does your child point with one finger to show you something interesting?<br>( <b>FOR EXAMPLE</b> , pointing to an airplane in the sky or a big truck in the road)   | Yes | No |
| 8. Is your child interested in other children? ( <b>FOR EXAMPLE</b> , does your child watch other children, smile at them, or go to them?)   | Yes | No |
| 9. Does your child show you things by bringing them to you or holding them up for you to see – not to get help, but just to share? ( <b>FOR EXAMPLE</b> , showing you a flower, a stuffed animal, or a toy truck)          | Yes | No |
| 10. Does your child respond when you call his or her name? ( <b>FOR EXAMPLE</b> , does he or she look up, talk or babble, or stop what he or she is doing when you call his or her name?)                                  | Yes | No |
| 11. When you smile at your child, does he or she smile back at you?  | Yes | No |
| 12. Does your child get upset by everyday noises? ( <b>FOR EXAMPLE</b> , does your child scream or cry to noise such as a vacuum cleaner or loud music?)   | Yes | No |
| 13. Does your child walk?  | Yes | No |
| 14. Does your child look you in the eye when you are talking to him or her, playing with him or her, or dressing him or her?   | Yes | No |
| 15. Does your child try to copy what you do? ( <b>FOR EXAMPLE</b> , wave bye-bye, clap, or make a funny noise when you do)   | Yes | No |
| 16. If you turn your head to look at something, does your child look around to see what you are looking at?  | Yes | No |
| 17. Does your child try to get you to watch him or her? ( <b>FOR EXAMPLE</b> , does your child look at you for praise, or say “look” or “watch me”?)   | Yes | No |
| 18. Does your child understand when you tell him or her to do something?<br>( <b>FOR EXAMPLE</b> , if you don’t point, can your child understand “put the book on the chair” or “bring me the blanket”?)                   | Yes | No |
| 19. If something new happens, does your child look at your face to see how you feel about it?<br>( <b>FOR EXAMPLE</b> , if he or she hears a strange or funny noise, or sees a new toy, will he or she look at your face?) | Yes | No |
| 20. Does your child like movement activities?<br>( <b>FOR EXAMPLE</b> , being swung or bounced on your knee)   | Yes | No |

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In general, refer early if developmental problems are identified, or if the risk for developmental problems is considered to be high.

**Difficulties with Monitoring Development and Behaviour**

All children are different. So many factors can affect the course of development. Development in a young child can be very dynamic, and the changes may be very rapid. There is always the danger in doing too little versus doing too much. However, “He’s a boy!”, “He’ll grow out of it!” are dangerous statements to make.

On the other hand, as children are so different – there may be individual variability in development, manifestation of particular temperament, environmental circumstances – for example if a child is unwell, hungry or tired - which may conspire to produce a certain behavioural response in the child, on that particular day.

**Communicating with Parents**

Well child visits always provide a good opportunity to speak with parents and understand their concerns (or lack of), as well as explain our concerns, if any. If there are no concerns, it is still a good opportunity for anticipatory guidance – that is, sharing information that helps families prepare for expected physical and behavioural changes during their child's current and approaching stage of development. Resources for these are shared below.

**Sharing Concerns with Parents**<sup>23</sup>

1. Highlight some of the child’s strengths, letting the parent know what the child does well.
2. Use materials such as the health booklet and fact sheets. This will help the parent know that you are basing your comments on facts and not just feelings.
3. Talk about specific findings and behaviours that you have observed.
4. Try to make it a discussion. Pause, give the parent time to think and to respond.
5. Expect that if the child is the oldest in the family, the parent might not have experience to know the milestones that the child should be reaching.
6. Listen and watch the parent to decide how to proceed. Pay attention to tone of voice and body language.
7. This might be the first time that the parent has become aware that the child might have a delay. Give the parent time to think about this and speak with the child’s other caregivers, such as a grandmother or domestic helper.
8. The language should be couched around “helping the child optimise his developmental potential” – which is really the main aim for any referrals.

Research has shown that most mothers reported a preference for a nonalarmist style of communication when developmental delays are suspected. In contrast, some mothers preferred a more

**TABLE 6. REFERRALS: WHO, WHEN, WHERE**

Referrals	
<b>Indications for Referral</b>	
<ol style="list-style-type: none"> <li>1. <b>History</b> <ol style="list-style-type: none"> <li>a. <b>Developmental regression or stagnation</b></li> <li>b. <b>Seizures</b></li> <li>c. <b>Risk factors, such as prematurity &lt;28 weeks, BW &lt;1500g, history of meningitis etc.</b></li> </ol> </li> <li>2. <b>Physical examination</b> <ol style="list-style-type: none"> <li>a. <b>Macrocephaly or microcephaly</b></li> <li>b. <b>Focal neurologic lesions</b></li> <li>c. <b>Facial, skin or other lesions suggestive of neurocutaneous or other syndromes</b></li> </ol> </li> <li>3. <b>Any suspicion of sensory impairment (hearing, vision)</b></li> <li>4. <b>Red flags present</b></li> <li>5. <b>Developmental checklist limit milestones not met</b></li> <li>6. <b>Major and persistent parental concerns, even in the face of normal observation</b></li> </ol>	
<b>Where to Refer</b>	
<ol style="list-style-type: none"> <li>1. <b>Child Development Programme</b> <ol style="list-style-type: none"> <li>a. <b>KKH DCD Department of Child Development</b></li> <li>b. <b>NUH CDU Child Development Unit</b></li> </ol> </li> <li>2. <b>Paediatric Neurology</b></li> <li>3. <b>General Paediatrics</b></li> <li>4. <b>Child Psychiatry</b> <ol style="list-style-type: none"> <li>a. <b>Child Guidance Clinic IMH</b></li> <li>b. <b>Psychiatry/Psychological Medicine in KKH, NUH, KPTH</b></li> </ol> </li> </ol>	<p>Children with developmental-behavioural concerns age below 7, not in mainstream primary or special education school Mainly motor concerns or if a neurologic condition is suspected If only growth is a concern (failure to thrive or short stature) Children with behavioural or mental health concerns who are above age 7 or already attending mainstream primary or special education school</p>

direct style, including the use of labels to help them understand their child’s development. The importance of preparation to accept information about developmental delays emerged as a theme in all groups. Elements contributing to preparedness included information about expected developmental skills, suggestions for promoting skills, and a specific time frame for follow-up evaluation. Mothers of children with disabilities perceived that early reassurance of normalcy by providers in response to their concerns led to self-doubt and increased difficulty accepting the diagnosis<sup>24</sup>.

**Local Referral Patterns & Services**

Children with developmental and/or behavioural concerns who are below the age of 7, and not yet in mainstream primary school or special education school, can be referred to the Department of Child Development at KKH, or the Child Development Unit at NUH, which both run the Child Development Programme (CDP) in Singapore.

Locally, the vast majority of children are delivered in hospitals. Hence, many of the children who have diagnosed ‘syndromes’ and significant motor impairments, such as cerebral palsy, are often diagnosed early. They present to, are diagnosed and managed by their neonatologist, geneticist or neurologist. These conditions are not often seen as primary referrals by the developmental paediatricians in the CDP.

The pattern of referrals to the above 2 hospital services in the last 5 years shows a predominance of referrals for delays in speech, language and communication. These account for more than

50% of referrals – including children with speech and language delays and disorders (30-35%), as well as children with autism spectrum disorders (ASD)(20-25%). The 2 other groups of diagnoses seen at presentation are children with global developmental delay (10-15%) and children with behavioural problems (10-12%).

The 2 hospital services provide diagnostic and assessment services, as well as interim intervention services. Please refer to Table 7 for intervention and support services for young children with developmental delay.

**CONCLUSION**

Every encounter with a child is an opportunity to consider that child’s developmental progress. Family Physicians are well placed to detect problems at an early stage, and promote optimal child development because of their ongoing relationship and frequent contact with the child and family.

A framework for developmental surveillance can be helpful, with limit age milestones set after the time of normal milestone acquisition, as set out in the Singapore Child Health Booklet. Thus absence of any one or more items is considered a high risk marker, and indicates consideration for further screening and possibly referral, as does parental or caregiver concern about development at any stage.

There is further work ahead to develop clear guidelines for developmental surveillance and screening in our local context.

**TABLE 7. INTERVENTION AND SUPPORT OPTIONS FOR YOUNG CHILDREN WITH DEVELOPMENTAL DELAY** *Please refer to <http://www.sgenable.sg/>*

<b>Intervention and Support Options for Young Children with Developmental Delay</b>
<b>Early Intervention Programme for Infants and Children</b>
<ul style="list-style-type: none"> <li>• Age 0-6, children with moderate-severe developmental delays</li> <li>• 17 EIPIC centres island-wide, 3 of which cater to children with ASD</li> <li>• Referral via SG Enable</li> </ul>
<b>Integrated Child Care Programme</b>
<ul style="list-style-type: none"> <li>• Age 2-6, children with mild-moderate developmental delays</li> <li>• 17 ICCP centres island-wide</li> <li>• These are regular child care centres, but have specially trained teachers and are able take in a quota of children with mild to moderate needs</li> <li>• Referral via SG Enable</li> </ul>
<b>Development Support Programme</b>
<ul style="list-style-type: none"> <li>• Currently K1, K2 children with mild developmental needs, or at risk</li> <li>• In the midst of rollout to different preschool centres</li> <li>• Provides short-term (maximum 15 weeks), focused (only 1 type of intervention) within the preschool setting</li> <li>• Referral via preschool centre</li> <li>• Children who are in EIPIC or ICCP are not eligible for DSP</li> </ul>
<b>Hospital Rehabilitation Services</b>
<ul style="list-style-type: none"> <li>• The CDP provides assessment and interim intervention services for pre-schoolers with developmental-behavioural concerns</li> <li>• Public hospitals have their rehabilitation units, but not all are able to cater to children with developmental issues</li> </ul>
<b>VVO Rehabilitation Centres</b>
<ul style="list-style-type: none"> <li>• Children’s Therapy Centre</li> <li>• Society for the Physically Disabled</li> </ul>
<b>Private Intervention and Therapy Centres</b>

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**RESOURCES**

Provide Information and Anticipatory Guidance

**HEALTH PROMOTION BOARD**

Healthy Start For Your Baby  
<http://www.hpb.gov.sg/HOPPortal/health-article/12206>  
 Healthy Start For Your Growing Child  
<http://www.hpb.gov.sg/HOPPortal/health-article/12294>

**EARLY CHILDHOOD DEVELOPMENT AGENCY**

Growing with Your Child booklet  
<http://www.ecda.gov.sg/growatbeanstalk/Pages/articledetail.aspx?type=4&category=Growing+With+Your+Child+Booklet>

Care & Development: A Resource for Parents of Children with Developmental Needs  
<http://www.ecda.gov.sg/growatbeanstalk/Pages/ArticleDetail.aspx?type=4&articleid=145>  
<http://www.childcarelink.gov.sg/ccls/uploads/MSF-ChildDevelopment-Booklet.pdf>

**CENTERS FOR DISEASE CONTROL AND PREVENTION USA**

Learn the Signs. Act Early  
<http://www.cdc.gov/ncbddd/actearly/milestones/index.html>

**MINISTRY OF HEALTH**

AMS-MOH Clinical Practice Guideline on Autism Spectrum Disorders in Preschool Children 2010  
[http://www.moh.gov.sg/content/moh\\_web/healthprofessionalsportal/doctors/guidelines/cpg\\_medical/2010/cpgmed\\_autism\\_spectrum\\_disorders\\_preschool\\_children.html](http://www.moh.gov.sg/content/moh_web/healthprofessionalsportal/doctors/guidelines/cpg_medical/2010/cpgmed_autism_spectrum_disorders_preschool_children.html)

**Summary**

[http://www.moh.gov.sg/content/dam/moh\\_web/HPP/Doctors/cpg\\_medical/current/2010/ASD%20CPG\(Card\).pdf](http://www.moh.gov.sg/content/dam/moh_web/HPP/Doctors/cpg_medical/current/2010/ASD%20CPG(Card).pdf)

**Patient Version**

[http://www.moh.gov.sg/content/dam/moh\\_web/HPP/Doctors/cpg\\_medical/current/2010/Autism%20Spectrum%20D.pdf](http://www.moh.gov.sg/content/dam/moh_web/HPP/Doctors/cpg_medical/current/2010/Autism%20Spectrum%20D.pdf)

**LEARNING POINTS**

- **Developmental delays are common.**
- **Use the developmental checklists and red flags in the health booklet at every immunisation and well child visit.**
- **Early detection of developmental delays lead to referral for assessment and appropriate early intervention, which is important and can influence outcomes.**
- **Avoid 'waiting and watching'. Refer early if there are any concerns.**