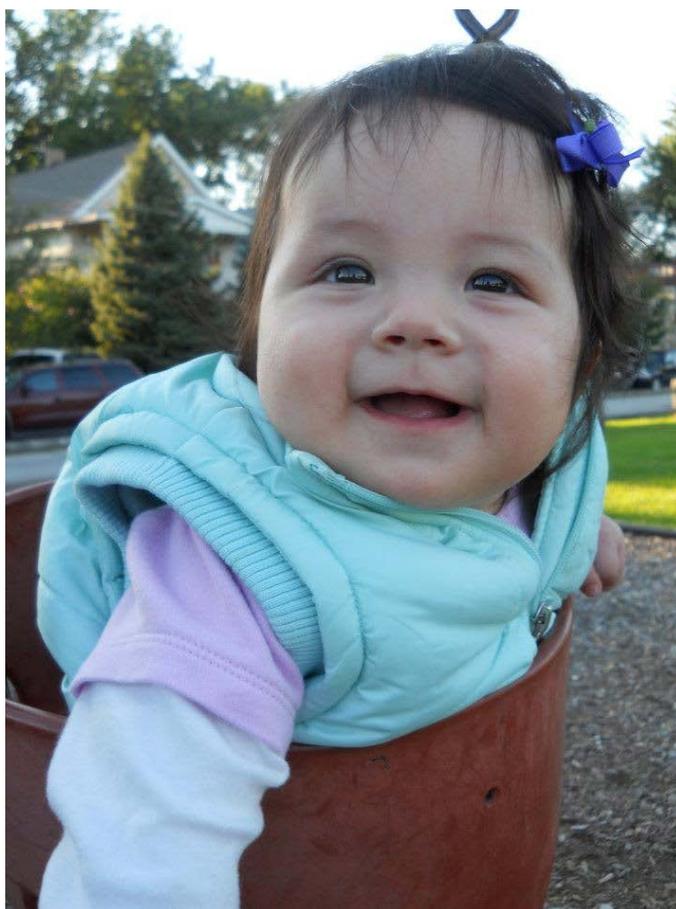


Thai Model of Early Detection and Intervention of Children with Developmental Delay: Guidelines for Health Care System



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Acronyms

APGAR:	Activity, Pulse, Grimace (reflex irritability), Appearance (skin color) and Respiration.
CPM:	Child Project Manager
DBP:	Developmental Behavioral Pediatric
DMH:	Department of Mental Health
DSPM:	Development Surveillance and Promotion Manual
DAIM:	Developmental Assessment for Intervention Manual
EL:	Expressive Language Skills
FM:	Fine Motor Skills
GM:	Gross Motor Skills
HRNB:	High Risk Newborn
LBW:	Low Birth Weight
LCDIP:	Lanna Child Development Integrated Project
MCH:	Maternal and Child Health
PHC:	Primary Health Care
PS:	Personal and Social Skills
RL:	Receptive Language Skills
RICD:	Rajanagarindra Institute of Child Development
SHC:	Secondary Health Care
TEDA4I:	Thai Early Developmental Assessment for Intervention
TDSI:	Thai Developmental Skills Inventory
TCDIP:	Thai Child Development Integrated Project
WCC:	Well Child Clinic

Introduction

During 1999-2014, the Department of Health, Ministry of Public Health was assigned to carry out an early childhood development survey every three years. The number of children who were likely to have delayed development increased to 30 percent. In addition, according to the survey conducted by the National Statistical Office (2012), only 20 percent of parents/guardians participated in learning and school preparation activities, which was the factor that caused many Thai children to have a lower developmental level than they should have had. In 2013, the Ministry of Education reported that about 10-15 percent of primary school (Prathom 4 – 6) students could neither read nor write. The early years of life are critical, because this is the period when the brain develops most rapidly and has a high capacity for change. Providing supportive conditions for early childhood development is more effective and less costly than attempting to address the consequences of early adversity later. If these children were treated appropriately in the early stages, their potential would be fully developed. Moreover, it would support their development for learning. This would help to reduce behavioral problems in school and at a later age. It would also help to reduce the cost of education and boost the growth of their income, thus becoming more self-reliant. This will in turn increase the country's productivity. But if these children do not receive proper care, they may cause more severe problems.

Hence, towards the end of 2015, the government set 11 policies to be used as the direction for moving the country forward, and people's health care was one of them, namely, policy no. 5: the enhancement of public health services and people's health. The Ministry of Public Health, which is the main institution responsible for people's health at every level, produced 15 aspects in an integrated and strategic health plan. The development of health, women, and early childhood were aspects relevant to the development of public health according to Her Royal Highness's Initiatives. This plan was set as an important strategy by the Ministry of Public Health, aiming to reduce risk factors by age group, especially in the 0-5 years group. The plan was to promote children to have appropriate development by focusing on integration with internal and external offices, such as government, local, and private sectors, as well as the general population. Therefore, the Department of Mental Health (DMH), Ministry of Public Health also increased public and professional awareness of children with developmental delay, concern about rates of surveillance, screening, assessment, identification, early intervention, and increasing demand for services in the health care system.

The DMH also did research to develop tools and materials suitable for screening, assessment, and promotion of Thai child development, and also to find the norm for Thai child development. In 2009, the Rajanagarindra Institute of Child Development (RICD), Department of Mental Health did research to develop the Thai Developmental Skills Inventory (TDSI), a tool for screening child development, from birth to five years old. RICD began to develop screening and assessment tools from data collection of medical and public health personnel in 50 hospitals in Thailand. This new tool, the "Thai Developmental Skills Inventory for Children from Birth to Five Years (TDSI) for Healthcare Personnel, Mental Health

Department, Ministry of Public Health Version (654 items)”, is easy to understand, and the content is applicable to current situations in the field. Later, in the year 2010, the norm for Thai child development was developed in Chiang Mai Province. Then in 2011, the norm for Thai children throughout the country was developed. At the same time, the manual for parents and health personnel for screening, assessment, and promotion of child development, was developed in a variety of forms, such as, printed media, electronic media, VDO presentations, computer programs, and a website. The study was conducted in 5 regions of Thailand with 2,079 subjects from different age groups. There were 300 items of this instrument which demonstrated discrimination qualities for screening child development from birth to five years old, separated into 60 age groups of each month of life, on five child development skills: gross motor, fine motor and intelligence, receptive language, expressive language, and personal and social skills. After that, in 2012, RICD did a research study to evaluate the effectiveness of the manual by selecting significant items using statistics and reviews by experts in the child development field. As a result, the Thai Developmental Skills Inventory for Children from Birth to Five Years (TDSI), Mental Health Department, Ministry of Public Health Version (70 items) was created. This instrument with 70 significant items can be used to examine child development from birth to five years old. From the results above, we have had the opportunity to share experiences and research presentations, at both national and international levels, and was extended as the “Lanna Child Development Integration Project, LCDIP” in 8 provinces of northern Thailand. The aims of LCDIP are to develop a system of surveillance, screening, child development promotion, and development of knowledge and skills of health professionals, that is important for health professionals working with health volunteers and families of children to improve their child development outcomes. In the year 2013, this project received a UN Public Service Award in the category of Improving the Delivery of Public Services for the project “Child First Work Together.”

Later, the “Thai Child Development Project, TCDIP” was generated in order to be used as a communication tool between public health institutions at every level, involved in the caretaking of children who have suffered from birth asphyxia, low birth weight, abnormal delivery; including pre-birth, during birth, and after-birth periods, and children who have been born without abnormalities starting from newborns to the age of five. The purpose is to encourage surveillance, screening and promotional systems for single-integrated child development throughout the country. We conducted a continuing study to develop a “Development Surveillance and Promotion Manual, DSPM”, or the white manual, to integrate as a tool for surveillance – encouraging, screening – preventing, passing, stimulating and following up children from birth to 5 years old, which is able to be used to offer healthcare services to children at every level. All information found in the manual can be used by healthcare personnel in order to provide clear guidance. It would also enable parents to train their children directly. Also, healthcare volunteers would be able to utilize it to follow up with the stimulation of child development in their communities. This was because the main reason why children did not pass the test was due to the fact that they lacked the opportunity to have their learning

enhanced by their families, which usually resulted from the parents' lack of knowledge and skills. The "Developmental Assessment for Intervention Manual, DAIM", or the green manual, was also developed for healthcare personnel working in the field of child development, health volunteers and parents who care for children in the at risk group (risk group means a LBW and APGAR score of 1,2,7 minutes, less than or equal to 7). Parents need to do the assessment at home. If the child fails the test, parents need to follow the instructions in the manual. Moreover, they have to show the healthcare professional at a follow up meeting. DMH also conducted a continuing study to develop the "Thai Early Developmental Assessment for Intervention: TEDA4I" aimed at early intervention for children with developmental delay by public health officers who are working in Well Baby Clinics or developmental clinics in secondary and tertiary health care services.

In the year 2015, the Ministry of Public Health pushed policies to drive health service system development forward in the aspect of child development, and the operation, according to Her Royal Highness's Initiatives, could be carried out sustainably, corresponding to the Plan of the Child Development Project Honoring Her Royal Highness Princess Maha Chakri Sirindhorn on the Occasion of Her Royal Highness's 5th Birthday Cycle Celebration, April 2nd, 2015. The objective was to help Thai children receive appropriate equal developmental support throughout the country from parents, caregivers, communities and the integration of various plans from every associated sector. The goal was for 85 percent of Thai children to have appropriate development within 3 years (from April 1, 2015 to March 31, 2018), and the objectives were to allow parents, child caregivers, and public health volunteers, as well as public health personnel in each area, to continuously monitor, follow up, support and stimulate the development of children who were born from April 2015 onwards, and to allow public health personnel in each area to screen and promote/stimulate the development of every Thai child who was born before April 1, 2015, focusing on the age groups of 9, 18, 30 and 42 months by using DSPM and DAIM. If children still had a delay after re-surveillance from DSPM and DAIM, then they were referred for assessment by Thai Developmental Assessment for Intervention (TEDA4I) in the secondary health care unit. With TED4I, we will begin the assessment with development of the age range under the actual age. If after assessment, children have delayed development, they can use the service unit's developmental promotion program to solve delayed development problems for 3 months. After that, family and children come back and pediatricians or well-trained staff (trained by DMH staff) will re-assess the children's development. If the children have delayed development, they can be re-assessed using TDSI III, additionally diagnosed, provided with care, then treated based on disease and periodically followed up on their development, helping them to have a better quality of life. The development of knowledge and skills of health personnel and public health volunteers was through training by DBP, focusing on effective primary screening and referral processes. Online data was recorded via www.thaichilddevelopment.com to improve existing individual reports, including data recordings of 43 folders, along with data recordings of children who have delayed development and abnormalities. Real-time results could be seen. The performance in the years 2015 – 2017, reflects the works of public health officers

and affiliated agencies related to early childhood, including the cooperation of parents, guardians, and teachers/caregivers in following up a child's development.

Services for children's development and developmental delay, and care in the Thai Health Care System is the responsibility of the Ministry of Public Health. These services are delivered through Sub-district Health Promotion Hospitals, Community Hospitals, General Hospitals, Technical Centers, and specialists on children with developmental delay. The "Children with Developmental Delay Detection and Early Intervention: Guidelines for Health Care System, Thai Model" has been unavailable. The guideline has been generated in order to provide guidance on appropriate surveillance, screening, assessment and early intervention of children from birth to five years old, at healthcare facilities, in order to reduce the risk of developmental delay in Thailand.

Purposes

This guideline aims to:

1. Provide guidance on appropriate surveillance, screening, assessment and management of children from birth to five years old, at health-care facilities, in order to reduce the risk of developmental delay in Thailand
2. Understand the Thai Child Developmental System Model, and apply it to each country's context

Target Audience

These guidelines are intended to support and improve child development services at national and facility level in public health care facilities. At national level, this document provides guidance primarily to policy-makers responsible for the establishment and monitoring of a national child development program. At facility level, the main target audience are health personnel in health care facilities.

Definition

Developmental delay is defined as a child not being able to meet developmental milestones, and delay in one or more of the following developmental domains:

1. Gross Motor Skills (GM)
2. Fine Motor Skills (FM)
3. Receptive Language Skills (RL)
4. Expressive Language Skills (EL)
5. Personal and Social Skills (PS).

Developmental Surveillance and Promotional Manual, DSPM is for children from birth to 6 and a half years old. There are 139 items, which can be used by 1) self-study caregivers or parents and health volunteers for surveillance and stimulation, and 2) well-trained health care professionals, focusing on the age groups of 9, 18, 30 months for surveillance, and 42 and 60 months for screening.

Developmental Assessment for Intervention Manual, DAIM is for children from birth to 5 years old, and the at risk group (Risk group means a LBW and APGAR score of 1, 2, 7 minutes less than or equal to 7). There are 130 items, which can be used by 1) self-study caregivers or parents and health volunteers for screening and stimulation, and 2) well-trained health care professionals for screening, and neurodevelopmental assessment in order to early detect and intervene, focusing on the age groups of 9, 18, 30, 42 and 60 months.

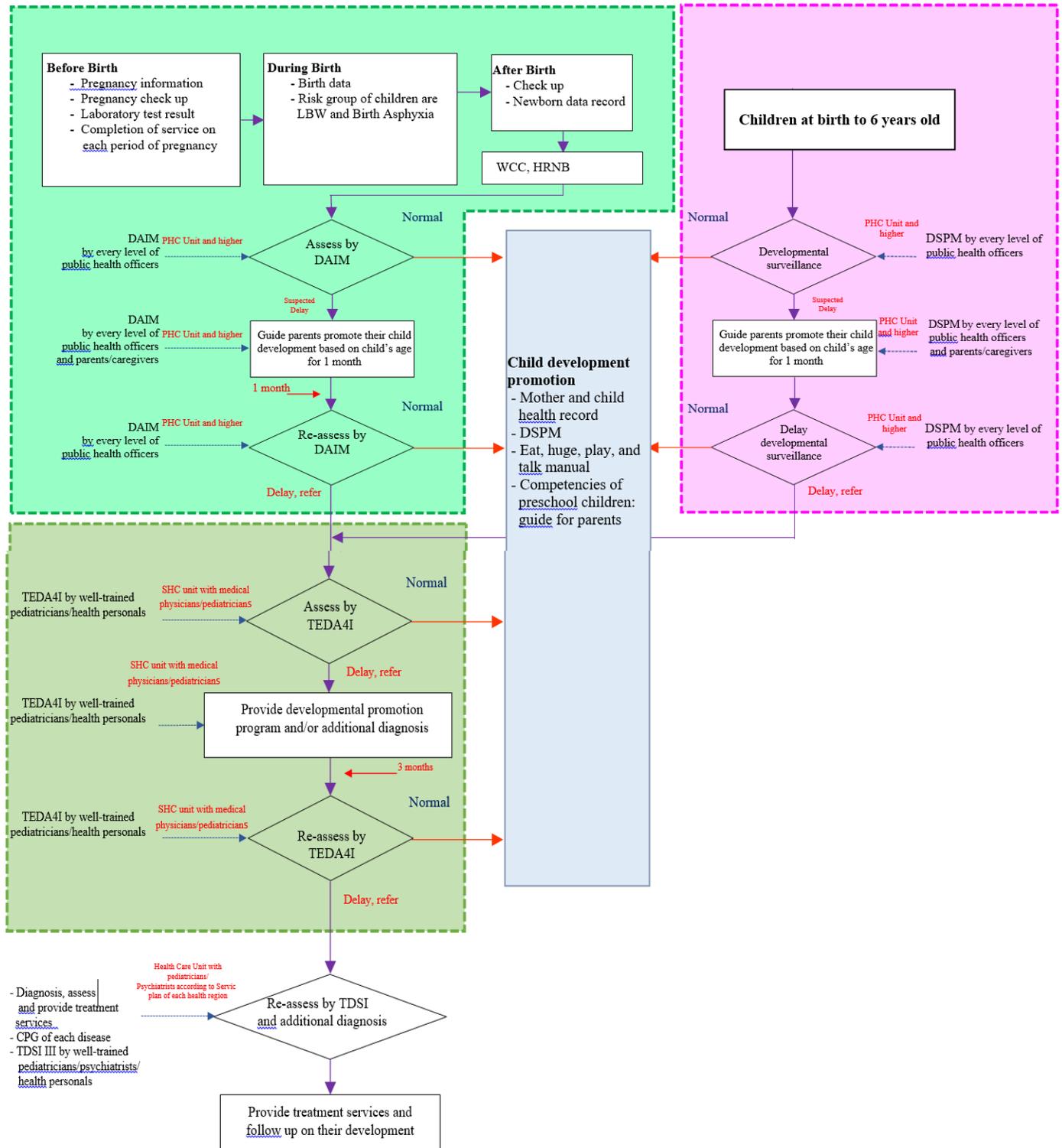
Thai Early Developmental Assessment for Intervention, TEDA4I is for children from birth to 6 years old. There are 145 items, which can be used by well-trained health care professionals in secondary and tertiary health care units for post screening and stimulation with DSPM and DAIM for 30 days, if the children have delayed development.

Operational Guide

1. Set the target group of children by focusing on the importance of monitoring those who are in the risk group:
 - 1.1 Children who were born without any abnormalities
 - 1.2 Children in the risk group who have birth asphyxia and/or LBW.
2. The tools are DSPM, DAIM, and TEDA4I
3. Steering the child development operation
 - 3.1 *Central Level* is responsible for integrating plans and working together with every associated office, including within and outside the Ministry of Public Health, in order to push child development forward, allowing people to have a good quality of life in the long run. This sector consists of
 - (i) The Ministry of Public Health consisting of
 - i) The Office of the Permanent Secretary, Ministry of Public Health (Office of Inspection and Evaluation, Office of Public Health Management, Office of Policy and Strategy)
 - ii) Department of Health
 - iii) Department of Mental Health
 - iv) Department of Medical Services
 - v) Department of Health Service Support
 - (ii) Related ministries include
 - i) The Ministry of Education
 - ii) Ministry of Interior
 - iii) Ministry of Social Development and Human Security
 - (iii) Bangkok Metropolitan Administration
 - (iv) Institutions in universities include
 - i) The Asian Health Development Institute of Mahidol University
 - ii) National Institute of Child and Family Development of Mahidol University
 - iii) The Public Health Science College of Chulalongkorn University
 - 3.2 *Regional Level*, the screening process should be carried out systematically:
 - (i) Zone level: The Regional Health Commission is responsible for steering the overall work forward, as well as supervising, monitoring, and evaluating performance in provinces.
 - (ii) Provincial level: The Integration and Promotion Commission of Provincial Child Development is responsible for preparing provincial strategic plans and operational plans as well as supporting operations to make sure that the set goals are achieved. The commission is also responsible for monitoring and evaluating performance, which will be carried out by districts. The chairman of the commission is the provincial governor, and the committee members consist of the president of the MCH Board and representatives of DBP. The secretarial role is appointed to the provincial chief medical officer and the secretary's assistant is the CPM.

- 3.3 *District level*: the main responsibilities are to monitor, encourage, and support children with delayed development as well as collect and analyze data, statistics, and performance of each district every three months. Integration and Promotion of the District Child Development Commission, having the chief district officer as chairman, representatives from associated offices as committee members and the head of district public health as secretary. District health system and family care team.
- 3.4 *Sub-district level*: the main responsibilities are to screen and continuously follow up on children that are at risk of having slow development. If a child still has delayed development after one month of monitoring, the child should then be referred to the district level, and the results shall be recorded in the reporting system (43 folders).
4. Personnel development: preparing for personnel training at every level, focusing on effective primary screening and referral processes:
- 4.1 A level (Provincial level) and B level (District level), training of trainers will be carried out in order to provide understanding and to equip trainers to use the tools in the “DSPM” and “DIAM.” In addition, trainers will be able to manage work plans effectively.
- 4.2 Public health volunteer training for child development will be carried out in order to support parents and child caregivers in monitoring, follow up and support of children with delayed development, as well as helping to promote child development for children who are not raised by their parents or those who live with a single parent.
5. Data system and monitoring processes:
- 5.1 Improve existing individual reports in order to make them relevant to the operation. Improvement includes data recording of 43 folders, making it easier to record the data by categorizing into the ages of 9, 18, 30, and 42 months, along with data recording of children who have delayed development and abnormalities.
- 5.2 Follow up operation performance. The project manager, who is responsible for women and children’s planning at provincial and district levels, will give a report on the progress of every area, on a three monthly basis. This will help assess areas with lower screening and development results than the expected goal.
- 5.3 Assessment is divided into the following three categories:
- (i) Regional assessment using random sampling, carried out yearly by regional health organizations (public and mental health centers).
 - (ii) National assessment using the project assessment model, carried out yearly by the Departments of Health and Mental Health, as well as academic networks and the office of inspection and evaluation.
 - (iii) Assessment carried out every 2 years, and at the end of the project, to be assessed by external offices.

Surveillance, Screening, Assessment and Promotion of Child Development



Flowchart of Surveillance, Screening, Assessment and Promotion of Child Development

Description of Flowchart of Surveillance, Screening, Assessment and Promotion of Child Development

1. Normal child delivery

- 1.1 The DSPM is used for surveillance of child development at every age group, and is carried out by parents, caregivers and public health volunteers. It is also used for screening of children with delayed development by public health officers for children aged 9, 18, 30 and 42 months. The surveillance and screening processes are carried out at PHC units or higher, such as sub-district hospitals, community hospitals, general hospitals and provincial hospitals.
- 1) If children are developing appropriately, parents will be advised to support their development based on their age.
 - 2) In the case that children are likely to have delayed development, parents will be advised to help their children to practice related skills continuously for one month, and then they will be re-evaluated.
- 1.2 After one month, public health officers from a PHC unit or higher, will re-evaluate the child's development using the DSPM. The public health officers will focus on skills that do not meet the criteria.
- 1) If the children, who are at risk of having delayed development in certain skills, have developed and meet the criteria, they have developed normally, but surveillance should still be maintained.
 - 2) However, if they are suspected of having delayed development in some new skills, the evaluators should recommend parents to help the children with these skills for one month, and then the children should be evaluated again. Furthermore, if children still do not pass the criteria, they should be referred to SHC units, or higher, with physicians or pediatricians (community hospitals, provincial hospitals) to stimulate their development.

2. Children risk group

Monitoring and taking care of children who have birth asphyxia and/or LBW should be carried out based on the following instructions:

- 2.1 Delivery room: Hospital staff from an SHC unit (community or provincial hospitals that provide a delivery room), on finding that a child has LBW and/or birth asphyxia, should start by recording prenatal data, including pregnancy information, pregnancy check-ups, lab tests, etc.
- 2.2 Pediatric general ward: staff from pediatric general wards or other medical wards in PHC units or higher (community hospitals, provincial hospitals that provide a delivery room, special medical wards or Neonatal Intensive Care Units (NICU) that receive newborn infants with LBW and/or birth asphyxia, will keep records of infants' data.

Before discharge, infants will be scheduled for a follow-up and parents will be advised on how to take care of their babies and will also be given a mother and child's health handbook, as well as a guide for using DAIM

- 2.3 Follow up on development at community or provincial hospitals: use DAIM. Newborns that weigh less than 2,500 grams and/or were born with birth asphyxia will be evaluated for development every time they come for a check up. Staff in charge are from the WCC or HRNB.
- 1) Service units starting from PHC and higher (community hospitals, provincial hospitals) will assess children's development using the DAIM.
 - 1.1) If children develop appropriately, they will be supported according to their ages.
 - 1.2) If children are at risk of having delayed development, parents should be advised about promoting child development using the DAIM for one month.
 - 2) After one month, PHC units and higher (community hospitals, provincial hospitals) will re-assess the development using the DAIM.
 - 2.1) If children have appropriate development, they should be promoted according to their ages.
 - 2.2) If children have delayed development or redundant problems, they should be referred to an SHC unit which has physicians or pediatricians in charge, and who use TEDA4I.
3. SHC units and higher that have physicians or pediatricians on site, will assess with well-trained staff using TEDA4I.
- 3.1 If children have appropriate development, they should be promoted according to their ages.
 - 3.2 If children have delayed development or redundant problems, they will be taken care of by physicians or pediatricians from SHC units or higher, using the development promotion program for three months.
4. After three months, SHC units and higher, that have physicians or pediatricians on site, will assess development again using the TEDA4I.
- 4.1 If children have appropriate development, they should be promoted according to their ages.
 - 4.2 If children have delayed development or redundant problems, they will be referred to an SHC unit that has pediatricians or psychiatrists on site, or service units based on the service plan of each health region.
5. SHC units and higher, that have pediatricians or psychiatrists on site, or service units based on the service plan of each health region, will assess development using the TDSI III and/or will diagnose, assess, treat, and refer.
- 5.1 If children have appropriate development, they should be promoted according to their ages.
 - 5.2 Children with delayed development should receive re-diagnosis, and they should be treated for their problems. They should also be monitored periodically so that their quality of life will be better.

Roles and Responsibilities in the Child Developmental System

Office	Roles and Responsibilities
Parents	<ol style="list-style-type: none"> 1. Assess their children's development based on age. 2. Stimulate their children's development according to age.
Health Volunteers	<ol style="list-style-type: none"> 1. Visit children at their homes. 2. Follow up children that do not come for a checkup.
Sub-district health promoting hospitals	Coordinate with health volunteers for home visits when parents do not take their children to an appointment.
Community hospitals	<ol style="list-style-type: none"> 1. Record data of newborns that were delivered at the hospital 2. Examine children's development schedules 3. Record examination results 4. Refer children who have delayed development to pediatricians.
General hospitals/ Provincial hospitals	<ol style="list-style-type: none"> 1. Record data of newborns that were delivered at the hospital 2. Send information to community hospitals to follow up children. 3. Examine children's development schedules 4. Record examination results 5. Follow up and take care of children who have delayed development problems. 6. Receive children who have been referred from community hospitals. 7. Refer children who have delayed development problems to a specialist hospital for children with developmental delay
Specialist hospitals for children with developmental delay	<ol style="list-style-type: none"> 1. Provide examinations and treatment of children who have been referred from other units. 2. Record examination results using the provided system. 3. Act as centers which collect all information 4. Act as consultants regarding recording and analyzing data systems.