16th Haridas Memorial Lecture
Singapore Paediatric Society
2018

Building an Inclusive

Early Childhood Intervention Ecosystem

in Singapore

1988-2017

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DR. GOPAL HARIDAS - AN APPRECIATION

By

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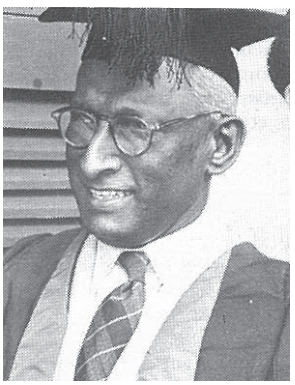

**The late Dr. Gopal Haridas,
O.B.E., J.P., L.M.S., M.D., M.R.C.P.**

Mr. President and Fellows.

I take it as an honour and a privilege to speak to you today of my knowledge of Dr. Gopal Haridas. One might ask oneself what manner of man was this who not only has had a Lecture Theatre named after him but has inspired an annual Memorial Lecture.

Some of you may not remember him but the men he produced live on in the Children's Department of Singapore. By him they were inspired and trained to his eternal credit. In appearance he was tall, grave and looked every inch an aristocrat, He was soft spoken, precise and always of impeccable behaviour. In fact, some people have wondered whether he ever had any childhood, or had the follies of youth passed him by.

I have spoken to some of his school fellows who were with him at St. Xavier's, Penang. There he was well behaved, very hardworking but by no means brilliant. As a medical student he was a non-hostelite, very hardworking, always punctual, meticulous in his work but again was not considered to be brilliant by his colleagues, He failed his L.M.S. Examination on his first attempt, passing easily on his second.

From October 1922 until March 1923 he was a Demonstrator in Pathology working under Dr. Finlayson who was not only a Pathologist and Bacteriologist but also a Member of the Royal College of Physicians, London, with charge of some wards. Dr. Finlayson is remembered as an excellent physician and a brilliant pathologist. He was very hardworking and rode a bicycle from the General Hospital to Tan Tock Seng Hospital performing post mortems at 7.00 a.m. He was never known to be late. The young Haridas benefitted by this mentorship. He later became House Physician at the General Hospital from April 1923 until May 1929, where he obtained excellent first hand experience and in June 1929, he was selected by Professor R.B. Hawes as Medical Tutor to the Medical Professorial Unit, a position held subsequently by Dr. C. E. Smith and Professor E. S. Monteiro. He spent 3 years in this post and maintained an interest in Pathology as related to Medicine, attending every early morning postmortem. Professor Hawes formed a very high opinion of him, so much so that in August 1932 he went to England for postgraduate training in Medicine and Children's Diseases at Great Ormond Street. He attended the M.R.C.P. course at Charing Cross Hospital and in Apri1 1933 obtained the Membership.

From June 1933 to August 1937 he was Lecturer in Diseases of Children under Professor Hawes and in September 1937 was promoted to the Malayan Medical Service.

From September 1937 until August 1938 he was promoted much to his disgust, Medical Officer-in-Charge of Tan Tock Seng Hospital. There I met him and being Fellow Members of the Royal College of Physicians, and both having served at Charing Cross Hospital was struck up an acquaintance.

I was not to meet him professionally until about June 1940. The Children's Department was for teaching purposes under the Professor of Medicine and it was a custom to do a round every Thursday afternoon. It was on these rounds that I got to know him. I had been myself Registrar to the Children's Department at Charing Cross Hospital and had worked at Great Ormond Street under Sir Robert Hutchinson and Dr. Poynton, and so was in no mean position to appreciate his work and worth. He was 11 years older than I, had got the Membership before me, had a great deal more experience in Medicine than I had. Nevertheless, his innate courtesy never made me feel that I was teaching my grandmother to suck eggs.

In those days we had to depend upon Nursing, hydration and diet very much more than today. We had sulphonamide in the form of M & B 693 and crystalline Vitamine Bl, both life saving drugs; also Vitamin A and Vitamin D. The diets were prepared by the Sisters not by Dietitians. There was a ward kitchen and often the diet had to be tempered to the "shorn gut" - an art which was known to the Sisters and which saved many lives. There were no such thing in these wards as mass diet and routine nursing. The sick child for the first 2 or 3 days to be treated very much as an individual.

Dr. Haridas did a morning round and also a round at 9.00 p.m. in the evening where special attention would be given to the very sick. These night rounds and Dr. Haridas' devoted attention to detail were of greatest value. He was always prepared to talk to and soothe the anxious mothers which was a great source of comfort to them, even if this meant a midnight visit. He was an excellent clinician, diagnostician and clinical examiner. From him I learned a most elegant method of taking the ankle jerk in infants. The value of observing localised sucking in of intercostal spaces in bronchopneumonia. The use of sulphonamides in dysentery and above all in conjunction with cardiac beri beri. The great importance of taking the mother's dietary history in breast fed infants. He was not very good at explaining. One learned more from watching him than talking to him; the way he talked to the mothers, his methods of examination, etc.

My opinion of him then was, not only was he a great gentleman but also a very good doctor.

My next meeting with him was in October 1945. He was then Medical Specialist at the Kandang Kerbau Hospital having over all charge of the Medical Wards. As Staff Officer, B.M.A. and Consultant Physician I used to go round with him once a week. He was then back to general medicine. I had some very interesting ward rounds with him. Throughout the occupation he had, in my opinion, exceeded in stature, the opinion of him I held before. This is what I wrote in January 1948.

> "Dr. Haridas has been an established Consultant in General Medicine and in Pediatrics in Singapore for 13 years and is at present Physician to the Children's Department. In my opinion he is a man of the greatest integrity and in his bearing as a Consultant has always been a great credit to the College. During the occupation years 1942-1945 he was Consultant Physician to the Civilian Hospital which post he held with great integrity, maintaining during that time a good professional morale among the younger Medical men by his example, and by means of teaching ward round and Clinical Meetings. As Consultant to the British Military Administration in 1945 I was able to see his work, and he gave me pride in the College to see how well he has done and in what respect he was held. In addition he has published a number of articles chiefly in the Malayan Medical Journal. The British Journal of Ophthalmology and the Archives of Diseases in Childhood bearing on his work in this country. He takes a great interest and attends at Clinical Meetings of the United Services Society and the Alumni Society and he has presented before them numerous instructive and well thought out papers based upon his work in the wards. On the civil side he is a J.P. and is on the Committee which deals with Prison Reform and Juvenile offenders. He is an Officer in St. John's Ambulance Brigade."

He was a better writer than speaker. His paper on cardiac beri beri is a classic and should be reprinted. In it one can see a reflection of the man trained as he was in the Sydenham School. I think that this Society would be well advised to have this done not only as a tribute to Dr. Haridas but as a source of inspiration to themselves.

During his later years he continued to teach Pediatrics and to good effect. The young Wong Hock Boon was committed to his care in the early fifties as were many who later became distinguished in this field.

He retired sadly from the staff of the General Hospital in 1954 and was not to see the relative commodious-ness of the Mistri Wing. He continued in active practice in the City and up to the time of his death regularly attended Clinical Meetings. He was active in founding the Society of General Practitioners and was elected Vice-Master of the Academy of Medicine while in retirement. In spite of his outside practice he never failed to attend a Comitia Meeting, and was serving with distinction until the time of his death. I will conclude with a list of his honourifics:

Doctor of Medicine
Academician, Academy of Medicine
Knight Commander of the Order of St. John of Jerusalem
Officer of the Most Excellent Order of the British Empire
Justice of the Peace
Consulting Physician in Paediatrics to the British
Army in the Far East (War Office List)
Consulting Physician to the General Hospital.

The lesson to be learned from his life brings out very well the thoughts of Sir Robert Hutchinson, that he could never abide "Clever Doctors". Haridas was never a "Clever Doctor". He had, however, that which is much more, a reasonable intelligence and an infinite capacity for taking pains which some say is hall mark of a genius.

(From the Second Haridas Memorial Lecture)

16th Haridas Memorial Lecture
Singapore Paediatric Society

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In Singapore
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by

Professor HO LAI YUN

Contents

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Introduction

The early years of a child are a period of considerable opportunity for growth and vulnerability of harm. All children are born wired for feelings and ready to learn, both intellectually and socially. Decades of scientific research have concluded that experiences in the first few years establish a foundation for human development that is carried throughout life.[1] Early childhood intervention programmes can shift the odds toward more favourable outcomes in development, especially for children at risk. However, there is no quick fix in the world for early childhood interventions. Programmes that work are rarely simple, inexpensive, or easy to implement. Each country must decide its own model and strategies and develop its resources based on existing human resources and infrastructures.

Historical Perspective

Child development and rehabilitation services in Singapore have come a long way, and special education has been in Singapore for more than sixty years.[2]

In 1987, a Task Force under the then Singapore Council of Social Service conducted a review of the status of programmes and services for people with special needs in Singapore.[3] It was not surprising to find that virtually all the services for the disabled, including special education and rehabilitation, were initiated by voluntary welfare organisations (VWOs). They were also entirely responsible for fund-raising. Therefore, historically, they have their own missions and a strong sense of ownership for their programmes and services. However, there were marked variations in the approach and the structure of their programmes with no common standards and poor coordination in service delivery. As a result, there were uneven distribution of caseloads and demands of services among the VWOs. The age group they served and the length of their programmes were variable and not comprehensive. Services were also limited and mainly rehabilitative rather than interventional, focusing on children with severe disabilities such as mental retardation, cerebral palsy, and autism, Furthermore, no proper follow-up services were available after completion of the early rehabilitation and long-term outcomes were completely unknown. In many developed countries, developmental-behavioural paediatrics is already an established medical discipline. In Singapore, teaching and training of child development and developmental disabilities in our paediatric undergraduate and postgraduate training programmes remained fragmentary and received minimal emphasis. There was also hardly any serious research work in this field.

The turning point for a better-coordinated partnership to enhance the quality of programmes and services for the special needs population in Singapore was the report by the Advisory Council on the Disabled in 1988.[4] Several recommendations with significant impact on the improvement of child development and rehabilitation services in Singapore were made. The government became an equal partner with the National Council of Social Service for the funding and management of special education. School buildings were leased out and land was set aside for the construction of purpose-built special schools. Financial support of up to a maximum of twice the cost of educating a primary school child was granted to a special child, matched by a similar contribution from the Community Chest of Singapore. The Advisory Council also recommended the setting up of a programme for the early identification and management of children with developmental problems. These recommendations were included in the government's vision to build a gracious society in the next lap.[5]

The conceptualisation and subsequent implementation of the Child Development Programme (CDP) in Singapore has been a journey on a long and winding road. The programme itself started out almost as an impossible mission, but there was a glimmer of light at the end of a dark tunnel.[6]

The CDP started very humbly with the setting up of the Development Assessment Clinic (DAC) at

Singapore General Hospital in 1991 as a pilot project with a block vote grant of 1.9 millions. This was a small clinic space along the long corridor of Bowyer's Block at the back of the current Singapore National Eye Centre. In 1995, the Ministry of Health (MOH) approved the DAC as an established programme in public health service. The DAC was relocated to the old Kandang Kerbau Hospital in 1996. With the opening of the new KK Women's and Children's Hospital (KKH) in 1997, the DAC was renamed Child Development Unit (CDU).

However, continued funding of the child development programme remained an unresolved issue. In 2002, MOH decided to fund the programme under the Health Service Development Programmes (HSDP) for five years. Two Child Development Units were then established at KK Women's and Children's Hospital and National University Hospital. While the diagnostic and evaluation services are hospital-based on initial referral, the intervention services would be community-based: one sited at the SingHealth Polyclinic at Health Promotion Board, under KKH; and the other at Jurong Polyclinic under NUH. Upon completion of HSDP, the programme continued to be funded under MOH's Reinvestment Fund. The CDU at KKH was renamed Department of Child Development in 2007. MOH would continue to fund the CDP until 2020.

Currently, there are three intervention centres under DCD of KKH: two at Health Promotion Board (one being relocated from St. Andrew Community Hospital in 2014), and one at Rivervale Crescent (relocated from SengKang Polyclinic in 2016). There is one intervention centre under NUH: Keat Hong Community Club, opened in 2017 (relocated from Jurong Medical Centre).

The main objectives of CDP are: identification and treatment of children with developmental and behavioural problems so as to correct developmental dysfunctions; minimise the impact of a child's disability or of prevailing risk factors; strengthen families; and establish the foundations for subsequent development. From the outset, the cross-cluster MOH CDP has committed to evolve and develop along certain basic principles. It should build on existing structures and strive to be sustainable. It should adopt a multi-disciplinary and team-based approach and encourage partnerships with professional bodies, consumer groups, schools, charities and VWOs, parent groups and associations. It would establish links and integrate its services with the social and community support programmes under the Ministry of Community Development, Youth and Sports (MCYS) and the National Council of Social Service (NCSS), as well as with the education programmes under the Ministry of Education (MOE). The services of CDP should be family-oriented or family-focused, and deliver in community-based settings. The programmes must be evidence-based or follow the good practice guidelines; have a quality framework and can be evaluated. Hopefully, the programmes are flexible and replicable.

Developmental Surveillance and Developmental Screening

Developmental surveillance and screening are two distinct but complementary concepts in monitoring the status of the developing child. Developmental surveillance is a longitudinal, continuous and cumulative process that relies on repeated purposeful review of the child and the family. It aims to not only detect delays early, but also to identify risk factors on child development. It involves eliciting any parental concerns, making skilled observations of the child, and giving parents information and guidance on health and developmental issues relevant to the child's age and parents' needs.[7] Less time is needed for surveillance and it is opportunistic. It should take place at all well child visits, such as immunisation visits and also at other visits, if parents have a concern.

Developmental screening is cross-sectional and administered at specific ages or time points of the child. It aims to identify and refine certain recognised risk, and decides who needs further evaluation. It is therefore more time intensive as it uses a validated standardised screening instrument with published sensitivity and specificity and targeted at specific ages.

The Denver Developmental Screening Test (DDST), Singapore was developed in the mid-1980s and has since been adopted as the formal developmental screening tool.[8] It was further validated in 1994 to be suitable for children in Singapore.[9] Community health workers, particularly Maternal and Child Health (MCH) nurses and family physicians, are uniquely placed to administer the DDST, Singapore to children attending the MCH or private clinics for their well baby and child visits. Potential problems of screening programmes include variable knowledge and skills, as well as attitude, among those healthcare workers doing the screening.[10]

From early- to mid-1990s, there were seventeen MCH clinics providing developmental screening services for about 50% of the annual birth cohort of children. With the integration of the MCH services into the main Polyclinic system, as well as changing needs of the population demography, the polyclinics were no longer the main providers of immunisations and developmental screening for our children. At this point, DDST, Singapore remains the only standardised developmental screen for Singapore children.[8, 9]

Both developmental surveillance and screening are important in order for children with special developmental needs to be identified early and receive timely intervention. The second Enabling Masterplan (2012-2016)[11] of the Ministry of Social and Family Development (MSF) recommends strengthening the national developmental surveillance and screening system by establishing a network of early detection touch points in the community, comprising of primary health care professionals, child care centres, pre-schools, 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.[11] The Masterplan also proposed that the Child Health Booklet be used as a main tool for routine developmental surveillance. Every child born in Singapore has a copy of the standardised Health Booklet. The Booklet contains developmental checklists at certain important and sensitive touch points of children, based on our validated DDST, Singapore. In the last revision of the Health Booklets, screening items targeting at early detection of autism have been incorporated in the checklists. In future revision, more touch points between the age of two and three will also be included. To improve the utilisation of the checklists in the Health Booklet, and based on the users' feedback, we may look into simplifying the words and sentences and to provide relevant pictures to assist parents in understanding the items in the checklists better. An electronic version of the Health Booklet is likely to facilitate implementation of developmental screening in the healthcare system.

However, developmental screening should not be the sole responsibility of the healthcare professionals. The aim is to encourage and empower the parents and caregivers at home to play the central role in monitoring the child's health and development. The information on developmental milestones of a child will also serve as anticipatory guidance for parents and caregivers. This method of developmental surveillance has been extended to involve pre-school teachers who will be the caretakers of children once they are in the playgroups, nurseries or kindergartens.

Seeking out children at risk

An important challenge to developmental surveillance is that children and families with the highest level of possibility of developmental problems are sometimes the least likely to avail themselves of the services.

Neonatal departments usually maintain an "At-Risk" registry of the high-risk newborn infants upon discharge for follow-up care and outcome evaluation. These infants would include those who are born very-low-birth-weight, infants with congenital anomalies, and those who have experienced perinatal stress. The neonatologists running the neonatal follow-up programme would continue to be the primary physicians taking care these infants. A multi-disciplinary team of specialists would be involved and those children with developmental problems would be channelled to the CDP.

The concept of "at risk" registers is to ensure the close monitoring and assessment of those most likely to be developmentally delayed. The limitations of such registers must be acknowledged. Many developmentally delayed children do not have any identifiable aetiological or risk factors, and many children who have suffered clear identifiable insults, and are very much at risk, develop quite normally. Furthermore, the inclusion of all possible risk factors necessitates large numbers of children being placed on the at risk registers, making the concept logistically difficult and practically impossible most of the time. The clear advantages of early diagnosis must be counterbalanced by the dangers of inappropriate labelling.

Getting children to attend playgroups, nurseries and other pre-schools by two years of age will provide early opportunities of exposure to learning, together with relevant challenges to developmental skills and social interactions. VWOs such as Singapore Children's Society, Grass-roots organisations, and religious and ethnic community groups, together with Community Development Councils, have programmes to pro-actively seek out families with children in the pre-school age not attending any pre-school setup between 2-3 years old. They will provide social and financial support to get these children to pre-schools.

Many up-stream initiatives under various names, such as "Head-Start", "Bright Start", and "Healthy-Start", and "Kids 0 to 3" (Kid's Integrated Development Service) programmes, have made attempts to seek out children and families at risk. These projects have similar objectives to work in partnership with at-risk families from the time a baby is born. The latest initiative is the KidSTART programme, launched by MSF in 2016 and currently led by the Early Childhood Development Agency (ECDA), will be further discussed in this paper.

Comprehensive Developmental Assessment

Developmental Screening can only indicate that a child may have a problem that should be further investigated. It cannot describe definitively the nature and extent of a dysfunction or disability. Screening should not be used to label children as being delayed, nor can it be used to develop intervention strategies. Screening must be followed by comprehensive assessment to confirm or dismiss the suspicions raised by the screening procedure.

A seamless and hassle-free referral system has been established. The majority of children would come through the polyclinics to the two main diagnostic and assessment centres: Department of Child Development (DCD), KKH, and Child Development Unit (CDU), NUH.

The purpose of a comprehensive developmental assessment is to accurately determine a child's developmental status in a number of domains: physical (including vision/hearing and gross and fine motor development), cognition, communication, social-emotional, and adaptive. It will include a search for the cause(s) of the delay, although most of the developmental problems remain uncertain or idiopathic in aetiology even after the best possible search. A complete assessment is a complex procedure. It is often time consuming and is expensive. Therefore, it should be carefully planned. A multi-disciplinary team coordinated by a trained paediatrician as case manager is required to obtain a thorough understanding of the child's unique abilities – his weaknesses, strengths, attainment levels and needs. The number and type of professionals that are involved may vary, but a "core" team is usually involved in every assessment, the features of the delay in a child will suggest which specialty groups need to be involved.

It is now well accepted that the procedures and instruments used for assessment of infants and toddlers cannot simply be professionally directed and test-driven. This is based on the fact that the standardised tests for children from birth to age of three years are not as predictive as psychological testing instruments used in older children are. In addition, young children are changing rapidly in the first three years of life. Thus their assessment must be seen as an evolving process rather than one determined by a single test or test battery. Present-day assessment practices emphasise a play-based approach using developmental and behavioural checklists, direct observations, and criterion-referenced instruments.

In addition to assessing the child's level of development, every assessment should identify the family's concerns, priorities, and resources. Concerns are what family members identify as needs, issues, or problems that they want addressed. Priorities allow for a family to set its own agenda and makes choices about how subsequent early intervention will be involved in their life. Resources include finances, strengths, abilities, and supports that can be mobilized to meet the family's concerns, needs, and desired outcomes. Identifying these issues leads to the development of early intervention outcomes, strategies, and activities they will help families achieve their goals.

Pattern of Developmental Problems in Pre-Schoolers

Table 1 shows the pattern of developmental problems in preschoolers seen under the CDP (both KKH and NUH) from 2004 to 2010.

Table 2 shows the pattern of developmental problems in preschoolers from 2011 to 2017.

As both KKH and NUH are de facto national referral centres for children with developmental problems through the surveillance and screening system, the numbers should be quite representative of the national statistics. In addition, as both services come under CDP, it is unlikely that children would be receiving care from both sides at the same time. There may be children who are under the care of private paediatricians. The numbers will be small and the majority of them will subsequently be channeled back to the two public institutions as the intervention services are highly subsidised.

"Preschoolers" include children who have yet been enrolled into either mainstream schools or special schools in Singapore. Their age-range would generally be between 0 to 6 years old, but some may

go right up to 8 years because of deferment in entering mainstream schools.

It must be emphasised that the numbers only represent developmental "problems" seen in these children. They must not be considered as statistics of developmental "disabilities". Although it is well known that certain diagnosis may have co-morbidities, e.g., ADHD and developmental delay may be seen in children with autism spectrum disorders, there is no double-counting and the most prominent diagnostic feature would only be taken into account. The diagnosis also represents a range of functional severity from most severe to the mildest.

From 2004 to 2017, a rather consistent pattern and trend of the developmental problems in preschoolers can be seen. Autism spectrum disorders (ASD) and speech and language delay and disorders together accounted for between 53% and 58% of the developmental problems Learning problems/ disabilities and attention deficit hyperactivity disorders (ADHD) had not surfaced to be major issues in this age range (<10%), as we never labelled a child as ADHD or learning disabled below five to six years of age. However, we anticipate that these two problems will emerge to dominate the developmental problems once the children enter primary schools and start to face different varieties of academic challenges and demands.

Developmental delays, environmental-related delay and other behavioural issues accounted for about 30%. Some of them are idiopathic and others are related to parenting and caregiving issues. Both the departments at KKH and NUH have been working closely with MSF, pre-schools, philanthropic and government-linked Foundations, and VWOs in a number of parenting and caregiver's education programmes to empower and support the families in raising children in Singapore.

Improved perinatal care and expanded nation-wide neonatal screening programmes over the past five decades have resulted in significant reduction in the number of infants and children born with congenital malformations, and those who may sustain significant brain damage during pregnancy, or during the peripartum and postnatal period. This is obvious from the fewer cases of cerebral palsy, syndromic disorders (such as Down syndrome) and children with impairment of special senses (visual and hearing impairment). It is also reported that the School for the Deaf is winding down its operation and will merge with the School for the Visually Impaired in 2016.

About 30% of the children with developmental problems were seen before the age of 3 years, or 50% before they reached the age of four. We hope that with increased awareness and an expansion of the developmental surveillance and screening system in the community and at home, more children can be assessed at an earlier age so that they can be started on early developmental interventions.

We also see an increasing trend in the number of new referrals from 2004 to 2017. When will we arrive at a steady state? The smaller numbers seen in earlier years represent the numbers that both CDP departments at KKH and NUH could manage to see due to both limited clinic space and shortage of staff. The waiting time for visits in those days was long. With improvement in both infrastructures and resources, together with increased awareness, the numbers would start to climb. Once we reach the desired waiting time, the numbers may approach the steady state.

Individualised Intervention Plan

The development of the individualised management and education plan is based on the information gathered through the assessment of the child and family, directed by the family's concerns, priorities, and resources, and in collaboration with the early intervention team. The strategies and activities needed to achieve the desired outcomes often require a broad range of early intervention services. Any eventual intervention plan would involve the parents as a focal point, so their participation in the entire process is of paramount importance. Parents have to be counselled and helped to reshape, rebuild and to adjust their view of the child. We also recognise that health services alone will not be successful. A strong working relationships and partnerships with social services in the community, as well as with schools, are mandatory. A follow-up evaluation system is in place to monitor the progress of the child and the family so that the management plan can be regularly reviewed and updated. There is also the need for proper documentation of the adjustments and achievements.

Certain critical factors have been identified as keys to a favourable outcome: First, parents who are dedicated and committed; have reasonable expectations and never give up hope on their child.

Second, schools that are receptive, accommodating and dare to give the child a chance. And third, peers who are understanding, accepting and forgiving of some of these children's apparent eccentricities. The roles of the professionals are mainly to provide an early diagnosis, identify the child's strengths and weaknesses, treat the child as being different rather than abnormal, guide the parents, and advocate for the best interests of the child.

Table 3 shows the different categories of children under the follow-up care of the Child Development Programme from 2011 to 2017. In the child's journey beyond early childhood, the case manager, who is usually the primary care paediatrician, will continue to monitor the progress of the child, support the family, and plays the important role of advocacy until the child reaches adulthood.

Early Childhood Developmental Intervention

There is growing evidence that early intervention (EI) can have substantial impact on children with developmental delays/disabilities and on their families.[1, 12]. Recognised benefits of early intervention are: gains in physical, cognitive, language and speech development, social competence, and self-help skills; prevention of secondary disabilities; reduction of family stress; reduction in the needs for special education services or placement during school years; reduction in likelihood of social dependence in adulthood; and savings to society of the costs of additional educational and social services that would be needed later without early intervention. The goals and outcomes of EI would be: promote development in all important domains; promote child engagement, independence, and mastery; build and support social competence; facilitate the generalised use of skills; support families in achieving their own goals; prepare for and assist children with normalised life experiences in their families, schools, and communities; help children and families make smooth transitions; and prevent or minimise the development of future problems or disabilities.

Currently, there are changing emphasis in the approach to early intervention: shifting the decision-making power on caring for the child from the professionals to the family; shifting interventions from being diagnosis-based to one that is based on the developmental needs of the individual child; shifting emphasis of intervention from disability to functional and developmental performance, participation and quality of life; and shifting the settings of service and care delivery to a less restrictive, more natural and inclusive environment, e,g., childcare centres, pre-schools and schools, homes, and the community.

Each of the community-based intervention centres of KKH and NUH consists of a multi-disciplinary team of allied health professionals (physiotherapists, occupational therapists, speech and language therapists), psychologists, special needs educators, social workers, and nurse practitioners. They serve the important role of providing early intervention at the tertiary level after the comprehensive assessment. The children and their families require a period of stabilisation. Parents would go through the "Signposts for Building Better Behaviour Programme" to assist them in understanding their children and acquire skills and techniques in managing some of the difficult behavioural issues of the children. Children with mild developmental problems can be discharged after a short period of intervention. For children with more complex issues and are likely to require a longer period of intervention, the centres will continue appropriate interim intervention in partnership with the parents until they are enrolled into the EIPIC centres. "SG Enable" is the central coordinating body in arranging the children's placement at the EIPIC centres nearest to their respective homes.

The Early Intervention Programme for Infants and Children (EIPIC) provides developmental and therapy services for infants and young children at risk of moderate to severe developmental delays. At the end of 2017, there are twenty-one EIPIC centres located across Singapore. They are run by the following Voluntary Welfare Organisations (VWOs) *(in alphabetical orders)*: Autism Association of Singapore, Autism Resource Centre, Singapore (ARC), Asian Women's Welfare Association (AWWA), Canossian School, Cerebral Palsy Alliance, Singapore (CPAS), Fei Yue Community Service, Metta Welfare Association, Rainbow Centre, SPD (former Society for the Physically Disabled, and Thye Hua Kwan (THK) Moral Charities. From 2012 to 2017, a total of about 6,500 children were referred to EIPIC centres, or approximately 1,300 children annually. By 2018, there will be 500 more EIPIC places, bringing the total to 3,200 places. Parents may also consider enrolling their children in selected accredited private early intervention centres under the Pilot for Private Intervention Providers (PPIP) programme. This serves as an alternative to VWO EIPIC centres. Children enrolled in these centres are similarly subsidised for the early intervention programme.

All EIPIC teachers must hold Advanced Diploma in Early Childhood Intervention (Specials Needs) (ADESN). MSF is also working with the National Council of Social Service (NCSS) and SkillsFuture Singapore to develop the Skills Framework for Social Service (SF-SS), which will be ready in 2018. The framework will include a skills map that articulates the skills and competencies required to enter the profession and progress as EIPIC teachers, as well as professional development programmes that EIPIC teachers can take on for skills upgrading and mastery. This will better equip both existing EIPIC teachers and potential entrants to identify relevant training opportunities, and plan their professional development pathways.

As some of the VWO EIPIC centres are still evolving entities, MSF has appointed and funded a multidisciplinary team of consultants from KKH and NUH to assist these centres in building capabilities and enhance early intervention standards. While doing so, we are mindful to resist creating a cookie cutter system, where everyone has formed one single standard. This is a field, which continues to benefit and is informed by studies, methodologies and pedagogies from within and from abroad. We want to look at these from an evidence-based lens, and we want to study how these different methods can be used to strengthen the landscape and to benefit children with different kinds of needs. We want to look at standardisation of measurements but we also do not want to stultify creativity and the exploration of evidence-based methods. This is a balance we want to strike, and requires close partnership to achieve.

From "Mission: I'mPossible" to Development Support Programme

In 2006, in line with the current emphasis of shifting the settings of service and care delivery to a less restrictive, more natural and inclusive environment, KKH SengKang intervention centre initiated a pilot "Therapy Outreach Programme" in one preschool centre in that region without additional funding. In 2007, the programme was expanded to eight preschools. The initial outcomes were positive with no default rate as the intervention was carried out in the child's pre-school. The teachers were able to work closely with the therapists in understanding the child better. In 2009, with a S$2.4 million fund from Lien Foundation, the project was renamed "Mission I'mPossible" (MIP). In the next three years, MIP operated in twenty-five PCF centres and one NTUC centre in the Pasir Ris-Punggol GRC. There were about 4,500 children in these pre-school centres and 1,700 children were screened, with 440 children receiving intervention and support. At the same time, about 300 early childhood educators at the centres benefited from MIP.

The project was completed in 2012 and a great success, providing good evidence of a viable model of right-siting of children with developmental needs. The final report "Mission I'mPossible" (MIP) was published with Lien Foundation in April 2012.[13] In addition, an independent MIP Evaluation team was engaged to undertake the task of validating the credibility of the project, providing empirical-based evidence of the programme effectiveness and on major aspects of its operation.[14]

The MIP was presented to the Ministry of Social and Family Development (MSF). MSF then decided to secure the consultation of KKH DCD to further evolve the MIP as the "Development Support Programme" (DSP).

The DSP was officially launched by MSF on 10 May, 2013, to provide children with mild developmental needs learning support and therapy intervention. A group of professionally qualified early childhood educators known as Learning Support Educators (LSEds) are deployed to work closely with teachers and parents. They play the key role in DSP: conduct screening to assist in understanding the child's developmental needs; provide in-class support to embed and generalise therapy goals back into the classroom after individual intervention with the therapists; provide targeted support in social skills, literacy, language and handwriting; and to provide advice and support to classroom teachers and the parents. Therapy teams from various VWO EIPIC centres play a complementary role by providing appropriate therapy intervention for children who require greater support. MSF has budgeted S$30 million on the development of the DSP for five years since 2013.

Started with 30 preschool centres under PCF and the NTUC-run My First SKool in 2012 in the central and part of north-east and eastern regions in Singapore, the DSP has reached out to 600 centres (including some private preschools) and about 2,300 preschool children throughout Singapore by the end of December 2016, covering the northern and western parts of the Island. Based on pre- and post-intervention results on a standardised screening tool, progress made on the children's Individual Education Plans (IEPs) and feedback from early childhood educators and parents, children who received support through the DSP

showed significant improvement. The programme adheres to the "inclusive" principle to allow children who are "different" from one another in their developmental abilities to learn and play together in a natural school environment.

DSP has recently been renamed Development Support (DS) and Learning Support (LS) Programme in July 2017 to better reflect the therapy based support (DS) and the psycho-educational (LS) support. The DS programme is currently piloted on a group of pre-schoolers with mild-moderate developmental needs and are attending the pre-schools and the EIPIC centres at the same time. There is a scope to calibrate our EIPIC service delivery to better cater to the varying needs of our children, It is recommended that the DS and LS Programme should operate in a continuum with EIPIC, with varying intensities of interventions as well as to maximise the available resources. They must work towards seamless integration with the regional pre-schools and be complementary to one another in the care and education of children.

The Integrated Child Care Programme (ICCP) under MSF was initially set up to allow a number of special child centres to accept certain numbers of children with special needs to be immersed with their peers in learning. Currently, there are 14 Childcare centres that offer the ICCP for children with special needs; but this is only for children with mild to moderate disabilities. No therapy is provided at these centres, and each centre has just up to 10 children with special needs enrolled. These centres have teachers who are specially trained to address the learning and social needs of the child. Working together with the parents and the healthcare professionals, the teachers will develop an individual education plan for each child and monitor the progress regularly. The children are placed in classes appropriate to their age and functional level. The physical classroom environment is also designed to cater to children with special needs, and specially designed teaching materials may be used. They will join in all or most of the activities of their classes, with trained teachers at hand to provide them the extra guidance and help. The aim is to provide an appropriate learning environment for young children aged 2 to 6 years with mild to moderate levels of developmental problems as well as to provide opportunities for them to interact with other children in a natural setting. This way, the child will be better able to adjust when he or she subsequently goes into mainstream primary school. These children come mainly from the CDP after their assessment. The ICCP programme is now being reviewed together with the DSP and EIPIC programmes under MSF.

SG Enable, previously known as Disability Information and Referral Centre (DIRC), has been established to function as a central registry for children with developmental problems who require intervention services in specialised centres and to streamline the referral processes. This is in tandem with the setting up of several new EIPIC Centres strategically located in the community in order to cater to the needs of the children and their families as near to their doorsteps as possible.

Figure 1. shows Mission I'mPossible Flow Chart.

Education: The Best Gift for Children

Education is an important component in the jigsaw puzzle of a comprehensive child development programme. It is the key enabler in imparting to our children the values, skills and knowledge needed to thrive in a rapidly changing world. Education is the best gift we can offer our children. The education system continues to be a great social leveler.

In Singapore, a high premium is placed on developing a child's potential and abilities to the fullest and nurturing each child to be a responsible citizen. Our education system aims to help our young acquire the values, skills and knowledge to face future challenges. This policy has led to the development of a comprehensive and technologically oriented educational system, which is ability-driven. However, schools should focus not only on developing the children's knowledge and cognitive skills, but also pay more attention to their socio-emotional and physical development, as well as to the character-building of these children. Although schools are extremely important for education and development, children also learn from their parents, siblings, peers, books, televisions, and computers. The information and thinking society of the twenty-first century will no longer be content with products of education that have been trained to merely take in and recycle information handed out by teachers and other authority figures. Today's children who become tomorrow's adults need to experience an education that teaches them to think for themselves and to generate new information. The idea of "moulding" children no longer captures the essence of what is needed.

In managing our children with a wide range of developmental differences in learning, the focus has

been on correcting the child's dysfunctions. However, the child's strengths must not be lost. It is important that any intervention strategy should include a strong emphasis on the ongoing identification of the child's strengths, his affinities, potentials, and talents in which he can achieve a sense of mastery and triumph. Athletic skills, artistic inclinations, creative talents, and mechanical aptitudes are among the potential assets of certain students who are underachieving academically. These children need help and opportunities to develop their talents, to build on their natural and acquired proclivities, and to achieve respect and praise for their efforts. Such efforts are likely to be critical in working toward the enhancement of self-esteem. These potential assets can have tremendous long-term implications for the child's transitions into young adulthood, including career choices.

With the implementation of the Compulsory Education Bill (2000) in 2003, all children must attend at least six years of primary education in national schools. However, the figures in 2006 showed that 5% of our children entering primary school have not attended preschool at all. To ensure that all our children can have a good start in life, the government worked with various grassroots agencies, VWOs and self-help groups to get as many children as possible into preschool or kindergarten. The number had been reduced to 1.1% by 2011. At the same time, many efforts are made to halve the school dropout rate at primary and secondary school levels from 3% to 1.5% by 2010. All these measures will go a long way in helping especially the lower-income group to level up the educational opportunities, in making sure everyone, however disadvantaged, financially or because they have special learning needs, has access to education. This is important to prevent polarisation in society.

To provide opportunities for all, the Ministry of Education has announced in 2006 a major adjustment in the education policies that will provide many paths for students to grow and develop. "Every child's talent is valued" and "No child would be left behind". The vision is to "build a mountain range with many peaks of excellence".

From 2008, primary school pupils will not be streamed into EM1, EM2 and EM3 (E: English, M: Mother Tongue). Instead, depending on their strengths, they will study subjects at different levels of difficulty – the Standard level or the easier Foundation level. Therefore, there is shift from a "fixed" menu to the subject-based "a la carte" menu of study. With more flexibility in the curriculum, catering to the different abilities of students, instead of a one-size-fit-all, students will not be so easily discouraged and leave the school system prematurely as a result.

In 2007, Northlight School was set up with the mandate to engage and to continue to provide learning opportunities to the teenage premature primary school leavers or those who have not done well in the Primary School Leaving Examination (PSLE). Assumption Pathway, another school of similar nature, opened in 2009. The emphasis is to assist them to set aside their past academic failures, allow them to discover their individual strengths, maintain their self-esteem, and encourage character development and vocational training.

Crest Secondary School, a Specialised School for Normal (Technical) students, took in its first batch of Secondary One students in January 2013. This was followed by Spectra Secondary School in 2014. Both schools will offer a customised curriculum that integrates both academic learning and vocational training. Apart from N(T) subjects such as English Language, Math, Basic Mother Tongue (Chinese, Malay, Tamil) and Science, the school will also offer four Institute of Technical Education (ITE) Skills Certificate (ISC) courses, namely Hospitality Services, Retail Services, Facility Services and Mechanical Servicing. Learning will be practice-oriented, with an emphasis on skills development to prepare students for progression to post-secondary skills training at the ITE and for employment. Industrial attachment will be an important component of the ISC learning experience for the students,. In addition, the school will adopt innovative pedagogies to strengthen students' literacy and numeracy skills. A key cornerstone of the school's holistic education is the approach in building students' character, with a strong focus on values education and strengthening social and emotional competencies. At the end of their four-year journey, the students will graduate with the GCE N(T) Level Certificate and the ITE Skills Certificate.

Pathlight School will offer mainstream primary school curriculum for children with mild to moderate autism, but they do not have adequate social and communication skills to allow them to cope in the usual mainstream primary schools. Several education tracks are designed according to the academic capabilities and behavioural competencies of these children.

To provide greater educational pathways and to recognise different talents, the Singapore Sports

School was started in 2004 and the School of the Arts in 2008.

These changes in our educational approach would allow many children with different developmental problems to be included in the mainstream schools, supported by trained teachers and integrated with their peers in their learning experiences. The emphasis is to allow opportunities for them to continue to learn and develop along their innate strengths and their talents will be valued. The definition of success will therefore be widening.

In 2005, The MOE has undertaken a review of measures to cater to children with special needs, in both Special Education (SPED) schools and mainstream schools.[15]

Initiatives to enhance support for SPED schools include:

a. Provide additional funding to improve the quality of professional resources in SPED schools by helping the SPED schools to recruit better qualified teachers, providing better professional development for the staff and improving the curriculum design;

b. Build additional SPED schools to cater to children with autism. The Singapore Autism School in Jurong was opened in September 2005, taking care of the children with the severe form of autism who are not able to attend mainstream schools. The St. Andrew Autism School has also started to cater to the needs of the teenagers with autism.

c. Increase support for SPED school infrastructure, by accelerating and completing the development of purpose-built SPED schools by 2008 and providing additional development funding. The Spastic Children's Association of Singapore has been rebuilt to become the Cerebral Palsy Centre in Pasir Ris in 2004. Balestier Special School of Rainbow Centre has recently completed its move from the former premise and reopened. Chao Yang School and Jervois School under the Association for Persons with Special Needs, taking care of children in the educationally subnormal range, have moved to Ang Mo Kio.

Initiatives to enhance support for mainstream schools include:

a. Increased resources to enhance current early detection, intervention and support programmes for students with mild to moderate levels of special needs to cope with the regular school curriculum and to remain in the mainstream schools and do well.

b. Designated mainstream schools will have dedicated non-teaching staff known as Special Needs Officers (SNOs) with training in special education to support pupils with mild special needs by: providing in-class support, providing individual/small group intervention or skills training, developing learning resources that are appropriate for pupils; monitor the pupils' progress, communicating and working closely with the teachers in the schools as well as specialists from MOE, communicating with parents on the learning needs and progress of the pupils, and working with external agencies such as KKH and NUH Child Development Units.

The SNOs have since been renamed Allied Educators, Learning and Behavioural Support [AEDs (LBS)].

c. Training in special needs will also be provided for selected mainstream teachers across schools. This will raise general awareness of different types of learning disabilities and help teachers identify and manage children with mild learning disabilities. Over the next five years from 2005, about 10% of teaching staff in all schools would be trained to enable them to better support students with special needs in their respective schools.

Teachers Trained in Special Needs (TSNs) are classroom teachers who have attended certificate-level training in special needs and are equipped with skills to support pupils with mild special needs by: planning classroom instruction to cater to the pupils, adapting and differentiating the curriculum to suit the pupils' needs, monitoring their progress and sharing relevant strategies with parents and fellow teachers, and facilitating transition of pupils from one level to the next. 10% of all primary school teachers will be trained as TSNs by 2010 while 20% of all secondary school teachers will be trained by 2012.

Starting in 2007, certain primary schools have been identified to be equipped with appropriate staff to cater to and to support children with autism and dyslexia. The Dyslexia Association of Singapore (DAS) will be provided with fund to allow early testing of preschool children suspected of having learning disabilities so that early intervention can be started to make these children better prepared as they enter mainstream primary schools. Children with dyslexia may also enrol in the MOE-Aided literacy remediation Programme (MAP)

at the Dyslexia Association of Singapore (DAS), where they may qualify for subsidised programme fees. To help children with emotional, social and/or behavioural difficulties and disorders, such as ADHD, schools work closely with REACH (Response Early Intervention and Assessment in Community Mental Health) services and parents on suitable school-based interventions and support.

Children with visual impairment, hearing loss and/or physical impairment may tap on itinerant educational support services, where personnel from Social Service Organisations such as AWWA and Singapore Association for the Deaf (SADeaf), provide additional support in school to enhance the child's accessibility to learning and the environment. MOE also provides assistive technology such as Frequency Modulation (FM) systems, magnifiers, text-to-speech software, for the children's use.

The Learning Support Programmes (LSP) in the primary schools would be broadened to provide remedial support to pupils who lag behind in their academic capabilities. The schools are also providing opportunities for children with special education needs to be included with their peers in the less restrictive learning environment.

Social workers are deployed to the schools to provide professional social supports to pupils and to establish links between the families in needs to the relevant community resources, such as the family service centres.

The publication of the Singapore Children's Society Research Monograph "Bullying in Singapore Schools" in 2008 provided a powerful advocacy on protecting our children, especially those with special needs, in our schools.[16] Since then, "Bully-free Schools" campaigns have been organised on a regular basis. Having peers in schools who are receptive, understanding and accommodating to some of the eccentric behaviours of children with special needs is one of the key factors for educational success for these children.

Caring for Children with Special Educational Needs (SEN)

The education of students with moderate to severe special educational needs (SEN) who are of school-going age is provided in special education (SPED) schools. In 2018, there will be 19 government-funded SPED schools run by 12 Voluntary Welfare Organisations (VWOs) and all SPED schools receive funding from the Ministry of Education (MOE) and the National Council of Social Service (NCSS).

MOE's vision for these students is to be "Active in the Community, and Valued in Society". For this to happen, students need to be equipped with the knowledge, skills, and attributes to participate meaningfully in their communities, and become contributing citizens who are valued by society.

To this end, SPED schools are guided by the SPED Curriculum Framework: 'Living, Learning and Working in the 21st Century' in designing and delivering quality and holistic education for their students. Released in 2012, the SPED Curriculum Framework marks a significant milestone in raising the quality of special education by setting a common language and direction for excellence in teaching and learning across the 19 SPED schools. At the same time, the Framework provides the flexibility and space for the SPED schools to customise their curriculum to the unique needs of their diverse student profiles. SPED schools offer educational programmes aimed at developing the potential of students and helping them to be independent, self-supporting and contributing members of society. Individualised Educational Plans (IEPs), tailored for each student to help him realise his potential are drawn up for all students. Besides being taught by specialised teachers, students in all SPED schools are provided with supporting facilities and also receive support from allied professionals such as psychologists, speech therapists, occupational therapists, physiotherapists and social workers.

The Framework articulates the Vision for SPED, a set of core Principles, and "Living, Learning and Working" Outcomes that students can aspire towards at the end of their education. The Framework further specifies the core Learning Domains for a holistic education (Academic, Social-Emotional, Daily Living, Vocational, the Arts, Physical Education and Sports). Finally, the Framework affirms the importance of Character and Citizenship Education (CCE) as the Foundation for a Values-Based SPED, and Information Communication Technology (ICT) as an Enabler for teaching and learning in SPED.

A programme to get special needs and mainstream school students to learn and play together will be extended to all the SPED schools. They are paired with mainstream schools to provide opportunities for students to interact with one another. These tie-ups include getting students to attend the same lessons, sharing common recess periods, and holding school

events together such as International Friendship Day and Total Defence Day. For instance, Townsville Primary School and Pathlight School for Children with Autism are located side by side in Ang Mo Kio. During the 30-minute break each day, students share their meals and play games such as badminton and table tennis. Over at Canossian School for the hearing-impaired, students attend daily lessons and participate in co-curricular activities alongside other children from MacPherson Primary and Canossa Primary. A special gate stands in the fence that divide Meridian Junior College and the Cerebral Palsy Alliance, Singapore (CPAS) centre at Pasir Ris. It allows the students of the two schools to move back and forth easily with having to go to the main road.

From 2019, all children with moderate-to-severe SEN will be included within the Compulsory Education (CE) framework. This means that children born after 1st January 2012 are required to regularly attend a Government-funded Special Education (SPED) school, unless they are granted exemption from CE.

To ensure smooth implementation of CE for children with moderate-to-severe SEN, an Implementation Advisory Panel (IAP) was formed in December 2016. The panel had made recommendations in the areas of exemption from CE and placement of children with SEN in appropriate educational settings.

We have created many different training and educational pathways for children with special needs in order to assist them in achieving their full developmental potentials.

Figure 2 shows the current pathway for children with special needs.[17]

Starting Well Index and Vital Voices for Vital Years

We have a strong educational system. Singapore students work hard and they aim high, and they achieve very good results. This is recognised around the world. We should build on these strengths and aim to help our students to discover their own talents, realise their full potential, and develop a passion for learning that lasts through life. However, until most recently, the Singapore education journey starts formally only when the child enters the mainstream primary school.

Consciously setting aside a time to stimulate young children's development is a relatively new phenomenon. Until the 1980s, preschools in most countries were largely focused on providing simple child minding. But as economies shift towards more knowledge-based activities, awareness about child development—the need to improve their social awareness, confidence and group interaction skills, and to prepare them for starting primary education—continues to grow. Nevertheless, policymakers still give most attention to the tertiary, secondary and primary levels of education, in descending order of importance, with the least focus given to the early years of child development. This is a missed opportunity as preschools can help ensure that all children get a strong start in life, especially those from low-income or disadvantaged households.

Against this backdrop, "Starting Well" is an Economist Intelligence Unit research programme, commissioned by the Lien Foundation, Singapore, to devise an index to rank preschool provision across 45 countries, encompassing the OECD and major emerging markets, in 2012.[18] At its core, the Starting Well Index assesses the extent to which these governments provide a good, inclusive early childhood education environment for children between the ages of three and six. In particular, it considers the relative availability, affordability and quality of such preschool environments.

The Nordic countries: Finland, Sweden and Norway perform best at preschool, and European countries dominate the rankings. In general, the leading countries in this Index have the following elements in place for their preschool systems: a comprehensive early childhood development and promotion strategy, backed up with a legal right to such education; universal enrolment of children in at least a year of preschool at ages five or six, with nearly universal enrolment between the ages of three and five; subsidies to ensure access for underprivileged families; where provision is privatised, the cost of such care is affordable relative to average wages; a high bar for preschool educators, with specific qualification requirements, often backed up with commensurate wages, as well as low student-teacher ratios; a well-defined preschool curriculum, along with clear health and safety standards; clear parental involvement and outreach; and a broad socioeconomic environment that ensures that children are healthy and well-nourished when they enter preschool.

In the Starting Well study, Singapore ranked 29th overall among the 45 countries, below South Korea (10th), Hong Kong (19th) and Japan (21st). Singapore's performance for the categories of 'affordability' (21st)

and 'availability' (25th) was average. It scored lowest in terms of 'quality (30th). Some of the areas Singapore did well were the provision of curriculum guidelines and providing targeted subsidies for underprivileged families. Singapore also has high levels of preschool enrolment. For the affordability factor, the report noted that the government balances Singapore's market led provision of preschool education where families pay for the preschool of their choice with direct subsidies. Most of Singapore's weaknesses showed up in the area of "quality", which includes factors like student teacher ratio, average preschool teacher wages, preschool teacher training and linkages between preschool and primary school. All top ten countries on the Index have ratios ranging from one teacher to five to 11 children, compared to Singapore's 1:20 ratio.

To examine what it takes to advance Singapore's pre-school education, the Lien Foundation concomitantly commissioned a study in 2012 that drew upon the views of 27 leaders from a range of discipline in early childhood services. Entitled "Vital Voices for Vital Years" the study examined the key challenges facing the preschool sector and provides a ground-up perspective of solutions for improvement.[19] Some of the challenges highlighted by the study include: uneven quality, equity and affordability currently present in the sector; difficulties faced by the preschool profession: high turnover, low status, low remuneration, and low morale; the need for increased efforts for greater parental awareness and education; and the need for more cohesive governance of the pre-school sector, at policy and operational level. . The study raised some possible areas for improvements: 1) Levelling the gaps in quality, affordability and accessibility for better equity, 2) Elevating the early education workforce to revitalise the profession, 3) Drawing greater community and parental involvement for a holistic preschool education and 4) Advocating the formation of a new distinct lead ministry for greater efficiencies and coherence of policies and implementation.

Riding on the Waves of Early Childhood Education

Pre-schools are the seeding fields of an inclusive, fair and just society. Early pre-school exposure will allow children of different race, language, religion and creed to play, relate and learn in the same setting so that they know from a young age the diversity within every cultural and ethnic groups. Recognising and accepting these differences are important aspects of getting along with others in a diverse, multi-cultural world, which is crucial to the harmony in Singapore. Quality pre-school education lays a strong foundation for life-long learning and pre-school education has now been placed right at the start of a child's education journey in Singapore.

The person who is schooled in the Singapore education system embodies the *Desired Outcomes of Education*, [21] which are attributes that educators aspire for every Singaporean to have by the completion of his formal education. These outcomes establish a common purpose for educators, drive our policies and programmes, and allow us to determine how well our education system is doing. This person is expected to have a good sense of self-awareness, a sound moral compass, and the necessary skills and knowledge to take on challenges of the future. He is responsible to his family, community and nation. He appreciates the beauty of the world around him, possesses a healthy mind and body, and has a zest for life. In sum, he is a confident person, a self-directed learner, an active contributor, and a concerned citizen.

In line with the Desired Outcomes of Education of the Singapore system, the key stage outcomes of pre-school education emphasises the need for children to build up confidence and social skills and be equipped with the necessary knowledge, skills, and dispositions for life-long learning. At the end of their pre-school education, children should know what is right and what is wrong; be willing to share and take turns with others; be able to relate to others; be curious and able to explore; be able to listen and speak with understanding; be comfortable and happy with themselves; have developed physical coordination, healthy habits, participate in and enjoy a variety of arts experience; and love their families, friends, teachers and school.

The MOE develops the *Nurturing Early Learners*[20] Curriculum Framework in 2012 to support and guide early childhood educators in Singapore. There will also be a parallel set of resources to support early childhood educators in the teaching and learning of Mother Tongue Languages. The framework is not intended to provide strict rules about what must be taught. Rather, it provides guidelines for a holistic pre-school education while giving educators the discretion to customise their curriculum according to the interests, needs and abilities of the children.

At the centre of the curriculum framework is the child and the belief that children are curious, active and competent learners. Based on this belief, Children are

nurtured holistically through six learning areas and their positive learning dispositions are also cultivated through teacher-facilitated learning experiences. The six learning areas outlined in the framework, through which children acquire knowledge, skills and learning dispositions are: Aesthetic and Creative Expression; Discovery of the World; Language and Literacy; Motor Skills Development; Numeracy; and Social and Emotional Development. The learning dispositions are positive behaviours and attitudes towards learning. They are important for children in their journey as life-long learners and they support children's learning and development in the various learning areas. There are six learning dispositions (PRAISE) that pre-schools will seek to develop in every child: Perseverance; Reflectiveness; Appreciation; Inventiveness; Sense of wonder and curiosity; and Engagement.

It is expected that some children would have exceeded the expectations at the end of kindergarten, while others, depending on their developmental needs, will continue to work towards some of these learning goals. Parents should not overemphasise specific learning areas, and we should be careful not to focus purely on the academic performance of children at this crucial pre-school age. Instead, we must develop in children the knowledge, skills, and dispositions that will equip them for life-long learning.

ECDA and NIEC

The Early Childhood Development Agency (ECDA) was set up in April 2013 as an autonomous agency jointly overseen by the Ministry of Social and Family Development (MSF) and the Ministry of Education (MOE), and is hosted under MSF. The agency will serve as the regulatory and developmental authority for the early childhood sector in Singapore, overseeing key aspects of children's development below the age of seven, across both kindergartens and child and infant care programmes. To ensure every child has access to affordable and quality early childhood development services and programmes, it promotes accessibility by master planning the infrastructure and manpower resources to support the early childhood sector. It enhances affordability by providing subsidies and grants to keep quality pre-school programmes affordable. It will also facilitate the training and development of early childhood educators, and conduct public education and outreach activities for parents to learn about their child's early development. On the whole, it will uplift the image and professionalism of the early childhood sector through strategic partnerships and programmes.

To ensure sustainable growth, ECDA has worked with operators, unions and industry associations to develop innovative and forward-looking manpower strategies in the Early Childhood Industry Transformation Map (ITM). There are three key strategies under the ITM. First, more efficient and innovative services will be developed for parents and children. For example, infants and toddlers currently have separate spaces within the same centre. These spaces could be shared so that children can transit more smoothly from the infant to toddler age group. Operators can also enrol more children, while maintaining standards of quality and safety. Second, ECDA will introduce solutions to free up teachers' time for higher-value work, such as lesson planning. Administrative responsibilities will be simplified through centralized services and use of technology. Third, expanding the opportunities for more people to join the early childhood sector. Beyond academic qualifications, there are many persons with the aptitude and competence to join the sector. One job role that will be piloted is Allied Infant Educators, who receive on-the-job coaching and supervision to care for babies.

The Ministry of Education (MOE) embarked on a pilot of MOE Kindergartens (MKs) in 2014. There are 15 MKs in 2017, with three more to be opened in Punggol in 2018. Moving forward, MOE will increase the number of MOE Kindergartens to 50 by 2023 to provide more high-quality and affordable pre-school places. All new MKs will be co-located with primary schools to enable closer collaborations between MKs and primary schools on programmes and joint activities, which enrich the learning experience of pre-school children and support their smoother transition to Primary One.

There are two currently major anchor operators' Early Years Centres: the NTUC First Skools and the PCF Sparkletots. They will continue to focus on the children's early years of learning and development and to collaborate strategically with the MKs to ensure a smooth transition and continuum of quality and affordable preschool service for children aged two months to six years old.

MOE also recognises the importance of developing a fraternity of passionate and capable Early Childhood (EC) professionals, who are instrumental in providing quality pre-school education. Today, while there are many training providers, the EC training landscape is fragmented with no single national institute overseeing EC training and professional development. To transform the EC training ecosystem, MOE will

set up the National Institute of Early Childhood Development (NIEC) under the ambit of the National Institute of Education.

NIEC will bring together the EC training capabilities and expertise of the Institute of Technical Education (ITE), Ngee Ann Polytechnic (NP), Temasek Polytechnic (TP), and NTUC's SEED Institute, to become a major player in the EC training landscape. With the formation of NIEC, there will be greater scale and mandate to build on existing capabilities and go further to achieve what individual providers cannot do on their own. NIEC will centralise and drive all strategic and professional aspects of EC training, such as curriculum design and development, academic governance and faculty development. With its close affiliation to NIE, NIEC will also benefit from NIE's expertise in curriculum, pedagogy, and teacher training to strengthen the nexus between research, training, and practice. NIEC will offer Certificate-level and Diploma-level Pre-Employment Training (PET) courses for post-secondary students interested in joining the pre-school sector. In addition, it will offer Continuous Education and Training (CET) courses for mid-careerists, and in-service upgrading and Continuing Professional Development (CPD) courses to further develop the competencies of in-service teachers and leaders. NIEC will cover about 60% of the training of pre-school teachers in the sector. Other major training providers in the private sector include Kinderland Consortium International Institute and Asian International College to allow more diversity in training approach. NIEC will be fully operational to take in its first batch of students from January 2019.

Social and Community Support

The social safety net in Singapore is a unique "Many Helping Hands" approach, which involves the partnership of all sectors of the society and the government. The many helping hands consist of the MSF, NCSS and Community Chest (its fund-raising arm), Community Development Councils, voluntary welfare organizations, philanthropic organisations and Foundations, religious and ethnic community and grass-roots organisations, financial corporations and consumer groups, as well as parent support groups and associations. The principle is to foster self-reliance. Family remains the primary line of support, including financial and emotional support. The emphasis is social assistance, not welfare.

Although Singapore enjoys a generally good standard of living, there will always be some families who miss out on the benefits of prosperity and their children's basic needs are not being met. *Supplementary Services* are available to provide tangible financial or other material help to families. In addition, supplementary helps targeted specifically at children's needs are also available.

The Community Care (ComCare) Fund was established in 2005 with an initial capital of S$250 million from the Government. Since then the Government has made periodic top-ups to the Fund. In 2018, the Fund stands at S$1.7 billion. The ComCare Fund provides sustainable funding for social assistance programmes for low-income Singaporeans, with the majority of the fund catering to programmes for children from disadvantaged families. The President's Challenge is a movement supported by the kindness and generosity of people from all walks of life. It calls for the nation to do their part to build a more caring and inclusive society and to help their less fortunate. In 2018, a total of S$10 million has been set aside over the next five years to fund programmes that help needy and vulnerable families to grow their skills and boost their job prospects. Singapore Press Holdings sponsored the School Pocket Money Fund, which raised large sums for distribution to ensure, among other things, that poor children can afford food at school recess times. Many VWOs also organize activities such as Walks to raise funds that can be tapped to supplement needs for needy children. The ethnic community organisations - Chinese Development Assistance Council (CDAC), Mendaki and the Association of Malay Professionals, Sinda and Eurasian Association, serving Chinese, Malays, Indians, and Eurasians respectively - all have an educational focus. Besides financial assistance, they also provide low-cost tuition to school children as well as parent education. These are some examples of existing supplementary helps to meet children's needs.

In 2013, MSF started setting up Social Service Offices (SSOs) in Housing and Development Board (HDB) towns, to provide more accessible and coordinated social assistance to Singaporeans in need. The rollout of the full network of 24 Social Service Offices (SSOs) was completed in 2015, and 95 per cent of ComCare beneficiaries now live or work within 2 kilometres of an SSO. Physical accessibility and awareness of ComCare have increased because of the SSOs, and this has made it easier for needy families to seek help. Aside from providing ComCare assistance directly, SSOs also do ground-sensing and collaborate with VWOs and community partners to identify needs within each HDB town, to provide more holistic support for those in need.

Supportive Services are social service provisions that strengthen the capacity of parents to fulfil their roles more effectively. Many families, including the normal functioning families, require supports to enable the social functioning of adults in their parental roles. These include affordable housing and healthcare services; job availability, training and re-training; family-friendly workplaces, affordable quality childcare facilities for working parents, and recreation facilities.

When both parents work and when care by other family members is not available, alternative affordable and quality care arrangements by non-family members become necessary. While there are alternative care by foreign domestic workers and family day care providers who take care of a small group of children in their own home, infant and child care and student care centres are some of these services that families have come to rely upon as more mothers join the work force.

Childcare centres cater for children from infancy up to the age of sever years as a service for working parents and fees are subsidised. Child care centres are licensed by the MSF to ensure not only the children's safety and well-being, but also their learning and development. However, Childcare centres should be doing more than just taking care of children alone. A number of these centres have also expanded their services to include parenting education and counselling, parent support services, as well as public education programmes for families with children under their care. The emphasis is to encourage parental participation in the care of their children. Childcare centres now come under the administration of ECDA.

Student care centres cater for primary school children who have no adult at home when they return from school or before they go to school. These children may be lonely and bored and may seek distraction outside the home such as frequenting shopping centres and getting involved in undesirable activities with questionable company without their parents' knowledge. Student care centres provide a place where these children can have a proper meal, do their homework and engage in recreational activities under supervision of adults.

An extensive network of family service centres (FSCs) is available in Singapore to offer general family-oriented programmes, ranging from parent education, to family counselling and student care. Some FSCs may have special programmes to meet the needs of children and their families. For example, in "Healthy Start" programme, the FSCs work closely with the staff of hospitals with maternity service, which identify families at risk of social problems as early as at the time of delivery of the newborn infants. A long-term supportive relationship is then established with the at-risk family, to ensure that the child's developmental needs, health checks, pre-school enrolment are attended to while assisting the family with other possible issues such as employment, budgeting, and marital relationship. Other voluntary welfare agencies also offer supportive help to families where the children have problems in the family or in school, or are on the verge of delinquency.

In 2004, The National Library Board launched a nation-wide KidsRead Programme at the Community Libraries. This programme would provide an early opportunity for children between 4 to 8 years old, especially those in the lower-income families, to be exposed to appropriate reading materials.

Children who have behavioural problems (for instance, stealing, disruptive behaviour, aggression), emotional problems (for instance, depression, anxiety, fear), relationship problems with parents, peers, school-related problems, and other psychological or psychiatric problems have recourse to Child Guidance Clinic (CGC) for assessment and treatment. Pre-school children may be seen under the CDP and will be referred to the CGC. Indeed, this is an area of growing concern when more of our children need such services.

Substitute Services are required for children's welfare when parents are not able to carry out their functions and the child must be removed from the home. Foster Family Care is usually the ideal temporary arrangement, which provides the child with normal family life pending a more permanent solution. Although children up to 18 would be eligible for foster care, it is usually easier for the child and the foster family if the child is very young. Children and the foster families are often carefully matched by MSF. For some children, Residential Care may give better hope of positive outcomes. This covers Children's Homes with a wide range of specific purposes. Where children are in need of care and protection, the role of the home is to shelter, protect, and heal emotional damage. Some children with behavioural problems and who are placed on Probation Order or Beyond Parental Control statutory supervision orders may require to be placed in residential settings, which give them a more structured daily routine than in their own homes, but still allow for freedom to attend school.

Those who cannot respond positively to the freedom allowed in these homes are sent by the Juvenile Court to institutions designated under the Children and Young Persons Act as "approved schools", namely Singapore Boys' Home or Toa Payoh Girls' Home, administered by MSF. Programmes for education, skills training, personal development, and counselling are carried on within the perimeters of the Home. There are also Homes that meet the need of families who are unable to provide care for their children at home. This is most likely to be where a single parent cannot use day care – perhaps for reasons of being on shift work – or where there are insoluble problems in the relationship between the child and parents.

Examples of Integrated Inclusive Community Support Programmes

Circle of Care

Developed by the Lien Foundation and Care Corner, 'Circle of Care' (COC) is a multidisciplinary, child-centric model of education and care combining social work, learning support, and parental involvement. In 2013, the COC model was successfully piloted at two of Care Corner's childcare centres – Leng Kee and Admiralty - for children from birth to age 6. The majority of children at these two centres receive government financial assistance, with a monthly household income of S$1,500 or less. COC uses a new and integrated approach that weaves a 'circle of care' around the child, bringing teachers, social workers, education therapists and community partners – who typically work apart – together to provide a holistic continuum of care for children. The early intervention provided by this ecosystem of care is able to benefit children at-risk or with learning difficulties effectively because it is done in the natural setting of a preschool, where children spend hours daily.

Three years after its launch, the Lien Foundation and Care Corner Singapore are expanding the COC programme from two to nine pre-schools, in partnership with three major pre-school operators (MY World Preschool, PAP Community Foundation and PPIS, the Singapore Muslim Women's Association), and two primary schools (Lakeside Primary School and Gan Eng Seng Primary School). More than 1,700 children would benefit in the next three years. The ground-up collaboration aims to build clusters of primary schools and pre-schools to create a structured transition, especially for at-risk children from disadvantaged families, from pre-school into primary school. It aims to reach at least 15 preschools by 2018.

KidSTART

In 2014, Temasek Foundation Cares launched KIDS 0 to 3 (Kid's Integrated Development Service) Programme in Ang Mo Kio, headed by KK Women's and Children's Hospital in close collaboration with Ang Mo Kio Family Service Centre. KKH's participation under Division of Medicine would involve the Department of Obstetrics, Department of Child Development, Neonatology, Adolescent Medicine, Psychological Medicine, Medical Social Service and Rehabilitation.

Based on this model of upstream approach, the Early Childhood Development Agency (ECDA) initiated a new system of support for low income and vulnerable children in 2016, to enable them to have a good start in life. The new initiative, called KidSTART, will coordinate and strengthen support across agencies, extend new forms of support, and monitor the progress of these children from birth to six years old. Through KidSTART, families requiring additional support will be proactively identified. Their children will be provided with early access to appropriate health, learning and developmental support. Parents will be supported and equipped with parenting knowledge and resources to nurture the child at home, through home visits, parent education and/or family support programmes. Selected pre-schools will also provide additional support and work with parents, to better support the child through his pre-school years and his transition to primary school. The families will also be linked up with existing community resources for additional assistance, based on their needs. 1,000 children living in the pilot sites - Bukit Merah, Kreta Ayer, Boon Lay, Taman Jurong and Geylang Serai - are expected to benefit from KidSTART when the pilot starts in the second half of 2016. This pilot will allow ECDA to test the implementation of the system with different partners, and tap on the unique make-up and resources available to support vulnerable children in these local communities. It will also allow ECDA to evaluate and refine the delivery model before evaluating whether KidSTART should be offered in more areas, and if so, the most feasible approach. ECDA has set up a programme office to work with government agencies, and selected Social Service Offices, hospitals and community partners to implement KidSTART.

Kindle Gardens

In 2016, the Kindle Garden was set up at the Enabling Village, Lengkok Bahru, run by AWWA and funded by

Lien Foundation. It aims to provide all children, with or without special needs, a "values-based, inclusive and non-discriminatory learning environment". Up to 30 per cent of its places are for children with special needs. The facility and its programme are designed such that children with special needs can learn alongside other children. For instance, there is a toy car big enough for a child on a wheelchair to enter, and play in it with able-bodied friends. Kindle Garden takes in children with mild to severe special needs, including those with autism and Down syndrome. Among the 12 staff at Kindle Garden, there is a speech therapist, an occupational therapist and an early intervention teacher. These children with special needs are learning with their peers. Currently, about 2,600 children with moderate to severe special needs benefit from the Early Intervention Programme for Infants and Children (EIPIC), but 1,800 of them - 70 per cent - do not attend pre-school due to the severity of their needs or the lack of suitable pre-schools. Kindle Garden can offer effective intervention for the needs present in half this group, and will evolve to eventually serve the rest too. This pilot project should be the model for future development of more inclusive pre-schools.

Strengthening our Partnership with the Parents

Among the many components of a comprehensive inclusive early childhood intervention ecosystem, parents and caregivers play the most critical role. In a hurdle race, we can only assist in lowering the height of the hurdles, but parents are the ones who carry the child, clearing the hurdles all the way to the end of the race. Caring for the caregivers is one of the key areas to address in the Enabling Masterplan III (2017-2021).[22]

The family is the most powerful and pervasive influence and the constant in a young child's life. Parents know certain aspects of their children better than anyone does. Families have the greatest vested interest in seeing their child learn. The family is likely to be the only group of adults involved with the child's educational programmes throughout his/her entire learning journey. There are success stories aplenty where parents heroically enter into the world of their children, discover their hidden talents and start a fruitful learning journey together.

Professionals are not the "experts", they must always recognise the expert contribution of parents. They must always be aware that their attitudes and assumptions about parents would become roadblocks to a productive partnership: treating parents as vulnerable and helpless clients; keeping professional distance (aloofness and coldness); treating parents as if they need therapy and counselling; blaming parents for their child's condition; disrespecting parents as less intelligent; treating parents as adversaries; and labelling parents (denying, resistant, anxious, uncaring, troublesome, hostile, …), so that parents feel intimidated, confused, angry, …..Professionals must work in collaboration with families to address the child's needs in a way that is consistent with the priorities of the entire family. There should be a complete and unbiased exchange of information between families and professionals. Families have different methods of coping. Policies and programmes should address these diverse needs and recognise and honour cultural diversity, and the strengths and individuality of all families.

All parents and family members must adjust to the discovery that a child has a special needs/disability. Initial period of emotional crisis (shock, disbelief, denial) is followed by a period of alternating feelings (anger, guilt, depression, shame, lowered self-esteem, rejection and over-protectiveness), finally acceptance and positive response. The adjustment process is different for each patent, and professionals should not make assumptions about an individual parent's stage of adjustment, Stress can occur at any point in the process, especially during transition between stages as family readjusts to changing circumstances.

The principles of family-centred approach are: empowering families, providing social supports, building relationships with families as the basis for intervention, building communication skills, and maintaining effective communication.

Since March 2011, a community-level programme was introduced to help enhance the knowledge, skills and mental well-being of parents and caregivers of children with developmental needs. The 3-year pilot programme, put together by DCD at KKH and Parenting Research Centre (PRC), Australia, with the support of National Council of Social Service (NCSS), and Temasek Foundation Cares, would impart an evidence-based educational programme designed to equip parents and caregivers to understand their child's difficult behaviour, develop better ways to manage them more effectively and prevent the further development of behavioural concerns. The project delivered a parenting support course, called "Signposts for Building Better Behaviour" (*"Signposts"*), through a network of qualified and

trained facilitators from KKH, NUH, EIPIC Centres and other centres across Singapore. The *"Signposts"* programme had been developed and instituted as a state-wide programme by PRC in the Australian State of Victoria since 2005. KKH adapted its content to local needs. A special grant, "Temasek Cares – IMPACTT for Children with Developmental Needs", allowed the course to be extended to parents and caregivers at a highly subsidised and affordable fee. The *"Signposts"* programme had since been taken up by the Social Service Institute (SSI) of NCSS for continued training of facilitators. The programme was completed in 2014, with about 5,000 parents and caregivers of more than 3,000 children benefited from this programme, and with more than 200 facilitators trained and equipped to support this programme. Through a special grant from Tote Board and Temasek Foundation Cares, *"Signposts"* will continue from 2015 to 2019.

Parents who have participated in *"Signposts"* continue to meet regularly to share and support each other through the parent-initiated CASPER (Caring And Sharing Parents, Ever Resilient) Programme. Five sessions are held each year with an average attendance of 20 parents each time. The DCD allied health professionals also share topics related to parenting children with special needs during these meetings.

"Signposts" would be made more accessible to the public when the training materials and its contents become available in Chinese and Malay language in the second half of 2017. A plan to develop a teacher's version of *"Signposts"* within the regular classroom is being considered. In the 2016 Budget, MSF announced its plan to expand the outreach of *"Signposts"* to 120 schools in 2016 and up to 175 schools in 2018. In this regard, MSF has since ramped up its intensive recruitment of practitioners to be trained as *"Signposts"* facilitators. Accredited trainers from KKH continue to train *"Signposts"* facilitators over three runs per year at the Social Service Institute, NCSS. To date, more than 400 local practitioners from 50 institutions (hospitals, schools, community agencies, etc.) have been trained. We also continue to provide support to the facilitators with regular forums as well as overseeing the programme integrity and fidelity.

Another collaborative pilot project supported by Temasek Foundation Cares was The ISSPA Programme (Integration Support Programme for Preschoolers with Autism), aiming to build up working model for children with autism spectrum disorders to be supported in the regular preschools with the clear intention of transition into mainstream primary schools as far as possible.

Temasek Foundation Cares also funded S.A.F.E (Supporting Autism through Family Empowerment). It aims to enable parents and caregivers to build capability in their home to better support their children with autism spectrum disorder (ASD). It was initially funded for 3 years from April 2013 to March 2016; and it has been extended for another 3 years to March 2019.

To-date 24 allied health professional have been trained as Family Support Facilitators (FSF) for the programme. 173 families have participated in S.A.F.E since it was launched in 2013. They received a total of 664 sessions of support in the form of workshops and home visits from the FSF. S.A.F.E provides the timely and critical support for families within their home environment during the time between diagnosis of the child's condition and EIPIC enrolment, which can be particularly stressful for the family. The preliminary findings from the S.A.F.E implementation have so far been encouraging. The areas of impact include achievement of family outcomes and goals; alleviation of negative emotional states of caregivers; improvement of caregivers' sense of competence; and improvement of the child's general behaviours. The S.A.F.E initiative was well received by MSF and the Ministry is seriously looking into the possibilities of embedding S.A.F.E. or its critical components into EIPIC services. This will strengthen the need to both equip and support parents and caregivers of children attending EIPIC programme.

To ensure a smooth transition of the children under our care from pre-schools to mainstream environment, both KKH and NUH continue to organise the annual "Parents Forum" with the Ministry of Education in May and June each year since 2001. The dialogue sessions are conducted in both English and Mandarin. Parents are briefed on the options of educational placement of their children, as well as the supports available for their children in the mainstream schools. They are also briefed on the revised national goals for children entering special schools and the various pathways they would go through in ensuring that they continue to be living, learning and working, and are active in the community and valued in the society.

SG Enable will set up a Caregivers' Space at the Enabling Village by the end of 2018, to serve as a

meeting place for peer support groups, training of caregivers of persons with disabilities, and engagement sessions by Voluntary Welfare Organisations (VWOs) as well as community partners for caregivers. Caregivers will also be able to get information and advisory service at Enabling Village.

Completing the Jigsaw Puzzles

Our vision of an inclusive early childhood intervention in Singapore is to start upstream in identifying families at risk even before the birth of the babies. These families would receive early social and health supports to ensure that the young child could receive optimal care after birth in terms of appropriate nutrition, immunisations, and early developmental stimulations. The regional social and community supports system, with both governmental agencies and VWOs working closely in partnership, would ensure that these children could receive early learning experience in childcare centres and pre-schools. Children with developmental needs are identified early and put under the continuum of care of DSP and EIPIC. The pre-schools would be an integrated and inclusive learning environment with trained pre-school teachers, learning support educators and therapists. Parents are active participants in the entire process. There will be seamless transition from pre-schools to the next stage of educational placement. All these initiatives are contained in the successive Enabling Masterplans since 2007, allowing Singapore to achieve what we have acceded to internationally under the United Nations Convention on the Rights of the Child (UNCRC) and United Nations Convention on the Rights of Persons with Disabilities (UNCRPD).

The Enabling Masterplans have adopted a life-course approach staring from the early pre-school years to the ageing years. They identify the needs of persons with disabilities (PWDs) at every phase of life, as well as gaps in the existing landscape, so that policies, programmes and services can be put in place to plug the gaps. The needs of the caregivers have been put into consideration so as to support families in caring for the PWDs. Therefore, the transition from adolescence to adulthood after childhood interventions is critical. Transition is a process, not an event, and should begin early as possible. It must take into account the young person's developmental stage and the functional impact of the disability. Transition to adult programmes and services should occur prospectively rather than during a crisis. Professionals in the childhood programmes must prepare to "let go" of the developing young adults. Some of the future expectations and challenges would include: moving toward independence, developing social competence, moving toward post-secondary education, entering the work force, community living, participation in sports, leisure, and community activities, issues of sexuality, and developing a life plan. Our vision is for every person with disability to maximise his potential and is embraced as an integral member of the society.

A New Paradigm of Early Childhood Intervention: Early Childhood Holistic Outcomes (ECHO) Framework

Early childhood intervention (ECI) is a nation's investment for the future. Although it is about doing the right thing at the right time in order to have the greatest impact on the child's future, expectations of the outcomes, cost-effectiveness and returns on investment of ECI are set to grow considerably. Outcomes evaluation should be a continuous effort and in line with the current shifting of emphasis on intervention from disability to functional and developmental performance, participation and quality of life. Outcomes should be also interpreted from the perspectives of the summative effectiveness and efficiency of the network of medical care, social and community supports, education, and parental and family participation in the ecosystem and it is impossible to proportionate the contributions of each individual components.

Currently, EIPIC providers use different assessment practices because of varying client profiles. The present Enhanced Programme Evaluation Systems (EPES) framework measures the child's skills and behaviours in isolation within developmental domains (e.g., gross motor, fine motor skills) only in the classroom and therapy settings. Backed by international evidence-based recommendations for ECI, and based on the Early Childhood Outcomes (ECO) Framework adopted by the United States Office of Special Education Programs,[23] the Early Childhood Holistic Outcomes (ECHO) Service Framework is a pioneering push for a paradigm shift in Singapore's ECI practices. ECHO Framework is an enhancement to the current EPES model. It extends the measurement framework to monitor child outcomes across a variety of typical daily routines and activities, beyond that of a classroom setting: having positive socio-emotional relationships; acquiring and using knowledge; and using appropriate behaviour

to meet needs. In addition, ECHO measures family functional outcomes: understanding their child's strengths, abilities and special needs; helping their child develop and learn; and knowing how to communicate their child's needs to others, and accessing relevant services and support. With its uniform set of child and family outcome measures, ECHO offers a framework for enhanced service quality and outcome service delivery in ECI. This also sets the foundation for a future continuum of services for children with special needs and their families.

Funded by the Lien Foundation, and jointly spearheaded by KK Women's and Children's Hospital and Thye Hua Kwan Moral Charities (THKMC), ECHO started as a pilot and rolled out in phases in four THKMC EIPIC centres since February 2014. The ECHO project in Singapore received assistance and advice from the Early Childhood Technical Assistance (ECTA) Center.[24] By November 2016, ECHO has benefited more than 500 children with special needs and their families, and 100 professionals at the THKMC EIPIC centres.

ECHO brings together a trans-disciplinary collaboration between ECI professionals: social workers, teachers, allied health professionals, psychologists, and significant others in the child's life, including family and primary caregivers. This strong emphasis on equal partnership between professionals and caregivers is the hallmark of best-evidenced form of family-centred practice. The ECHO framework emphasizes integrated functional behavioual learning in the natural environment (i.e., home EIPIC centre, school, community) through an activity and routine-based approach. A new process introduced with ECHO to is the routine-based interview (RBI). RBI is a semi-structured interview conducted at the homes of the children, where social workers and professionals actively engage families to share their challenges and priorities, so that they are more able to appreciate the lives of the children and their families as well as to obtain crucial information about how the child functions at home and in the community. After the interview, possible strategies will be shared with the parents so that they are empowered to implement the goals for the child in the home and community setting. Finally, the ECHO framework emphasizes that outcome measurement processes are an integral part of daily ECI services. Outcome data is useful for individualized intervention planning as well as programme monitoring of each child. This ushers in a new era of programme evaluation.

ECHO's holistic functional child outcomes are aligned with the key stages outcomes for pre-school education in Nurturing Early Learners Framework[20] and the 21st Century Competencies,[25] as well as the World Health Organisation's International Classification of Functioning Disability and Health.[26] With ECHO, the stage is now set for ECI in Singapore to progress with new standards.

Conclusion

Singapore has made remarkable achievements in improving maternal and child health in the last five decades since its independence. The infant mortality rates have fallen from 82.2 per thousand births in 1950, to 6.0 per thousand in 1990 and 2.0 per thousand in 2016. The Under-5 Mortality Rates are 8 and 3 per thousand children 0-5 years old in 1990 and 2016, respectively. In UNICEF's report on "The State of the World's Children 2017",[27] Singapore was ranked top, together with Japan, Sweden, Norway and Switzerland, for the lowest infant mortality rates and under-5 mortality rates in the world in 2016.

Childhood mortality rates in Singapore have fallen to very low levels and are now mainly associated with conditions that modern medical care cannot affect. These include: stillbirths of unknown cause, serious congenital malformations and genetic disorders, extreme low birth weight, serious accidents and cancers. This means that death rates such as the traditional infant and perinatal mortality rates are no longer adequate indices of medical care. Other population-based indices must be developed to enable proper evaluation of "how we are doing" as a community in the provision of holistic care to mothers and children. Relative good health by usual statistical criteria may mist the awareness of subtle and soft issues that interfere with quality of life, especially for children. We must guard against complacency and unawareness, which may deflect services and support away from the special needs of children and families, diffusing services and running into the risk of diluting or diminishing standards.

A number of "new morbidities" have been identified to pose major challenges to child health in the next decades. They are: chronic medical illnesses, developmental disabilities, learning problems, injuries and neglect, behavioural disturbances and disorders, sequelae associated with unhealthy life-styles, and social and emotional disorders. These problems are not new. They emerge and become matters of concern when the more urgent demands of

acute medical or economic conditions are met in our maturing society.

Singapore also has a new vision towards building an inclusive society with a broader definition of meritocracy, recognising different strengths and different individuals. It is a tall order and will take a heroic effort on everybody's part. It was emphasised in the Presidential Address in Parliament in May 2014[28] that education is the key and the education system must uphold this ethos, allowing the abilities of all Singaporeans to be fully developed. The Government will invest in our children at an earlier age, by improving pre-school education so that the less privileged can get a good start. We recognise that tackling inequality and to build a fair and just society have to start in preschools. Pre-school education is only a component of a comprehensive early childhood programme. It must be complemented with an effective early childhood development and intervention programme, a nation-wide supportive network of social and community services for the families, and an efficient legal framework in child protection. The Child Development Programme has been and shall continue to be contributing to this new national agenda.

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Table 1. PATTERN OF DEVELOPMENTAL PROBLEMS IN PRE-SCHOOLERS, SINGAPORE 2004-2010

Developmental Problems	2004	2005	2006	2007	2008	2009	2010
Autistic spectrum disorders	508 (29%)	361 (27%)	461 (28%)	432 (26%)	517(26%)	493(24%)	528(21%)
Speech and Language delays and disorders	417 (24%	376 (28%)	485 (29%)	490 (29%)	625(31%)	664(32%)	926(37%)
Global developmental delay	289 (17%)	198 (16%)	230 (14%)	249 (15%)	251(13%)	232(11%)	298(12%)
Learning problems / disabilities	126 (7%)	131 (10%)	152 (9%)	124 (7%)	148(7%)	218(10%)	204(8%)
Behavioural problems/ disorders	106 (6%)	108 (8%)	136 (8%)	162 (10%)	161(8%)	221(11%)	255(10%)
Attention-deficit-hyperactivity Disorders (ADHD)	103 (6%)	56 (4%)	72 (5%)	73 (4%)	118(6%)	65(3%)	66(3%)
Environment-Related Delay	74 (4%)	32 (2.5%)	26 (1,6%)	85 (5%)	96(5%)	112(6%)	141(5.6%)
Motor Developmental Delay	45 (3%)	36 (2.8%)	56 (4%)	48 (3%)	68(2%)	47(2%)	57(2.3%)
Cerebral palsy	34 (2%)	17 (1.3%)	10 (0.8%)	3 (0.2%)	6(0.4%)	6(0.2%)	13(0.5%)
Syndromic disorders	29 (1.5%)	17 (1.3%)	8 (0.5%)	6 (0.5%)	5(0.3%)	14(0.5%)	7(0.3%)
Impairment special senses	9 (0.5%)	1 (0.1%)	1 (0.1%)	4 (0.3%)	5(0.3%)	11(0.3%)	7(0.3%)
Total	1740	1333	1637	1676	2000	2083	2502

Table 2. PATTERN OF DEVELOPMENTAL PROBLEMS IN PRE-SCHOOLERS, SINGAPORE 2011-2017

Developmental Problems	2011	2012	2013	2014	2015	2016	2017
Autism spectrum disorders	683(21%)	610(21%)	784(20%)	72(17%)	822(21%)	840(20%)	1031(21%)
Speech and Language delays and disorders	1168(36%)	970(33%)	1356(34%)	1559(38%)	1445(36%)	1435(34%)	1670(34%)
Global developmental delay	369(12%)	448(15%)	566(14%)	471(11%)	424(11%)	548(13%)	652(13%)
Learning problems/disabilities	315(10%)	231(8%)	299(8%)	425(10%)	381(10%)	357(8.5%)	413(8.5%)
Behavioral problems/disorders	372(12%)	316(11%)	482(12%)	600(15%)	629(15%)	767(18%)	827(17%)
Attention-Deficit-Hyperactivity Disorders (ADHD)	48(1.5%)	58(2%)	167(4%)	75(1.8%)	50(1.5%)	50(1.2%)	71(1.5%)
Environment-Related delay	131(4%)	187(6%)	163(4%)	151(4%)	103(2.5%)	110(2.6%)	98(2%)
Motor developmental Delay	74(2%)	9(3%)	89(3%)	92(2.2%)	89(2.0%)	74(1.8%)	99(2%)
Cerebral palsy	12(0.5%)	8(0.2%)	8(0.2%)	5(0.1%)	7(0.3%)	3(0.1%)	7(0.2%)
Syndromic disorders	25(0.8%)	14(0.5%)	13(0.3%)	14(0.4%)	11(0.5%)	23(0.5%)	16(0.4%)
Impairment special senses	7(0.2%)	11(0.3%)	17(0.5%)	19(0.5%)	6(0.2%)	1(0.3%)	15(0.4%)
Total	3204	2947	3944	4132	3967	4220	4899

Table 3: FOLLOW-UP CARE of CHILDREN with DEVELOPMENTAL PROBLEMS

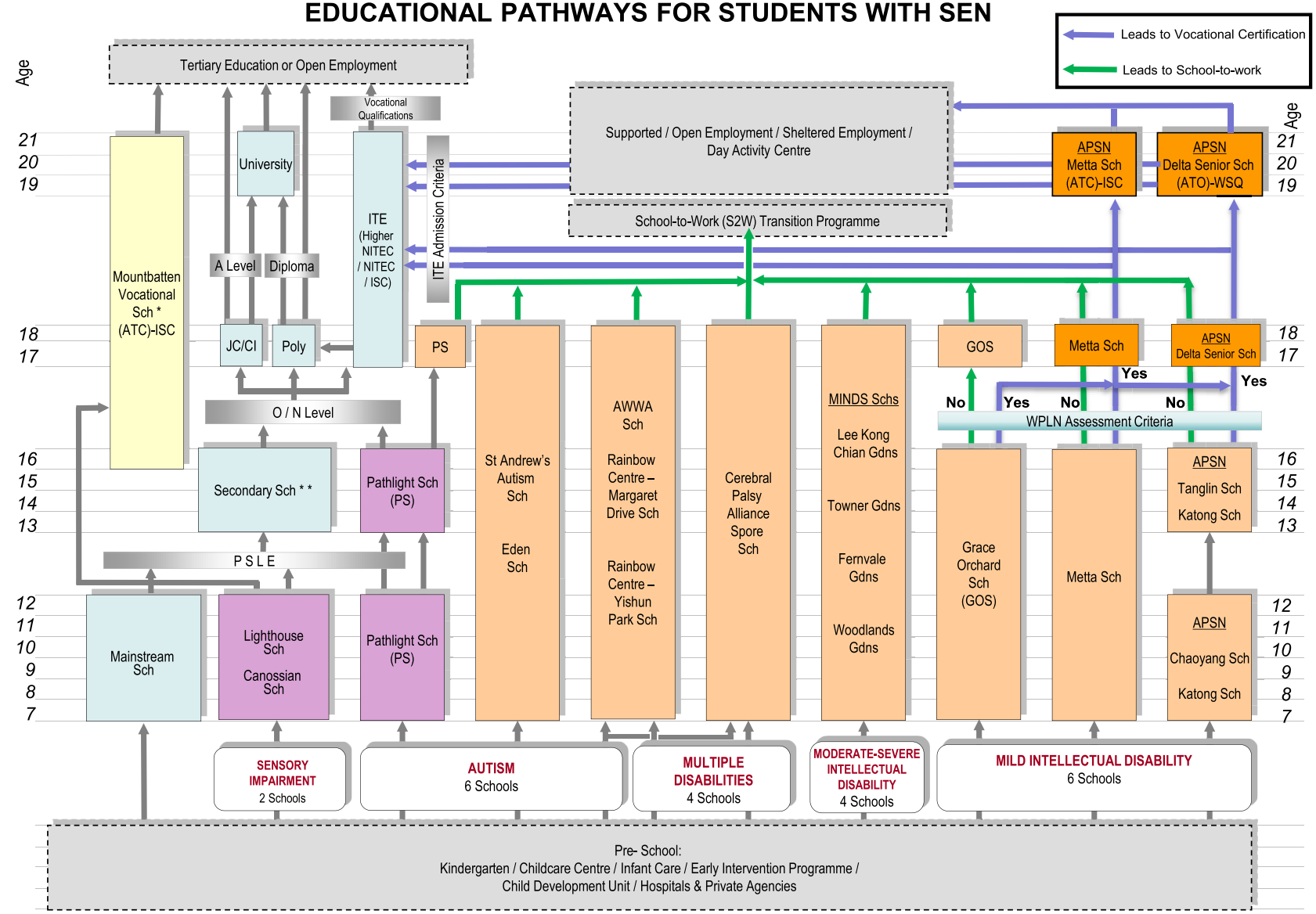
Child Development Programme 2011-2017

Developmental Problems	2011	2012	2013	2014	2015	2016	2017
Autism spectrum disorders	2584	3025	3254	3906	4220	4834	5292
Speech and Language delays and disorders	1512	1720	2004	2519	2898	3134	3055
Global developmental delay	788	991	1237	1330	1496	1645	1721
Learning problems / disabilities	661	756	813	949	1118	1286	1218
Behavioral problems / disorders	341	376	636	840	1001	1234	1371
Attention-Deficit-Hyperactivity Disorders (ADHD)	326	348	414	387	477	562	523
Environment-Related delay	214	310	347	402	412	514	412
Motor developmental Delay	98	159	227	224	219	220	168
Cerebral palsy	53	36	39	36	30	39	41
Syndromic disorders	94	82	84	85	89	86	84
Impairment special senses	46	62	64	71	61	99	112
Total	6717	7865	9119	10749	12021	13653	13997


1 Parental Consent obtained
CONSENT
ABC
2 Screening by Form Teachers and LSEds
3 Case Filter meeting
LSEd packages
4A
Language Development
Literacy
Motor
Social Skills
LSEd Support Package
Classroom Management
Parent Training
4B Appointment with Paediatrician
MISSION: I'MPOSSIBLE
5 Parents' Briefing Session
6 MIP Financial Assistance & Support for Parents
MIP
Therapy required
7
Occupational Therapy
Speech & Language
Learning & Behaviour
Therapy sessions in preschool
In-class Follow-up by LSEd
8 Preschool Classroom
9 Review by Paediatrician or Case Filter Team
10 Child graduates from preschool and enters Primary School.
MISSION: I'MPOSSIBLE
MIP is spearheaded by the Lien Foundation, in close collaboration with KK Women's and Children's Hospital and PAP Community Foundation, to support preschoolers with developmental needs.
LIEN foundation
KK Women's and Children's Hospital SingHealth
PAP COMMUNITY FOUNDATION

Figure 1

EDUCATIONAL PATHWAYS FOR STUDENTS WITH SEN



Legend : **ATC** = Approved Training Centre **ATO** = Approved Training Organisation **ISC** = ITE Skills Certificate **NITEC** = National ITE Certificate **WPLN** = Workplace Literacy and Numeracy **WSQ** = Work Skills Qualification

* Mountbatten Vocational School (ATC): Eligibility applies * * Includes mainstream Government, Government-aided, Independent, Specialised Independent (School of the Arts, Singapore Sports School, NUS High School of Mathematics and Science, School of Science and Technology), and Specialised Schools (Northlight School, Assumption Pathway School, Crest and Spectra Secondary Schools).

Figure 2

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