

Subspecialty Board and Training Programme in Developmental Behavioural Paediatrics

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Executive Summary

Developmental Behavioural Paediatrics (DBP) is a recognized branch within paediatrics concerned with providing highly specialized care to children with a focus on their developmental and psychosocial well-being, and on helping children with disabilities to achieve their personal best and lead fulfilled lives. The scope of DBP includes the active promotion of a facilitative environment through strengthening of positive determinants and preventive strategies to minimize the prevalence and impact of developmental disorders; timely identification; comprehensive medical, educational, psychosocial evaluation of developmental problems and disabilities through multidisciplinary and multi-sectoral input; and specific prescription and follow through across medical, education and community settings. Parent and community education and advocacy work are also key roles in this field. The DBP subspecialty is distinct for its focus on children's development and behaviour in the context of their families and the community, while related subspecialties may take a neurological approach to child development or a rehabilitative focus for chronic disabilities. The two countries with established DBP subspecialties today are the USA with the American Board of Pediatrics Subboard of Developmental-Behavioral Pediatrics from 2002, and Canada with the Royal College of Physicians and Surgeons of Canada Program in Developmental Pediatrics from 2005. References are taken from these boards, as well as similar but less

formalized programmes on the nature and accreditation requirements for Hong Kong's DBP subspecialty.

Over the past two decades, Hong Kong's parents and community have become increasingly aware of developmental needs and problems of their children and their potential serious impact. This is witnessed through dramatic increase in demand for early identification, specialized assessment, training and support services. Hong Kong's needs for DBP subspecialist service are estimated with the following references: (1) Overall summative prevalence of 15% of children showing different levels and types of developmental problems, as gathered from studies from different countries and regions including Hong Kong. Assuming some of these are unidentified, mild in nature or unwilling to seek professional attention, about 10% of children are expected to require subspecialty attention at some point. Hong Kong's child population under 18 years of age is 1.2 million, for which preventive and identification services are required, and about 120,000 (10%) children and their families needing direct care; (2) reference from reports on subspecialty workforce in the US and Canada, where DBP subspecialist to child population ratio of around 1:40,000 is present in high specialist to child ratio states and provinces; (3) workload statistics gathered in consultation with local DBP service providers, including in- and outpatient DBP services in both public and private services, where annual new and review appointments total around 38,000 per year, and where output capacity is 600-1,200 per subspecialist per year, leading to a current need of around 38 DBP subspecialists in Hong Kong; (4) anticipated rate of growth in demand

from official local data on trends of the past decade; and (5) anticipated rate of attrition from subspecialists leaving service. With all of the above taken into consideration, a total of 50 DBP subspecialists is projected to be required in 2020, i.e. in 10 years. The current presence of about 15 full-time DBP subspecialists in Hong Kong gives an estimated shortfall of 42 in 10 years.

This proposed DBP subspecialty training and accreditation programme aims to strengthen the current situation through meeting service needs and strengthening professional practice. The total duration of training is 3 years, with one year of potential overlap with Hong Kong College of Paediatricians higher training programme. The programme includes a core DBP programme of 21 months within which child public health (two months) and clinical genetics (one month) experiences are required; three months of compulsory child neurology rotation, three months of child and adolescent psychiatry rotation, and nine months of elective time within which a combination of rotations with pre-set curriculum are required. In addition to clinical training, research, teaching and administration requirements are present. Training is highly recommended to be done in more than one centre with overseas exposure. Assessment for the training experience includes portfolio evaluation on clinical course work and research, teaching and administrative output, as well as oral and written assessments. Currently there are about 25 peer-recognized subspecialists with about 15 practicing solely or the majority of time in DBP. 10-15 potential trainers and 2-3 potential

clustered programme units are estimated to be present. Manpower and facilities are expected to be able to accommodate 5-7 trainees at one time.

A number of consultations have been carried out over the past eight years among local DBP related professionals. Hong Kong is a recognized leader in DBP in this region, with partners turning to it for consultation and support. This DBP subspecialty accreditation programme aims to formalize training and assure Hong Kong DBP professional standards, as well as to strengthen DBP related services, research, teaching and professional and public education.

Introduction

The subspecialty of Developmental Behavioural Paediatrics

Developmental Behavioural Paediatrics (DBP) is an internationally recognized subspecialty within paediatrics which focuses on supporting developmental and psychosocial well-being of children, especially those with developmental behavioural problems and disabilities. The subspecialty serves to foster understanding and promotion of optimal development of children and youth and support of their families, through clinical care, education, research and advocacy. It aims to promote the abilities of all children to maximize personal potential through an interdisciplinary approach that views developmental profiles in the context of physiological and psychosocial factors impacting these children's lives. It draws the expertise of a wide variety of complementary disciplines.

DBP is built on theoretical foundations and conceptual models derived from the biological bases of behaviour and its interaction with environment, on behavioural genetics and gene-environment interactions. Research foundations are diverse, reflecting the nature of the field itself. The biopsychological perspective requires an integration of basic and social sciences, while ecological perspectives require attention to social cultural influences. Medical science and social science research are often intertwined, covering questions with practical as well as basic scientific significance, and using approaches that are often complex in methodological and analytical

approach. The body of research accumulated to date covers biopsychosocial models and developmental outcomes of these combined genetic, environmental and experience factors, work on instrument development, surveys, qualitative studies, intervention testing, advocacy driven research, and use of secondary data sets to answer epidemiological, clinical, policy questions. References to DBP Subspecialty are listed in [Appendix 1](#).

Developmental and behavioural problems and disorders are often divided into congenital developmental anomalies, and acquired conditions that impact normal developmental trajectories. They variously affect children's physical, motor, sensory, cognitive and socio-emotional development. The scope of DBP (Figure 1) includes three interrelated arms: (1) active promotion of a facilitative environment, through strengthening of positive determinants and preventive strategies to minimize the prevalence and impact of developmental disorders, timely surveillance and identification, early intervention, parent and community education and advocacy work; (2) comprehensive assessment of developmental challenges provided through multidisciplinary and multi-sectoral input; and (3) specific prescription for and provision of effective short term support and long term management. Habilitation /rehabilitation include medical investigation and treatment of neurodevelopmental, sensory, emotionally and behaviourally related developmental-behavioural disorders in medical and allied health settings (medical, psychological, physiotherapy, occupational and speech therapies, audiological, optometric and nutritional interventions), special education in

special and mainstream settings, vocational preparation and occupational training, and support for employment and social living.



Figure 1 Scope of Developmental Behavioural Paediatrics

Child development and its challenges are integral parts of paediatric care, as well as that of many other disciplines outside paediatrics. Developmental Behavioural Paediatrics occupies a special and critical position in synthesizing and supplementing the contributions of related professionals to attain a comprehensive understanding of the needs of, and management of the child and family. In line with the conceptual framework of the World Health Organization's international Classification of Functions, developmental paediatricians should in particular understand the needs of a child with developmental differences from perspectives of biological

functioning, activities and life participation in the context of the family and society.

DBP as a distinct subspecialty

From the offset, it is necessary to highlight the differences between DBP and other related subspecialties, such as Neurodevelopmental Disabilities in the USA under the joint Boards of American Board of Pediatrics and the American Board of Psychiatry and Neurology, and Neurodisability in the U.K. under the Royal College of Paediatrics and Child Health (RCPCH).

Neurodevelopmental Pediatrics in U.S.A., started in 2001, “takes a neurological approach to child development, while developmental behavioral pediatrics focuses on children’s development and behavior in the context of their families and schools” (O’Keefe L (2002). Appendix 2). Typically a Neurodevelopmental Paediatrics programme would require one year of adult neurology, 18 months of child neurology and neurodevelopmental disabilities, and 18 months of clinical neuroscience and research. In the U.K., care of children with significant special needs (approximately 2% of the child population) is mainly provided by Community Paediatricians or General Paediatricians. With increasingly complex area of work, the subspecialty of Paediatric Neurodisability, started in 2005 as a Level 3 training programme under RCPCH, representing a growing area of community focused paediatrics that deals with children with life-long neurological problems such as cerebral palsy, brain injury sequelae or other neurologically disabling conditions (Salt A. (2003) Appendix 3; Horridge K et al. (2008) Appendix 4). It can be seen therefore, that while there is overlap in the explicit list of

disorders covered by these respective subspecialties, there are key differences in emphasis: major conditions addressed (e.g. neurological disorder related disabilities versus developmental and behavioural disorders), aspects and depth of focus (e.g. specialist neuro-patho-physiological investigations versus functional physical, cognitive, psychological-linguistic, psychiatric and social evaluations), scope of specialty (e.g. mainly hospital and clinic based versus public health and community focus through prevention, surveillance, cross sector work for rehabilitation and advocacy). We believe that, with the background to be discussed below, Hong Kong will benefit from the presence of a DBP subspecialty.

Ground work supporting a subspecialty in Developmental Behavioural Paediatrics

I. The Hong Kong College of Paediatricians (HKCP): Laying the foundations for a subspecialty

With the maturation of Hong Kong's general paediatric specialty since the inception of the HKCP in 1993, many fellows in general paediatrics are today practicing various aspects of Developmental Behavioural Paediatrics in the community, having had exposure or non-structured training in the subject. HKCP 2004 guidelines on criteria for accreditation of a paediatric subspecialty training programme (**Appendix 5**) requires a subspecialty to be identifiably distinct while sharing with general paediatrics a significant part of training.

For accreditation of the subspecialty, HKCP also requires an existing caseload, ongoing public and private services in the field, medical and other necessary related professionals for the subspecialty, and facilities for teaching and training. Developmental behavioural problems and disorders together account for 10-20% of the population, taking all conditions into consideration (Rehabilitation Programme Plan 2007, Labour & Welfare Bureau, Hong Kong SARG). Hong Kong's repertoire of knowledge in DBP, including those specific for local Hong Kong's children, the experience and workload of general paediatricians and general practitioners working in this area, the local prevalence according to local studies of these conditions, and the amount of local research that is being done and still needed, attest to the appropriateness for establishment of a formal subspecialty in Developmental Behavioural Paediatrics under the HKCP at this point in time. In addition to training paediatric subspecialists in DBP, this subspecialty will play a key role in undergraduate medical training and general paediatric training in normal child development and its related disorders. These are within the current curriculum of Hong Kong's two medical schools with didactic teaching and centre visits, and that of Hong Kong College of Paediatrician for basic trainees, with rotations of three months through well child care clinics and another three months through assessment centres for developmental disorders. Today's training is being provided by related staff from public services. It is envisaged that a DBP sub-specialty will take on an important role in the

systematic formulation, delivery and quality assurance of these training programmes in future.

II. Related local policies and service delivery systems

The momentum for a subspecialty in DBP commenced three decades ago with the launching of universal developmental screening at Maternal and Child Health Centres in 1978 and the setting up of the first developmental assessment centre under the then Medical and Health Department in 1977. Rehabilitation services have been provided by hospitals and clinics, non-government agencies and special education sectors in a piecemeal fashion for decades, and were not comprehensively covered by policy and legislation. The White Paper on Rehabilitation in 1977 “Integrating the Disabled into the Community: A United Effort” set the scene for local policies to address the needs of disabled individuals. The concept of equality and anti-discrimination towards disabled persons was further brought to public attention through the second White Paper on Rehabilitation in 1995 “Equal Opportunities and Full Participation: A Better Tomorrow for All”. With rising awareness of developmental problems and special needs by the public, propelled by parent groups, the demand for early diagnosis and services became a challenge to professionals, gate keepers and policy makers.

III. Professional ground work in DBP in Hong Kong

In 1994 the HK Society of Child Neurology & Developmental Paediatrics (HKCNDP) was formed as a professional subspecialty body, with intensive involvement in scientific activities, professional training, and advocacy in child neurology and developmental paediatrics. Seminars on DBP subjects are held regularly at quarterly meetings and annual scientific conferences, and working groups on various DBP subjects including cerebral palsy, specific learning disabilities, attention deficit disorders were organized with wide involvement of academic, professional, parent and administrative sectors, resulting in position papers and reports for Hong Kong. Since 2003, HKCNDP has been the convenor of annual joint meetings in DBP with regional training centres of the Mainland of China, Taiwan, Macau and Singapore, providing a platform for professional exchange, and supporting the development of the subspecialty of DBP in the Mainland of China. A working group under the Chinese Pediatric Association for developing the DBP subspecialty was set up in 2008 with HKCNDP members as specialist consultants (DBP Activities by the HKCNDP, Appendix 6).

IV. HKCP Task Force on subspecialty development and HKCNDP response

Indeed, the potential for development of subspecialties in paediatrics was included in the 1991 M&A of the HKCP. In 1998, initiative was taken at the HKCP to further explore this matter, and in 2000, a Task Force was formed under it to oversee the development of subspecialties.

Questionnaires were sent in 2002 to members practicing in different paediatric subspecialties to survey their readiness to be accredited. The

DBP subspecialty group's response was submitted in 2003 (Appendix 7), and other paediatric subspecialty group returns were received (Appendix 8 – reviewed in slide 5). In response to an invitation for formal proposals by HKCP Task Force in 2004 (Appendix 9), HKCNDP organized open consultations for all recognized local experts in DBP, HKCNDP full members, as well as paediatric service heads. Stock taking of DBP activities and workload, trainer background, manpower considerations for trainers and trainees, were obtained through these consultations. The DBP subspecialty group agreed that Hong Kong is ready for a formal DBP subspecialty board for accreditation and training under the HKCP. It was decided that efforts will be made by concerned colleagues to study the structure of its potential future board, training goals, curriculum, program structure, evaluation and trainers. In July 2008, HKCP held a third forum (Appendix 10) to provide update on paediatric subspecialty developments, explain accreditation criteria, application and vetting procedures to members. In response, the DBP subspecialty group of HKCNDP again submitted its report to HKCNDP Council on its intention to pursue accreditation for a subspecialty in DBP (Appendix 11).

Training goals, objectives and method

A. Programme goals

To enable the Developmental Behavioural Paediatrics trainee to:

- 1) Provide specialized care to children with respect to their developmental and psychosocial well-being.
- 2) Understand child development and behaviour, both normal and abnormal, spanning the full age range from prenatal period to late adolescence, including theoretical foundations, research application in DBP, professional education and health advocacy.
- 3) Be a competent clinical expert, collaborator across professionals and sectors, and manager for DBP activities within the service delivery system.

B. Programme objectives

To enable the Developmental Behavioural Paediatrician trainee to:

- 1) Have in-depth knowledge of normal and abnormal physical, sensory, motor, language, cognitive and social/ emotional development, including underlying theoretical frameworks and processes.
- 2) Possess understanding of the aetiology, epidemiology, genetic and other risk factors of developmental disorders.

- 3) Develop and evaluate screening, surveillance and early identification programmes.**
- 4) Have communication skills that are culturally sensitive, developmentally appropriate and family focused, and ability to share information in discussions, presentations or in writing with related disciplines and sectors over many situations, including on clinical, professional and policy matters.**
- 5) Possess knowledge and skills in identification and assessment for the entire range of problems, for defining biological and psychosocial aetiologies and guiding management decisions.**
- 6) Extend beyond reaching a medical diagnosis, integrating multiple domains of interactive influences in formulating a comprehensive profile.**
- 7) Recognize urgency of problems and appropriate timing for intervention.**
- 8) Have theoretical understanding of and practical experience with intervention strategies in medical, educational and social domains, and personal skills in therapeutic modalities including guidance, counseling, behavioural treatment methods and basic psychopharmacotherapy for developmental behavioural disorders, and techniques in neurorehabilitation.**
- 9) Have understanding of the interdisciplinary process, including knowing the conceptual frameworks and methods used by other medical and allied health professionals and disciplines (psychiatry,**

psychology, linguistics / speech and language pathology, neurorehabilitation therapists, nutritionists, social workers, and others) and sectors (e.g. special education, social welfare), and to equip them with abilities to function in a leadership role on these interdisciplinary, multisectoral teams.

- 10) Understand culturally diverse populations and the impact of developmental and behavioural problems on families from varied social and economic backgrounds.**
- 11) Make scientific and evidence-based judgments through an understanding of research methodology and use of critical appraisal techniques on current important research issues in the field, and ability to develop, write funding proposals for, and complete a research project.**
- 12) Understand determinants of developmental health, and its application to public policy, to develop an attitude of advocacy, and an ability to advocate change beyond the office walls that impacts on children with special developmental needs.**
- 13) Be familiarized with existing legislation, changing concepts of care and service delivery approaches, including current controversies in the field of DBP, particularly in their community.**
- 14) Understand delivery systems and market forces as they impact on the care of children with developmental and behavioural problems.**

- 15) **Be able to evaluate and serve as market radar for the quality of services for children with developmental or behavioural needs in the community, and to support knowledge capture and dissemination.**
- 16) **Teach DBP in professional training programmes, academic settings and the community.**
- 17) **Understand ethical principles with respect to research and clinical practice.**
- 18) **Become future leaders in the field of DBP in Hong Kong.**

C. Method

For clinical goals

- 1) **Structured didactic sessions and course work to consolidate the foundation and research-based theories on child development, its deviations and management. These include reading assignments, lectures and videotape demonstration of patient encounters and procedures, seminars for integrating theory with clinical experience, tutorial teaching by a variety of disciplines (child neurologists, neurorehabilitation team members including neurosurgeons and orthopaedic surgeons and therapists, neuropsychologists, speech and language pathologists, social work agency representatives, special educators and others), assigned course work, etc. Resources**

such as libraries and access to knowledge databases should be readily available to trainees.

2) Rotations through full range of programmes delineated by age group and diagnostic categories. The entire age range from neonatal to late adolescence, and range of developmental disorders including congenital, acquired, in-patient and ambulatory, at clinic or community settings, are to be covered over the training period. Elective in-depth studies in specific programmes are available as options.

3) During programme rotation

- a. to participate in its operations.**
- b. to conduct hands on assessment and case management, on assigned number of cases, as multidisciplinary team member and case manager, and participate in routine team meetings on the full range of client groups.**
- c. to maintain close consultation with consultants from relevant medical and non-medical specialties, such as neurology, neurosurgery, psychiatry, genetics and special educators, and participate in joint evaluation and management at bedside/ clinic and structured multi-specialty team meetings (e.g. developmental behavioural paediatrician, neurosurgeon, neurologist, and therapists of children pending epilepsy surgery; developmental behavioural paediatrician, ENT, dental and plastic surgeons,**

speech therapist and audiologist for children with cleft anomalies).

- d. to gain skills in behavioural and medication management through theoretical understanding and supervised practice.
- e. to conduct case-based learning through reviewing clinical and longitudinal management along with theoretical components of developmental and environmental processes, including their broader application to groups of problems or patients.
- f. to be familiarized with the range of resources for children and families in the community.
- g. to serve as consultants to rehabilitation agencies such as preschool centres and special schools for children with various disabilities.
- h. to sit in as observer, where possible, on policy meetings on matters related to DBP and rehabilitation in Hong Kong.

For research goals

- 1) Attend meetings of epidemiology and research teams of the training centre(s) that oversee vetting of research proposals, administrative procedures, and receiving of interim and final reports. Attend and contribute to didactic sessions on research theories and practice of these teams.
- 2) Through study of service clinical database, analyze clinical, demographic and service delivery trends, making reference to local and international statistics, and developing research questions.

- 3) **Be prepared to study the specific needs of the population in Hong Kong and approaches to treating or helping them.**
- 4) **Participate as principle investigator in at least one clinical research project during the training period, including writing up of proposal, coordination with other parties involved, participate in applying for financial support as indicated, implementing the study, and writing up the report and submitting for publication. The trainee will work with a mentor for each project, as well as share research process experiences with other trainees undergoing studies/projects, as available in the training setting.**
- 5) **Participate as assistant or observer in large research projects led by trainers +/- outside academic organizations.**
- 6) **(Optional) Protected time for enrollment in selected courses on research, biostatistics and epidemiology at local academic institutions on public health.**

For teaching and learning goals

- 1) **Be given guidance in searching relevant literature, preparing clinical materials including video- and audio-taping, giving clinic based demonstrations, using presentation software and equipment, and speaking publicly.**

- 2) Observe and later provide teaching, in various formats such as use of powerpoint and video clip illustrations, to parent groups and the public at clinic and community settings, to junior trainees individually or in small groups, at seminars for related medical and non-medical professionals and academic participants.**

- 3) Participate as speaker (and organizer where possible) at least two times during the training period at open DBP academic/professional scientific meetings. Presentation of clinical reviews or findings of research done during the training period will be encouraged.**

DBP Subspecialty training experience

Description of DBP subspecialty training programme

Duration

3 years with a maximum of one year overlap with general paediatrics higher training.

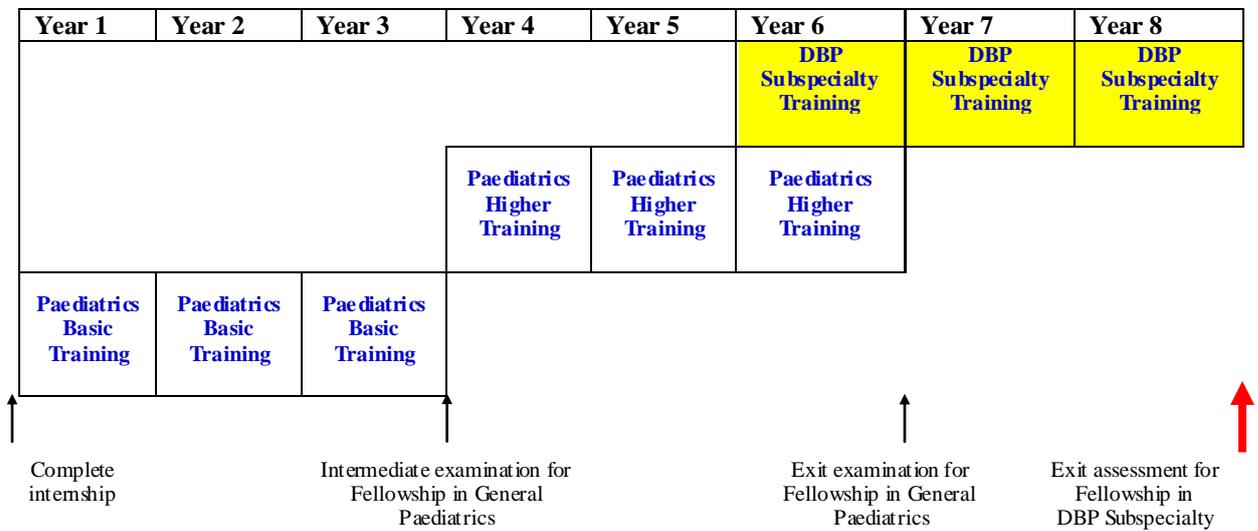


Diagram 1: Block diagram of training programme in General Paediatrics plus training programme in Developmental Behavioural Paediatrics

Rotations

- I. Core DBP programme
- II. Compulsory Child Neurology rotation
- III. Compulsory Child & Adolescent Psychiatry rotation
- IV. Electives

| DBP Subspecialty Training Programme | | | | | |
|-------------------------------------|---------------------|-------------------|-----------------|------------------|----------|
| DBP Core Programme | | | Child Neurology | Child Psychiatry | Elective |
| DBP core module | Child Public Health | Clinical Genetics | | | |
| 18 month | 2 months | 1 month | 3 months | 3 months | 9 months |
| 36 months | | | | | |

Diagram 2: DBP Subspecialty Training programme and rotations

I. Core DBP programme (21 months)

- No less than 18 months of DBP covering comprehensive and interdisciplinary clinical evaluation and management, and participation as consultants on developmental disorders in clinics, special education and community settings. Regular joint activities with outside related specialties, settings, and service providers for management of patients must be documented. No release for other compulsory or elective log-based equivalent¹ training should be taken during these 18 months.

¹ *log-based equivalent: number of hours/sessions that is equivalent to full time attendance expected at that posting*

- **Two months full time or log-based equivalent of DBP from a child public health perspective.**
- **One month full time or log-based equivalent of DBP related clinical genetics.**

DBP modules

I. Ambulatory DBP programme

The majority of DBP programmes are delivered in out-patient settings. The centre (or centres, together contributing to one training programme) should be equipped with all essential components for diagnostic, therapeutic and follow on services to children with developmental disabilities, for bridging medical, educational, rehabilitation and community services to them; providing professional training, and carrying out research in the field of DBP.

These required components include:

- a. Adequate client load covering the range of developmental disabilities and behavioural disorders, for supporting trainee exposure and research. Assuming an 18-month DBP program rotation through the centre, each DBP trainee should be exposed to assessment and management of around 600 children spanning 0-18 years and the range of conditions, and their families.**
- b. Presence of stable multidisciplinary team of health care professionals specifically trained and with working experience in DBP (Appendix 12).**

- c. **Ongoing programmes with non-medical disciplines from other service sectors, such as those from special education.**
- d. **Facilities for respective disciplines and activities, including tools and equipment, and rooms designed for special purposes (Appendix 13).**
- e. **Have in place structured didactic and teaching sessions, involving a comprehensive set of presentations covering theories, research, clinical practice, social and policy applications of DBP. Research lectures and meetings along with research mentorship system for individual trainees have to be available.**
- f. **Specialized programmes: The centre(s) should have as its clinical backbone a range of individual programmes that are developed for specific patient groups, overseen by stable, specifically trained multidisciplinary teams on respective subjects.**

These major specific patient groups include:

- **Global developmental delay and mental retardation**
- **Physical disabilities arising from cerebral palsy, neuromuscular disorders and other CNS conditions**
- **Hearing impairment**
- **Visual impairment**
- **Developmental language delay and specific language impairment**
- **Specific learning disabilities**
- **Autistic spectrum disorders**
- **Attention deficit/ hyperactivity disorder**
- **Externalizing conditions including conduct disorder and oppositional defiant disorder**

- **Internalizing conditions including depression, anxiety, mood and obsessive disorders**
- **Congenital and genetic conditions affecting development**
- **Regulatory disorders including sleep disorders, feeding, eating and elimination conditions**
- **Developmental disabilities resulting from chronic illnesses, including chronic pain conditions**
- **Developmental disabilities arising from acquired brain injury**
- **High risk / early identification and intervention programmes**
- **Developmental problems/ disorders resulting from psychosocial factors**

Each of these special programmes/ teams should have in place:

- **clinical protocols for diagnosis, and criteria for referrals and follow up management**
- **structured parent support and educational activities after diagnosis**
- **ongoing internal clinical data review and studies on the subject**
- **established networks within the community for supporting their client group, including consultative roles at related service agencies (Appendix 14)**
- **ongoing research activities**
- **participation in advocacy work and related local policies**

DBP trainees should be rotated through each of the above programmes during their core DBP rotation.

II. In-patient DBP programmes

In-patient client exposure in DBP involves children with complex developmental problems requiring tertiary care. These children have serious health and development issues for which hospital stay with joint input from different disciplines and specialties are needed. Examples of these clients include those with or need:

- one-stop integrated workup for clients requiring in-patient setting, multi-specialty input, e.g. intractable epilepsy for consideration of neurosurgery, uncommon genetic or metabolic conditions requiring in-patient diagnostic workup;**
- severe challenging behaviours requiring in-patient observation by multidisciplinary team;**
- serious medical illnesses requiring long term hospitalization, with significant developmental, behavioural and psychosocial problems;**
- acquired brain injury requiring assessment and neurorehabilitation planning after stabilization.**

DBP trainees should have access to in-patients as cases arise during their DBP, child neurology or child & adolescent psychiatry rotations.

DBP modular schedule

| Month | Aspect of work | Case load | Sessions (half days) per month (total 40 per month) |
|-----------|--|---|---|
| 1st-6th | Clinical (<i>triage, clinical assessment, follow on management, team conferences, writing reports</i>) | 250 appointments | 32 |
| | Clinical session at in-hospital or community settings | | 1 |
| | Didactic sessions /seminars | | 3 |
| | Research | | 4 |
| 7th-12th | Clinical (<i>clinical assessment, follow on management, team conferences, writing reports, liaising with outside specialties on complex cases</i>) | 200 appointments | 28 |
| | Clinical session at in-hospital or community settings | | 2 |
| | Didactic sessions /seminars | | 2 |
| | Research | | 4 |
| | Clinical or Administrative Project | | 4 |
| 13th-21st | Development behavioural paediatrics in child public health (CPH): epidemiology, critical appraisal, surveillance, and others | Hands on participation in public child health activities, completion of one project | Equivalent to 2 months full time |

| | | | |
|--|--|-------------------------|--|
| | Development behavioural paediatrics in clinical genetics | | Equivalent to 1 month full time |
| | Clinical (<i>clinical assessment, follow on management, team conferences, writing reports, collaborating with outside specialties on complex cases, providing consultations to multi-specialty teams and outside parties</i>) | 200 appointments | 28 |
| | Clinical session at in-hospital or community settings | | 2 |
| | Seminars/teaching activities, including some coaching of junior trainees | | 2 |
| | Research | | 4 |
| | Clinical / Administrative Project | | 4 |

Optional additional 6 months of DBP module as Elective

| | | | |
|------------------|---|-------------------------|-----------|
| 22nd-27th | Clinical time | 200 appointments | 28 |
| | Clinical sessions at in-hospital or community settings | | 2 |
| | Research and project | | 6 |
| | Coaching junior trainees and teaching activities | | 4 |

II. Compulsory child neurology (CN) experience (3 months)

No less than three months full time inpatient child neurology rotation.

Child Neurology modules

Attachment to child neurology in- and out-patient teams within accredited general paediatric services, or to full time tertiary child neurology settings, locally or overseas, with clinical, teaching, and research duties.

III. Compulsory child and adolescent psychiatry experience

(3 months)

No less than three months of full time rotation (120 half day sessions), or an log-based equivalent number of sessions to be taken over the remaining training period (i.e. outside of the 21 months of compulsory core DBP and the 3 months of compulsory CN modules).

Child & adolescent psychiatry modules

Attachment to child psychiatry ambulatory and in-patient multidisciplinary child psychiatry team, with psychiatrists, clinical psychologists, occupational therapists, nurses, social workers and teachers. The rotation can be solely or partly local or overseas, with supervised duties in clinical consultation, medication and behaviour management. Didactic and research activities should be present.

Clinical scope to be covered includes neuropsychiatric conditions in children. While there will be overlap with emotional behavioural conditions seen during DBP rotations, these neuropsychiatric conditions, such as ADHD, ASD, mood and anxiety disorders and disruptive/ antisocial behaviours, are expected to be more serious or complex than normally handled within DBP settings. Supervision in use of psychotropic medication, cognitive behavioural therapy, family therapy and management of adolescents with these conditions will be areas of specific focus.

Trainees are encouraged to attend training courses available in the subspecialty held locally or overseas during the training period.

IV. Electives in DBP subspecialty related subjects (9 months)

Elective programmes in clinical, para-clinical and community levels are chosen, adding up to a total of 9 months. Additional rotations in DBP, CN, child & adolescent psychiatry or other electives as listed below may be opted, with a maximum of 3 elective programmes during this period, and each elective *duration being no less than 1 month and no more than 6 months. These can be taken on log-based equivalents while trainee is posted at one of the other electives (e.g. log-based experience in child & adolescent psychiatry during additional elective in DBP or CN)*. All elective programmes are subject to prior approval by the DBP subspecialty board on their contents, duration of rotation, relevance to the DBP training, presence of

adequate case exposure and supervision, and stated outcome measures.

Elective options include but not limited to:

Developmental behavioural paediatrics

Child neurology

Child & adolescent psychiatry

Neonatal Medicine / Genetics

Neonatal / high risk programmes

DBP related electrophysiology studies

Rehabilitation for children with multiple disabilities and special health care needs

Child protection

Special education: curriculum, pedagogy and administration

Physical medicine and rehabilitation

Vision / Hearing sciences

Paediatric neurosurgery

Paediatric orthopaedic surgery

Sleep medicine in child development and its disorders

Clinical research as applied to DBP

Elective programme modules

Elective experiences are intended to prepare the DBP trainee for specialized focus in a specific area under DBP (e.g. technical aspects of evaluating hearing impaired children, rehabilitation for physical disabilities, consultation to schools and special education policies).

Training exposure

Three months overseas training within DBP and exposure to two programme units are highly recommended.

Supervision arrangement

The degree to which the trainer will be directly supervising the trainee's clinical work (precepting especially for complex cases), providing didactic sessions, and personally demonstrating through direct participation in team work, should be described at application for the rotation.

Evaluation

All training programmes should have prior approval by the HKCP Accreditation Committee, DBP Programme Director and the DBP Subspecialty Board.

A blueprint for an exit written examination will be made DBP Subspecialty Board members prior to the commencement of this Programme, to define the knowledge that a DBP certified subspecialist should be expected to demonstrate at the end of the period. The final report integrating all sources of information on competency: written exams, clinical observations from trainers and professional team members, completion of a scholarly project, oral exams/OSCE, will be developed. References for these will be made from current established overseas DBP subboards (Appendix 15 & 16).

During the training period, the trainee is required to keep a personal log book that is documented, signed, dated and received in timely fashion. Specific objectives will be set at the beginning of each rotation, including the number of specific types of cases, procedures, team activities to be done. In addition to checking against these objectives, clinical preceptors will be asked to provide written assessment at the end of the rotation. Feedback should cover areas of clinical knowledge and skills, education, administration and research. The trainee's skills in triage, comprehensive evaluation, team leadership, communication with parents and team members, counseling and educational skills, knowledge of services and local systems, and efforts in advocating for an individual child and family or group of clients, should be noted. Participation and effectiveness in teaching and research should be documented. The log book must be endorsed by his / her supervisor every 6 months regularly during the training programme, and an interview between the trainer and trainee should be conducted at those junctures for feedback.

Subspecialty trainees should complete at least one research / dissertation for assessment, with submission for publication in an international or local peer reviewed journal by the end of the training period. Trainees must make at least two presentations in local or regional meetings. Furthermore, they are encouraged to provide "Evidence of Personal Development" during this period.

At the end of the 3-year training programme, the trainee will be evaluated through various measures: written examination, in-training observations

from trainers, feedback from health care professionals, completion of research / scholarly project, and interview on theoretical, clinical and service aspects of DBP by a panel to be determined by the DBP Subspecialty Board Chairman, Programme Director and the HKCP Accreditation Committee.

Trainers

After approval of DBP as a subspecialty by the Council of the HK Academy of Medicine (HKAM), First Fellows will be elected according to HKAM and HKCP criteria (Appendix 17). Trainers will be elected from First Fellows. A trainer can supervise no more than two trainees either in the subspecialty training programme or in the Higher Training Programme in Paediatrics, and no more than three trainees at any one time. He / she must be actively involved in teaching, research and clinical service of that subspecialty. The accreditation of Subspecialty Trainers will be required once every 3 years.

Accredited trainers should possess the following attributes and background:

- Minimum of 5 years active practice in the field after documented and adequate subspecialty training
- Active participation in DBP professional and research activities locally and internationally
- Involvement in community consultation related to DBP
- Involvement in advocacy and policy matters related to DBP

- Experience in DBP training within the general paediatrics fellowship programme

Training Units

Each training unit will be accredited according to their professional team composition, caseload, range of diagnoses, clinical, teaching and research activities, and facilities. In accordance with objectives and methods in this document, applications to be a training site will be measured against respective listed requirements. Medical training units and other affiliated and outreach sites are included in list of potential training sites (**Appendix 18**).

Continued Medical Education

A minimum of 30 points out of the 90 points in a 3-year cycle of the HKCP CME requirements points should be specific to the subspecialty.

Structure and Manpower

Demand side

- The children population under 18 years of age in Hong Kong is around 1.2 million out of a total population of 7.03 million (Census and Statistics Department, Hong Kong Government, 2009).
- Current load: Prevalence of the full range of developmental problems, disorders and disabilities in children is estimated to be around 15% (Reference: Prevalence of developmental behavioural problems and disabilities. Appendix 19). Assuming some of these are unidentified, mild in nature or parents unwilling to seek professional attention, about 10% of children, i.e. 120,000 (10% of 1.2 million) children and their families are expected to require direct subspecialty attention.
- New cases: Taking the number of live births per year to be around 80,000 (Hong Kong Census & Statistics Department 2009), 10% of these children developing developmental behavioural problems/ disabilities during childhood will yield around 8,000 new-case appointments per year.
- Data surveyed from Hong Kong's DBP public and private services in both ambulatory and in-patient settings (2002, 2004, 2009 HKCNDP consultations) provided an estimated 2,500 review-case appointments per month, or 30,000 review-case appointments per year.
- Therefore, the total number of new and review case appointments per year is estimated to be 38,000 (8,000+30,000). This demand is expected

to rise with increasing public and professional awareness, and emerging developmental issues in the community. An estimated average of 3 % per year increase in demand is projected for the next 10 years (2000-2009 data from The Hong Kong Rehabilitation Programme Plan 2007 and statistics from Department of Health). This will give a projected demand of around 50,000 ($38,000 \times 1.03^{10}$) appointments per year by 2020 (in 10 years time).

- The case load of a full time DBP subspecialist ranges from 600-1,200 appointments per year, depending on the DBP practice profile and mix, such as proportion of appointments seen for initial diagnostic workup, regular outpatient revisits, inpatient rounds, cross sector joint clinics and community outreach work. For an average of say 1,000 appointments per full time DBP subspecialist per year, the current demand for 38,000 DBP appointments per year will require $38,000 \div 1,000 \sim 38$ DBP subspecialists. For 50,000 DBP appointments per year after 10 years in 2020, $50,000 \div 1,000 \sim 50$ DBP subspecialists (i.e. a further of 12 more DBP subspecialists) will be required.

Supply side

- DBP subspecialists workforce reference was taken from the American Board of Pediatrics workforce trends series on pediatrics and related subspecialty workforce, with DBP reviewed in “Pediatrics Workforce: A Look at Developmental-Behavioral Pediatrics Data from the American Board of Pediatrics” (Althouse LA, Stockman JA (2007) Appendix 20-1); and from the Canadian paediatric subspecialty workforce review in

“Variability of the Pediatric Subspecialty workforce in Canada” (Filler G, Piedboeuf B (2010) Appendix 20-2). These reports showed a range of DBP subspecialist to children population ratio, varying between US states and between Canadian provinces. In the US, states with high-supply reported a DBP subspecialist to children ratio of around 1:40,000, while Canadian provinces with high-supply reported a similar 1 DBP subspecialist to 38,000 children population. For Hong Kong, a 1:40,000 DBP subspecialist : children population ratio will require a supply of 30 DBP subspecialists in Hong Kong for its 1.2 M children. The projected estimation in the discussions above are thus in line with practices in regions where DBP training, accreditation and subspecialist services are present.

- **The following tables show current manpower and training needs to meet projected supply and demand.**

Estimated current situation

| | |
|---|-----------------|
| Number of Paediatric Fellows who may be qualified as First Fellows | 18-20 |
| Total number of existing subspecialists | about 25 |
| Total number of subspecialists currently <i>working solely or the majority of time</i> in DBP | 15 |
| Number of potential trainers available | 10 - 15 |
| Number of trainees currently under training in this subspecialty | 6 - 8 |
| Number of trainees that can be accommodated by the currently available manpower, facilities and training posts | 5 - 7 |
| Number of centres or clustered networks required for this subspecialty in the whole of Hong Kong | 2 - 3 |

Additional DBP subspecialists required to meet current need

| | Estimation |
|---|---------------------|
| Number of fellows who are peer recognized DBP subspecialists currently working solely or the majority of time in DBP | 15 |
| Number of fellows in DBP subspecialty needed currently, working solely or the majority of time in DBP | 38 |
| Number of trainees that need to be trained to meet <u>current</u> need | 38 – 15 = 23 |

| | |
|-------------------|-----------|
| Subtotal 1 | 23 |
|-------------------|-----------|

Additional number of DBP subspecialists required, to meet needs over the next 10 years

| | |
|--|-----------------------|
| Additional subspecialist need from anticipated increase in demand | 50-38 = 12 |
| Attrition rate of fully trained subspecialists leaving full-time DBP practice over the coming 10 years | 5 |
| Attrition rate of trainees who drop out of subspecialty training programme over the coming 10 years (estimated from past history) | 2 |
| Subtotal 2 | 19 |

| | |
|--|--------------------|
| Total number of <i>additional</i> subspecialists needed to be trained to meet demand at the end of 10 years | 23 +19 = 42 |
| Subtotal 3 | 42 |

Source of information: Collective data and estimated workload from

Department of Health, Child Assessment Service, Family Health Service and Student Health Service

Hospital Authority, Departments of Paediatrics neurorehabilitation case load, including outpatient and inpatient stay care

Paediatricians practicing DBP in the private sector

Labour & Welfare Bureau, Rehabilitation Programme Plan Statistics

Implementation

Planning stage

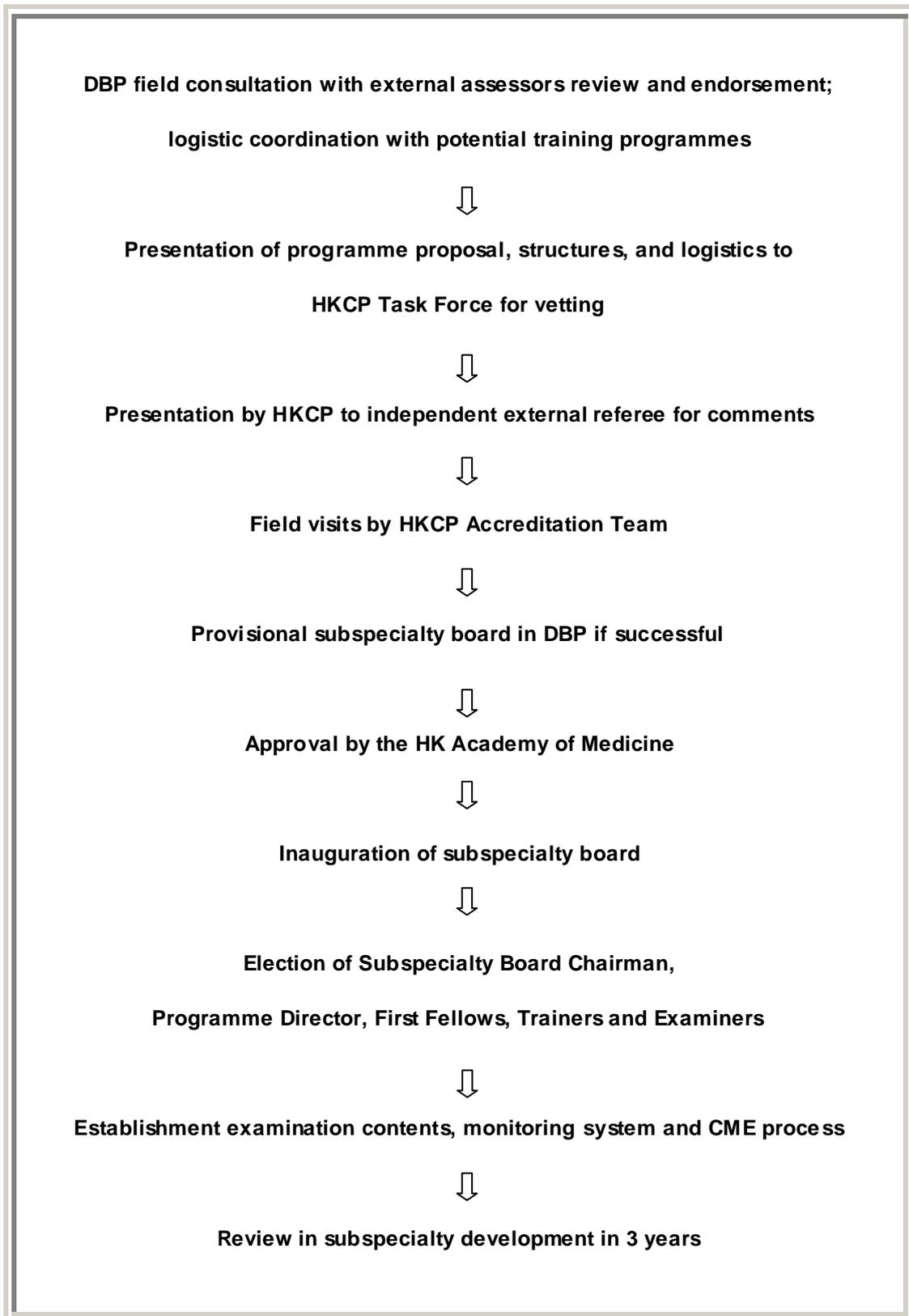
1. Continue consultation with local and international DBP experts and practicing paediatricians in the field during the subspecialty application process.
2. Work out arrangements on centres that intend to participate as training programme units.
3. Disseminate information to all potential first fellows and subspecialty trainees.
4. Disseminate proposals to related specialties involved in DBP subspecialty work, and potential elective module training providers.
5. Disseminate information to DBP related discipline groups
6. Determine sequence of roll out for training units and programmes in Hong Kong.

(See Table 1 page 44)

After accreditation as subspecialty

- 1. Work on logistics for selection and posting of trainees and matching with trainers and programmes.**
- 2. Monitor progress through ongoing feedback from trainers, training institutes and trainees, and make adjustments as indicated.**
- 3. Programme heads and trainers to meet regularly with HKCP and local DBP subspecialists, to share experience and discuss areas for improving curriculum and programme arrangements.**
- 4. Formal review of subspecialty progress 3 years after its inauguration.**

Table 1: Flow chart for establishment of DBP Subspecialty Board



APPENDICES

1. **References to DBP Subspecialty**
2. **O'Keefe L. (2002). Two "new" subspecialties: neurodevelopmental disabilities, developmental-behavioral pediatrics. AAP News Vol. 20 No. 4 April 2002, p.188.**
3. **Salt A. (2003). The New Subspecialty of Neurodisability. Neurodisability College Specialist Advisory Committee, Royal College of Paediatrics and Child Health, U.K.**
4. **Horrige K et al. (2008). Resource Pack for Level 3 Training in Paediatric Neurodisability. Special Advisory Committee, Royal College of Paediatrics and Child Health, U.K.
<http://www.rcpch.ac.uk/Training/Committees-for-Training/CSAC/Further-CSACs>**
5. **Guidelines on the Criteria for the Accreditation of a Paediatric Subspecialty Training 2004 Programme, Hong Kong College of Paediatrics**
6. **DBP Activities by the Hong Kong Society of Developmental Behavioural Paediatrics (HKCNDP)**
7. **HKCNDP Developmental Paediatrics return to HKCP Questionnaire for Subspecialty Development and Accreditation to HKCP 2003**
8. **Hong Kong College of Paediatricians Paediatric Subspecialty Group Returns 2004**
9. **Hong Kong College of Paediatricians 2nd Consultative Forum with Subspecialty Groups 11th February 2004**
10. **HKCP Task Force for Higher Training of Paediatrics Subspecialty in Hong Kong 2008**
11. **Report on subspecialty activities in DBP and subspecialty readiness 2008 to Hong Kong College of Paediatrics**
12. **List of Professionals in a Developmental Behavioural Paediatrics Programme**
13. **Developmental Behavioural Paediatrics Ambulatory Programme: Site requirements**
14. **Community Networks in Developmental Behavioural Paediatrics Programmes**
15. **The Royal College of Physicians and Surgeons of Canada: Final In Training Evaluation Report (FITER)/ Comprehensive Competency Report (CCR). 2009. The Royal College of Physicians and Surgeons of Canada.
http://rcpsc.medical.org/residency/certification/filters/developmental_peds_e.pdf**

16. ***The American Board of Pediatrics, Subboard of Developmental-Behavioral Pediatrics Subspecialty Certifying Examination Content Outline.***
<https://www.abp.org/abpwebsite/certinfo/subspec/suboutlines/dbeh.pdf>
17. ***Guidelines for Admission of "First Fellows" in New Subspecialty***
18. ***Potential Full/Part Time Centres/ Programmes/Organizations involved in DBP Subspecialty modular training in Hong Kong***
19. ***References on prevalence of childhood developmental problems and disabilities***
20. ***Althouse LA, Stockman JA (2007). Pediatrics Workforce: A look at Developmental Behavioral Pediatrics data from the American Board of Pediatrics. The Journal of Pediatrics. 148(2) (pp 166-169), 2006.***
21. ***Filler G, Piedboeuf B (2010). Variability of the Pediatric Subspecialty Workforce in Canada. The Journal of Pediatrics. Epub 2010 June 18. doi: 10.1016/j.peds.2010.05.015***