TIERS
IN BRIEF

CHILDREN'S MEDICAL SERVICES

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Children's Medicine Services:
Tiers in Brief to Support System Planning

Contents

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Children's Medicine Services:
Tiers in Brief to Support System Planning

1.0 Tiers of Service

1.1 Tiers of Service Framework & Approach

Planning & coordinating children's health services is a major area of focus for Child Health BC & its collaborators (health authorities, ministries, non-profit organizations, school boards, etc). The Tiers of Service framework provides a tool to define & plan such services.

Utilizing a common language & methodology, the Tiers of Service framework:

- Recognizes that health services, while important, are one of several factors that contribute to child & youth well-being overall.
- Is informed by a review of frameworks/tools in other jurisdictions around the world.
- Facilitates system planning for clinical services, knowledge sharing/training & quality improvement/research. The responsibilities & requirements for each of these three areas are defined within the Tiers framework.

Child Health BC is leading the use of the Tiers of Service approach to system planning for children's services. This is being done through:

Creation of a series of modules: For each of the major areas of health services - such as children's medicine, children's surgery, children's emergency care, children & critical care services and mental health services for children and youth - a Tiers of Service module has or is being created.

Self-assessment based on the modules: Once a module is finalized & accepted by the key partners in the province, a self-assessment is completed. Child Health BC works with health authority partners as necessary to get this work completed.

System planning and service planning based on self-assessment results: Using the self-assessment analysis, CHBC is committed to supporting provincial, regional and local planning in collaboration with other entities.

1.2 BC's Child Health Tiers of Service Modules

Below are the Tiers of Service modules. Some have been completed and some are in development.

Clinical Services modules:

- **Children's Medicine**
- Children's Surgery
- Children's Emergency Department
- Children & Critical Care Services
- Child Development, Habilitation & Rehabilitation
- Children's Home-based Services (future)
- Mental Health Services for Children and Youth
- Substance Use Services for Children and Youth (future)

Clinical Diagnostic & Therapeutic Service modules:

- Children's Laboratory, Pathology & Transfusion Medicine
- Children's Medical Imaging (future)
- Children's Pharmacy Services (future)

Collectively, the modules & their components provide the foundation for provincial & health authority (HA) planning of children's health services.

2.0 Medical Tiers of Service

2.1 Module Development

The Children's Medicine module is made up of three components:

- Setting the Stage for Tiers Development: Summarizes the data and literature used to create the module.
- Tiers in Brief to Support System Planning: Provides a high-level overview of key aspects of the module ***(this document)***.
- Tiers in Full to Support Operational Planning: Provides significant detail of key aspects of the module: (1) clinical service. (2) knowledge sharing/training; and (3) quality improvement/ research.

The module was developed by an interdisciplinary working group comprised of a representative(s) from each of BC's HAs (various combinations of pediatricians, a pediatric subspecialist, nurses, allied health, directors/managers & planners), the BC Pediatric Society, a Child Development Centre, Child Health BC, family physicians & a meeting facilitator. In addition to the working group, representatives from all BC HAs (including the First Nations HA) & other constituent & topic-specific groups were invited to provide feedback on the draft document. The final version was accepted by the Child Health BC Steering Committee.

The document was informed by work done in other jurisdictions, mostly notably Queensland,[1] New South Wales,[2-5] Australia[6] & the United Kingdom.[7,8] B.C. data was used where it was available, as were relevant BC & Canadian standards & guidelines (e.g., Accreditation Canada standards,[9] Provincial Privileging Pediatric Medicine document,[10] Provincial Privileging Pediatric Subspecialty Medicine documents[i] & the Royal College of Physicians & Surgeons Objectives of Training documents for Pediatric Medicine & Medical Subspecialties[ii]).

[i] Current versions of the provincial privileging documents are available at: http://bcmqi.ca/credentialing-privileging.

[ii] Current versions of the Royal College Objectives of Training are available at: www.royalcollege.ca.

2.2 Module Scope

The Children's Medicine module focuses on care provided to children as follows:

1. Hospital-based & accessible as follows:[iii]
   a. New patients: Up to a child's 17th birthday (16 years + 364 days); &
   b. Children receiving ongoing care: Up to a child's 19th birthday (18 years + 364 days).
2. Community-based: Delivered in a variety of community settings (e.g., Child Health Clinics, Child Development Centres, Public Health Units, Community Health Centres, Nursing Stations, daycares, preschools, schools, homes & on-reserve).

The Children's Medicine module does not include:

- Services provided in private family physician, pediatrician, pediatric subspecialists & therapists' offices (beyond the influence of the tiers of service initiative).
- Parenting & other support provided by private & non-profit agencies (beyond the influence of the tiers of service initiative). Note: Parenting & other support provided directly by BC HAs is in scope.
- Services that support complex developmental and/or behavioural conditions (e.g., Cerebral Palsy, Autism & Fetal Alcohol Spectrum Disorder) (discussed in the Children's Development, Habilitation & Rehabilitation Services module).
- Home-based services (discussed in Children's Home-based Services module).
- Services provided in Emergency Departments (EDs) (discussed in Children's ED Services module).
- Services provided in Critical Care Units (discussed in Children's Critical Care Services module).
- Services provided in Neonatal Intensive Care Units (refer to Tiers of Perinatal Care document at: www.perinatalservicesbc.ca).
- Services provided to support children whose primary diagnosis is a psychiatric condition (discussed in Children's Mental Health & Substance Use module).

2.3 Recognition of the Tiers

The *Child Health Tiers of Service Framework* includes 6 tiers of service.

Tier	Child Health Framework Tiers of Service
T1	Prevention, Primary & Emergent Health Service
T2	General Health Service
T3	Child-Focused Health Service
T4	Children's Comprehensive Health Service
T5	Children's Regional Enhanced & Subspecialty Health Service
T6	Children's Provincial Subspecialty Health Service

The *Children's Medicine* module recognizes each of the 6 tiers:

- Children's *General* Medicine Services: T1, T2, T3 & T4.
- Children's *Enhanced & Subspecialty* Medicine Services: T5 & T6.

Table 1 provides an overview (Tiers at a Glance) of the Children's Medical Tiers of Service (General Medicine & Subspecialty Medicine).

[iii] BC Children's Hospital. Administration manual: Admission age, BCCH & Sunny Hill Hospital for Children. 2010.

Table 1: Children's Medicine Tiers at a Glance

Document		Prevention, Primary & Emergent Health Service T1	General Medical Service T2	Child-Focused Medical Service T3	Children's Comprehensive Medical Service T4	Children's Regional Enhanced & Subspecialty Medical Service T5	Children's Provincial Subspecialty Medical Service T6
Service reach		Community health service area(s)/local health area (LHA).	Community health service area(s)/local health area.	Multiple local health areas/health service delivery area.	Health service delivery area/health authority.	Health authority.	Province.
Service focus		Supports the health & well-being of infants, children, youth & their families. Stabilizes & refers/transfers as necessary.	Diagnoses & provides definitive treatment for children with low acuity/complexity medical conditions. Stabilizes & refers/transfers as necessary.	Diagnoses & provides definitive treatment for children with relatively common, medium acuity/complexity conditions. Stabilizes & refers/transfers as necessary.	Diagnoses & provides definitive treatment for children with a broad range of medium acuity/complexity conditions (including complex psychosocial issues). Stabilizes & refers/transfers as necessary.	Diagnoses & provides definitive treatment for children with high acuity and/or relatively common high complexity conditions (including complex psychosocial issues). The range of conditions is dependent upon the types of subspecialists available. Stabilizes & refers/transfers as necessary.	Diagnoses & provides definitive treatment for children with a broad range of high acuity and/or high complexity medical conditions (including complex psychosocial issues), many of whom require care from multiple subspecialty teams.
Children's Medicine Services *(General & Subspecialty Medicine)*	Inpatients		Limited capacity for short-term inpatient stays (in the ED or a general inpatient bed). No dedicated pediatric inpatient beds. If child in hospital, FP/NP on-call 24/7.	Dedicated pediatric inpatient beds. Pediatrician on-call 24/7.	Dedicated pediatric inpatient unit. Pediatrician on-call 24/7.	Dedicated pediatric inpatient unit. Pediatrician (or resident) on-site 24/7. Pediatric subspecialists are available for on-site consultation in higher volume subspecialties which includes but is not limited to neurology & cardiology. Availability is typically days, M-F.	Dedicated pediatric inpatient units, grouped by specialties/ subspecialties. Pediatrician (or resident) on-site 24/7. Full range of pediatric subspecialists available for on-site patient management & consultation 24/7.

Document		Prevention, Primary & Emergent Health Service T1	General Medical Service T2	Child-Focused Medical Service T3	Children's Comprehensive Medical Service T4	Children's Regional Enhanced & Subspecialty Medical Service T5	Children's Provincial Subspecialty Medical Service T6
Children's Medicine Services cont'd *(General & Subspecialty Medicine)*	Outpatients		Clinic space & infrastructure available for visiting specialists & virtual care consultations (in the ED, hospital outpatient or community-based clinic).	Clearly describable process in place to manage children discharged from hospital or ED requiring short-term follow-up by a pediatrician. Child-friendly treatment/ procedure space & infrastructure. May be shared with adults.	Outpatient clinics: • General pediatrics • Child maltreatment (non-acute) Child-friendly clinic(s) & outpatient treatment/ procedure space & infrastructure. May be shared with adults.	Same as T4 plus: Regularly occurring pediatric subspecialty clinics available on-site for higher volume subspecialties which include but are not limited to: • Cardiology • Diabetes • GI medicine • Neurology Pediatric subspecialty clinics may be staffed by local pediatric subspecialty providers or via outreach from T6. Pediatric outpatient clinic & treatment/procedure space is used exclusively by children.	Broad range of pediatric specialty/subspecialty clinics on-site. Coordinates & provides pediatric subspecialty outreach clinics (on-site or virtual care) throughout the province.
	Community -based	Promotes healthy infant, child & youth development, injury prevention & parenting. Provides immunizations. Screens, supports & refers children for developmental delays or other health issues to appropriate resource(s) for assessment.		Assessment & community-based follow-up of children referred for vulnerabilities, delays & other health issues identified through screening. Youth-specific drop-in health care services.	Advanced assessment, intervention & follow-up of referred children *living within the HA/HSDA* with hearing loss.		

3.0 Children's Medical Tiers in Brief

This section describes the responsibilities and requirements at each tier to provide a **safe, sustainable** and **appropriate** level of service.

Service levels are expected to align with the service needs of children living in the team's geographic area of focus. For example, a Tier 6 team (BC Children's Hospital) may be expected to provide T2-T6 services (T1 services are usually community-based & not delivered through a hospital) as follows:

- T2 services for children living in Vancouver
- T3 & T4 services for children living in the Vancouver Coastal geographic area
- T5 & T6 services for children living throughout the province.

While the expectation is that the requirements at each tier will align with the responsibilities, occasional exceptions may occur, usually due to geography & transportation, in which treatments/ procedures may be done on a case-by-case basis in an **unplanned/emergency** by services that would not normally do such treatments/procedures. These exceptions are appropriate in situations in which the resources (trained personnel, equipment, etc) are available & deferring the treatment/procedure would be detrimental to a child's outcome. Another circumstance in which exceptions may occur is in **unique, planned** situations where children with chronic conditions are supported to remain living in their home community (e.g., children with chronic ventilators).

The tier identified for a given service represents the highest tier of that service which is available at that site under usual circumstances.

3.1 Differentiation of the Tiers

3.1.1 Definitions

"Acuity" & "medical complexity" are the terms used to differentiate the tiers from each other. Refer to Appendix 1 for definitions of these terms & a description of the relationship between acuity, medical complexity, frequency & tier of service. Examples of children who would be expected to receive services at each tier are also included. Table 2 provides a "summary" version.

Table 2: Children Appropriate to Receive Services at Each Tier (Medical Complexity, Relative Frequency & Acuity)

		Prevention, Primary & Emergent Medical Service			General Medical Service			Child-Focused Medical Service			Children's Comprehensive Medical Service			Children's Regional Enhanced & Subspecialty Medical Service			Children's Provincial Subspecialty Medical Service		
		T1			T2			T3			T4			T5			T6		
Underlying Condition		Acuity of Presenting Complaint																	
Medical Complexity	**Relative Frequency**	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Healthy																			
Low																			
Med	Common																		
	Uncommon																		
High	Common													*	*				
	Uncommon																		

*Applicable only if relevant medical subspecialty team is available.

3.2 Responsibilities & Requirements at each Tier

Tier 1: Prevention, Primary & Emergent Medical Service

T1: Service descriptions & responsibilities

Service reach:	Serves children that live in the community health service area(s).[iv]
Service focus:	Supports the health & well-being of infants, children, youth & their families.
Service responsibilities	
Clinical services:	
Inpatient	
Hospital-based outpatient	
Community-based	• Services focus on: • Promoting healthy infant, child & youth development, injury prevention & parenting. • Screening, supporting & referring children at risk for or experiencing: (a) developmental delays, including communication/language, motor or cognitive delays; or (b) vision, hearing, nutrition or dental issues. • Providing immunizations. • Services are delivered in a variety of community settings.
Knowledge sharing & transfer/training:	• Facilitates access to learning activities that support the maintenance of physician & staff competencies in child health care. e.g., on-line access to child health guidelines/reference materials/continuing education courses (e.g., PALS) & participation in HA & provincial learning activities relevant to child health (e.g., pediatric rounds & conferences).
Quality improvement & research:	• HA QI structures & processes in place, including case reviews. If child involved, physicians & staff with child health expertise participate in the review. Implements recommendations. • Participates in regional & provincial child health quality improvement initiatives.

[iv] See www.bcstats.gov.bc.ca/statisticsbysubject/geography/referencemaps/Health.aspx for a listing of administrative boundaries in BC.

T1: Service requirements	
Inpatient	
Hospital-based outpatient	
Community-based	• Staff competent in the assessment, care & delivery of health promotion & screening services for infants, children, youth & families. • Staff typically includes: Community-based FPs, NPs, RNs with relevant certified practice designation, public health nurses, RNs, community nutritionists, dental hygienists, non-health professional staff with appropriate education & training (e.g., health unit aides, maternal child health home visitors/workers), Elders & HealthLink BC staff. • Clearly describable post-screening processes in place to access early intervention, child protection & pediatric specialty services. • Well-defined linkages between hospital & community-based services, including services provided to children living on-reserve. • Guidelines to support transition from children's to adult services.

Tier 2: General Medical Service

T2: Service descriptions & responsibilities	
Service reach:	Serves children that live in the community health service area(s)/local health area (LHA).
Service focus:	Diagnoses & provides definitive treatment for children with low acuity/complexity medical conditions.
Service responsibilities	
Clinical services:	
Inpatient	• Very limited inpatient capacity for children (in the ED or a general inpatient bed). • Stays are usually less than 48 hours, after which the child is discharged or transferred to a centre with dedicated pediatric inpatient beds. • Inpatient care includes: • Routine inpatient nursing care including assessment, care planning, treatments, monitoring, teaching & discharge planning (see Tiers in Full for details). • Administration of (1) analgesics via topical, oral, enteral, intranasal & rectal routes; & (2) common intermittent IV medications via syringe & mini bag (e.g., antibiotics). • Insertion & maintenance of continuous peripheral intravenous infusions with pre-mixed electrolytes. • Insertion, replacement & maintenance of NG tubes for short-term

	hydration. Maintains established G-tubes. • Actions to ensure immediate safety needs are met (e.g., during mental health crises; cases of suspected child maltreatment). Capacity to certify a child as per the Mental Health Act, if required. • Stabilization of critically ill children while awaiting transfer.
Hospital-based outpatient	
Community-based	
Knowledge sharing & transfer/training:	• Facilitates access to learning activities that support the maintenance of physician & staff competencies in child health care. e.g., on-line access to child health guidelines/reference materials/continuing education courses (e.g., PALS) & participation in HA & provincial learning activities relevant to child health (e.g., pediatric rounds & conferences).
Quality improvement & research:	• HA QI structures & processes in place, including case reviews. If child involved, physicians & staff with child health expertise participate in the review. Implements recommendations. • Participates in regional & provincial child health quality improvement initiatives.

T2: Service requirements

Inpatient	• Capacity for short-term inpatient stays (in the ED or a general inpatient bed). Bed(s) meets criteria for "safe pediatric bed" (see glossary). No dedicated pediatric inpatient resources/beds. • If child in-hospital, FP/NP on-call 24/7 & available on-site as needed. • RNs assigned to children have "pediatric skills" (see glossary). Practice predominantly involves adults. • Psychosocial & allied health providers available on request for individual cases. Practice is predominantly with adults. • BC Pediatric Early Warning System (PEWS) and site-specific escalation protocols in place in inpatient areas where children are admitted. • Clearly describable process in place to access mental health professionals. • Smart IV pumps used for all children on IVs. • Processes in place for safe medication dispensing, storage & administration, including weight-based dosage calculations.
Hospital-based outpatient	• Clinic space & infrastructure available for visiting specialists & virtual care consultations (in the ED, hospital outpatient or community-based clinic).
Community-based	

Tier 3: Child-Focused Medical Service

T3: Service descriptions & responsibilities

Service reach:	Serves children that live in multiple local health areas and/or the health service delivery area (HSDA).
Service focus:	Diagnoses & provides definitive treatment for children with relatively common, medium acuity/complexity medical conditions. Assessment & community-based follow-up of children referred for vulnerabilities,[v] delays & other health issues identified through screening.
Service responsibilities	
Clinical services:	
Inpatient	• Offers inpatient nursing procedures & treatments which include: • Routine inpatient nursing care including assessment, care planning, treatments, monitoring, teaching & discharge planning (see Tiers in Full for details). • Administration of (1) analgesics via topical, oral, enteral, intranasal, rectal, SQ & IM injection; & (2) intermittent IV medications via syringe & mini bag (e.g., antibiotics, opiates). • Insertion & maintenance of continuous peripheral intravenous infusions with pre-mixed electrolytes. • Maintains peripherally inserted central catheter (PICC) lines. • Initiates & maintains infusions of blood & blood components. • Insertion, replacement & maintenance of NG tubes for short-term hydration. Maintains & replaces established G-tubes. Maintains established GJ tubes. • Administration of supplemental O_2 up to 40% in children who are stable & showings signs of improvement. Resolution expected within 2 - 3 days. • Actions to ensure immediate safety needs are met (e.g., during mental health crises; cases of suspected child maltreatment). Capacity to certify a child as per the Mental Health Act, if required. • Stabilization of critically ill children while awaiting transfer. • Provides consultation & follow-up for children referred for suspected maltreatment. Refers complicated cases to local/regional child protection team. • Pediatric case volumes (minimum): ≥500 medical/surgical visits (inpatient and day care) OR ≥500 med/surg inpatient days per year (excluding NICU).

[v] Children & families who may be at risk for poor outcomes associated with lifestyle/ behavioural, psychosocial or environmental risk factors.

Hospital-based outpatient	*Clinic services:* • Clearly describable process in place to manage children discharged from hospital or ED requiring short-term follow-up by a pediatrician. • High volume sites may offer (not required) pediatric-focused respiratory disease/asthma services and/or diabetes services. If offered, they are linked to T4/T5 services within the HA through HA administrative & quality structures. *Outpatient procedures & treatments:* • Performs outpatient procedures & treatments that have a low risk of allergic reactions/complications which include: • Monitoring (e.g., vital signs, weights, O2 saturations, spirometry) • Diagnostic tests/procedures (e.g., lumbar puncture, bladder catheterization) • IV therapy (e.g., IV fluids, IV starts, blood products, antibiotics, CVC/ICC/CADD care) • Maintenance of peripherally inserted central catheter (PICC) lines. • Teaching (e.g., home NG, rectal valium, home IV) • Wound management/dressing changes • Selected chemotherapy medications as per provincial guideline & direction provided by T6. • Other (e.g., insertion NG tube, IM/SQ injections) • Provides oral sedation to children undergoing diagnostic or therapeutic treatments/procedures.
Community-based	• Provides assessment & follow-up services for children referred for developmental delays or vision, hearing, nutrition or dental issues. Provides enhanced services to parents/families with identified vulnerabilities. • Provides accessible, confidential health care services to youth on a drop-in basis.
Knowledge sharing & transfer/ training:	• Mechanisms in place to regularly review physician & staff education needs related to the maintenance of competencies in child health/pediatric care. • Facilitates physician & staff access to learning activities based on identified practice gaps, including the practice of critical clinical skills where limited opportunity exists in practice (e.g., simulation, off-site clinical experiences).
Quality improvement & research:	• HA QI structures & processes in place, including case reviews. If child involved, physicians & staff with child health expertise participate in the review. Implements recommendations. • Provides child health expertise for T1-T2 case reviews, if requested. • Participates in regional & provincial child health quality improvement initiatives.

T3: Service requirements	
Inpatient	• Pediatrician on-call 24/7 & available for on-site consultation as needed. Inpatients are typically admitted under a pediatrician. • Children are assigned to RNs with "pediatric skills" 24/7 (see glossary). Practice may be predominantly with adults but includes some children. Formalized pediatric orientation & ongoing education offered. • "Safe pediatric beds" available on an inpatient unit (see glossary). Physical separation of children from adult patients recommended. • Interdisciplinary team (psychosocial & allied health providers) available days, M-F on request for individual cases. Members have general pediatric knowledge & skills (most have predominantly adult practices). May be hospital-based or based in the community with in-hospital services provided via a service agreement. • BC Pediatric Early Warning System (PEWS) and site-specific escalation protocols in place in inpatient areas where children are admitted. • Smart IV pumps used for all children on IVs. • Clearly describable process in place to access mental health professionals. General psychiatrist on-call 24/7 & available for on-site consultation as needed.
Hospital-based outpatient	*Clinic services:* • If pediatric-focused respiratory disease/asthma &or/ diabetes outpatient are offered, see T4 for requirements. Services are linked to T4/T5 services within the HA through HA administrative & quality structures. *Outpatient procedures & treatments:* • Pediatrician available on-site for procedures & treatments which require ongoing monitoring. Available on-call at other times. • RNs assigned to children undergoing procedures & treatments have "pediatric skills" (see glossary). Practice may be predominantly with adults but includes some children. • Child-friendly space & infrastructure to perform procedures & treatments. May be shared (in ED, procedure room in inpatient or outpatient area, medical day unit, etc). Capacity to provide oral sedation. • Capacity within the operating room to provide sedation and/or anesthesia to healthy children ages 2 & over undergoing treatments & procedures (as per Surgical Tiers document).
Community-based	• Staff competent to manage children with vulnerabilities & other issues identified through screening. • Staff & physicians with specific knowledge about youth health. • Space to provide youth health drop-in services.

Tier 4: Children's Comprehensive Medical Service

T4: Service descriptions & responsibilities

Service reach:	Serves children that live in the health service delivery area/health authority.
Service focus:	Diagnoses & provides definitive treatment for children with a broad range of medium acuity/complexity medical conditions (including complex psychosocial issues). Advanced assessment & community-based follow-up of children referred for vulnerabilities, delays & other health issues.
Service responsibilities	
Clinical services:	
Inpatient	• Offers a broad range of nursing procedures & treatments, some of which are commonly not available at T3, including: • Administration of analgesics via: (a) continuous IV to children ages 2 & over; & (b) patient controlled IV route. • Administration of oral, intranasal, IM & IV sedation/analgesia. • Insertion of PICC lines. • Insertion and maintenance of short-term central venous catheters (CVCs). • Maintenance of long-term CVCs. • Accessioning & maintenance of implanted venous access devices. • Initiation & maintenance of high alert continuous peripheral IV infusions (e.g., insulin). • Initiates & maintains infusions of blood & blood components. • Insertion, replacement & maintenance of NG tubes required for nutritional management. Maintains & replaces established G-tubes. Maintains established GJ tubes. • Initiation, administration & monitoring of TPN. • Teaches children/families about home enteral nutrition. • Administration of supplemental O2 up to 40% in children who are stable & not deteriorating. Resolution is expected within 1 - 2 weeks. • Collaborates with providers in the child's home community to develop & implement discharge plans. May involve referrals to pediatric specialists/specialty teams (e.g., nursing support services, at-home program, specialty clinics). • Pediatric case volumes (minimum): ≥1,000 medical/surgical visits (inpatient and day care) OR ≥1,500 med/surg inpatient days per year (excluding NICU).

Hospital-based outpatient	*Clinic services:* • Provides consultation & ongoing interdisciplinary care in a Pediatric Outpatient Clinic to children with a broad range of medium complexity medical conditions which include but are not limited to: • Children discharged from hospital or ED requiring short-term follow-up. • Children with complex chronic diseases who require an urgent assessment for a specific issue (e.g., feeding tube malfunction, medication titration). • Children with common pediatric conditions (e.g., asthma, croup, feeding issues, constipation, food allergies, developmental delays/issues & behavioural challenges). • Children with vulnerabilities related to the social determinants (e.g., low income, new immigrants & refugees). • Children requiring lifestyle assistance (e.g., healthy weights). • Children undergoing surgeries that require pre- or post-op evaluation/ testing. • In collaboration with T5/T6 subspecialty teams, provides ongoing management/monitoring for children with high complexity medical conditions that live within the HA. • Refer to Children's Diabetes Tiers of Service module for responsibilities related to diabetes. • Accesses team within the HA for consultation & follow-up of children in whom maltreatment is suspected (non-acute response). [Suspected Child Abuse & Neglect (SCAN) team]. Team may be hospital or community-based. • Hosts clinics for T5/T6 visiting pediatric subspecialty teams (on-site or via virtual care). *Outpatient procedures & treatments* • Performs outpatient procedures & treatments that have a medium risk of allergic reactions/complications. Includes T3 procedures & treatments plus infusions of: • Steroids & antibodies (e.g., infliximab) & bisphosphonates • Cytotoxic and/or chemotherapy medications (as per provincial guideline & direction provided by T6 cancer & rheumatology services).
Community-based	• Provides advanced assessment & follow-up services for children referred for delays & other health issues. e.g., auditory brainstem response (ABR) testing +/- sedation to assess the cause & extent of hearing loss. • Refer to Child Development, Habilitation & Rehabilitation module for other community-based services.
Knowledge sharing & transfer/ training:	Health care learners: • Provides child health/pediatric experiences/placements for a broad range of undergraduate, graduate & post-graduate health care learners. • Designated by UBC as a training site for undergraduate medical students, family medicine residents & pediatric residents.

	Staff & physicians: • Mechanisms in place to regularly review physician & staff education needs related to the maintenance of competencies in child health/pediatric care. • Facilitates physician & staff access to learning activities based on identified practice gaps, including the practice of critical clinical skills where limited opportunity exists in practice (e.g., simulation, off-site clinical experiences). • Organizes regional activities that support the maintenance of physician & staff competencies in child health/pediatric care (e.g., pediatric rounds, conferences). Provides pediatric clinical experiences for T1-T3 (on-site &/or via simulation). If T5 exists within the HA, works in collaboration with T5.
Quality improvement & research:	• HA QI structures & processes are in place to specifically review & improve the quality & safety of care provided to children, including case reviews. Implements recommendations. • Provides child health/pediatric expertise for T1-T3 case reviews, if requested. • Participates in the provincial approach to collection & tracking of child health/pediatric quality indicators. Leads the tracking of quality indicators at a regional level (in collaboration with T5 if T5 exists within the HA). • Leads regional quality improvement initiatives (in collaboration with T5 if T5 exists in HA). Participants in provincial quality improvement initiatives.

T4: Service requirements

Inpatient	• Pediatrician on-call 24/7 & available for on-site consultation as needed. • "Safe pediatric unit" (see glossary) available. RNs practice exclusively or primarily with children. Formalized pediatric orientation & ongoing education offered. • Other members of the interdisciplinary team (psychosocial & allied health providers) available days, M-F (some on extended hours). Team members have general pediatric knowledge & skills (most have practices which include adults & children). • RT/MD on-site 24/7 to perform endotracheal intubation if required. • Pain management team & wound/ostomy RN available days, M-F (for adults & children). • BC Pediatric Early Warning System (PEWS) and site-specific escalation protocols in place on inpatient pediatric unit. • Mental health services, including general psychiatrist, on-call 24/7 & available for on-site consultation as needed. • Smart IV pumps used for all children on IVs.

Hospital-based outpatient

- Child-friendly clinic space(s) & infrastructure. May be shared with adults.
- Space accommodates T5/T6 outreach services (on-site or via virtual care) for selected pediatric subspecialty services. At a minimum, subspecialty services include an RN and the relevant pediatric subspecialist.

Staffing	Pediatric Outpatient Clinic	Child Maltx [SCAN] Clinic[vi]
MD/NP	Ped'n +/- GP/NP	Ped'n +/- GP/NP
RN	✓	✓
Cert asthma educator	✓ See note 1	
SW	On request/referral	✓ or psychologist
Dietician	On request/referral	
Child life	On request/referral	
OT	On request/referral	
PT	On request/referral	
RT	On request/referral	
Pharmacist	On request/referral (by phone)	On request/referral (by phone)

Legend:
✓ = Consistent person(s) assigned & available on-site to participate in scheduled clinics. Consistency allows for development of enhanced pediatric skills in specialty/subspecialty area.

On request/referral = Person(s) with general pediatric knowledge & skills is available on a limited, consultation basis to come to the clinic to assess & treat specific children. May not be a consistent person.

Community-based

- Audiologists & audiology technicians with training in advanced diagnostic testing (e.g., ABR). Audiology clinic with soundproof booth & specialized equipment & supplies.
- Staff & physicians with specific knowledge about youth health.
- Space to provide youth health care drop-in services.

Tier 5: Children's Enhanced & Regional Medical Subspecialty Service

T5: Service descriptions & responsibilities

Service reach: Serves children that live throughout the health authority (HA) (regional referral centre).

Service focus: Diagnoses & provides definitive treatment for children with high acuity and/or relatively common high complexity medical conditions (including complex psychosocial issues). The range of conditions is dependent upon the types of subspecialists available.

Advanced assessment & community-based follow-up of children referred for vulnerabilities, delays & other health issues.

[vi] May be hospital or community based.

Service responsibilities	
Clinical services:	
Inpatient	• Provides on-site pediatric subspecialty consultation in higher volume subspecialties which includes but is not limited to neurology & cardiology (inpatients are typically admitted under a pediatrician). • Inpatient nursing procedures & treatments & coordination of complex discharges as per T4 plus: • Inserts long-term CVCs & implanted venous access devices (in the OR). • Establishes G-tubes & GJ tubes (in radiology). Maintains & replaces established G-tubes & GJ tubes (in radiology). • Procedures & treatments relevant to on-site T5 subspecialty services. • Pediatric case volumes (minimum): ≥2,000 medical/surgical visits (inpatient and day care) OR ≥4,500 med/surg inpatient days per year (excluding NICU).
Hospital-based outpatient	*Clinic services:* • Provides interdisciplinary care to children with a: • Broad range of medium complexity medical conditions (as per T4); & • Limited range of common, high complexity medical conditions. • Regularly occurring interdisciplinary Pediatric Subspecialty Clinics are available for higher volume subspecialties which include but are not limited to cardiology, diabetes, GI medicine and neurology. Clinics may be staffed by local pediatric subspecialty providers or by T6 providers via on-site outreach. *Outpatient procedures & treatments:* • Same as per T4 plus procedures & treatments relevant to on-site T5 subspecialty services.
Community-based	• Provides advanced assessment & follow-up services for children referred for delays & other health issues. e.g., auditory brainstem response (ABR) testing +/- sedation to assess the cause & extent of hearing loss. • Refer to Child Development & Rehabilitation module for other community-based services.
Knowledge sharing & transfer/ training:	Health care learners: • Provides child health/pediatric experiences/placements for a broad range of undergraduate, graduate & post-graduate health care learners. • Designated by UBC as a training site for undergraduate medical students, family medicine residents & pediatric residents. Staff & physicians: • Mechanisms in place to regularly review physician & staff education needs related to the maintenance of competencies in child health/pediatric & pediatric subspecialty care (as relevant to the subspecialty services provided on-site). • Facilitates physician & staff access to learning activities based on identified practice gaps, including the practice of critical clinical skills where limited opportunity exists in practice (e.g., simulation, off-site clinical experiences). • Organizes regional learning activities that support the maintenance of physician & staff competencies in child health/pediatric care (e.g., rounds &

	conferences, clinical experiences on-site or via simulation). Provides child health/pediatric clinical experiences for T1-T4. Works in collaboration with T4.
Quality improvement & research:	Quality improvement: • HA QI structures & processes are in place to specifically review & improve the quality & safety of care provided to children, including case reviews. QI includes reviewing & improving the quality of pediatric subspecialty care provided on-site. Implements recommendations. • Provides child health/pediatric expertise for T1-T4 case reviews, if requested. • Participates in the provincial approach to collection & tracking of child health/pediatric quality indicators. Leads the tracking of quality indicators at a regional level (in collaboration with T4). • Leads regional quality improvement initiatives (in collaboration with T4). Participants in provincial quality improvement initiatives. Research: • Participates in child health/pediatric-related research & research in pediatric subspecialty areas provided on-site.

T5: Service requirements

Inpatient	• Pediatrician (or resident) on-site 24/7. Inpatients are typically admitted under a pediatrician. • Pediatric subspecialists are available for on-site consultation in higher volume subspecialties which includes but is not limited to neurology & cardiology. Availability is typically days, M-F - not 24/7. • "Safe pediatric unit" (see glossary) available. RNs practice exclusively or primarily with children. Formalized pediatric orientation & ongoing education offered. • Interdisciplinary team (psychosocial & allied health providers) available days, M-F (some on extended hours). Most members work exclusively or primarily with children. • Pediatric feeding & swallowing team & capacity to perform videofluoroscopy feeding studies available locally. • Pain management team & wound/ostomy RN available days, M-F (for adults & children). • BC Pediatric Early Warning System (PEWS) and site-specific escalation protocols in place on inpatient pediatric unit. • Mental health services on-call 24/7. Child & youth psychiatrist available days, M-F & general psychiatrist on-call after-hours. • On-site T5 NICU & T5 PICU.
Hospital-based outpatient	• Clinic space(s) & infrastructure is assigned to children only. • Space accommodates T6 outreach services (on-site or via virtual care). • Pediatric Outpatient and Child Maltreatment Clinics are available. See chart below for staffing requirements.

- Subspecialty Clinics are available for higher volume subspecialties which include but are not limited to cardiology, diabetes, GI medicine and neurology. Clinics may be staffed by local pediatric subspecialty providers or by T6 providers via on-site outreach. See chart below for staffing.

Staffing	Pediatric Outpatient Clinic	Child Maltx [SCAN] Clinic[vii]	Subspecialty Clinics
MD/NP	Ped'n +/- GP/NP	Ped'n +/- GP/NP	Subspecialist
RN	✓	✓	✓
Cert asthma educator	✓ See note 1		Others as relevant to the type of subspecialty service provided
SW	On request/referral	✓ or psychologist	
Dietician	On request/referral		
Child life	On request/referral		
OT	On request/referral		
PT	On request/referral		
RT	On request/referral		
Psychologist	T4: None T5: On request/referral	✓ or SW	
Pharmacist	On request/referral (by phone)	On request/referral (by phone)	

Legend:
✓ = Consistent person(s) assigned & available on-site to participate in scheduled clinics. Consistency allows for development of enhanced pediatric skills in specialty/subspecialty area.

On request/referral = Person(s) with general pediatric knowledge & skills is available on a limited, consultation basis to come to the clinic to assess & treat specific children. May not be a consistent person.

Tier 6: Children's Provincial Subspecialty Medical Service

T6: Service descriptions & responsibilities

Service reach:	Serves children that live throughout the province.
Service focus:	Diagnoses & provides definitive treatment for children with a broad range of high acuity and/or high complexity medical conditions (including complex psychosocial issues), many of whom require care from multiple subspecialty teams.

Service responsibilities

Clinical services:

Inpatient

- Provides on-site subspecialty consultation & patient management for a broad range of high acuity/complexity medical conditions.
- Inpatient nursing procedures & treatments available as per T5 plus:
- Manages pain that requires an extended & innovative range of options, including regional analgesia/anesthesia (e.g., epidurals).

[vii] May be hospital or community based.

	• Provides care to children with a stable airway & stable ventilator requirements. • Provides care to children that require CPAP & BIPAP under specific circumstances (refer to Tiers in Full for specific circumstances). • Procedures & treatments relevant to on-site T6 subspecialty services. • Collaborates with providers in the child's home community to develop & implement complex discharge plans which may involve multiple pediatric specialists/programs, resources & equipment needs (e.g., NG or CVC care at home, home ventilation, home TPN, etc). • Pediatric subspecialists provide telephone consultation to health care providers *throughout* the province 24/7. RNs, allied health & other specialty/subspecialty team members available for consultation days, M-F. • Pediatric case volumes (minimum): ≥8,000 medical/surgical visits (day care & inpatient) OR ≥20,000 med/surg inpatient days per year (excluding NICU).
Hospital-based outpatient	*Clinic services:* • Provides interdisciplinary care & follow-up to children with a broad range of high complexity medical conditions in regularly occurring Pediatric Specialty/Subspecialty Medicine Outpatient Clinics. *Outpatient procedures & treatments:* • Same procedures & treatments as T5 plus procedures & treatments relevant to T6 subspecialty services.
Community-based	
Knowledge sharing & transfer/ training:	• Health care learners: Provides child health/pediatric experiences/placements for a broad range of undergraduate, graduate & post-graduate health care learners. • Designated by UBC as a training site for undergraduate medical students, family medicine residents & pediatric residents. Range of pediatric medicine experiences is broad, including rotations in general pediatrics, pediatric ED, NICU, PICU & subspecialty areas. • In conjunction with UBC, develops model & provides clinical experiences for training pediatric & pediatric subspecialty medicine residents/fellows in BC. Staff & physicians: • Mechanisms in place to regularly review physician & staff education needs related to the maintenance of competencies in child health/pediatric & pediatric subspecialty care. • Facilitates physician & staff access to learning activities based on identified practice gaps, including the practice of critical clinical skills where limited opportunity exists in practice (e.g., simulation). • Organizes provincial & regional learning activities that support the maintenance of physician & staff competencies in child health/pediatric & pediatric subspecialty care.

	• Provides pediatric & pediatric subspecialty clinical experiences for T1-T5 physicians & staff throughout the province (on-site and/or via simulation).
Quality improvement & research:	Quality improvement: • HA QI structures & processes are in place to specifically review & improve the quality & safety of care provided to children (including subspecialty care), including case reviews. Implements recommendations. • Provides pediatric subspecialty expertise for T1-T5 case reviews, if requested. • Participates in the provincial approach to collection & tracking of child health/pediatric quality indicators. Leads the tracking of quality indicators at a regional level (in collaboration with T4). • Leads provincial quality improvement initiatives (in collaboration with other HAs), as well as regional quality improvement initiatives (in collaboration with T4). • In collaboration with CHBC & HAs, develops & disseminates guidelines on relevant child health/pediatric/pediatric medicine subspecialty topics. Research: • Conducts & supports others to conduct research in child health/pediatrics & pediatric subspecialty areas.

T6: Service requirements

Inpatient	• Pediatrician (or resident) on-site 24/7. • Full range of pediatric subspecialists available on-call 24/7 & available for on-site consultation & patient management as needed. • "Safe pediatric units" (see glossary) available & grouped according to medical/surgical specialties/subspecialties. • RNs practice is exclusively or primarily with children. Most RNs have "enhanced pediatric skills" (see glossary) in a specific subspecialty area(s). Formalized pediatric orientation & ongoing education offered. • Interdisciplinary team (psychosocial & allied health providers) available days, M-F (some on extended hours). Members work exclusively or primarily with children. Most have "enhanced pediatric skills" (see glossary) in a specific subspecialty area(s). • Pediatric feeding & swallowing team & capacity to perform videofluoroscopy feeding studies available locally. • Pediatric pain management team & pediatric wound/ostomy RN available days, M-F. • BC Pediatric Early Warning System (PEWS) and site-specific escalation protocols in place on inpatient pediatric unit. • Child & youth psychiatrist on-call 24/7 & available on-site for consultation as needed. Child & youth inpatient mental health units on-site. • On-site NICU & PICU.

Hospital-based outpatient

Clinic services:

- Pediatric-specific clinic space & infrastructure available for specialty & subspecialty clinics.
- On-site (a) pediatric feeding & swallowing team for oral motor & dietary assessment/consultation days, M-F; & (b) videofluoroscopy feeding studies.
- Clinic staffing:
  - General Pediatric Outpatient Clinic: as per T5.
  - Specialty & Subspecialty Clinics: See below.

	Specialty Clinics				
Staffing	**Complex Care Clinic**	**Complex Feeding & Nutrition Clinic**	**Complex Pain Clinic**	**Child & Family Clinic (Child Maltreatment)**	**Subspecialty Clinics**
MD/NP	Ped'n +/- GP/NP	Ped'n + GI Med MD +/- GP/NP	Ped'n + Developt'l Ped'n + Peds Anesthesiologist + Psychiatrist	Ped'n +/- GP/NP +/- Psychiatrist	Subspecialist(s)
RN	✓	✓	✓	✓	✓
SW	✓	On request/referral	✓	✓	Others as relevant to the type of subspecialty service provided
Dietician	✓	✓	On request/referral	On request/referral	
Child life	On request/referral	On request/referral	On request/referral	On request/referral	
OT	On request/referral	On request/referral	On request/referral	On request/referral	
PT	On request/referral	On request/referral	✓	On request/referral	
SLP	On request/referral	On request/referral	On request/referral	On request/referral	
RT	On request/referral	On request/referral	On request/referral	On request/referral	
Psychologist	On request/referral	On request/referral	✓	✓	
Pharmacist	On request/referral	On request/referral	✓	On request/referral (by phone)	

Legend:
✓ = Consistent person(s) assigned & available on-site to participate in scheduled clinics. Consistent exposure to children with specified condition(s) allows for development of "enhanced skills" (see glossary) in specialty/subspecialty area.

On request/referral = Person(s) with general pediatric knowledge & skills is available on a limited, consultation basis to come to the clinic to assess & treat specific children. May not be a consistent person.

Community-based

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Appendix 1: Differentiation of the Tiers

"Acuity" & "medical complexity" are the terms used to differentiate the tiers from each other. This Appendix provides definitions of these terms & describes the relationship between acuity, medical complexity, frequency & the tier of service. Examples of children who would be expected to receive services at each tier are also included.

Table 3: Levels of Medical Complexity

Note: None (no complexity) = Healthy child

	Medical Complexity		
	Low	**Medium**	**High**
Relative frequency	Common; AND	Common or uncommon; AND	Common or uncommon; AND
Systems affected	Single system condition; AND	Single or multi-system; AND	Multi-system; AND
Course of illness	Predictable; AND	Predictable; AND	Unpredictable; AND
Availability of care algorithms/ protocols	Yes; AND	Some conditions; AND	No; AND
Risk associated with short-term, intercurrent acute illness	Unlikely to create immediate risk; AND	Unlikely to create immediate risk; AND	May create immediate risk; AND
Exacerbations	Exacerbations, if present, do not require emergent intervention; exacerbations are predictable & not life-threatening; AND	Exacerbations may require emergent intervention; exacerbations are predictable & not life-threatening; AND	Exacerbations are frequent & often linked to significant disability and/or threat to life & limb; AND
Range of interventions required & predictability of outcomes	Standard range; outcomes of interventions are predictable; AND	Standard range; outcomes of interventions are predictable; AND	Extended & innovative range of interventions may be required; interventions may be associated with significant risk or side effects; &
Signs & symptoms of clinical deterioration	Obvious; AND	May be subtle; AND	Risk of unpredictable life threatening deterioration is significant & signs & symptoms may be subtle; AND
Functional limitations specific to the medical condition & its management	Functional impairments, if present, are short-lived & expected to resolve; AND	Regular monitoring & proactive planning is required to manage functional impairments; AND	Significant functional impairments may be present, often requiring prolonged dependence on:[11] • Device-based support (e.g., tracheostomy, suctioning, oxygen support, tube feeding and/or mechanical ventilation); AND/OR • Other medical devices requiring regular care/monitoring (e.g., apnea monitors, renal dialysis, urinary catheters/colostomy bags); AND
Impact if condition deviates from expected course	Unlikely to be life-threatening.	Unlikely to be life-threatening	May be life-threatening
Examples	Well controlled asthma or diabetes, psoriasis, obesity, autoimmune hypothyroidism, celiac	Common conditions: Common and/or repaired congenital heart disease, cerebral palsy with some co-morbidities, epilepsy, spina	Common conditions: complex congenital heart disease, known genetic syndrome with multiple congenital anomalies (Angelman's, Prader-Willi, Noonan),

	Medical Complexity		
	Low	**Medium**	**High**
	disease.	bifida, Crohn's disease, juvenile arthritis, nephrotic syndrome. Uncommon conditions: Sickle cell disease, Cystic fibrosis, hemophilia, Hirschschprung's disease, HIV infection.	muscular dystrophy, spinal muscular atrophy. Uncommon conditions: extremely rare metabolic disorders, rare or undiagnosed syndrome with active multisystem involvement, fragility & neurological impairment, ex-preterm infant with numerous sequelae (developmental delay, hydrocephalus, seizures, aspiration, pulmonary hypertension, gastrostomy tube, spasticity, neurogenic bladder, etc.)

Table 4: Levels of Acuity

	Acuity		
	Low	**Medium**	**High**
Presenting problem	Non-urgent	May be urgent or expected to progress to be urgent in the foreseeable future. May be associated with significant discomfort or inability to function.	Potential or real threat to life, limb or function. May be associated with significant discomfort or inability to function.
Potential for immediate deterioration	No history suggestive of potential for immediate deterioration	Stable & not deteriorating. Need for ICU would be an unexpected event.	Potential for immediate deterioration. Need for ICU may be expected.
Investigations & interventions	Non-urgent investigations & interventions required.	Some investigations & interventions required in the immediate-term	Immediate & possibly extensive investigations & interventions required. Typically requires an inpatient stay up to & including ICU.
Examples	Acute otitis media, vomiting, hematuria, constipation in an otherwise healthy child, concussion, mild-moderate failure to thrive.	Persistent vomiting, exacerbation of asthma, mild to moderate dehydration, afebrile or febrile seizures, Kawasaki disease, pneumonia, croup.	Bacterial meningitis, septic shock, intractable seizures, acute renal failure, severe anemia, volvulus, enterocolitis.

Table 5 provides an overview of the relationship between medical complexity, relative frequency, acuity & the appropriate tier of service provision. Table 6 provides examples of children who would be expected to receive services at each tier.

Table 5: Children Appropriate to Receive Services at Each Tier (based on Medical Complexity, Relative Frequency & Acuity)

		Prevention, Primary & Emergent Medical Service			General Medical Service			Child-Focused Medical Service			Children's Comprehensive Medical Service			Children's Regional Enhanced & Subspecialty Medical Service			Children's Provincial Subspecialty Medical Service		
		T1			T2			T3			T4			T5			T6		
Underlying Condition		Acuity of Presenting Complaint																	
Medical Complexity	Relative Frequency	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Healthy		Eg 1							Eg 4							Eg 11			
Low		Eg 2							Eg 5							Eg 12			
Med	Common							Eg 3	Eg 6							Eg 13			
	Uncommon										Eg 7	Eg 8				Eg 14			
High	Common													* Eg 9	* Eg 10		Eg 15	Eg 17	Eg 19
	Uncommon																Eg 16	Eg 18	Eg 20

Legend for Table 5:

Eg Refer to Table 6 for examples of children appropriate to receive services.

* Applicable only if relevant medical subspecialty team is available

NOTE:
Psychosocial complexity, in addition to medical complexity, may impact the appropriate tier of service provision. Children with significant psychosocial issues generally require the services of T4 or above.

Table 6: Examples of Children Appropriate to Receive Services at Each Tier (application of the principles in Tables 3, 4 & 5)

#	Med Complexity	Relative Frequency	Acuity	Example	Tier of Service Required
1	Healthy		Low	Otherwise healthy child presenting with otitis media	T1, T2
2	Low		Low	Child with well controlled asthma presenting with hematuria	T1, T2
3	Med	Common	Low	Child with Crohn's disease presenting with acute otitis media	T3
4	Healthy		Med	Healthy child presenting with persistent vomiting & mild to moderate dehydration	T3
5	Low		Med	Child with celiac disease presenting with pneumonia	T3
6	Med	Common	Med	Child with cerebral palsy presenting with afebrile or febrile seizures	T3
7	Med	Uncommon	Low	Child with hemophilia presenting with hematuria	T4
8	Med	Uncommon	Med	Child with HIV infection presenting with pneumonia	T4
9	High	Common	Low	Child with complex congenital heart disease presenting with failure to thrive	T5 (if pediatric cardiologist available) - otherwise T6
10	High	Common	Med	Child with Duchene's muscular dystrophy presenting with pneumonia	T5 (if pediatric neurologist available) - otherwise T6

#	Med Complexity	Relative Frequency	Acuity	Example	Tier of Service Required
11	Healthy		High	Otherwise healthy child presenting with bacterial meningitis	T5 - (if PICU available) - otherwise T6
12	Low		High	Child who is obese presenting with septic shock	T5 - (if PICU available) - otherwise T6
13	Med	Common	High	Child with cerebral palsy presenting with intractable seizures	T5 - (if PICU available) - otherwise T6
14	Med	Uncommon	High	Child with Hirschprung's disease presenting with enterocolitis	T5 - (if PICU available) - otherwise T6
15	High	Common	Low	Child with Angelman's Syndrome presenting with concussion.	T6
16	High	Uncommon	Low	Child with an unknown genetic diagnosis involving severe neurological impairment & multisystem chronic disease, presenting with acute otitis media.	T6
17	High	Common	Med	Child with Prader-Willi Syndrome presenting with exacerbation of asthma	T6
18	High	Uncommon	Med	Ex pre-term infant with numerous sequelae (e.g., developmental delay, hydrocephalus) presenting with persistent vomiting	T6
19	High	Common	High	Child with complex congenital heart disease presenting with meningitis	T6
20	High	Uncommon	High	Child with a fatty acid oxidation disorder presenting with metabolic decompensation in the setting of a febrile illness.	T6

Appendix 2: Glossary

Registered Nurse with "pediatric skills"

- Demonstrates a broad understanding of growth & development. Distinguishes between normal & abnormal growth & development of infants, toddlers, children & youth.
- Understands the psychological impacts of care provision (including hospitalization) at different developmental stages (infant, toddler, preschooler, school aged & youth).
- Understands how to provide a physically & psychologically safe environment appropriate to the age & condition of the child.
- Demonstrates understanding of the physiological differences between infants, children & adults & implications for assessment & care.
- Assesses a child's normal parameters, recognizes the deviations from the normal & acts appropriately on the findings.
- Demonstrates knowledge of common pediatric conditions & their management.
- Demonstrates understanding of fluid management in an infant & child.
- Calculates & administers medications & other preparations based on weight based dosages.
- Assesses child & family's knowledge & provides teaching specific to the plan of care & condition or procedure.
- Communicates effectively & works in partnership with children & families (children & family-centered care).
- Aware of & accesses pediatric-specific clinical guidelines & protocols.
- Responds to patient deterioration/acute urgent situations in an appropriate & timely manner.
- Commences & maintains effective basic pediatric life support, including 1 & 2-rescuer infant & child CPR, AED use & management of airway obstructions.
- Provides referrals to public health nursing, nutrition & utilizes contact with the child & family to promote child health. e.g., immunization, child safety.
- Assesses pain & intervenes as appropriate.
- Initiates & manages peripheral IV infusions on children. Consults expert clinicians as necessary. Identifies & manages complications of IV therapy.

References:

- NSW's Guidelines for Care in Acute Care Settings[3]
- BC Children's Pediatric Foundational Competencies on-line course[12]
- BC Children's CAPE tools (2008-2010)[13]

"Enhanced pediatric skills" (refers to RNs & others on the interdisciplinary team)

- Demonstrates in-depth knowledge in a specific area of clinical care (e.g., respiratory diseases, sexual assault, diabetes, wound management, etc).
- Performs comprehensive assessments & plans, provides & evaluates care in children with suspected or known issues in specific areas of clinical care.

Reference: BC Children's CAPE tools.[13]

"Safe pediatric bed"

All hospitals that admit children must take steps to ensure the environment is as safe as possible for children & youth (<16.9yrs). For a T2 service, this includes:

- Physical safety:
  - Area is physically safe for children & youth with any potentially dangerous equipment or sharps, ligature risks, medications, chemicals or fluids out of reach or in locked cupboards. Windows if present must have safeguards to allow for minimal opening.
  - Ability to position bed near the nursing station for appropriate level of observation, as required (e.g., children/youth with mental health conditions).
  - Physical separation of children & youth from adult patients is recommended. If physical separation is not possible, children & youth are not in the same area/unit as adults who are under the influence of, or withdrawing from alcohol or chemical substances, known sex offenders, a danger to themselves or others and/or are confused and/or wandering.
  - Furniture meets appropriate safety standards for children & youth, with appropriate size of beds for smaller children.
- Psychological comfort:
  - Parents/primary caregivers are able to stay with their children & youth 24/7 during hospitalization.
  - Self-served food and drink is in close proximity.
- Knowledgeable staff:
  - Sufficient “RNs with pediatric skills” are allocated each shift to ensure adequate supervision and care (includes adhering to a daily routine) relevant to the age and nursing needs of child.
  - Criminal record checks are required as part of the credentialing and/or hiring process for all staff and physicians (as per legislation).
- Equipment and supplies:
  - Pediatric emergency equipment and supplies are in close proximity (refer to Appendix 1 in the Medical Tiers in Full document for a non-exhaustive list of equipment and supplies).

Additional requirements for a T3/T4 service:

- Psychological comfort:
  - Access to child-friendly bathrooms.
  - Space for changing diapers (if appropriate to the clinical specialty).
  - Facilities for breastfeeding and breast milk storage (if appropriate to the clinical specialty).
  - Safe space(s) and age-appropriate facilities/equipment for children and youth to play/be entertained/have exercise. e.g., age appropriate media, arts/crafts books and board games, supervised use of courtyard, if available.

"Safe pediatric unit"

In addition to the requirements for a safe bed, a "safe pediatric unit" includes:

- Physical safety:
  - Children & youth are cared for on a dedicated pediatric inpatient unit(s).
  - Pediatric unit is functionally separate from adult patients, preferably with a door that can be closed (but not locked) and not opened by young children.
  - Regulated hot water temperature and secure electrical outlets are present on the unit.

- Psychological comfort:
  - Bedside sleeping facilities and ideally a kitchenette with fridge and microwave are available for parents/primary care givers.
  - Youth-friendly facilities/activities are available.
- Mechanisms to promote safety amongst children and youth with mental health conditions, such as:
  - Regular site-wide safety risk assessments (as per WorkSafe BC violence risk assessments). e.g., Personal alarms or panic buttons available where required? Appropriate staffing to prevent staff working alone/in isolation).
  - Least restraint and seclusion procedures (see Provincial Least Restraint Guidelines, 2018).
  - Environmental/room and unit safety checks/rounds and documentation in alignment with BC Provincial Violence Prevention Curriculum.
  - Guidelines to ensure personal searches are conducted only as required for safety, as per trauma informed guidelines.

Reference: *BC Children's Hospital (2019). 2019 ONCAIPS-BC Provincial Child & Adolescent Inpatient Mental Health Standards. BC Children's Hospital, Child and Adolescent Psychiatry.*

Child & family-centred care

Child & family-centred is one of the tenets of pediatric care. For a all tiers, this means:

- Services are delivered in line with the principles of the UN Convention on the Rights of the Child (version in child friendly language is at: http://www.unicef.org/rightsite/files/uncrcchilldfriendlylanguage.pdf).
- Children & their families are actively involved in health care planning & transitions.
- Children & their families are provided information about care options available to them in a way they can understand. This allows them to make informed choices.
- The chronological & developmental age of the child is considered in the provision of information & care.
- Families are actively encouraged to participate in the care of their child.
- Education is provided to children & their families who wish to be involved in providing elements of their own/their child's care.
- When families stay in hospital to help care for a child:
  - The environment supports family presence & participation (e.g., overnight accommodation, sitting room, quiet room/area for private conversation & facilities for making refreshments).
  - Consideration is given to their practical needs, including regular breaks for personal needs, to obtain food/drink, make telephone calls, etc.
- Information & support is given to families on how to access funds for travel to & from specialist centres.
- Information is available for children & their families in several formats including leaflets & videos. Information is culturally & age-appropriate & is provided in a variety of commonly used languages.
- Child & their families have access to professional interpreter services.
- Children & their families are provided with contact details for available support groups, as appropriate.

- Transition pathways are in place to allow for seamless transition to adult services.
- Children & families are actively encouraged to assist in identifying safety risks (e.g., ask questions about medications, question providers re hand washing etc).
- Opportunities are available for children & their families to provide input on the quality & safety of care provided (e.g., surveys, committees, rounds, parent advisory council, etc).

Adapted from:

- Institute for Healthcare Improvement, the National Initiative of Children's Healthcare Quality & the Institute for Patient- & Family-Centered Care, Patient- & Family-Centered Organizational Self-Assessment Tool, 2013.[14]
- Welsh Assembly Government, All Wales Universal Standards for Children & Young People's Specialised Healthcare Services, 2008.[15]
- Maurer, M et al, Guide to Patient & Family Engagement: Environmental Scan Report (Agency for Healthcare Research & Quality), 2012.[16]

Appendix 3: Change Log

Document	Date	Description of Change
Initial approval (by CHBC Steering Committee)	July 2016	
Minor revisions	July 2019	• Incorporated new designation of "community health service area" (Service Reach, T1/T2). • Added criteria for site-specific escalation protocols (BC PEWS) (All tiers) • Added additional detail around T6 discharge planning responsibilities. • MDs: Added that inpatients are typically admitted under a pediatrician (T5). • Clarified that if pediatric-focused respiratory disease/asthma &/or diabetes services offered at T4, they are linked to T4/T5 services. • Added specificity to continuing education & QI activities requirements for physicians (to align with other modules).
	August 2020	Appendix 2: Glossary. Updated definition of "safe pediatric unit" to align with mental health module (additional criteria).
	April 25, 2021	Minor editorial changes and finalized the formatting.