CHILDREN & DIABETES SERVICES (OUTPATIENTS)

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Children & Diabetes Services (Outpatient)

Contents

1.0 Diabetes: Incidence, Prevalence & Adherence to Guidelines

In 2012/2013, there were, 2,264 children less than 20 years old living with Type 1 diabetes in BC. There were 250 new cases of Type 1 diabetes in 2007/08. See Table 1.

Table 1: BC Prevalence & Incidence Statistics, Children <20 Years Old

Diabetes	BC Prevalence	BC Incidence
Type 1	2,264 cases (2012/13)	250 new cases per year (2007/08)
Type 2	219 (63% female) cases (2012/13)	53 (68% female) new cases per year (2012/13).

Source Type 1: Fox DA, Islam N, Sutherland J, Reimer K, Amed S, 2018.[1]
Source Type 2: Amed S, Islam N, Sutherland J, Reimer K, 2018.[2]

Adherence to guidelines
A study of BC children diagnosed with Type 1 diabetes over a 7-year period (Amed et al, 2013[3]) reported:

- Mean age at diagnosis of type 1 diabetes was 10.2 years (study included 1,472 children representing 5,883 person years under age 20 at the time of their diabetes diagnosis).
- 39% of person-years had good adherence[i] to guidelines (7% had optimal and 32% had good adherence). 61% did not have good adherence (7% had minimal[ii] and 54% had poor[iii] adherence).
- The proportion of person-years at goal (optimal of good adherence) was:
  - higher in females than males (41% vs 37.6%)
  - higher in younger children than older children (~42% in children up to age 14 and 28% in children 15 - 19 years).
  - higher in children whose diabetes care was provided by a specialist or in a shared specialist/GP model (54% each) than by a GP only (28%).
- No difference was found in the proportion of person-years at goal among individuals with and without an MSP subsidy.
- While there was a decreasing trend in proportion at goal as distance from BC Children's Hospital (BCCH) increased, this trend was not statistically significant.
- Individuals 4-years post-diagnosis were 78% less likely to be at goal compared with the year of diagnosis (52% at goal in the year of diagnosis vs 20% 4 years post-diagnosis). For every yearly increase in the age at diagnosis, the odds of being at goal decreased by 3.5%.

[i] Defined as optimal or good adherence to guidelines. Optimal adherence = 3 diabetes-related MD visits/yr, 3 hemoglobin A1c (HbA1c) tests/yr, 1 glucagon prescription dispensed/yr and appropriate screening for diabetes-related co-morbidities and complications). Good adherence = 2 diabetes-related physician visits/yr, 2 HbA1c tests/yr and appropriate screening for diabetes-related co-morbidities and complications).
[ii] Minimal adherence = 2 MSP diabetes-related MD visits/yr and 2 HbA1c tests/yr.
[iii] Poor adherence = <2 MSP diabetes-related MD visits/yr or 2 HbA1c tests/yr.

2.0 Primary Care Providers & Diabetes Providers

Table 2 shows the many primary care providers (nurse practitioners and family physicians) that provide care to children and youth in BC. This contrasts with the small numbers of specialty pediatricians and even smaller numbers of pediatric endocrinologists that provide care to children with diabetes.

Table 2: Primary Care & Diabetes Care Providers in BC

Provider	Number in BC
Nurse practitioners	540 (CIHI, 2020)[4] Provide primary care to adults, children & families
Family physicians	6,884 (CIHI, 2020)[5] Of these, a portion work in a community-based comprehensive practice model[iv] and provide primary care to adults, children, and families
General pediatricians	378 (2020, CIHI)[5] (active physicians in clinical & non-clinical practice; excludes physicians registered in pediatric subspecialty processes) Provide care to children with diabetes
Pediatric endocrinologists	Refer to Children's Medicine Services Part 1: Setting the Stage

3.0 Scope of Module

Includes:

- Outpatient services (hospital or community-based) that provide diabetes care to children up to and including the point of transition to adult diabetes services.

Excludes:

- General medical care provided to children in hospital or as outpatients that is not specific to diabetes. Refer to pediatric medicine module.
- Diabetes care to children in emergency departments. Refer to emergency department module.
- Diabetes care to children in inpatient settings. Refer to pediatric medicine module.

4.0 Recognition of the Tiers & Establishment of a Diabetes Network

The *Child Health Tiers of Service Framework* includes 6 tiers of service. This Children & Diabetes Tiers of Service (Outpatients) module recognizes 3 of the 6 tiers: T4, T5 and T6 (refer to Table 3). Tier 1 services are general child/youth health services and not specific to diabetes care. They are, however, included to show the continuum of services but are grayed out to show the distinction.

Table 3: Overview of Child Health Tiers of Service & Children & Diabetes Tiers of Service

[iv] Survey of physicians working in Vancouver Coastal Health (VCH) (1,017 surveys sent; 525 responses received (52% response rate) reported that 67.6% of physicians reported doing at least some community-based primary care, but only 21.3% provided this care full-time (most respondents supplemented community-based work with part-time hours in focused practice, hospitals, or inpatient facilities).[8]

Tier	Generic Description	Children & Diabetes Tiers Description
1	Prevention, Primary & Emergent Health Service	Prevention, Primary & Emergent Diabetes Service
2	General Health Service	
3	Child-Focused Health Service	
4	Children's Designated Health Service	Comprehensive Diabetes Service for Children (Outpatients)
5	Children's Regional Subspecialty Health Service	Regional Diabetes Subspecialty Service for Children (Outpatients)
6	Children's Provincial Subspecialty Health Service	Provincial Diabetes Subspecialty Service for Children (Outpatients)

Notes about the Children & Diabetes Tiers of Service (Outpatients) module:

- The Tiers of Service document defines a future (not current) state model and is intended to support future planning of culturally safe diabetes services for children in BC.
- The responsibilities and requirements at each tier are summative.
- The tier identified represents the highest tier of diabetes service which is available at that site.
- Service levels provided by a given team are expected to align with the service needs of children living in the team's geographic area of focus. For example, a T6 diabetes team (BC Children's Hospital) is expected to provide T4, T5 and T6 services. T4 services are required for children living in Vancouver, T5 services for children living in the Vancouver Coastal geographic area and T6 services for children living throughout the province.

The Children & Diabetes Tiers of Service (Outpatients) module provides a common language and methodology to describe the responsibilities and requirements at each tier. This common language supports a strong provincial system of diabetes care and can reduce variation in services available to children with diabetes and their families. It will also strengthen the consistency and continuity of care across the province.

5.0 Development of Module

National/international standards/guidelines were considered in designing the Children & Diabetes Tiers of Service (Outpatients) module and in identifying the responsibilities and requirements at each tier to provide a **safe, sustainable,** and **appropriate** level of service.[6,7] A jurisdictional review and environmental scan of BC Diabetes Centres also contributed to the development of this module and is available under a separate cover.

As identified in the British Columbia Cultural Safety and Humility Standard[v], designing and delivering culturally safe services to First Nations, Metis and Inuit peoples and communities is foundational for Indigenous clients' health and wellness journey across the health system. Promotion of health and wellness for First Nations, Metis, and Inuit children and families with diabetes in B.C. was considered throughout the development of the module.

[v] HSO 75000:2022E accessed from healthstandards.org

This module is organized into the following sections:

6.1 Clinical Services (Outpatients):
- 6.1.1 Service reach & description
- 6.1.2 Responsibilities
- 6.1.3 Requirements

6.2 Knowledge Sharing & Transfer/Training

6.3 Quality Improvement & Research

Responsibilities and requirements are divided into two types: (1) Required and (2) Notable. Required criteria were identified by the provincial working group through a three-step modified Delphi approach, in addition to reviewing similar documents in other jurisdictions.

Required criteria (to align each site to a tier)
100% must be met

AND

- Create patient safety risk[vi] or system risk[vii] if not met; OR
- Is unique to a given tier AND essential to providing services at that tier (service cannot function at that tier if the criterion is not met)

AND

- Are observable (tangible) and easily measurable

Notable criteria – anything not identified in blue type

- No threshold (no minimum % must be met)
- Important criterion that assists with planning and operating at a given tier

Note: Tier 1 is focused on primary care for diabetes services. It is included to show the continuum of services but grayed out to show the distinction.

[vi] Patient safety risk = risk that preventable harm may occur to a patient during the process of health care if criterion is not met. Reference: World Health Organization. Patient safety 2020. www.who.int/teams/integrated-health-services/patient-safety (accessed August 10, 2022).

[vii] System risk = risk that service provision or the role of the service within the relevant network may be severely disrupted if criterion is not met. References: (1) Provincial Health Services Authority. PHSA Integrated Risk Management Framework Document. Vancouver. 2019; (2) Al-Zuheri A, Amer Y, Vlachos I. Risk assessment and analysis of healthcare system using probability-impact matrix.: Nur Primary Care; 2019. p. 1-4.; (3) Government of Western Australia. Clinical Risk Management Guidelines for the Western Australian Health System. Information Series No 8. East Perth 2019.

6.0 Children & Diabetes Tiers of Service (Outpatients)

6.1 Clinical Services

6.1.1 Service Reach & Description

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	T4	T5	T6
1	Service reach	Local community.	Multiple local health areas/health service delivery area (HSDA).	Health authority.	Province.
2	Service description	Diabetes care provided by a local care provider. e.g., family physician, pediatrician, or nurse practitioner. Diabetes care may also be provided by nurses & other providers (e.g., community health nurses working in on-reserve health centres) when the expectation aligns with their scope of practice. Diabetes care provided by a T1 provider(s) is directed and supported by a T4/T5/T6 diabetes team through virtual/support. A T1 provider is most likely utilized in geographic areas where it is unrealistic for children/families to travel to a T4/T5/T6 diabetes team 4 times per year.	Diabetes care provided by an interdisciplinary diabetes team. The practice of individual team members may include both adults and children (exception: pediatrician). The pediatric caseload of a T4 diabetes team focuses primarily on children who have few or no medical complications & their families (psychosocial issues may be present). For reasons of geographic proximity, children who have significant medical complications may be managed by a T4 team in consultation & with the support of a T5/T6 team.	Diabetes care provided by an interdisciplinary *pediatric* diabetes team. The practice of individual team members is exclusively or predominantly with children. The caseload of a T5 diabetes team focuses on children who have significant medical complications & their families (psychosocial &/or significant psychiatric issues which impact their diabetes management may be present). For reasons of geographic proximity, some children may be managed in conjunction with a T1 provider or T4 diabetes team. In these cases, the T5 team provides the overall direction for care. For reasons of geographic proximity, children who have multiple, significant medical complications may be managed by a T5 team in consultation & with the support of a T6 team.	Diabetes care provided by an interdisciplinary *pediatric* diabetes team. The practice of individual team members is exclusively with children. The caseload of a T6 team focuses on children who have multiple, significant medical complications & their families (psychosocial &/or significant psychiatric issues which impact their diabetes management may be present). Multiple pediatric subspecialty teams are usually involved. For reasons of geographic proximity, some children may be managed in conjunction with a T1 provider or T4/T5 diabetes team. In these cases, the T6 team provides the overall direction for care.

6.1.2 Responsibilities

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	T4	T5	T6
1	Initial assessment, education, & management	Conducts initial assessment of children who have Type 1 & Type 2 diabetes. Refers children to T4/T5/T6 diabetes team for initial education & management.	Conducts interdisciplinary assessments at diagnosis in children with Type 1 & Type 2 diabetes who have few or no medical complications. Medical complications, if present, can be managed locally. For children with significant medical complications &/or significant psychiatric issues which impact their diabetes management, consults with &/or refers to T5/T6 diabetes team. Provides initial education & treatment to children newly diagnosed with Type 1 & Type 2 diabetes according to current guidelines.[viii] Typically includes: • Medical management: injectable & oral medications. • Nutrition management. • Promoting regular physical activity. • Teaching stress reduction strategies. • Teaching healthy weight strategies (particularly for Type 2 diabetes). • Teaching & supporting self/family management of diabetes (e.g., travel, sick day management, management of special life events, etc).	Same as T4 plus: Conducts interdisciplinary assessments at diagnosis in children with Type 1 & Type 2 diabetes who have significant medical complications &/or psychiatric issues which impact their diabetes management. Examples are not prescriptive but may include children with: • Insulin resistance syndromes • Morbid obesity associated with type 2 diabetes. • Very high Hgb A1C (>9%). • Lipid abnormalities. • Microalbuminuria. • Eating disorders. For children with multiple, significant medical complications &/or psychiatric issues who require the ongoing involvement of multiple pediatric subspecialty teams, consults with &/or refers to T6 diabetes team. E.g., children with diabetes caused by or associated with a chronic disease such as cystic fibrosis or high dose steroid use or an unrelated complex chronic disease.	Same as T5 plus: Interdisciplinary assessments at diagnosis usually involve multiple pediatric subspecialty teams (e.g., neonatal diabetes, survivors of childhood cancers, etc). Coordinates initial education & treatment with other co-located pediatric subspecialty teams, as required. Provides consultation to all providers & diabetes teams within the province.

[viii] Canadian Diabetes Association Clinical Practice Guidelines at: http://guidelines.diabetes.ca; International Society for Pediatric and Adolescent Diabetes, 2018 Consensus Guidelines. http://web.ispad.org/.

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	T4	T5	T6
	Initial assessment, education, & management cont'd		Initial education & treatment for medically stable children is available for outpatients (in-person or virtual).	Provides consultation to T1 providers & T4 diabetes teams within health authority.	
2	Ongoing assessment, education & management	In collaboration with the T4/T5/T6 team, provides ongoing monitoring for children with Type 1 & Type 2 diabetes in between visits to the child's T4/T5/T6 team. Collaboration may be provided through virtual support (phone &/or video). Consults with & communicates changes to the child's T4/T5/T6 team.	Develops plan for ongoing monitoring. Where appropriate, works collaboratively with T1 providers in the child's local community to develop the plan. Plan describes the care requirements, schedule of visits & roles of the diabetes care team vs local care provider. Works with other resources, providers, and clients to design and deliver culturally safe services to First Nations, Metis and Inuit peoples and communities. Provides education & manages children starting on insulin pumps. Familiar with insulin pumps & can interpret blood glucose results & make insulin adjustments. Manages related medical care. Provides education & manages children on continuous blood glucose (CBG) monitors. Familiar with blood glucose monitors & utilizes results to make insulin adjustments. Manages related medical care. Screens for co-morbidities & diabetes-related complications. Refers to appropriate personnel/resources.	Same as T4 plus: Manages co-morbidities & diabetes-related complications. Refers to other subspecialists that provide care to children & adults as required (subspecialists may be co-located or at T6). Some pediatric subspecialists (medical & surgical) available.	Same as T5 plus: Manages co-morbidities & diabetes-related complications in children with diabetes who require the involvement of multiple pediatric subspecialty teams.

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	T4	T5	T6
	Ongoing assessment, education & management cont'd		Clinics work with children/parents to make changes in the treatment plan (e.g., insulin adjustments, carbohydrate ratios, etc). Clinics simultaneously communicate to Nursing Support Services when there is a significant change to the treatment plan (e.g., MDI to pump, conventional to MDI) or at minimum annually. In a timely way, Nursing Support Services, in partnership with children/parents/guardians, updates the child's care plan at school & coordinate the required changes. Provides regular updates (i.e., after each visit & inpatient admission) on the status of the child's diabetes & treatment plan to the child's T1 diabetes care provider (if applicable). If no T1 provider, updates the primary care provider.		
3	Nutrition assessment, education & management		Conducts initial nutrition assessment & develops nutrition treatment plan. Updates initial assessment & treatment plan annually & more often, if required. Provides nutrition education to children with Type 1 & Type 2 diabetes & their families. Education is age-specific, culturally appropriate & supports healthy eating patterns & feeding relationships. Provides practical tips for meal planning & carbohydrate counting to children & their families.	Same as T4 plus: Children may have increased nutritional &/or medical complexities (e.g., eating disorder, celiac, nutrient deficiency).	Same as T5 plus: Nutrition care planning may involve multiple pediatric subspecialty teams (e.g., complex feeding disorders).

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	T4	T5	T6
	Nutrition assessment, education & management cont'd		Provides information about community-based nutrition resources, including culturally relevant resources. Monitors growth & development.		
4	Psychosocial support		Conducts initial psychosocial assessment of children & their families. Reviews status at each contact. Supports children & their families in adjusting to their diagnosis & changes in lifestyle & impacts on family & close relationships that result from the diagnosis. Facilitates development of positive coping strategies. Provides logistical support to children & their families in areas such as funding of equipment & travel, completion of forms, appropriate housing, etc. Considers socioeconomic status & local supports, as able. Provides time-limited 1:1 counselling for children & their families in acute emotional distress. Refers children/families to specialized mental health resources (e.g., local mental health team), if required. Builds capacity amongst the diabetes team in providing psychosocial & culturally/spiritually relevant support to patients & their families & in recognizing situations referral to specialized resources.	Same as T4 plus: Provides time-limited 1:1 consultation for complicated psychological situations, which impact the management of their diabetes (e.g., anxiety, depression).	Same as T5 plus: Provides time-limited 1:1 consultation for very complicated psychological situations, which impact the management of their diabetes often including multiple pediatric subspecialty teams.

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	T4	T5	T6
5	Diabetes support & resources for children/families	Procedures in place for children/families on a T1 provider's caseload to receive diabetes-related telephone advice: a. If urgent, 24/7 in accordance with HA procedures. b. If non-urgent, within 2 business days by the T1 provider or a member of the "home" diabetes team (T4/T5/T6). Contact information & expectations are clearly communicated to children/families.	Procedures in place for children/families on the diabetes team's caseload to receive diabetes-related telephone advice: a. If urgent, 24/7 in accordance with HA procedures. b. If non-urgent, within 2 business days by a member of the diabetes team. Contact information & expectations are clearly communicated to children/families.	Same as T4.	Same as T4 plus: In collaboration with T4 & T5, develops resources & tools to support T1/T4/T5/T6 providers/teams in responding to diabetes-related questions from children/families. E.g., patient/family handouts, education modules, etc.
6	Diabetes support & resources for providers		Procedures in place for providers *within the HA* to receive diabetes-related telephone advice: a. If urgent, 24/7 in accordance with HA procedures. b. If non-urgent, within 2 business days by a member of the diabetes team. Upon request, liaises with schools, camps & other local care providers to provide expert advice on the care of children with diabetes (e.g., Public Health Nurses, Nursing Support Services, Indigenous providers & those working in friendship centres, Indigenous wellness centres, nursing stations & health centres in First Nations communities).	Same as T4.	Same as T5 plus: Procedures in place for providers within the province to receive diabetes-related advice: a. If urgent, 24/7 by pediatric diabetes subspecialist. b. If non-urgent, within 2 business days by a member of the diabetes team. In collaboration with T4 & T5, develops resources & tools to support T1/T4/T5 providers/teams in providing appropriate diabetes-related care. e.g., guidelines, protocols, education modules, etc.

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	**T4**	**T5**	**T6**
7	Diabetes outreach services		May provide outreach services to children/families *within the HA* for children with Type 1 & 2 diabetes who have few or no medical complications. Outreach may be on-site (visiting clinic – depending on distances & volume) &/or via virtual health. Develops capacity within the local geographic area to support the care of children with diabetes.	Same as Tier 4 plus: May provide outreach services to children/families within the *Health Authority* for children with type 1 & 2 diabetes. Focus of service is on children with significant medical complications &/or psychiatric issues which impact their diabetes management. Outreach may be on-site (visiting clinic, likely as part of a larger visiting endocrinology clinic) &/or via virtual health. Develops capacity within the *HA* to support the care of children with diabetes.	Same as Tier 5 plus: May provide outreach services to children/families *within the province* for children with type 1 & 2 diabetes. Develops capacity within the *province* to support the care of children with diabetes.
8	Virtual support (provider/team to provider/team)	Access to equipment & infrastructure to participate in virtual health consultations including: • Consultation with T4-T6 pediatric specialists & subspecialists (phone &/or video support).	Access to equipment & infrastructure to participate in virtual health consultations including: • Consultation with T5/T6 pediatric specialists & subspecialists (phone &/or video support).	Same as T4 plus: Provides virtual consultation/support to providers/teams within the HA on the management of diabetes in children (phone &/or video support).	Provides virtual consultation/support to providers/teams throughout the province on the management of diabetes in children (phone &/or video support).

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	**T4**	**T5**	**T6**
9	Transition from pediatric to adult diabetes services		Develops transition plan & oversees the transfer of youth to the appropriate adult service (family physician, adult internal medicine or endocrine specialist +/- diabetes centre). Documented transition plan and medical summary transfer form for transfer from pediatric to adult care.	Same as T4. Documented transition plan and medical summary transfer form for transfer from pediatric to adult care.	Same as T5.

6.1.3 Requirements

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	**T4**	**T5**	**T6**
1	Physicians & interdisciplinary team	Diabetes care provided by a local care provider. E.g., family physician, pediatrician, or nurse practitioner. Diabetes care may also be provided by nurses & other providers (e.g., community health nurses working in on-reserve health centres) when the expectation aligns with their scope of practice. Diabetes care provided by a T1 provider(s) is directed and supported by a T4/T5/T6 diabetes team through virtual (phone &/or video) support. A T1 provider is most likely utilized in geographic areas where it is unrealistic for children/families to travel to a T4/T5/T6 diabetes team 4 times per year.	Diabetes team includes: • Pediatrician(s) • Registered Nurse(s) • Registered Dietitian(s) • Social Worker/Counsellor/Mental Health Worker(s) All team members: • Are assigned to the Diabetes Clinic & are present during scheduled clinics. • Maintain expertise through ongoing diabetes-related clinical experience & completing diabetes-specific continuing education (e.g., rounds, conferences). • Have completed a program in Indigenous Cultural Safety. Pediatrician(s): • Pediatrician *specializing in diabetes* or a physician with a special interest (and training) in childhood & adolescent diabetes. RNs/RDs: • Have specialized knowledge & skills in diabetes care. • Have general pediatric knowledge & skills acquired through consistent exposure to children in their clinic/outreach. RNs meet the requirements outlined in Appendix 1 (glossary) for "RN with pediatric skills."	Diabetes team includes: • Pediatric Endocrinologist(s) • Registered Nurse(s) • Registered Dietitian(s) • Social Worker RNs/RDs: Same as T4 plus: • RNs or RDs are CDEs & can independently complete insulin dose adjustments (IDAs) (achieved within 1 year of starting in a new role). Social worker: • Has expertise in pediatrics & chronic illness. Available upon request/referral: Same as T4 plus: • Psychologist who has specific expertise in pediatrics & knowledge of childhood diabetes & chronic illness.	Same as T5 diabetes team plus: The practice of individual team members is exclusively with children/families. Access to child & youth psychiatrist. Pediatric endocrinologist available 24/7 to provide telephone advice to care providers throughout the province on the management of urgent diabetes-related issues.

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	T4	T5	T6
	Physicians & interdisciplinary team cont'd		• At a minimum, 1 RN **or** 1 RD is a Certified Diabetes Educator (CDE) (achieved within 1 year of starting in a new role). During interim periods when no RN or RD is available, a physician/NP is assigned to perform this function. • At a minimum, 1 RN **or** 1 RD independently completes insulin dose adjustments (IDA) following HA's IDA policy & clinical scope of practice (achieved within 1 year of starting in a new role). During interim periods when no RN **or** RD is available, a physician/NP is assigned to perform this function. • Orientation includes review of relevant pediatric standards, pediatric-specific protocols, pediatric-specific equipment & the management of pediatric emergencies. Social worker/counsellor/mental health worker: • Has expertise in pediatrics and/or chronic illness. • Referral algorithm is in place to access further psychosocial & psychological services, as required (e.g., local mental health team & community-based services). Available upon request/referral: • Certified Insulin Pump Trainer • Pharmacist (by phone) • Indigenous Patient Liaison/Navigator or equivalent		

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	T4	T5	T6
2	Facilities		Access to equipment & infrastructure to participate in video-based consultations. Treatment space is culturally inclusive.	Same as T4	Same as T5
3	Pediatric volumes		Practice may include both adults and pediatrics. Structures are in place to pair up teams with lower volumes (T4) & teams with higher volumes (T5-T6) to share educational & quality improvement opportunities.	Manages 150+ children & youth with diabetes.[7] Team caseloads may be lower in less populated areas. Practice is exclusively or predominantly with children and youth. Structures are in place to pair up teams with lower volumes & teams with higher volumes to share educational & quality improvement opportunities.	Same as T5.

6.2 Knowledge Sharing & Transfer/Training

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	**T4**	**T5**	**T6**
1	Student learning (student, residents & fellows)			Creates opportunities to expose a broad range of undergraduate & graduate health care students to the care of children with diabetes.	• Provides outpatient experiences/placements in the care of children with diabetes for a broad range of undergraduate, graduate & post-graduate health care students. • Designated by UBC as the primary training site for pediatric endocrinology. Training includes rotations in outpatient diabetes clinic.
2	Continuing education (physicians & staff)	Accesses learning activities that support the maintenance of physician & staff competencies in diabetes. E.g., on-line access to guidelines/ reference materials/ continuing education courses & participation in HA & provincial learning activities relevant to diabetes & child health (e.g., pediatric rounds & conferences).	Same as T1 plus: Organizes &/or participates in HA activities that support the maintenance of physician & staff competencies in the care of children with diabetes.	Same as T4 plus: Builds clinical capacity in pediatric diabetes care amongst health care providers within the HA through activities such as collaborative outreach clinics (with local pediatricians) & clinical virtual health sessions.	Same as T5 plus: Organizes &/or participates in province-wide learning activities that support the maintenance of physician & staff competencies in the care of children with diabetes. E.g., pediatric rounds & conferences. Creates educational programs & mechanisms to deliver support for guidelines & evidence-based care in diabetes.

6.3 Quality Improvement & Research

		Prevention, Primary & Emergent Diabetes Service	Comprehensive Diabetes Service for Children (Outpatients)	Regional Diabetes Subspecialty Service for Children (Outpatients)	Provincial Diabetes Subspecialty Service for Children (Outpatients)
		T1	**T4**	**T5**	**T6**
1	Quality improvement	Participates in the provincial approach to evaluation / quality improvement of diabetes care and contributes relevant data on indicators	Same as T1 plus: • Regularly reviews the quality of diabetes care provided to children, including case reviews. Implements recommendations. • Supports staff in the provision of guideline & evidence-based care in diabetes.	Same as T4 plus: • Works in collaboration with T6 to fulfill the responsibilities outlined under the T6 "provincial role."	Same as T5 plus: *Provincial Quality Improvement role:* In collaboration/communication with CHBC & Has: • Develops & disseminates guidelines & standards on diabetes-related care, including care provided in community-based settings. • Develops a provincial approach to evaluation / quality improvement of pediatric diabetes care. • Create structures and processes to support active linkages (in-person &/or virtually using technology) with T5 teams in relevant subspecialty.
2	Research			Participates in diabetes research.	• Participates in national and international diabetes networks. • Conducts & supports other to conduct research in diabetes.

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Appendix 1: Glossary

1. **Nurse with "pediatric skills"**

- Knowledgeable about growth and development:
  - Demonstrates knowledge of typical development and variation from typical in childhood.
  - Performs safety assessments and creates safety plans (in partnership with children/youth and their families) to minimize risk and harm in accordance with developmental stage.
  - Utilizes appropriate strategies to address developmental responses to illness and healthcare encounters.
  - Considers chronological and developmental age in the provision of information and care.

- Delivers pediatric-specific care:
  - Performs age and developmentally appropriate bio-psychosocial assessments. Considers influences of ethnicity, spirituality, culture, and social determinants of health.
  - Assesses normal parameters, recognizes deviations from the normal and acts appropriately on the findings.
  - Uses developmentally appropriate, culturally safe (free from racism), and humble care processes when performing interventions.
  - Incorporates developmentally appropriate play &/or recreational activities into care.
  - Demonstrates an understanding of safe pediatric medications administration principles (e.g., side effects, weight-based dosing, over the counter medications, interactions, route of administration).
  - Assesses pain using a pain scale appropriate to the child's developmental age. Delivers a range of physical and psychological pain-relieving measures (e.g., positioning, information, relaxation techniques, distraction). Administers prescribed analgesics and evaluates their effect.
  - Demonstrates an understanding of fluid management in an infant and child. Manages peripheral IV infusions and complications.
  - Demonstrates basic knowledge of pediatric emergencies. Escalates level of intervention and care based on assessment (e.g., PEWS).
  - Commences and maintains effective basic pediatric life support, including 1- and 2-rescuer infant and child CPR, AED use and management of airway obstructions.
  - Provides teaching specific to the plan of care and condition or procedure in a way that children/youth and families can understand.
  - Demonstrates basic knowledge of common pediatric illnesses and conditions and their management.
  - Demonstrates basic knowledge of common pediatric mental health conditions, the Mental Health Act and mental health resources.

  - Observes and documents patterns of behaviour, shifts in affect/mood and significant information shared by children/youth and family. Takes appropriate action when required.
  - Familiar with strategies to support dysregulated children/youth.
  - Recognizes suspected cases of child maltreatment and takes action to ensure immediate medical and safety needs are met. Advocates for appropriate follow-up.

- Partners with children/youth and families to achieve an optimal level of health and well-being:
  - Actively involves children/youth and families in health promotion, goal setting, care planning and decision making. Considers social determinants and other system factors that impact health.
  - Encourages children/youth and families to identify and report safety risks (e.g., ask questions about medications, question providers re hand washing etc).
  - Using a strengths-based approach, helps children/youth and families to build capacity to self-advocate and navigate the health care system to achieve health and wellness goals.

- Promotes a child/youth & family friendly, culturally safe, trauma- and violence-informed, gender-affirming, recovery-oriented environment:
  - Engages with children/youth and families in a respectful, non-judgmental, culturally safe manner which acknowledges children/families' lived experiences when planning and providing care.
  - Utilizes the strengths and resources of children/youth and families to support care (e.g., resilience, problem solving, extended family, community, spirituality).
  - Utilizes professional interpreters when providing care to children/youth and families, as appropriate.

- Supports children/youth and families during transitions:
  - Uses communication strategies with children/youth, families, and relevant team members to support effective coordination of care across transitions.
  - Provides information and supports families to access funds for travel to and from specialist centres, if required.

Appendix 2: Change Log

Document	Date	Description of Change
Initial approval (by CHBC Steering Committee)	July 2018	
Minor revision	July 2020	Section 4.0 Recognition of the Tiers: Updated the table to include 5 out of the 6 tiers of service: T1 (outpatient only), T3 (inpatient only), T4, T5 and T6. Section 6.1.2 Inpatient Services: Changed the title of the column from T1 to T3 (Child-Focused Diabetes Service) to correctly reflect inpatient tiers of service.
Major revision	September 2022	Updated module to reflect outpatients only (inpatients is subsumed in the Children's Medicine module). Updated titles of tiers to reflect focus on outpatients. Shaded Tier 1 to reflect it is a general health service but shown in the Tiers framework to reflect the continuity of service. Section 1.0 Updated incidence and prevalence figures. Section 2.0 Updated Table 2: Primary Care & Diabetes Providers in BC. Section 6.0 Updated organization of tables for clarity and flow. Responsibilities: • Adjusted T5 outreach & resource role to reflect role within HA (previous version reflected a provincial role). • Added row for virtual support. • Added content to emphasize cultural appropriateness, as well as availability of providers in on-reserve communities. Requirements: • Adjusted the table to include physicians & interdisciplinary team in the same row.

Document	Date	Description of Change
		• Removed requirement for T5 & T6 pediatric endocrinologists to have a joint appointment with UBC. • Adjusted pediatric volumes to reflect IPAD guidelines (reduced thresholds & made less specific). Knowledge Sharing & Transfer/Training: • Separated student learning and continuing education into 2 rows. Quality Improvement & Research: • Separated quality improvement & research into 2 rows. • Removed T5 & T6 requirement for recruitment of pediatric endocrinologists to follow the provincial recruitment plan. References: • Added section outlining the references. Appendices: • Added Appendix 1 (glossary). • Removed Appendix 2 (details of national/international guidelines). • Removed Appendix 3 (insulin pump & CBG resources).
Minor Revision	September 2023	Requirements: • Tier 5 language changed from: RNs and RDs are CDEs & can independently complete insulin dose adjustments… To: RNs or RD are CDEs & can. Responsibilities: • Adjusted T4 outreach role to reflect role within the local geography (previous version reflected a regional role). Knowledge Sharing & Transfer/Training: • Removed Tier 5 requirement for creating opportunities for post-grad students (remains at Tier 6)