

SETTING  
THE STAGE

# CHILDREN & CRITICAL CARE SERVICES

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# Children & Critical Care Services: Setting the Stage for Tiers Development

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### HOW TO CITE CHILDREN & CRITICAL CARE SERVICES MODULE:

We encourage you to share these documents with others and we welcome their use as a reference. Please cite each document in the module in keeping with the citation on the table of contents of both of the documents. If referencing the full module, please cite as:

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## Critical Care Services for Children: Setting the Stage for Tiers Development

The Children & Critical Care (CC) Tiers module is made up of two components:

1. Setting the Stage for Tiers Development (provides the context - **this document**)
2. Tiers to Support System and Operational Planning (provides a description of the tiers and the corresponding responsibilities and requirements)

The Children & Critical Care Tiers module focuses on services provided by *specialist* and *subspecialist* health care providers to children up to 17 years old (16.9 years) who have *highly acute* and often *highly complex* illnesses, injuries and complications. It builds on and is intended to be used in conjunction with the *Children's Emergency Department, General Medicine* and *Surgery Tiers* modules.

All facilities providing pediatric services (T1-T6) should have capacity to provide resuscitation and initial stabilization of critically ill children while awaiting transport to a higher tier (in ED, on an inpatient unit &/or in ICU). This module focuses on critical care services which are provided **beyond** the resuscitation and initial stabilization period.

"Critical care services" refer to services which are **above and beyond those usually available on a pediatric inpatient unit** (refer to children's medical and surgical modules for details of what is usually provided on a pediatric inpatient unit). Provision of these services requires **specialized skills** and **enhanced staffing levels**. In BC, such services are usually provided in a pediatric-specific or a general intensive care unit.

### 1.0 Providers of Critical Care Services for Children

Critical care services for children are provided by a range of physician specialists and subspecialists, in partnership with nurses, allied health and other members of the health care team. In many cases, the physicians have specific training in critical care medicine (CCM).

CCM is a relatively new Royal College of Physicians and Surgeons-recognized subspecialty. CCM has multiple different base specialties that serve as a route for entry including pediatrics, anesthesiology, cardiac surgery, emergency medicine and general surgery. Within CCM, there is an adult and a pediatric stream. In Canada, there are 21 Royal College accredited CCM training programs - 13 adult and 8 pediatric (source: Canadian Critical Care Society website). There are 12 pediatric CCM physicians in BC, 8 at BCCH and 4 in Victoria.

### 2.0 Utilization of Intensive Care Units by Children

Highlights of the data used to inform the development of this module are provided in this section. Data is for 2019/20 and children ages 0 - 16.9 years unless otherwise stated.

Refer to Appendices 1 - 3 for detailed tables. Appendix 4 provides a summary of designated pediatric beds in BC, including pediatric ICU (PICU) beds. BCCH has 22 PICU beds and Victoria General has 5 beds. Additionally, the University Hospital of Northern BC (UHNBC) has 4 beds with the capacity for more intensive monitoring, up to and including continuous cardiorespiratory monitoring.

## 2.1 ICU Visits & Days

### 2.1.1 Visits and Days, 4-Year Trend

In 2019/20, 1,590 children were discharged from an ICU in BC (4.4 admissions per day). These children occupied 5,722 ICU bed days (16 beds per day) and had an average length of stay (ALOS) of 3.6 days. See Table 1 (Appendix 1 for details).

**Table 1: ICU Visits & Days, Children 0 - 16.9 Yrs, 2019/20, 2018/19, 2017/18, and 2016/17 (CIHI)**

| Activity   | 2019/20 | 2018/19 | 2017/18 | 2016/17 | Difference, 2019/20 - 2016/17 |
|------------|---------|---------|---------|---------|-------------------------------|
| ICU Visits | 1,590   | 1,643   | 1,630   | 1,851   | -261                          |
| ICU Days   | 5,722   | 5,474   | 5,715   | 6,742   | -1,020                        |
| ALOS       | 3.6     | 3.3     | 3.5     | 3.6     | +0.0                          |

### 2.1.2 Ages of Children Treated in ICU

The highest proportion of ICU visits for children were between 2 and 13.9 years of age: 45% of total visits, while the highest proportion of ICU days for children were less than 2 years of age: 46% of total days. 11% of BC's children were in the less than 2 years age group, while 71% were in the 2 - 13.9 years age group. See Table 2 (Appendix 1 for details).

**Table 2: ICU Visits & Days by Facility & Age of Child, Children 0 - 16.9 Yrs (CIHI, 2019/20)**

| Treating Hospital              | ICU Visits |            |              |               |              | ICU Days     |            |              |               |              |
|--------------------------------|------------|------------|--------------|---------------|--------------|--------------|------------|--------------|---------------|--------------|
|                                | < 6 mos    | < 2 yrs    | 2 - 13.9 Yrs | 14 - 16.9 Yrs | Total        | < 6 mos      | < 2 yrs    | 2 - 13.9 Yrs | 14 - 16.9 Yrs | Total        |
| BCCH                           | 213        | 162        | 402          | 111           | 888          | 1,260        | 644        | 1,270        | 463           | <b>3,637</b> |
| Victoria General               | 73         | 45         | 144          | 39            | 301          | 544          | 143        | 343          | 127           | <b>1157</b>  |
| UHNBC (Prince George)          | 49         | 44         | 75           | 14            | 182          | 137          | 99         | 199          | 35            | <b>470</b>   |
| Other BC Hospitals             | 34         | 52         | 94           | 39            | 219          | 79           | 107        | 156          | 116           | <b>458</b>   |
| <b>Total</b>                   | <b>369</b> | <b>303</b> | <b>715</b>   | <b>203</b>    | <b>1,590</b> | <b>2,020</b> | <b>993</b> | <b>1,968</b> | <b>741</b>    | <b>5,722</b> |
| <b>% Visits/Days</b>           | <b>23%</b> | <b>19%</b> | <b>45%</b>   | <b>13%</b>    | <b>100%</b>  | <b>35%</b>   | <b>17%</b> | <b>34%</b>   | <b>13%</b>    | <b>100%</b>  |
| <b>% BC's Child Population</b> | <b>11%</b> |            | <b>71%</b>   | <b>18%</b>    | <b>100%</b>  | <b>11%</b>   |            | <b>71%</b>   | <b>18%</b>    | <b>100%</b>  |

### 2.1.3 Visits and Days by Treating Hospital

The highest number of ICU visits and days for children were at BC Children's Hospital (BCCH), Victoria General Hospital (Vic Gen) and University Hospital of Northern BC (UHNBC). Combined, these represented 86% of total ICU visits and 92% of total ICU days. See Table 3 (Appendix 1 for details).

**Table 3: ICU Visits & Days by Facility, Children 0 - 16.9 Yrs, (CIHI, 2019/20)**

| Treating Hospital     | ICU Visits   |              | ICU Days     |              |
|-----------------------|--------------|--------------|--------------|--------------|
|                       | #            | % Prov Total | #            | % Prov Total |
| BCCH                  | 888          | 56%          | 3,637        | 64%          |
| Victoria General      | 301          | 19%          | 1,157        | 20%          |
| UHNBC (Prince George) | 182          | 11%          | 470          | 8%           |
| Other BC Hospitals    | 219          | 14%          | 458          | 8%           |
| <b>Total</b>          | <b>1,590</b> | <b>100%</b>  | <b>5,722</b> | <b>100%</b>  |

### 2.1.4 Visits and Days by Location of Child's Home Residence

The highest proportion of visits and days were by children living in the Fraser Health Authority (FHA): 26% of total visits and 33% of total days. FHA has more children than any other HA.

On a per capita basis, children living in Northern Health utilized an ICU more often than children living in the other health authorities.

See Table 4 (Appendix 2 for details).

**Table 4: ICU Visits & Days by HA of Child's Home Residence, Children 0 - 16.9 Yrs (CIHI, 2019/20)**

| HA of Child's Home Residence       | ICU Visits   |               | ICU Days     |             | % BC Child Pop'n |
|------------------------------------|--------------|---------------|--------------|-------------|------------------|
|                                    | #            | % Prov Visits | #            | % Prov Days |                  |
| IHA                                | 224          | 15%           | 717          | 13%         | 15%              |
| FHA                                | 404          | 26%           | 1,831        | 33%         | 42%              |
| VCH                                | 314          | 20%           | 812          | 15%         | 20%              |
| VIHA                               | 233          | 15%           | 888          | 16%         | 15%              |
| NHA                                | 363          | 24%           | 1,344        | 24%         | 7%               |
| <b>Total, BC as Home Residence</b> | <b>1,538</b> | <b>100%</b>   | <b>5,592</b> | <b>100%</b> | <b>100%</b>      |
| <b>Out of Prov/Unknown</b>         | <b>52</b>    |               | <b>130</b>   |             |                  |
| <b>Total, All</b>                  | <b>1,590</b> |               | <b>5,722</b> |             |                  |

## 2.2 Reasons for ICU Visits

### 2.2.1 Mode of Entry

The most common routes of entry to ICU by children were direct entry or via emergency. A smaller number were admitted via a clinic or day care surgery from within the same hospital.

**Table 5: Mode of Entry of ICU Visits, Children 0 - 16.9 Yrs (CIHI, 2019/20)**

| Treating Hospital     | ICU Visits            |            |           |             |           | Total        |
|-----------------------|-----------------------|------------|-----------|-------------|-----------|--------------|
|                       | Direct <sup>(1)</sup> | ED         | Clinic    | Day Surgery | Other     |              |
| BCCH                  | 534                   | 342        | 12        | 0           | 0         | 888          |
| Victoria General      | 142                   | 150        | 2         | 7           | 0         | 301          |
| UHNBC (Prince George) | 89                    | 38         | 55        | 0           | 0         | 182          |
| Other BC Hospitals    | 23                    | 191        | 2         | 3           | 0         | 219          |
| <b>Total</b>          | <b>788</b>            | <b>721</b> | <b>71</b> | <b>10</b>   | <b>0</b>  | <b>1,590</b> |
| <b>% Prov Visits</b>  | <b>50%</b>            | <b>45%</b> | <b>4%</b> | <b>1%</b>   | <b>0%</b> | <b>100%</b>  |

<sup>(1)</sup> Direct entry includes:

- Children admitted to ICU from another area within the same hospital (e.g., medical unit, OR, etc), excluding the Emergency Department or a clinic; and
- Children admitted to ICU from another hospital.

### 2.2.2 Major Clinical Categories/Case Mix Groups

The most common clinical categories for admission to ICU were: respiratory (23%), circulatory (13%) and nervous system (12%). See Table 6. The most common case mix groups were upper/lower respiratory infection (8%), major cardiothoracic intervention with pump (7%), asthma (5%), viral/unspecified pneumonia (4%) and seizure disorder, except status epilepticus (4%). See Appendix 3 for details.

**Table 6: Visits by Major Clinical Category, Children 0 - 16.9 Yrs (CIHI, 2019/20)**

| Major Clinical Category (MCC)  | ICU Visits |                    | ICU Days |                  |
|--|------------|--------------------|----------|------------------|
|  | #          | % Total ICU D/C'es | #        | % Total ICU Days |
| Diseases & Disorders of the Respiratory System                               | 373        | 23%                | 1,638    | 29%              |
| Diseases & Disorders of the Circulatory System                               | 199        | 13%                | 819      | 14%              |
| Diseases & Disorders of the Nervous System                                   | 191        | 12%                | 487      | 9%               |
| Diseases & Disorders of Ear, Nose, Mouth & Throat                            | 162        | 10%                | 770      | 13%              |
| Newborns & Neonates with Conditions Orig in Perin Period                     | 155        | 10%                | 646      | 11%              |
| Significant Trauma, Injury, Poisoning & Toxic Effects of Drugs               | 151        | 9%                 | 458      | 8%               |
| Diseases & Disorders of the Endocrine System, Nut'n & Metabolism             | 78         | 5%                 | 122      | 2%               |
| Diseases & Disorders of the Digestive System                                 | 71         | 4%                 | 132      | 2%               |
| Diseases & Disorders of the Musculosk System & Connective Tissue             | 46         | 3%                 | 181      | 3%               |
| Diseases & Disorders of the Blood & Lymphatic System                         | 45         | 3%                 | 183      | 3%               |
| Multisystemic or Unspecified Site Infections                                 | 37         | 2%                 | 123      | 2%               |
| Diseases & Disorders of the Kidney, Urinary Tract & Male Reproductive System | 34         | 2%                 | 68       | 1%               |

| Major Clinical Category (MCC)                                  | ICU Visits   |                    | ICU Days     |                  |
|--|--------------|--------------------|--------------|------------------|
|  | #            | % Total ICU D/C'es | #            | % Total ICU Days |
| Other Reasons for Hospitalization                              | 28           | 2%                 | 55           | 1%               |
| Diseases & Disorders of the Hepatobiliary System & Pancreas    | 7            | 0%                 | 11           | 0%               |
| Diseases & Disorders of the Skin, Subcutaneous Tissue & Breast | 5            | 0%                 | 10           | 0%               |
| Diseases & Disorders of the Eye                                | 3            | 0%                 | 8            | 0%               |
| Burns  | 3            | 0%                 | 8            | 0%               |
| Diseases & Disorders of the Female Reproductive System         | 2            | 0%                 | 3            | 0%               |
| <b>Total, All MCCs</b>   | <b>1,590</b> | <b>100%</b>        | <b>5,722</b> | <b>100%</b>      |

### 2.3 HA of Treating Hospital versus Location of Child's Home Residence

57% of children accessed ICU services in a hospital in their home HA. This ranged from 0.5% of children living in Fraser to 96% living in Vancouver Coastal. See Table 7.

Table 7: HA of Treating Hospital versus Location of Child's Home Residence (CIHI, 2019/20)

| HA of Treating Hospital                     | Child's Home Residence |            |             |            |            | Total Visits, excl Other | Other     | Total Visits, incl Other | % Prov Visits |
|---|------------------------|------------|-------------|------------|------------|--------------------------|-----------|--------------------------|---------------|
|   | Interior               | Fraser     | Van Coastal | Van Island | Northern   |                          |           |                          |               |
| <b>Interior</b>                             | <b>115</b>             | <b>1</b>   | <b>3</b>    | <b>0</b>   | <b>3</b>   | <b>122</b>               | <b>6</b>  | <b>128</b>               | <b>8%</b>     |
| Cariboo Memorial Hospital                   | 41                     |            | 2           |            | 2          | 45                       | 1         | 46                       | 3%            |
| East Kootenay Regional Hospital             | 12                     |            |             |            |            | 12                       | 3         | 15                       | 1%            |
| Kelowna General Hospital                    | 28                     |            |             |            |            | 28                       | 2         | 30                       | 2%            |
| Kootenay Boundary Regional Hospital         | 9                      |            |             |            |            | 9                        |           | 9                        | 1%            |
| Penticton Regional Hospital                 | 10                     |            | 1           |            |            | 11                       |           | 11                       | 1%            |
| Royal Inland Hospital                       | 8                      | 1          |             |            | 1          | 10                       |           | 10                       | 1%            |
| Vernon Jubilee Hospital                     | 7                      |            |             |            |            | 7                        |           | 7                        | 0%            |
| <b>Fraser</b>                               |                        | <b>2</b>   |             |            |            | <b>2</b>                 |           | <b>2</b>                 | <b>0%</b>     |
| Abbotsford Reg Hosp & Cancer Centre         |                        | 1          |             |            |            | 1                        |           | 1                        | 0%            |
| Royal Columbian Hospital                    |                        | 1          |             |            |            | 1                        |           | 1                        | 0%            |
| <b>Vancouver Coastal</b>                    | <b>0</b>               | <b>2</b>   | <b>7</b>    | <b>0</b>   | <b>0</b>   | <b>9</b>                 | <b>0</b>  | <b>9</b>                 | <b>1%</b>     |
| Powell River General Hospital               |                        |            | 4           |            |            | 4                        |           | 4                        | 0%            |
| Vancouver General Hospital                  |                        | 2          | 3           |            |            | 5                        |           | 5                        | 0%            |
| <b>Vancouver Island</b>                     | <b>1</b>               | <b>2</b>   | <b>5</b>    | <b>296</b> | <b>2</b>   | <b>306</b>               | <b>3</b>  | <b>309</b>               | <b>19%</b>    |
| Victoria General Hospital                   | 1                      | 2          | 3           | 290        | 2          | 298                      | 3         | 301                      | 19%           |
| West Coast General Hospital                 |                        |            | 2           | 6          |            | 8                        |           | 8                        | 1%            |
| <b>Northern</b>                             | <b>2</b>               | <b>1</b>   | <b>1</b>    | <b>0</b>   | <b>245</b> | <b>249</b>               | <b>5</b>  | <b>254</b>               | <b>16%</b>    |
| Dawson Creek and District Hospital          |                        |            |             |            | 5          | 5                        |           | 5                        | 0%            |
| Fort St. John General Hospital              |                        |            |             |            | 28         | 28                       | 1         | 29                       | 2%            |
| G.R. Baker Memorial Hospital                |                        |            |             |            | 1          | 1                        |           | 1                        | 0%            |
| Mills Memorial Hospital                     |                        |            |             |            | 31         | 31                       |           | 31                       | 2%            |
| UHNBC (Prince George)                       | 2                      | 1          | 1           |            | 174        | 178                      | 4         | 182                      | 11%           |
| Prince Rupert Regional Hospital             |                        |            |             |            | 6          | 6                        |           | 6                        | 0%            |
| <b>Provincial Health Services Authority</b> | <b>106</b>             | <b>396</b> | <b>217</b>  | <b>67</b>  | <b>64</b>  | <b>850</b>               | <b>38</b> | <b>888</b>               | <b>56%</b>    |
| B.C. Children's Hospital                    | 106                    | 396        | 217         | 67         | 64         | 850                      | 38        | 888                      |               |
| <b>Total ICU Visits, BC</b>                 | <b>224</b>             | <b>404</b> | <b>233</b>  | <b>363</b> | <b>314</b> | <b>1,538</b>             | <b>52</b> | <b>1,590</b>             | <b>100%</b>   |
| <b>% Treated in Home HA</b>                 | <b>51%</b>             | <b>0%</b>  | <b>96%</b>  | <b>82%</b> | <b>78%</b> | <b>57%</b>               |           |                          |               |
| <b>% BC ICU Child Visits</b>                | <b>15%</b>             | <b>26%</b> | <b>15%</b>  | <b>24%</b> | <b>20%</b> | <b>100%</b>              |           |                          |               |
| <b>% BC Population</b>                      | <b>16%</b>             | <b>38%</b> | <b>24%</b>  | <b>17%</b> | <b>6%</b>  | <b>100%</b>              |           |                          |               |

Note: For the purposes of this table, children from VCH that were admitted to either a VCH hospital or BCCH were assumed to have received the service in their home HA.

### 3.0 Literature on Volumes & Outcomes

This literature review was conducted in preparation for development of the Jan 2019 Critical Care module.

In preparation for development of the Children & Critical Care Tiers module, a literature search was undertaken on the relationship between volumes and outcomes in adult, pediatric and neonatal ICUs. Most of the literature focused on adult and not pediatric or neonatal ICUs.

Although the literature is conflicting, most studies suggest there is a positive relationship between volumes and outcomes (higher volumes, better outcomes). Some noted the relationship existed only for high risk/complexity patients.

#### *Adult ICUs:*

- Most studies/literature reviews suggest there is a relationship between volumes and outcomes (higher volumes, better outcomes),<sup>1-5</sup> although some report no relationship.<sup>6-8</sup>
- One literature review (n=20 studies) suggested there was a high volume threshold at which point the risk benefit is lost (more than 450 cases per year per diagnostic category and more than 711 cases not specific to a diagnostic category). Optimal ICU performance was noted to be between low and high volumes.<sup>1</sup>
- One systematic review and meta-analysis (n=29 studies) found that 63% of the studies reported a statistically significant association between higher admission volumes and improved outcomes. The magnitude of the benefits was greatest in selected high risk conditions (cardiovascular, respiratory, severe sepsis, hepato– G.I., neurologic and postoperative admission diagnoses).<sup>9</sup>
- Two individual studies that focused on specific patient groups only (e.g., renal, subarachnoid hemorrhage) concluded a positive volume/outcome relationship.<sup>10,11</sup>
- One study of 29 ICUs in Spain reported no relationship between volumes and outcomes.<sup>12</sup> Another concluded the benefit was seen only in high-risk patients<sup>13</sup> and another only with certain diagnoses.<sup>14</sup>
- One study concluded the number of pressure ulcer prevalence and catheter-related bloodstream infection rates were higher in larger hospitals.<sup>15</sup>
- One study showed that reduced ICU bed availability was associated with increased rates of ICU readmission and ward cardiac arrest.<sup>16</sup> One literature review identified 70 - 75% to be the optimal ICU occupancy rate.<sup>17</sup> Another study did not show a relationship between ICU bed availability and occupancy.<sup>18</sup>

#### *Pediatric ICUs:*

- There are less studies/literature reviews published on volume and outcomes in pediatric ICUs.
- 3 articles show a relationship between PICU volume and morbidity/mortality (higher volumes, better outcomes):
  - Tilford's study<sup>19</sup> examined the volumes & outcomes in 16 PICUs that ranged from 4 - 20 beds (147 - 1,246 admissions/yr, with an average of 863/yr). The study reported significant effects of patient volume on both risk-adjusted mortality and patient length of stay. A 100% increase in PICU volume decreased both risk-adjusted mortality (adjusted odds ratio: .95)



and reduced length of stay (incident rat ratio: .98). Factors such as fellowship training programs, university hospital affiliation, number of PICU beds and children's hospital affiliation had no effect on risk-adjusted mortality or patient length of stay.

- Marcin's study<sup>20</sup> examined the volumes & outcomes in 15 PICUs (152 - 2,156 admissions/yr). On average, admission to higher-volume PICUs was associated with lower severity-adjusted mortality (odds ratio = 0.68 per 100 patient increase in volume). However, although severity-adjusted mortality rates decreased as annual PICU admission volumes increased, there was a slight increase in mortality rates among PICUs with very high annual admission volumes. This suggests that, although increasing PICU volumes are on average associated with lower mortality rates, there may be a point at which increasing volume not only does not result in further reductions in severity-adjusted mortality rates, but may be associated with some increase in mortality rates. The lowest severity-adjusted mortality rates were among PICUs with annual admission volumes between 992 and 1,491.
- Ruttman's<sup>21</sup> study examined the relationship between diagnostic diversity within a PICU and mortality risk. The study concluded no relationship although did note a small but significant volume effect present. A volume increase of 10 patients/month was associated with a 4% decrease of the adjusted mortality odds ratio.
- One PICU article showed a relationship between ICU volume and LOS (higher volume, shorter LOS) for critically ill children with acute asthma.<sup>24</sup>
- One PICU study (Markovitz<sup>22</sup>) examined the volumes & outcomes in 92 PICUs (186,643 patients). For patients with low severity of illness, PICU volume was not a related to mortality. For patients with high severity of illness, PICU volume is inversely related to mortality (i.e., higher PICU volumes were associated with higher risk– adjusted mortality). Potential explanations included differences in quality of care, issues with unmeasured con founding or calibration of existing severity of illness scores. Kahn<sup>23</sup> in a later article noted the relationship was conditional on severity of illness and that the association between higher volume and higher risk of death was largely confined to more acutely ill patients. He proposed that the study results could be attributable to limitations in the study design, including differing case-mixes between high volume and low volume PICU's.

#### Neonatal ICUs:

- 3 articles in the NICU literature showed a relationship between higher volumes and better outcomes.<sup>25,26</sup>

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**Appendix 1: ICU Visits & Days, All BC Hospitals, 2019/20 & 2018/19 (Children Ages 16.9 & Under)**

| HA of Treating Hosp            | Treating Hospital                | 2019/20    |                 |              |               |              |             |              |             |            | 2018/19    |              |               |              |             |              |             |            |  |
|--------------------------------|----------------------------------|------------|-----------------|--------------|---------------|--------------|-------------|--------------|-------------|------------|------------|--------------|---------------|--------------|-------------|--------------|-------------|------------|--|
|                                |                                  | Visits     |                 |              |               |              | Days        |              |             |            | Visits     |              |               |              |             | Days         |             |            |  |
|                                |                                  | < 6 mos    | 6 mos - 1.9 Yrs | 2 - 13.9 Yrs | 14 - 16.9 Yrs | Total        | % Total     | Pt Days      | % Tot       | Avg LOS    | < 2 Yrs    | 2 - 13.9 Yrs | 14 - 16.9 Yrs | Total        | % Total     | Pt Days      | % Tot       | Avg LOS    |  |
| IHA                            | Cariboo Memorial Hospital        | 9          | 19              | 15           | 3             | 46           | 3%          |              |             |            | 18         | 16           | 7             | 41           | 2%          | 96           | 2%          | 2.3        |  |
|                                | East Kootenay Regional Hospital  |            | 3               | 7            | 5             | 15           | 1%          |              |             |            | 3          | 8            | 9             | 20           | 1%          | 33           | 1%          | 1.7        |  |
|                                | Kelowna General Hospital         | 1          | 4               | 16           | 9             | 30           | 2%          |              |             |            | 7          | 14           | 7             | 28           | 2%          | 39           | 1%          | 1.4        |  |
|                                | Kootenay Boundary Reg Hospital   |            | 1               | 4            | 4             | 9            | 1%          |              |             |            |            | 5            | 2             | 7            | 0%          | 14           | 0%          | 2.0        |  |
|                                | Penticton Regional Hospital      | 2          |                 | 8            | 1             | 11           | 1%          |              |             |            | 3          | 8            | 1             | 12           | 1%          | 26           | 0%          | 2.2        |  |
|                                | Royal Inland Hospital            | 1          | 4               | 3            | 2             | 10           | 1%          |              |             |            | 1          | 1            |               | 2            | 0%          | 2            | 0%          | 1.0        |  |
|                                | Shuswap Lake General Hospital    |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | Vernon Jubilee Hospital          |            | 1               | 6            |               | 7            | 0%          |              |             |            | 2          | 5            | 2             | 9            | 1%          | 14           | 0%          | 1.6        |  |
| FHA                            | Abbotsford Regional Hosp         |            |                 |              | 1             | 1            | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | Burnaby Hosp                     |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | Chilliwack Gen Hosp              |            |                 |              |               |              | 0%          |              |             |            |            | 1            | 1             | 0%           | 2           | 0%           | 2.0         |            |  |
|                                | Langley Memorial Hospital        |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | Ridge Meadows                    |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | Royal Columbian Hosp             |            |                 |              | 1             | 1            | 0%          |              |             |            |            |              | 4             | 4            | 0%          | 30           | 1%          | 7.5        |  |
|                                | Surrey Memorial                  |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
| VCH                            | Lion's Gate Hosp                 |            |                 |              |               |              | 0%          |              |             |            | 2          |              | 2             | 4            | 0%          | 36           | 1%          | 9.0        |  |
|                                | Mt St Joseph Hosp                |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | Powell River Gen Hosp            |            |                 | 2            | 2             | 4            | 0%          |              |             |            |            | 3            |               | 3            | 0%          | 6            | 0%          | 2.0        |  |
|                                | Richmond Hosp                    |            |                 |              |               |              | 0%          |              |             |            |            | 1            | 1             | 0%           | 10          | 0%           | 10.0        |            |  |
|                                | Sechelt Hosp                     |            |                 |              |               |              | 0%          |              |             |            |            | 1            |               | 1            | 0%          | 2            | 0%          | 2.0        |  |
|                                | St Paul's Hosp                   |            |                 |              |               |              | 0%          |              |             |            | 1          |              | 1             | 2            | 0%          | 6            | 0%          | 3.0        |  |
|                                | Vancouver Gen Hosp               |            |                 |              | 5             | 5            | 0%          |              |             |            |            |              | 4             | 4            | 0%          | 38           | 1%          | 9.5        |  |
| VIHA                           | Cowichan District Hosp           |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | Nanaimo Reg Gen Hosp             |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | North Island Hosp - Comox Valley |            |                 |              |               |              | 0%          |              |             |            |            |              | 2             | 2            | 0%          | 2            | 0%          | 1.0        |  |
|                                | Royal Jubilee Hosp               |            |                 |              |               |              | 0%          |              |             |            |            |              | 1             | 1            | 0%          | 5            | 0%          | 5.0        |  |
|                                | St Joseph's Hosp                 |            |                 |              |               |              | 0%          |              |             |            |            |              |               |              | 0%          |              | 0%          | -          |  |
|                                | Victoria General Hosp            | 73         | 45              | 144          | 39            | 301          | 19%         |              |             |            | 162        | 153          | 28            | 343          | 21%         | 1197         | 22%         | 3.5        |  |
|                                | West Coast Gen Hosp              |            | 4               | 3            | 1             | 8            | 1%          |              |             |            | 4          | 5            |               | 9            | 1%          | 12           | 0%          | 1.3        |  |
| NHA                            | Dawson Creek Hosp                |            | 3               | 1            | 1             | 5            | 0%          |              |             |            | 1          |              |               | 1            | 0%          | 1            | 0%          | 1.0        |  |
|                                | Ft St John Hosp                  | 10         | 5               | 12           | 2             | 29           | 2%          |              |             |            | 27         | 18           | 4             | 49           | 3%          | 107          | 2%          | 2.2        |  |
|                                | GR Baker Hosp                    |            |                 | 1            |               | 1            | 0%          |              |             |            |            | 2            |               | 2            | 0%          | 2            | 0%          | 1.0        |  |
|                                | Mills Memorial                   | 9          | 8               | 13           | 1             | 31           | 2%          |              |             |            | 11         | 2            | 1             | 14           | 1%          | 49           | 1%          | 3.5        |  |
|                                | Prince Rupert Hosp               | 2          |                 | 3            | 1             | 6            | 0%          |              |             |            | 1          | 5            |               | 6            | 0%          | 7            | 0%          | 1.2        |  |
|                                | Univ Hosp of N BC                | 49         | 44              | 75           | 14            | 182          | 11%         |              |             |            | 119        | 97           | 13            | 229          | 14%         | 527          | 10%         | 2.3        |  |
| PHSA                           | BC Children's Hosp               | 213        | 162             | 402          | 111           | 888          | 56%         |              |             |            | 329        | 414          | 105           | 848          | 52%         | 3211         | 59%         | 3.8        |  |
| <b>Total</b>                   |                                  | <b>369</b> | <b>303</b>      | <b>715</b>   | <b>203</b>    | <b>1,590</b> | <b>100%</b> | <b>5,474</b> | <b>100%</b> | <b>3.4</b> | <b>691</b> | <b>757</b>   | <b>195</b>    | <b>1,643</b> | <b>100%</b> | <b>5,474</b> | <b>100%</b> | <b>3.3</b> |  |
| <b>% Total</b>                 |                                  | <b>23%</b> | <b>19%</b>      | <b>45%</b>   | <b>13%</b>    | <b>100%</b>  |             |              |             |            | <b>42%</b> | <b>46%</b>   | <b>12%</b>    | <b>100%</b>  |             |              |             |            |  |
| <b>% BC's Child Population</b> |                                  | <b>11%</b> |                 | <b>71%</b>   | <b>18%</b>    | <b>100%</b>  |             |              |             |            | <b>12%</b> | <b>70%</b>   | <b>18%</b>    | <b>100%</b>  |             |              |             |            |  |

Orange = PICU available

## Appendix 2: ICU Visits & Days by Location of Child's Home Residence, 2019/20

(Children Ages 16.9 & Under)

| Pt HA | Treating Hosp                      | Visits     | Days         | % Visits   | % Days     | % Prov Child Pop'n |
|-------|------------------------------------|------------|--------------|------------|------------|--------------------|
| IHA   | B.C. Children's Hospital           | 106        | 507          |            |            |                    |
|       | Cariboo Memorial Hospital          | 41         | 83           |            |            |                    |
|       | Kelowna General Hospital           | 28         | 38           |            |            |                    |
|       | East Kootenay Regional Hospital    | 12         | 23           |            |            |                    |
|       | Penticton Regional Hospital        | 10         | 23           |            |            |                    |
|       | Kootenay Boundary Reg Hospital     | 9          | 10           |            |            |                    |
|       | Royal Inland Hospital              | 8          | 21           |            |            |                    |
|       | Vernon Jubilee Hospital            | 7          | 7            |            |            |                    |
|       | Prince George Regional Hospital    | 2          | 3            |            |            |                    |
|       | Victoria General Hospital          | 1          | 2            |            |            |                    |
|       | <b>IHA Total</b>                   | <b>224</b> | <b>717</b>   | <b>14%</b> | <b>13%</b> | <b>15%</b>         |
| FHA   | B.C. Children's Hospital           | 396        | 1,796        |            |            |                    |
|       | Vancouver General Hospital         | 2          | 16           |            |            |                    |
|       | Victoria General Hospital          | 2          | 2            |            |            |                    |
|       | Royal Inland Hospital              | 1          | 2            |            |            |                    |
|       | Abbotsford Reg Hosp and Cancer Ctr | 1          | 2            |            |            |                    |
|       | Prince George Regional Hospital    | 1          | 7            |            |            |                    |
|       | Royal Columbian Hospital           | 1          | 6            |            |            |                    |
|       | <b>FHA Total</b>                   | <b>404</b> | <b>1,831</b> | <b>25%</b> | <b>32%</b> | <b>42%</b>         |
| VCH   | B.C. Children's Hospital           | 217        | 829          |            |            |                    |
|       | Powell River General Hospital      | 4          | 12           |            |            |                    |
|       | Vancouver General Hospital         | 3          | 32           |            |            |                    |
|       | Victoria General Hospital          | 3          | 3            |            |            |                    |
|       | West Coast General Hospital        | 2          | 2            |            |            |                    |
|       | Cariboo Memorial Hospital          | 2          | 6            |            |            |                    |
|       | Penticton Regional Hospital        | 1          | 1            |            |            |                    |
|       | Prince George Regional Hospital    | 1          | 3            |            |            |                    |
|       | <b>Van Coastal Total</b>           | <b>233</b> | <b>888</b>   | <b>15%</b> | <b>16%</b> | <b>20%</b>         |

| Pt HA                    | Treating Hosp                   | Visits       | Days         | % Visits    | % Days      | % Prov Child Pop'n |
|--------------------------|---------------------------------|--------------|--------------|-------------|-------------|--------------------|
| Island H                 | Victoria General Hospital       | 290          | 1,142        |             |             |                    |
|                          | B.C. Children's Hospital        | 67           | 193          |             |             |                    |
|                          | West Coast General Hospital     | 6            | 9            |             |             |                    |
|                          | <b>Island H Total</b>           | <b>363</b>   | <b>1,344</b> | <b>23%</b>  | <b>23%</b>  | <b>15%</b>         |
| NHA                      | Prince George Regional Hospital | 174          | 447          |             |             |                    |
|                          | B.C. Children's Hospital        | 64           | 211          |             |             |                    |
|                          | Mills Memorial Hospital         | 31           | 60           |             |             |                    |
|                          | Fort St. John General Hospital  | 28           | 72           |             |             |                    |
|                          | Prince Rupert Regional Hospital | 6            | 8            |             |             |                    |
|                          | Dawson Creek and Dist Hospital  | 5            | 5            |             |             |                    |
|                          | Cariboo Memorial Hospital       | 2            | 5            |             |             |                    |
|                          | Victoria General Hospital       | 2            | 2            |             |             |                    |
|                          | Royal Inland Hospital           | 1            | 1            |             |             |                    |
|                          | G.R. Baker Memorial Hospital    | 1            | 1            |             |             |                    |
|                          | <b>NHA Total</b>                | <b>314</b>   | <b>812</b>   | <b>20%</b>  | <b>14%</b>  | <b>7%</b>          |
| OOP/<br>Unspec           | B.C. Children's Hospital        | 38           | 101          |             |             |                    |
|                          | Prince George Regional Hospital | 4            | 10           |             |             |                    |
|                          | East Kootenay Regional Hospital | 3            | 4            |             |             |                    |
|                          | Victoria General Hospital       | 3            | 6            |             |             |                    |
|                          | Cariboo Memorial Hospital       | 1            | 1            |             |             |                    |
|                          | Kelowna General Hospital        | 2            | 2            |             |             |                    |
|                          | Fort St. John General Hospital  | 1            | 6            |             |             |                    |
| <b>OOP/Unknown Total</b> | <b>52</b>                       | <b>130</b>   | <b>3%</b>    | <b>2%</b>   |             |                    |
|                          |                                 | <b>1,590</b> | <b>5,722</b> | <b>100%</b> | <b>100%</b> |                    |

## Appendix 3: ICU Visits by Major Clinical Category & Case Mix, 2019/20

(Children Ages 16.9 & Under)

| Major Clinical Category/Case Mix Group                            | ICU Visits |            | ICU Days     |            |
|---|------------|------------|--------------|------------|
|   | #          | % Total    | #            | % Total    |
| <b>Diseases &amp; Disorders of the Respiratory System</b>         | <b>373</b> | <b>23%</b> | <b>1,638</b> | <b>29%</b> |
| Upper/Lower Respiratory Infection                                 | 134        |            | 591          |            |
| Asthma  | 79         |            | 173          |            |
| Viral/Unspecified Pneumonia                                       | 62         |            | 246          |            |
| Other Respiratory Diagnosis                                       | 21         |            | 62           |            |
| Symptom/Sign of Respiratory System                                | 16         |            | 111          |            |
| Bacterial Pneumonia   | 15         |            | 66           |            |
| Other Respiratory Intervention                                    | 8          |            | 14           |            |
| Respiratory Failure   | 6          |            | 51           |            |
| Disease of Pleura   | 6          |            | 40           |            |
| MCC 04 Unrelated Intervention                                     | 6          |            | 140          |            |
| Aspiration Pneumonia  | 6          |            | 61           |            |
| Other Lung Disease  | 3          |            | 45           |            |
| Pleurectomy   | 2          |            | 16           |            |
| Postprocedural Respiratory Disorder                               | 2          |            | 5            |            |
| Chronic Obstructive Pulmonary Disease                             | 1          |            | 3            |            |
| Bronchiectasis  | 1          |            | 1            |            |
| Other Intervention with Respiratory Diagnosis                     | 1          |            | 1            |            |
| Endoscopic Lung Resection   | 1          |            | 1            |            |
| Pneumothorax  | 1          |            | 1            |            |
| Failure/Rejection Lung Transplant                                 | 1          |            | 3            |            |
| Respiratory Biopsy/Inspection                                     | 1          |            | 7            |            |
| <b>Diseases &amp; Disorders of the Circulatory System</b>         | <b>199</b> | <b>13%</b> | <b>819</b>   | <b>14%</b> |
| Major Cardiothoracic Intervention with Pump                       | 106        |            | 172          |            |
| Arrhythmia without Coronary Angiogram                             | 18         |            | 50           |            |
| Major Cardiothoracic Intervention without Pump                    | 14         |            | 16           |            |
| Other/Miscellaneous Cardiac Disorder                              | 12         |            | 36           |            |
| Other/Miscellaneous Vascular Intervention                         | 8          |            | 26           |            |
| Myocardial Infarction/Shock/Arrest without Coronary Angiogram     | 8          |            | 16           |            |
| Cardiac Valve Repair except Percutaneous Transluminal Approach    | 5          |            | 5            |            |
| Syncope   | 4          |            | 4            |            |
| Heart or Lung Transplant  | 4          |            | 386          |            |
| Congenital Cardiac Disorder                                       | 3          |            | 29           |            |
| Cardiac Valve Replacement   | 3          |            | 9            |            |
| Percut Transluminal Cardiothoracic I/V except Percut Coronary I/V | 2          |            | 16           |            |
| Cardiac Conduction System Intervention                            | 2          |            | 2            |            |
| Minor Cardiothoracic Intervention                                 | 2          |            | 2            |            |
| Endocarditis  | 1          |            | 2            |            |
| Angina (except Unstable)/Chest Pain without Coronary Angiogram    | 1          |            | 1            |            |
| Other/Miscellaneous Vascular Disease                              | 1          |            | 1            |            |
| Heart Failure without Coronary Angiogram                          | 1          |            | 1            |            |
| Cardiac Valve Disease, except Endocarditis                        | 1          |            | 1            |            |
| Benign Hypertension   | 1          |            | 2            |            |
| Management/Removal of Pacemaker/Defibrillator/Leads               | 1          |            | 41           |            |
| Implantation of Cardioverter/Defibrillator                        | 1          |            | 1            |            |
| <b>Diseases &amp; Disorders of the Nervous System</b>             | <b>191</b> | <b>12%</b> | <b>487</b>   | <b>9%</b>  |
| Seizure Disorder, except Status Epilepticus                       | 64         |            | 94           |            |
| Excision/Repair of Brain  | 32         |            | 35           |            |
| Status Epilepticus  | 19         |            | 64           |            |
| Other Disorder of Central Nervous System                          | 17         |            | 43           |            |

| Major Clinical Category/Case Mix Group   | ICU Visits |            | ICU Days   |            |
|--|------------|------------|------------|------------|
|  | #          | % Total    | #          | % Total    |
| Insertion of Shunt/Brain Monitor   | 9          |            | 20         |            |
| Other Degenerative Disease of Nervous System                                   | 6          |            | 48         |            |
| Cranium Intervention   | 5          |            | 5          |            |
| MCC 01 Unrelated Intervention  | 4          |            | 52         |            |
| Meningitis except Viral  | 3          |            | 4          |            |
| Hemorrhagic Event of Central Nervous System                                    | 3          |            | 7          |            |
| Neuropathy/Polyneuropathy  | 3          |            | 6          |            |
| Infection/Inflammation of Central Nervous System except Meningitis             | 2          |            | 2          |            |
| Other Dysfunction of Central Nervous System                                    | 2          |            | 3          |            |
| Viral Meningitis   | 2          |            | 5          |            |
| Management of Nervous System Device/Other Minor Intervention                   | 2          |            | 9          |            |
| Other Vascular Intervention with Nervous System Diagnosis                      | 2          |            | 5          |            |
| Neuromuscular Disorder   | 2          |            | 3          |            |
| Thoracic/Major Intervention on Spine/Spinal Canal/Vertebra                     | 2          |            | 2          |            |
| Malignant Neoplasm of Central Nervous System                                   | 2          |            | 4          |            |
| Major Nerve Intervention or Intervention on other Site                         | 2          |            | 3          |            |
| Craniotomy for Drainage  | 2          |            | 2          |            |
| Drainage/Release of Brain  | 1          |            | 25         |            |
| Other Disorder of Nerve  | 1          |            | 1          |            |
| Multiple Sclerosis/Demyelinating Disorder                                      | 1          |            | 30         |            |
| Intracranial Vessel Intervention except Extraction                             | 1          |            | 11         |            |
| Benign & Uncertain/Unknown Behaviour Neoplasms, CNS                            | 1          |            | 1          |            |
| Ischemic Event of Central Nervous System                                       | 1          |            | 3          |            |
| <b>Diseases &amp; Disorders of Ear, Nose, Mouth &amp; Throat</b>               | <b>162</b> | <b>10%</b> | <b>770</b> | <b>13%</b> |
| Oral Cavity/Pharynx Intervention   | 38         |            | 51         |            |
| Influenza/Acute Upper Respiratory Infection                                    | 34         |            | 141        |            |
| Croup  | 28         |            | 69         |            |
| Hard/Soft Palate/Gingiva Intervention  | 14         |            | 17         |            |
| Miscellaneous Ear/Nose/Throat Disorder   | 12         |            | 332        |            |
| Glottis Intervention   | 8          |            | 94         |            |
| Sleep Apnea  | 5          |            | 8          |            |
| Otitis Media with/without Ventilation Tube                                     | 5          |            | 9          |            |
| Skin Intervention with Ear/Nose/Throat Diagnosis                               | 4          |            | 4          |            |
| Disease of Oral Cavity/Salivary Gland/Jaw                                      | 4          |            | 4          |            |
| Larynx/Trachea Intervention with Ear/Nose/Throat Diagnosis                     | 3          |            | 33         |            |
| Cochlear Implant   | 1          |            | 1          |            |
| Tonsillitis/Pharyngitis  | 1          |            | 2          |            |
| Epiglottitis   | 1          |            | 1          |            |
| Nose/Nasal Cartilage Intervention  | 1          |            | 1          |            |
| Other Ear Intervention   | 1          |            | 1          |            |
| Other Musculoskeletal Intervention on Head                                     | 1          |            | 1          |            |
| Oropharynx Excision  | 1          |            | 1          |            |
| <b>Newborns &amp; Neonates with Conditions Originating in Perinatal Period</b> | <b>155</b> | <b>10%</b> | <b>646</b> | <b>11%</b> |
| Newborn/Neonate 1500+ gm with Major Cardiovascular Intervention                | 49         |            | 326        |            |
| Newborn/Neonate 2500+ grams, Other Minor Problem                               | 22         |            | 49         |            |
| Newborn/Neonate 2500+ grams, Major Respiratory Complication                    | 16         |            | 67         |            |
| Newborn/Neonate 2500+ grams, Cardiovascular Anomaly                            | 16         |            | 39         |            |
| Newborn/Neonate 2500+ grams, Septicemia/Other Neonatal Infection               | 14         |            | 47         |            |
| Newborn/Neonate 2500+ grams, Other Moderate Problem                            | 9          |            | 29         |            |
| Newborn/Neonate 2500+ grams, Other Respiratory Problem                         | 7          |            | 12         |            |
| Newborn/Neonate 2500+ grams, Anomaly of Nervous/Resp/Diges System              | 5          |            | 14         |            |
| Newborn/Neonate 1500+ grams with Major Gastro/Respiratory Intervention         | 4          |            | 9          |            |
| Newborn/Neonate 2500+ grams, Other Major Problem                               | 4          |            | 24         |            |
| Newborn/Neonate 2000-2499 grams, Gestational Age 37+ Weeks                     | 2          |            | 9          |            |

| Major Clinical Category/Case Mix Group  | ICU Visits |           | ICU Days   |           |
|---|------------|-----------|------------|-----------|
|   | #          | % Total   | #          | % Total   |
| Newborn/Neonate 2500+ grams, Other Congenital Anomaly                               | 2          |           | 3          |           |
| Newborn/Neonate 2000-2499 grams, Gestational Age 35-36 Weeks                        | 2          |           | 9          |           |
| Newborn/Neonate 2500+ grams, Jaundice   | 1          |           | 2          |           |
| Newborn/Neonate 1500-1999 grams, Gestational Age 35+ Weeks                          | 1          |           | 6          |           |
| Newborn/Neonate 2500+ grams, Chromosomal/Multiple Anomaly                           | 1          |           | 1          |           |
| <b>Significant Trauma, Injury, Poisoning &amp; Toxic Effects of Drugs</b>           | <b>151</b> | <b>9%</b> | <b>458</b> | <b>8%</b> |
| Poisoning/Toxic Effect of Drug  | 54         |           | 86         |           |
| Single Intracranial Injury  | 13         |           | 31         |           |
| Skull/Intracranial Intervention with Trauma/Complication of Treatment               | 10         |           | 50         |           |
| Single Injury to Internal Organ   | 7          |           | 7          |           |
| Major Thoraco-abdominal/Vascular IV with Trauma/Complic'n of Treatment              | 7          |           | 36         |           |
| Other Thoraco-abdominal Intervention with Trauma/Complic'n of Treatment             | 7          |           | 64         |           |
| Multiple Intracranial Injury  | 6          |           | 32         |           |
| Concussion  | 5          |           | 5          |           |
| Open Wound/Other/Unspecified Minor Injury   | 5          |           | 7          |           |
| Complication of Transplanted Organ  | 5          |           | 11         |           |
| Significant Injury/Exposure to Element  | 4          |           | 12         |           |
| Multiple Injuries to Internal Organ   | 4          |           | 18         |           |
| Spinal Injury   | 3          |           | 9          |           |
| Intracranial Injury with Injury to Other Organ                                      | 3          |           | 17         |           |
| Rib Fracture/Flail Chest  | 2          |           | 2          |           |
| Post-Operative Hemorrhage   | 2          |           | 2          |           |
| Post-Operative Complication except Hemorrhage                                       | 2          |           | 4          |           |
| Other/Unspecified Complication of Treatment   | 2          |           | 2          |           |
| Ear/Nose/Throat Intervention with Trauma/Complication of Treatment                  | 1          |           | 1          |           |
| Internal Fixation of Facial Bone  | 1          |           | 6          |           |
| Fracture of Skull/Facial Bone   | 1          |           | 4          |           |
| Spinal Intervention with Trauma/Complication of Treatment                           | 1          |           | 25         |           |
| Fixation/Repair Hip/Femur   | 1          |           | 6          |           |
| Other Fracture Dislocation of Leg   | 1          |           | 13         |           |
| Fracture of Femur   | 1          |           | 2          |           |
| Other Major Bone Intervention with Trauma/Complication of Treatment                 | 1          |           | 4          |           |
| Fracture/Dislocation/Rupture of Pelvis/Sacrum/Coccyx                                | 1          |           | 1          |           |
| Organ Transplant with Trauma/Complication of Treatment                              | 1          |           | 1          |           |
| <b>Diseases &amp; Disorders of the Endocrine System, Nutrition &amp; Metabolism</b> | <b>78</b>  | <b>5%</b> | <b>122</b> | <b>2%</b> |
| Diabetes  | 62         |           | 95         |           |
| Disorder related to Nutrition   | 7          |           | 8          |           |
| Disorder of Metabolism  | 4          |           | 4          |           |
| Dehydration   | 1          |           | 1          |           |
| MCC 10 Unrelated Intervention   | 1          |           | 1          |           |
| Pituitary/Pineal Gland Intervention   | 1          |           | 3          |           |
| Cystic Fibrosis   | 1          |           | 2          |           |
| Disease/Disorder of Adrenal/Pituitary Gland   | 1          |           | 8          |           |
| <b>Diseases &amp; Disorders of the Digestive System</b>                             | <b>71</b>  | <b>4%</b> | <b>132</b> | <b>2%</b> |
| Non-Complex Hernia Repair   | 12         |           | 15         |           |
| Non-severe Enteritis  | 9          |           | 13         |           |
| Other Gastrointestinal Disorder   | 7          |           | 8          |           |
| Symptom/Sign of Digestive System  | 6          |           | 9          |           |
| Minor Upper Gastrointestinal Intervention   | 4          |           | 8          |           |
| Other Intervention with Gastrointestinal Diagnosis                                  | 4          |           | 19         |           |
| Non-Major Excision/Repair of Upper Gastrointestinal Tract, Unplanned                | 4          |           | 11         |           |
| Gastrointestinal Hemorrhage   | 3          |           | 4          |           |
| Endoscopic Large Intestine/Rectum Resection without Colostomy                       | 3          |           | 8          |           |
| Esophagitis/Gastritis/Miscellaneous Digestive Disease                               | 2          |           | 2          |           |



| Major Clinical Category/Case Mix Group   | ICU Visits |           | ICU Days   |           |
|--|------------|-----------|------------|-----------|
|  | #          | % Total   | #          | % Total   |
| Open Large Intestine/Rectum Resection without Colostomy, Unplanned                       | 2          |           | 2          |           |
| Intervention on Anus Excluding Reconstruction  | 2          |           | 3          |           |
| Simple Appendectomy  | 2          |           | 2          |           |
| Open Large Intestine/Rectum Resection without Colostomy, Planned                         | 2          |           | 4          |           |
| Colostomy/Enterostomy  | 2          |           | 6          |           |
| Repair/Fixation & Other Moderate Intervention on Lower GI Tract                          | 1          |           | 3          |           |
| Inflammatory Bowel Disease   | 1          |           | 1          |           |
| Severe Enteritis   | 1          |           | 4          |           |
| Complicated Appendectomy   | 1          |           | 4          |           |
| Complex Hernia Repair  | 1          |           | 2          |           |
| Gastrointestinal Obstruction   | 1          |           | 1          |           |
| Non-Major Excision/Repair of Upper Gastrointestinal Tract, Planned                       | 1          |           | 3          |           |
| <b>Diseases &amp; Disorders of the Musculoskeletal System &amp; Connective Tissue</b>    | <b>46</b>  | <b>3%</b> | <b>181</b> | <b>3%</b> |
| C1/C2/Thoracic Spine Intervention  | 19         |           | 62         |           |
| Spinal Vertebrae Intervention  | 7          |           | 19         |           |
| Craniofacial Bone Intervention with Musculoskeletal Diagnosis                            | 3          |           | 7          |           |
| Fixation of Lower Limb except Ankle/Foot   | 2          |           | 7          |           |
| Soft Tissue Intervention of Lower Limb   | 2          |           | 29         |           |
| Osteotomy of Lower Limb except Foot  | 2          |           | 4          |           |
| Systemic Connective Tissue Disorder  | 2          |           | 4          |           |
| Skin Intervention with Musculoskeletal Diagnosis   | 1          |           | 4          |           |
| Other Musculoskeletal Soft Tissue Intervention   | 1          |           | 22         |           |
| Joint Replacement with Malignant Neoplasm  | 1          |           | 5          |           |
| Inflammatory and Reactive Arthropathy  | 1          |           | 1          |           |
| Strain/Sprain/Joint/Tendon Disorder  | 1          |           | 2          |           |
| Resection/Amputation of Pelvis/Leg without Infection                                     | 1          |           | 2          |           |
| Other Soft Tissue Disorder   | 1          |           | 11         |           |
| Vertebral/Disc Disease   | 1          |           | 1          |           |
| Other Repair Bone of Leg except Ankle/Foot   | 1          |           | 1          |           |
| <b>Diseases &amp; Disorders of the Blood &amp; Lymphatic System</b>                      | <b>45</b>  | <b>3%</b> | <b>183</b> | <b>3%</b> |
| Acute Leukemia except Myeloid  | 11         |           | 33         |           |
| Intervention with Other Blood Malignant Neoplasm   | 6          |           | 12         |           |
| Non-Malignant Neoplasm of Other Site   | 4          |           | 5          |           |
| Other Chemotherapy   | 4          |           | 5          |           |
| Other Anemia   | 3          |           | 6          |           |
| Bone Marrow/Stem Cell Transplant   | 3          |           | 57         |           |
| Intervention with Blood/Lymphatic System Diagnosis except Neoplasm                       | 3          |           | 40         |           |
| Lymphoma   | 3          |           | 6          |           |
| Intervention with Lymphoma   | 2          |           | 4          |           |
| Acute Lymphadenitis  | 1          |           | 1          |           |
| Purpura/Other Hemorrhagic Disorder   | 1          |           | 6          |           |
| Other Disease/Disorder of Blood/Lymphatic System   | 1          |           | 2          |           |
| Hemoglobinopathy   | 1          |           | 3          |           |
| Malignant Neoplasm of Other Site   | 1          |           | 2          |           |
| Agranulocytosis  | 1          |           | 1          |           |
| <b>Multisystemic or Unspecified Site Infections</b>                                      | <b>37</b>  | <b>2%</b> | <b>123</b> | <b>2%</b> |
| Other/Unspecified Sepsis/Shock   | 17         |           | 49         |           |
| Other/Unspecified Viral Illness  | 6          |           | 15         |           |
| Other Infectious/Parasitic Disease   | 6          |           | 21         |           |
| Multisystemic/Unspecified Site Infection with Intervention                               | 4          |           | 27         |           |
| Sepsis due to Staphylococcus Aureus/Pseudomonas/Enterococcus                             | 2          |           | 6          |           |
| Chickenpox/Herpes Zoster/Cytomegaloviral Disease   | 1          |           | 4          |           |
| Fever  | 1          |           | 1          |           |
| <b>Diseases &amp; Disorders of the Kidney, Urin Tract &amp; Male Reproductive System</b> | <b>34</b>  | <b>2%</b> | <b>68</b>  | <b>1%</b> |

| Major Clinical Category/Case Mix Group  | ICU Visits   |             | ICU Days     |             |
|---|--------------|-------------|--------------|-------------|
|   | #            | % Total     | #            | % Total     |
| Kidney Transplant   | 10           |             | 26           |             |
| Lower Urinary Tract Infection   | 8            |             | 19           |             |
| Renal Failure   | 4            |             | 6            |             |
| Major Intervention on Upper Urinary Tract   | 3            |             | 4            |             |
| Radical Excision/Reconstruction of Bladder  | 2            |             | 6            |             |
| Non-Major Intervention on Lower Urinary Tract, Planned                            | 2            |             | 2            |             |
| Upper Urinary Tract Infection   | 1            |             | 1            |             |
| Non-Major Intervention on Male Reproductive System                                | 1            |             | 1            |             |
| Urinary Obstruction with Percutaneous Drainage                                    | 1            |             | 1            |             |
| Major Intervention on Male Reproductive System                                    | 1            |             | 1            |             |
| Disease/Disorder of Male Reproductive System                                      | 1            |             | 1            |             |
| <b>Other Reasons for Hospitalization</b>  | <b>28</b>    | <b>2%</b>   | <b>55</b>    | <b>1%</b>   |
| Other Factor Causing Hospitalization  | 7            |             | 18           |             |
| General Symptom/Sign  | 6            |             | 9            |             |
| Follow-Up Treatment/Examination   | 5            |             | 8            |             |
| Palliative Care   | 3            |             | 9            |             |
| Observation/Evaluation  | 2            |             | 2            |             |
| Convalescence   | 2            |             | 2            |             |
| Multiple/Unspecified Congenital Anomaly   | 2            |             | 6            |             |
| Other Admission with Non-Major Intervention                                       | 1            |             | 1            |             |
| <b>Diseases &amp; Disorders of the Hepatobiliary System &amp; Pancreas</b>        | <b>7</b>     | <b>0%</b>   | <b>11</b>    | <b>0%</b>   |
| Cirrhosis/Alcoholic Hepatitis   | 1            |             | 1            |             |
| Major Hepatobiliary Intervention  | 1            |             | 3            |             |
| Laparoscopic Cholecystectomy with/without Common Bile Duct Exploration            | 1            |             | 1            |             |
| Dilation/Drainage of Common Bile Duct   | 1            |             | 2            |             |
| Non-Major Hepatobiliary Intervention  | 1            |             | 2            |             |
| Excision Pancreas with Duodenum   | 1            |             | 1            |             |
| Extraction/Destruction of Calculus Common Bile Duct                               | 1            |             | 1            |             |
| <b>Diseases &amp; Disorders of the Skin, Subcutaneous Tissue &amp; Breast</b>     | <b>5</b>     | <b>0%</b>   | <b>10</b>    | <b>0%</b>   |
| Other Disease/Disorder of Skin/Subcutaneous Tissue                                | 3            |             | 8            |             |
| Other Skin/Subcutaneous Tissue Intervention                                       | 1            |             | 1            |             |
| Abscess   | 1            |             | 1            |             |
| <b>Diseases &amp; Disorders of the Eye</b>  | <b>3</b>     | <b>0%</b>   | <b>8</b>     | <b>0%</b>   |
| Lens Extraction/Insertion   | 1            |             | 2            |             |
| Other Ophthalmology Disorder  | 1            |             | 5            |             |
| Major Ophthalmology Disorder  | 1            |             | 1            |             |
| <b>Burns</b>  | <b>3</b>     | <b>0%</b>   | <b>8</b>     | <b>0%</b>   |
| Non-Extensive Burn  | 2            |             | 3            |             |
| Extensive Burn  | 1            |             | 5            |             |
| <b>Diseases &amp; Disorders of the Female Reproductive System</b>                 | <b>2</b>     | <b>0%</b>   | <b>3</b>     | <b>0%</b>   |
| Malignant Neoplasm of Female Reproductive System, except Ovary                    | 1            |             | 1            |             |
| Disorder of Menstruation/Endometriosis/Non-inflam Disorder of Female Repro System | 1            |             | 2            |             |
| <b>Grand Total</b>  | <b>1,590</b> | <b>100%</b> | <b>5,722</b> | <b>100%</b> |

## Appendix 4: HA Operated Pediatric Inpatient Beds in BC

| HA           | Hospital                               | General Pediatric Beds | Pediatric Observation Beds | Ped ICU Beds <sup>1</sup> | Child & Youth MH Beds | Youth SU Beds <sup>2</sup> | Total Ped Beds | NICU Beds       |
|--------------|--|------------------------|----------------------------|---------------------------|-----------------------|----------------------------|----------------|-----------------|
| IHA          | Kelowna General                        | 10                     |                            |                           | 8                     |                            | 18             | 12              |
|              | Kootenay Boundary (Trail)              | 4                      |                            |                           |                       |                            | 4              |                 |
|              | East Kootenay (Cranbrook)              | 2                      |                            |                           |                       |                            | 2              |                 |
|              | Vernon                                 | 5                      |                            |                           |                       |                            | 5              |                 |
|              | Royal Inland (Kamloops)                | 9                      |                            |                           | 2                     |                            | 11             | 8               |
| FHA          | Abbotsford Regional                    | 12                     |                            |                           |                       |                            | 12             | 10              |
|              | Langley Memorial                       | 9                      |                            |                           |                       |                            | 9              |                 |
|              | Chilliwack General                     |                        | 4                          |                           |                       |                            | 4              |                 |
|              | Royal Columbian                        | 12                     |                            |                           |                       |                            | 12             | 24              |
|              | Ridge Meadows                          |                        | 4                          |                           |                       |                            | 4              |                 |
|              | Surrey Memorial                        | 16                     |                            |                           | 20                    |                            | 36             | 28 <sup>3</sup> |
|              | Burnaby                                |                        |                            |                           |                       |                            |                | 8               |
|              | Creekside Withdrawal Management Centre |                        |                            |                           |                       | 6                          | 6              |                 |
|              | Last Door Recovery Centre              |                        |                            |                           |                       | 10 <sup>4</sup>            | 10             |                 |
| VCHA         | Lions Gate & Carlile Centre            | 10                     |                            |                           | 10                    |                            | 20             | 9               |
|              | Richmond                               |                        | 4                          |                           |                       |                            | 4              | 6               |
|              | St Paul's                              |                        |                            |                           |                       |                            |                | 9               |
|              | Peak House                             |                        |                            |                           |                       | 8                          | 8              |                 |
|              | Young Bears Lodge                      |                        |                            |                           |                       | 5                          | 5              |                 |
| Island HA    | Nanaimo Regional                       | 8                      |                            |                           |                       |                            | 8              | 9               |
|              | St Joseph's General                    | 4                      |                            |                           |                       |                            | 4              |                 |
|              | Victoria General/Ledger House          | 16                     |                            | 5                         | 14 <sup>5</sup>       |                            | 35             | 22              |
|              | Cowichan District (Duncan)             | 4                      |                            |                           |                       |                            | 4              |                 |
|              | Campbell River                         | 1                      |                            |                           |                       |                            | 1              |                 |
| NHA          | University Hospital of Northern B.C.   | 12 <sup>6</sup>        |                            |                           | 6 <sup>7</sup>        |                            | 18             | 9               |
|              | Nechako Centre                         |                        |                            |                           |                       | 8 <sup>8</sup>             | 8              |                 |
| PHSA         | B.C. Children's Hospital               | 97                     |                            | 22                        | 54 <sup>9</sup>       |                            | 173            |                 |
|              | BC Women's                             |                        |                            |                           |                       |                            |                | 60              |
|              | Ashnola (Keremeos)                     |                        |                            |                           |                       | 22 <sup>10</sup>           | 22             |                 |
| <b>TOTAL</b> |  | <b>231</b>             | <b>12</b>                  | <b>27</b>                 | <b>114</b>            | <b>59</b>                  | <b>443</b>     | <b>214</b>      |

Source: Survey of health planners & ED working group in each HA and internet.

**Note: Several hospitals in BC do not have dedicated pediatric beds but admit children to beds on adult inpatient units. These hospitals are not included on the list above.**

<sup>1</sup> Beds have the capacity for invasive monitoring, inotropic drugs and mechanical ventilation.

<sup>2</sup> Excludes beds in home-based settings.

<sup>3</sup> Plan to increase to 48 beds in the future.

<sup>4</sup> Contracted beds and number of beds fluctuates.

<sup>5</sup> 14 beds: 5 child, 6 youth & 3 special care (assessment/stabilization) beds.

<sup>6</sup> 4 beds have the capacity for more intensive monitoring, up to and including continuous cardiorespiratory monitoring.

<sup>7</sup> 2 beds for planned admissions and 4 for crisis stabilization.

<sup>8</sup> Includes 1 detox bed.

<sup>9</sup> Includes 14 beds at Looking Glass (up to age 24), a residential eating disorders program operated by PHSA (BC Mental Health & Substance Use Services and BCCH) in collaboration with the Looking Glass Foundation.

<sup>10</sup> Includes beds for ages 17 - 24.