

Chapter 6—Synthesis of Children's Treatment Services

Introduction

This chapter ties together the key findings and issues identified in the preceding chapters to paint a picture of the existing mosaic of children's treatment services, and summarizes the potential direction of change.

A bird's-eye view of change

Information gleaned through the environmental scan indicated some positive signs of change in treatment services for children in Ontario and other provinces, for example:²

- Reorganization of pediatric tertiary and quaternary care (highly specialized pediatric clinical activities). A prime illustration of this is the ongoing work of the Pediatric Specialized Care Coordination Council resulting from the review of children's cardiac surgery services in Ontario.¹⁴
- Funding of new therapy services for special populations of children.²³ Ontario has recently invested more in mental health services and early intervention programs for children at risk.²¹
- Identification of critically underserved areas and plans to implement service or boost capacity. This includes the implementation plan for the Northern Shores Regional Children's Treatment Centre (CRC).³ It also includes development of strategies to improve human resources for health services in general, as well as efforts to recruit pediatricians to selected sites in Northern Ontario.^{19,22}
- Service coordination and integration through improved interaction among existing resources, including the proposed Local Health Integration Networks.

Further, several service sectors in Ontario have undertaken initiatives to improve standardized collection and reporting of individual level data.

- At a provincial government level, this includes the work of the Integrated Services for Children Division portfolio.
- At the health services level, this can be seen with the implementation of formal collaboration such as the Child Health Network in Metropolitan Toronto, made up of area hospitals.⁹
- At a tertiary and quaternary care level, the new Ontario Child Health Network is a collaborative network of the 5 pediatric academic health sciences centres and Bloorview MacMillan Centre, a CRC and chronic care hospital health sciences centre.
- At the Ontario government's highest level, a new Children's Services ministry was announced in October 2003. It is not yet clear what role this ministry will have in the organization and delivery of children's treatment services.

These initiatives indicate that there is momentum for improving treatment services for children in Ontario. Yet, the bird's-eye view of overall distribution and coordination of these services also suggests that significant challenges lay ahead. For example, available data and stakeholder voices point to several critical issues:

- System fragmentation and variation in roles and practices;
- Limited access to information for planning and evaluation;

- Problems with service capacity and utilization;
- Challenges with integration of care; and,
- Lack of an overall blueprint and inventory of children's services.

Discussion

Specific concerns regarding the current model of health service delivery to children are outlined in detail here to assist in guiding policy development.

System fragmentation

Delivering services through multiple organizational sectors, more than one ministry and department creates silos with relatively little integration. A single blueprint, executive process, and envelope of funding would make the system more effective and efficient, reducing gaps and redundancies.

Data collection and system evaluation

Comprehensive encounter-level data for individuals is lacking across several important sectors (especially children's mental health centres and children's rehabilitation services), which limits evaluation and management of services as a whole. This is particularly important in light of other findings indicating gaps and duplication across organizations and sectors. In some instances, such as physiotherapy for a physical handicap, a service may be provided through a hospital, a CRC, or a CCAC, and the extent to which this occurs may vary from region to region.

Further, while survey and focus group participants expressed relatively consistent concerns, it is challenging to correlate this input with actual data on access and utilization of services. Lack of information on service capacity, waiting times, and utilization for all services across sectors is the main obstacle, and individual level data is not available for the two key sectors of MH and CRC. This impairs province-wide utilization analysis and makes it impossible to study joint utilization of mental health and rehabilitation services across sectors. For example, a comprehensive evaluation of access and quality in mental health treatment services would require access to physician services (available) and MH services data (not available) linked at an individual level.

Access and utilization

Assessing and ensuring equal access and effective utilization of special services for Ontario children is difficult. There are variations in utilization of home care and physician services across the province. For the latter, physician supply in rural regions in southern and northern Ontario, especially for specialty services, is a key factor. Stakeholder feedback indicates shortages in pediatric expertise across the spectrum of health professionals and long waiting lists for many rehabilitation and mental health services.

There is some agreement in the field about reduced access to psychiatric and pediatric physician services in Ontario's rural and remote areas. Children in many of these regions have lower rates of service utilization, including lower rates of service encounters with specialists, and this corresponds with lower specialty physician supply. However, this analysis aggregates encounters for different types of practices; for pediatric services this may include some primary care general assessments, community consultations, as well as pediatric tertiary care sub-specialist consultations. Benchmarks for appropriate utilization of these services have not yet been developed.

No data are available on waiting times to see pediatric specialists, and research on how rates of utilization

related to unacceptable waiting times or other access barriers. Non-hospital organizations reported mean waiting times of 4 to 6 months for rehabilitation and mental health services, a range most reported as unacceptable. To validate this information, standards on data collection and benchmarks for waiting times are necessary.

Distribution and capacity

Variability of organizational roles and activities across sectors makes it difficult to assess service distribution, capacity and utilization, and how organizations cooperate; it creates potential for inefficiency, gaps and duplication; and presents challenges in identifying best practices and securing evidence to support specific clinical activities.

This report is not intended as a determination of the “have” and “have not” DHCs with respect to health services for children. While regions in northern Ontario have typically been regarded as underserved, lower rates of utilization and reports of unacceptable waiting times have also been observed in other areas of the province, and furthermore, variation in utilization by geography may be specific to service and sector. For example, the rural versus urban pattern of variation in utilization rates for physician services does not appear to exist for home care services as organizations in both urban and rural/ remote locations reported excessive waiting times.

The system-level concerns raised in this report correspond with more general issues about children's services broached at the federal/interprovincial level in a Health Canada report, as noted in the following excerpts:

The system of care (as opposed to its separate component organizations) often exists without either a mission statement or an understanding of relevant goals [and]...has problems both focusing on where it is going and determining whether it is getting there.

In the absence of valid indicators of child health, organizations are left open to many other influences, each of which comes with its own set of incentives and disincentives. As a result, organizations are open to the difficulties associated with serving many purposes.

There is little or no external incentive for efficiency...coherent planning, priority setting, or action. There is no executive component that can cause the whole system of care to decide, act upon and implement coherent action.

The basic effect of all the above problems is that most existing systems of care are not true systems, but rather 'collections of services'.¹

It appears that Ontario's mosaic of children's treatment services falls somewhere between a “collection” and “system” of services. Present methods and available data for evaluating service distribution and coordination are crude and leave large gaps, and raise more questions than answers. Stakeholder participants in this research shared strong views on the need for a clearer common vision and blueprint for developing a system of services, and created recommendations for action (see Chapter 5, Stakeholder Views on Service Delivery). Additional questions about policy and planning were raised for discussion in the course of carrying out this study:

1. Is there a definition of services that require more centralization and those that require decentralization to children's communities?
2. Are there standards for wait times and travel to receive insured and extended health services?

3. Are there expectations of cooperation and integration of services that should lead to more uniformity and familiarity with formal collaborative relationships between organizations?
4. How much variability and overlap in the roles of sectors and organizations is appropriate for allowing organizations to better meet specific priority needs for the population in their areas?
5. Can specific indicators and benchmarks be identified to help evaluate and manage access to, and effectiveness of, treatment services for children?
6. To what extent should the distribution of health services remain and develop according to historic locations and relationships with service organizations, versus becoming driven by population-based spatial planning and/or regionalized funding?
7. Many children's treatment services relate to developmental, rehabilitation, social, educational and developmental objectives. A few fall under the insured services banner of the Canada Health Act (physician services), while others may be considered publicly-funded extended health services. How do activities relate to the Canada Health Act, and does this status have any implications for planning and evaluating these services?

Review of available data on services combined with service provider input from surveys and focus groups goes a long way to provide a picture of the system and the challenges in assessing and addressing the treatment needs of children. However, it is critical to consider related factors beyond the scope of this report that contribute to variation in utilization and outcomes of services, such as:

- Socio-demographic factors as primary determinants of health and disease prevalence; and
- Health promotion and preventive services.

Further research is required to develop and/or use the methodologies to study variation attributable to the above factors as well as health service characteristics, including better risk-adjustment and predictive modeling methodologies. It is also important to determine valid health outcome indicators for children to complement the information provided by the more simplistic indicators of utilization used in this report. This means moving beyond utilization-based indicators to outcome indicators with population-based data on functional status and quality of life.⁵

Policy Options

Input from health provider stakeholders from surveys and focus groups provided the following recommendations for policy change around data collection and system configuration.

A. Data collection

Improve availability of information for utilization evaluation, planning and policymaking

1. The Ontario Ministries involved in children's services should take necessary steps to collect, compile and make available for linkage and analysis with other electronic health data the province-wide electronic individual level data (including the health care number) for rehabilitation and mental health treatment services provided to children through the mental health centres and children's rehabilitation centres. Where relevant and possible, intake and outcome data should be included to ascertain and evaluate access, waiting time, and outcome.
2. Consideration should be given to collecting the same type of data for treatment episodes provided by public health units, CHCs or any other new or existing organizations funded to provide individual treatment services to children.

Benefits

- Data will allow analysts and researchers to address important policy-relevant questions about access, utilization and outcomes for rehabilitation and mental health services.
- Data can be handled securely through existing infrastructure for provincial health data.
- Data will also assist with planning, profiling clientele, case costing, performance review and will permit development standard indicators and benchmarks for feedback and performance evaluation.

Challenges

- Some organizations may be ill-equipped to collect and transfer data according to current standards.
- There may be initial costs in bringing these organizations and their data onto the grid.
- Concerns regarding data ownership and privacy may need to be addressed.
- Data on utilization alone (without other data such as criteria, waiting time and outcomes), will provide only limited information on access, appropriateness and outcome of services.

B. System

Improve accountability, develop a clinical information and management system, and coordinate service delivery

1. Ontario Ministries involved in children's services should develop a system blueprint and accountability structure for all children's treatment services.

Actions

- Produce an inventory of children's treatment services that details roles and mandates of the various governmental ministries, departments, organizations and programs involved.
- Name or develop an advisory body with terms of reference to identify and address system-level issues related to children's treatment services.
- Improve integration of funding across ministries with more transparent allocation to health care services for children.
- Develop a core accountability framework for all children's service agencies and organizations regardless of ministry responsible.
- Develop accountability mechanisms that promote allocation of services to children based on evidence and best practices, and address service gaps and redundancies.
- Include accountability mechanisms that ensure collaboration in broad care models.

Benefits

- Provides an overview of how departments and services interrelate and clarifies their roles within regions and the system as a whole.
- Demonstrates public accountability for expenditures and best practices, and serves as a scaffold for evaluating access, utilization and quality of these services.
- Provides a framework for tracking overall structural and funding changes for children's services over time.
- Provides the basis for identifying and resolving issues to reduce fragmentation, gaps, and redundancies and creates a forum for addressing other system issues.
- An integrated case management system would promote the child and family-centred approach, improve access, continuity and coordination of care, and reduce duplication and unnecessary referrals. Workforce planning will help anticipate future needs for full-spectrum professionals and help improve the capacity of services across Ontario.

Challenges

- Requires resources to construct and maintain the blueprint, inventory and accountability framework.
- May require balancing conflicting interests to resolve mandates and roles within the system.
- Potentially adds another layer in reporting and decision-making relationships if current accountability mechanisms are not integrated.

- Requires time and collaboration to harmonize care accountability framework with existing frameworks to suit system and sectoral needs.
- To work efficiently and effectively, a unified case management model would need to be integrated with buy-in from all relevant organizations.

2. The Ministries involved in children's services should work with stakeholders to develop a more comprehensive clinical information and management system for children's treatment services.

Actions

- Establish integrated clinical information and management systems based on agreements for collection and use of data, and ensure core data elements for consistent data availability across organizations.
- Establish a resource centre with an inventory of best practices, standards and guidelines for children's services.
- Engage all organizations to develop and evaluate common protocols, and determine best practices for effective and efficient children's care.
- Establish agreements for all the organizations to collect standardized electronic data, including a core dataset.

Benefits

Similar to Recommendation B1.

Challenges

Similar to Recommendation B1.

3. The Ministries involved in children's services should develop a coordinated approach to addressing the range of pediatric workforce needs of communities.

Actions

- Coordinate solutions to assess and address the deficit among disciplines of pediatric expertise in many communities.
- Develop strategies and incentives to train, attract and retain the range of health professionals with specific expertise in children's care needed for practice in rural/remote areas.

Benefits

- Population-based workforce planning could help anticipate future needs for professionals and assist in establishing a more sufficient distribution of services across Ontario.
- A common strategy could help address the workforce imbalance of a broader range of care providers (e.g., speech and language, occupational therapy, etc.).

Challenges

- Accurate information on professionals providing children's health services may be difficult to obtain and keep current.

- There may be diminishing returns in developing strategies and incentives for some of the more specialized professionals.
- Recruitment strategies and incentives may not always result in effective long-term retention.

4. The Ministries should work with stakeholders to develop a system-wide integrated case management strategy for seamless children's treatment services encompassing multiple organizations, geographic boundaries and age-related transitions.

Actions

- Establish integrated case management to minimize family disruption and fragmented services and maintain principles of family-centred care for children with special health care needs.
- Develop explicit strategies to facilitate service transition by age milestones and improve the client/professional-level linkage of services across ministries and communities.
- Support the development and evaluation of new models of care, information sharing, and collaboration to enhance access to specialized services for children in their community, home and school. For example, telehealth and enhanced teamwork between local providers and specialists in centres.
- Identify definitions, principles and best practices for efficient collaboration among organizations and health care professionals.

Benefits

- Integrated case management system for children with special health care needs should improve the child and family-centred approach to care and improve continuity, coordination and quality of care.
- Simplified access or gatekeeping should improve access to services and reduce duplication and unnecessary referrals arising from a fragmented delivery system.

Challenges

- Could lead to increased health expenditures if case management evolves as an additional infrastructure layer or new provider.
- Without a high level of buy-in from all the relevant organizations, case-managers may find it difficult to maintain knowledge of all the services, and coordinate effectively.

Appendix A. How the Research was Done

Information strategy

Before carrying out the research for this report, consultative meetings were held with contacts at the Ministry of Health and Long-Term Care (MOHLTC) and Ministry of Community and Social Services (MCSS) to determine the scope of services to be covered, and which information sources and survey sampling methods would be used. The decision was made to survey health care treatment services, excluding organizations that focused primarily on prevention, early intervention with high-risk and/or advocacy type services. The definition of "treatment" is broad and includes nursing, medical, rehabilitative/development and mental health services.

A sequential approach was used to obtain the information. In 2001, an environmental scan and District Health Council (DHC) surveys were completed. Surveys were developed and administered to the hospitals and other major organizations involved in children's health care treatment services. Early in 2002, available administrative data was identified and analyzed to provide information on utilization of services. Late in 2002, a preliminary report based on these information sources was circulated to stakeholders from the relevant organizations. Focus group meetings of these stakeholders were held to discuss issues in providing children's services, and the results of these discussions and recommendations were analyzed. Results from all of these information sources were synthesized and summarized for this report.

Data sources

Data on individual physician claims (Ontario Hospital Insurance Plan) and home care services (Ontario Home Care Administration Service) were obtained from ICES holdings through the standard data agreement with the MOHLTC. These data were analyzed at ICES with the stringent privacy protections as per the MOHLTC agreement and research ethics board approval.

Data on population and health status from Statistics Canada were obtained through ICES holdings and standard Statistics Canada reports. Data on hospitalizations for asthma and gastroenteritis were obtained from a recent ICES atlas on hospitalization rates for children.¹⁸ Information on physician supply was also obtained from a previous ICES report.¹⁷ The Hospital Inventory 2001 data was obtained directly from the Hospital Inventory project.²⁰ Data on pediatric hospital bed census was obtained from the Daily Census Summary for fiscal years ending 2000, 2001 and 2002 (Ministry of Health and Long-Term Care, Daily Census Summary, Ontario, 2003).

Indicators of pediatric services utilization

A descriptive study was carried out utilizing Ontario Health Insurance Plan (OHIP) physician claims for children 0 to 19 years of age for the calendar years 1996 to 2001. The annual rate of volume of physician services and the total number of children receiving services were calculated by DHC. OHIP billings for children aged 0 to 19 years were analyzed to identify the most common fee codes utilized by children and organized into groups called service-types to ensure that closely related billings were considered together.

Services examined included well child care, assessments, general assessments, and consultations for three classes of physicians: generalists, pediatric specialists, and other selected specialists (otolaryngology, ophthalmology, optometry, chiropractic, psychiatry). Specific billing codes were selected for each of these categories as indicators of service provision. The choices were based on a combination of face validity, identifiable as a major service for its class (e.g., full consultation by a pediatrician, A265), and the frequency of claim use within the data.

Two approaches were used for analysis:

1. Rate of individual service encounters for a closely related group of claims (e.g., the aggregate total number of pediatric consultations and related pediatric general assessments, and general reassessments claims) expressed as an annual rate per 100,000 children age 0 to 19 years; and,
2. Rate of individuals receiving at least one of a specific indicator service claim (e.g., A265) within the fiscal year expressed as a rate per 100,000 children age 0 to 19 years.

Data on home care services for 1998/99 to 2001/02 were also analyzed using the Ontario Home Care Administration Service database. The rate of nursing and allied professional services encounters and the rate of individuals receiving these services were calculated for these data as per the physician claims data. All rates were annualized and age and sex adjustments were calculated using standard methods and the relevant population file from Statistics Canada for reference.

Depicting area variation

For the purpose of overview and policy analysis, it makes the most sense to present data as much as possible at the DHC level. Although funding is not currently directed to services through the DHCs on a per capita based formula, the DHCs do have a role in regional planning for health services. In addition, as a unit of geography and population, they are small enough to assist in identifying regional differences, but still possess enough of a population for relatively stable statistical rates. While data are presented using DHCs as a unit, it is important to consider a number of key limitations. The population size among DHCs varies approximately tenfold from the least populous (Northern Shores) to the most populous (Toronto). Accordingly, statistical rates will be much more stable in the most populous DHCs and will influence the overall Ontario rates more significantly. Also, while there are geographic and socio-demographic differences between the DHC regions and their populations, there is significant overlap between DHC characteristics and heterogeneity within DHCs.

The utilization and area variation data for DHCs is provided in figures to facilitate visual inspection as well as in more detailed exhibit tables. [pls confirm this is what you meant] The Dartmouth approach has been used to identify borderline outliers (i.e., 1.1 to 1.3 times or 0.75 to 0.9 times relative to the provincial average) and major outliers (greater than 1.3 times or less than 0.75 times relative to the provincial average). This approach is more sensitive for describing variation and outliers when the rates of events studied are high, and less prone to extreme variation. It permits variation in standardized measures of rates (i.e., standardized morbidity ratios⁷) and proportions for a wide variety of data to be illustrated in the same manner for purposes of broader comparisons across these data. Standardized ratios are the ratio of the individual rate to the overall rate and essentially place all indicators on a similar scale, i.e. their position with respect to their own overall rate for the indicator. The second format involving tables with detailed rates and statistics is included in Appendix B.

Health care organization surveys

Members of the 16 DHCs were interviewed and surveyed for two purposes; to obtain information on perceived issues in children's health service delivery and children's health status; and, to obtain information on organizations and hospitals offering children's health treatment services in their DHC. This served as a starting point for creating the sample. Semi-structured survey interviews with DHC representatives were used to identify specific concerns about children's health care delivery. Questionnaires for the other organizations were modified to include these themes. Based on the environmental scan, interviews and piloting of questionnaires, hospitals and non-hospital organizations were surveyed separately using the same framework of questions.

Hospitals were included in the survey based on their report of pediatric services (i.e., a general pediatrician, Level 2 nursery, or any other pediatric services such as child psychiatry) in the Hospital Reports 2001 inventory conducted by the University of Toronto/Ontario Hospital Association. From the hospital inventory, 210 hospital sites in Ontario were identified. A significant proportion of these were associated with other hospitals in the same region to form a single corporation. Hospital sites were grouped together into their corporations.

Before surveying non-hospital organizations, service providers were categorized into one of three service types: medical (medical, nursing and dentistry services), rehabilitation (rehabilitation and developmental services) and mental health. These were determined by the primary service provided and/or the organization's mandate. In the survey, respondents were asked to indicate what types of services they provide. Non-hospital organizations fell into one of six types: Children's Mental Health Centres (CMHC), Children's Rehabilitation Centres (CRCs), Community Care Access Centres (CCACs), Community Health Centres (CHCs), Community Living Organizations (CL), and Public Health Units (PHUs) (Exhibit 1.1). Each survey was designed to cover the following domains: service capacity, professionals, services and programs, and integration and coordination. This information was supplemented by information in the Canadian Hospital Directory 2000/01 and the inventory of Ontario hospitals compiled for the Hospital Reports 2001.

Stakeholder focus groups

A one-day stakeholder advisory focus group session was held on September 17, 2002 with representatives from across the children's treatment services sectors (including hospitals). The aim of this session was to obtain feedback on a preliminary report on regional variation derived from administrative data analysis and survey data, and to discuss issues of concern and potential solutions related to the provision and delivery of children's services. Candidates were selected by canvassing organizations. Three focus groups were held with 8–10 participants each. Participants representing CRCs, CCACs, community services, hospitals, and CMHCs comprised each group. Representation from each of the service sectors and geographic regions was consistently obtained for each group.

Seven categories were defined as problem areas for discussion: regionalization, wait lists, mental health, transition, human resources, system, and barriers. For each category, the focus groups considered the following domains:

- Access and distribution of services;
- Specialization of services;
- Coordination and integration of services; and
- Information for managing and evaluating health services

Each group was asked the same questions about these domains:

1. What are the key problems in delivering children's treatment services in Ontario?
2. What are potential solutions?

A ranking procedure isolated the most pressing issues. Solutions were sought and discussed on the highest ranked three to five problems. Results of these exercises and discussion were recorded and synthesized using qualitative content analysis.

Limitations

As with any qualitative research, although specific questions were addressed, the focus group process was free flowing to enable the participants to discuss issues they perceived as important. The goal was to guide the discussion to keep it uniform across the three groups, but the dynamics of each group could not be predicted, so there was some variation in the time given to each content area. Although the representation of service and geographic areas was mostly uniform, the element of unpredictability nevertheless exists.

Another limitation to the results was the amount of material covered in a short time span (three hours). Due to time limitations, however, specialization and coordination were given less time, or were merged together. Information was not discussed in as much detail as the other content areas. In anticipation of time constraints, content areas were ordered according to priority so that access/distribution was the first point of discussion. This choice was made because specialization and coordination often overlap with access and distribution, and many of the problems raised are inter-dependent. As well, in conducting exploratory interviews with a representative from each DHC at the start of this project, it became apparent that access/distribution was a serious issue in children's health services that related to coordination and specialization of services.

Appendix B. Detailed Analytic Methods

Surveys

Coding age groups

Respondents were asked to indicate the age range of their clients. Because there is no standardized categorization of age ranges across organizations, an open question, rather than pre-set categories, was used.

Table 1. Defined age categories of study compared to age ranges provided by respondents

Age Category	Study Definition	Age Ranges Cited by Respondents
Infant	0–2	0–6 months, 0–1, 0–2
Pre-school	3–5	1–4, 2–4, 2–5, 2–6
School-Aged	6–12	3–14, 4–8, 4–12, 6–12
Adolescents	13–19	11–18, 12–16, 12–21

This example is not exhaustive, but does illustrate the variety of responses regarding target age of the service provided. An attempt was made to cover each age group served by a particular service, because although a service may be listed as serving infants, it does not necessarily mean it serves infants of all ages. For example, a service listed as serving 1 to 6 year-olds, was labeled as being targeted to infants and preschoolers.

Coding service integration and coordination

Survey respondents were asked if they coordinate services with other service providers on one or more of the following levels:

- Written agreement;
- Coordinated delivery; and
- Broader network.

Respondents were asked to list each organization for which a relationship exists and to indicate the nature of the relationship per the above categories. Relationship organizations were categorized the same as the respondent organizations, with the addition of school board and Children's Aid Society as follows:

- Hospital
- Rehabilitation Centre
- Community Care Access Centre
- Public Health Unit
- Community Health Centre
- Mental Health
- Community Living
- School Board
- Children's Aid Society
- Other

Codes were created to indicate the types of relationships between the respondent organizations and those with whom they coordinate. Respondent and relationship organizations were grouped into "types" and tabulated.

Utilization indicators

OHIP services codes used for indicators rates

OHIP claims for children aged 0 to 19 years were analyzed to identify the most common fee codes and organize into service types ensuring that closely related billings were considered together. For example, outpatient pediatric consultations and general assessments included the fee codes, A001, A007, A261, K017, K267, and K269. Service types that were prevalent and of interest included:

minor assessments, well infant care, and annual examinations

A001, **A007**, A261, K017, K267, K269

general practitioner/family practice assessments

A003, A004

counseling

K002, K003, K004, K007, K008, **K013**

outpatient pediatric assessment and consultation

A263, A264, **A265**, A266

psychiatric care and therapy

K191, K193, K195, K196, K197, K198, K199, C192, C197, C199, C198

psychiatric assessment, consultation

A193, A194, **A195**, A196, A395, A895, C193, C194, C195, C196, C395, C895

ophthalmology assessment and consultation

A233, A234, **A235**, A236, C233, C234, C235, C236

otolaryngology assessment and consultation

A243, A244, **A245**, A246, C243, C244, C245, C246

optometry services

V401, V402

chiropractic services

V101, V103

For the first indicator (rate of service encounters) all claims for each service in the list were counted, regardless of whether there were repeated claims for an individual during the year. For the second indicator (rate of individuals served), individuals with at least one principal consultation claim (bold) in the service category for the year were counted.

Statistical analyses of indicator rates

Unless otherwise specified, all rates are expressed using a denominator of 100,000 children aged 0 to 19 years of age.

Due to large population size and high rates observed for the indicators and data selected for this report, overall statistical tests of significance of variation are generally not very useful and have not been routinely included. At this level of analysis, overall tests of variation tend to be uniformly positive (i.e., indicating that the overall variation is statistically significant) and provide little additional information.

However, one degree of freedom chi square tests were used in specific circumstances to test the level of significance of the individual area rates difference from the overall provincial rate to assist in identifying outliers. Areas with rates that are statistically different from the provincial mean as per a significance level of probability <0.0001 have been identified with an asterisk in the Exhibits. Statistical tests of individual outlier significance were carried out only with the annualized rates of individuals receiving an indicator service. The problem of non-independence with the total volume of services data caused by multiple encounters per individual can be avoided by using this individual-based data. It is important to note that statistical significance does not necessarily mean clinical significance, as rate differences may be so small that they carry no policy relevance.

Description of associations between some selected DHC indicator rates (e.g., correlation of physician supply with rates of physician encounters) were carried out using Pearson correlation coefficients and/or unweighted least squares regression lines to represent these associations graphically. These analyses were based on the assumption and observation that the numerators and denominators for such rates are sufficiently large that the rates and their standardized ratio distributions approximate a normal distribution. These DHC rates have been used as a summary characteristics of the DHC, not as weighted representation of the individuals within. Regression analyses for the purpose of building predictive models of utilization are beyond the scope and intent of this report.