



National Physician Database Data Release, 2016–2017

Methodological Notes



Canadian Institute
for Health Information

Institut canadien
d'information sur la santé

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Methodological notes

1.1 Background

The National Physician Database (NPDB) was established in 1987 by the deputy ministers of health and in 1995 transferred to the Canadian Institute for Health Information (CIHI). CIHI is guided by the Advisory Group on Physician Databases on data quality, methodology and product development. The advisory group includes representation from all provincial and territorial ministries of health, the Canadian Medical Association and the jurisdictional medical associations, the Royal College of Physicians and Surgeons of Canada, the College of Family Physicians of Canada, the Association of Faculties of Medicine of Canada and the physician research community.

Historically, fee-for-service payment has been the predominant form of remuneration for physicians. Over time, there has been a shift to various alternative payment plans that are designed to better meet the specific needs of jurisdictions and regional areas. With the varying payment methods between jurisdictions, it is important to understand the limitations when interpreting physician payment information and service utilization data. Please refer to Section 1.6 of this report for more details on data limitations.

1.2 Data sources and collection

Data

NPDB data is derived from physicians' billings, including fee codes, which provincial and territorial medicare programs submit. Claims data and associated physician and patient demographic data are submitted in 5 separate files, usually within 6 months of the end of the fiscal quarter. Files that do not conform to standards defined in the *NPDB Data Submission Specifications Manual* are returned to be corrected and resubmitted.

CIHI gathers alternative payment information from a variety of provincial and territorial government sources. Missing alternative payment data for Ontario for 2001–2002 and Manitoba for 2001–2002 to 2003–2004 was estimated using the National Health Expenditure Database (NHEX). For more information on national health expenditures, please refer to the report *National Health Expenditure Trends, 1975 to 2016*, released in December 2016.

A complete description of NPDB record layouts is available in the *NPDB Data Submission Specifications Manual*, at cihi.ca. For further information on the NPDB, contact the program lead, NPDB, CIHI, at physicians@cihi.ca.

Type of data

There are 2 fee-for-service data categories: billing data and payment data. Billing data reflects the full amount the physician billed the province for a particular fee-code item. Payment data is what was actually paid to the physician. Both can vary as the billed amount is adjusted for billing thresholds, income capping or clawbacks. All jurisdictions, except Quebec, submit payment data.

All jurisdictions, except Nunavut, provide alternative payment data. All other jurisdictions, except Saskatchewan and Alberta, provide alternative payment data at the physician level. Saskatchewan provides aggregate alternative payment data at the physician specialty level, while Alberta provides alternative payment data aggregated at the provincial level only.

Population data

The Canadian population figures and estimates used in this report are compiled by Statistics Canada. The covered population consists of people who are eligible for medical services paid for by provincial and territorial medicare programs. This estimate is the total population less members of the Canadian Armed Forces and inmates in federal and provincial prisons, whose medical services are covered by a federal medical insurance program. Prior to 2013–2014, members of the Royal Canadian Mounted Police were removed from the population estimate as well. Estimates are for October 1 in the fiscal year and are revised annually. See Appendix A for net population data.

1.3 Data quality

Error/validation routines

NPDB files are derived from provincial and territorial administrative systems. The data is checked by the jurisdiction before the NPDB files are submitted. All the files are subsequently processed through the NPDB error/validation routines. These are limited in scope because the data cannot be confirmed against the source, but they include reviewing total record counts, service counts and dollar amounts for each file, checking each value against acceptable values, checking for invalid fee codes, checking for unique physician identifier (UPI) numbers in illogical formats and conducting logical reviews of the processed data. Time trending on service counts, dollar amounts and record counts is another method used to highlight potential issues with data quality. Any data that does not pass the error/validation routines is returned for correction and resubmission.

The provinces and territories are invited to review their own data for validity and consistency before publication.

Comparability

Physician funding is jurisdiction-specific, and funding systems continue to evolve through negotiations. Through ad hoc or program-specific work, concerns or issues may be raised with CIHI regarding cross-jurisdiction comparability. In these instances, CIHI engages with the affected jurisdictions to investigate any concerns. If required, updates are made retroactively in future reporting to ensure that the best possible national comparability and trending is available.

1.4 Data definitions

UPI

To preserve anonymity, data providers submit an encrypted physician identifier that is unique to an individual physician. The use of a UPI allows the same physician to be followed across jurisdictions and over time in Canada while maintaining anonymity.

Province or territory of practice

Province or territory of practice is the place of registration and the source of the physician's medicare payments. Some physicians practise in more than one jurisdiction in a given year because they move or work in more than one province (such as a physician who works near a provincial border). These physicians are captured in multiple jurisdictions but included only once in national counts.

Specialty

Physician specialty designations are assigned by the provinces and territories; the NPDB groups them with their national equivalents. Although there are 2 ways of defining specialties — by latest certification and by payment plan specialty — CIHI uses the latter for this report.

Internal medicine includes subspecialties such as cardiology, gastroenterology, hematology, rheumatology and medical oncology. Beginning in data year 2014–2015, the internal medicine subspecialties of cardiology and gastroenterology are reported as separate individual specialties. These 2 subspecialties are still included in the broader-level reporting of internal medicine. Psychiatry includes neuropsychiatry. Neurology includes electroencephalogram (EEG) specialists, and physical medicine includes specialists in electromyography. Physicians in the double specialty of ophthalmology/otolaryngology are included with ophthalmologists.

There are variations in how jurisdictions group certain specialists for reporting:

- Nova Scotia, Quebec and British Columbia report data for public health specialists with family medicine.
- In Newfoundland and Labrador, Prince Edward Island, New Brunswick, Saskatchewan and B.C., non-certified specialists are reported under their respective specialties. All other jurisdictions count them with family medicine.

For a complete listing of the specialty designations and their groupings, please see Appendix B.

Physician full-time equivalent

Full-time equivalent (FTE) is the measure used to estimate whether a physician is working full time. It is a weighted count based on a combination of all available forms of gross clinical payments, including all alternative payment program and fee-for-service payments that CIHI received from jurisdictions.

A physician's FTE value is calculated using his or her total payments in relation to upper and lower payment benchmarks for that specialty in that jurisdiction, as seen in the following equation:

$$FTE_i = \begin{cases} \text{total payments}_i \div \text{lower benchmark}_j & \text{If physician } i \text{ earns less than} \\ & \text{the lower benchmark value } j \\ 1 & \text{If physician } i \text{ earns an} \\ & \text{amount equal to or within} \\ & \text{the benchmark values} \\ 1 + \ln(\text{total payments}_i \div \text{upper benchmark}_j) & \text{If physician } i \text{ earns more than} \\ & \text{the upper benchmark value } j \end{cases}$$

Where

- FTE_i is the FTE value assigned to the i th physician;
- Total payments_i is the sum of all payments made to the i th physician;
- Lower benchmark_j is the lower benchmark value set for the j th physician specialty group within the province or territory of practice of the i th physician; and
- Upper benchmark_j is the upper benchmark value set for the j th physician specialty group within the province or territory of practice of the i th physician.

For a detailed outline of the FTE, the benchmark calculations and the measurement of FTE physicians, refer to Appendix C.

Provincial FTE benchmarks

Benchmarks are established to calculate a physician's full-time equivalence for each province and physician specialty using data year 2015–2016. The benchmarks are adjusted to the reporting year based on the annual fee increase/decrease percentages.

For a detailed outline of the FTE, the benchmark calculations and the measurement of FTE physicians, refer to Appendix C.

Average gross payment per physician

Average payment calculations are based on gross payments to physicians. They do not represent physicians' net incomes (gross payments less practice costs and other deductions).

Clinical alternative payment programs

Alternative payment programs are arrangements to pay physicians directly by methods other than fee for service. Classifications vary across jurisdictions. Below are examples of different alternative payment program classifications. For province-/territory-specific definitions, see Appendix D.

Salary: A compensation method by which physicians are paid based on annual scales, either part time or full time. The deduction of income tax at source and fringe benefits such as vacation are distinguishing features.

Sessional: Payments on an hourly or daily basis (set span of time). Used by some jurisdictions to fund services such as, but not limited to, hospital emergency departments, psychiatry clinics and clinics in rural areas.

Capitation: A model of compensation in which physician practices are paid a fixed sum of money for each patient rostered with the practice. Payment rates may be adjusted based on the age/sex status of registered enrollees. Capitation may fund a range of services, including prevention and medical care.

Block funding: Funding to practice plans or groups in which physicians have a range of responsibilities that usually span clinical service, teaching, research and administration.

Contract: Provides negotiated funding for physicians providing defined services to a defined population; the compensation arrangement usually specifies services to be provided or time commitments.

Blended: These are instances where physician services are compensated through an alternative payment program along with fee-for-service payments (usually a percentage of the fee). Province-specific variations exist.

Northern and underserved areas: Compensation for the provision of clinical services in rural or remote settings. Allowances may be paid as fee-for-service premiums over normal fees or as flat rate amounts paid periodically.

Emergency and on call: Programs provide amounts of funding to groups of physicians who agree to provide on-call services to hospitals.

National Grouping System counts

The National Grouping System (NGS) service counts and dollar amounts are created with data from the utilization file, which contains payments for fee-for-service claims by physicians, laboratories and diagnostic facilities as well as services received by people out of province or territory not processed through the reciprocal billing system — usually they are abroad or not covered by reciprocal billing.

Strata

Because all the medicare plans evolved separately in Canada, CIHI has to make adjustments to the data it receives to allow for comparisons across jurisdictions. Fees for services are paid according to payment schedules (or schedules of medical benefits), which set the amounts paid for each service. The schedules are different in every jurisdiction, because different fees have been negotiated, and each has its own terminology and ways of organizing the information. To allow for all the variations, CIHI groups the data into 121 categories of service. Data in 16 categories that pertains to imaging and laboratory services is not included (it is included in the reciprocal billing data). There is a complete list of CIHI's NGS categories in Appendix E.

Reciprocal billing data

Reciprocal billing — payment for out-of-province or out-of-territory services, billed through a special provincial/territorial agreement — accounts for less than 1% of total fee-for-service payments and less than 1% of total services.

1.5 Computations

Age

The age of physicians receiving clinical payments is calculated as of the end of the fiscal year, March 31.

Counts

All provincial counts are based on the number of physicians receiving payments from each provincial medical care plan. Totals are the sum of the provincial numbers, except in the case of average payment indicators other than the average payment per FTE. For these indicators, clinical payments to physicians who work in multiple provinces will be counted in the numerator, but the physician will be counted only once in the denominator.

Specialty

2 different specialty calculations are used in the associated data series:

1. Multiple specialties within the jurisdiction: If a jurisdiction reported more than one plan payment specialty for a physician during the year, the NPDB reports on the specialty with the most payments.
2. Multiple specialties within Canada: If a physician works in more than one province under different plan payment specialties, his or her reported specialty for Canada would be the one with the most payments. Other than the average payment per FTE, this calculation applies only to the series of average gross payment per physician indicators.

Average gross clinical payment

CIHI reports a series of different average payment metrics that are generated from the NPDB:

- 2 average gross clinical payment per physician indicators: One based on total combined clinical fee-for-service and alternative program payments, and the other based on fee-for-service payments only.
- 2 average gross payment per physician who received at least \$60,000 indicators: One based on total combined clinical fee-for-service and alternative program payments of physicians who were paid at least \$60,000 in payments, and the other based on fee-for-service payments only.
- 2 average gross payment per physician who received at least \$100,000 indicators: One based on total combined clinical fee-for-service and alternative program payments of physicians who were paid at least \$100,000 in payments, and the other based on fee-for-service payments only.
- Average gross clinical payment per FTE: Based on total combined clinical fee-for-service and alternative program payments of physicians adjusted for their level of activity.

Average gross clinical payment per physician

Average gross clinical payment amounts are reported at the provincial level, as well as at the specialty level for 8 provinces and Yukon (Saskatchewan and Alberta excluded).

Average gross payment amounts are calculated as the sum of all gross clinical payments (fee-for-service and alternative payments) made to physicians divided by the total number of physicians reported to CIHI by the jurisdictions less the number of imaging and laboratory specialists. This was done, where needed and/or possible, to ensure that the count of physicians used in the calculation contributed to the amount in the numerator, which excludes imaging and laboratory specialists. 2 methods were used to identify imaging and laboratory specialists, depending on the level of detail in the data submitted:

1. For jurisdictions that provided physician-level alternative payment plan (APP) data that was used to calculate the aggregate figure in Table A.1.3 of the *National Physician Database — Payments Data, 2016–2017* (Newfoundland and Labrador, P.E.I., Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, B.C. and Yukon), CIHI was able to identify the imaging and laboratory specialists and remove both their payments and head counts from the calculation.
2. For jurisdictions where detailed specialty-level APP data (i.e., payments and head counts) was not available (Saskatchewan and Alberta), CIHI adjusted the reported head count (if needed) using the number of imaging and laboratory specialists found in these provinces' fee-for-service data.

For the Total column in the average gross payment per physician indicator, the sum of payments is divided by the sum of the estimated number of physicians. This approach may result in physicians being counted more than once if they practice in more than one jurisdiction that provides only aggregate-level physician payments. For specialty calculations at the national level, physicians paid under more than one specialty designation, possibly in multiple provinces, are assigned to the specialty in which the majority of their payments were made and are counted only once.

Due to the greater proportion of short-term, visiting and locum physicians and their lower associated payments, in an attempt to improve comparability, CIHI has agreed to calculate the average payment per physician using only permanent in-province physicians in P.E.I. and physicians whose total gross payments are at least \$60,000 in Yukon (2009–2010 to 2012–2013 not reported).

Average gross clinical/fee-for-service payment per physician

Average gross clinical payment and average gross fee-for-service payment amounts are reported for each specialty group for each province (Saskatchewan and Alberta are included in the fee-for-service indicators only). These payment amounts are calculated as the sum of all gross clinical payments or gross fee-for-service payments (depending on the metric) made to physicians, divided by the number of physicians who received a payment. In cases where a threshold is applied (\$60,000 and \$100,000), physicians earning less than the threshold are removed from the calculations.

For national-level calculations, physicians paid under more than one specialty designation, possibly in multiple provinces, are assigned to the specialty in which the majority of their payments were made and counted only once.

Average gross clinical payment per FTE physician

Average gross clinical payment per FTE is reported by specialty group for each province. This is calculated as the sum of all gross clinical payments made to physicians divided by the sum of all physician FTE values, where the FTE is calculated as described in Section 1.4.

Physicians paid by more than one jurisdiction are included in the average payment calculations for each. To calculate the national-level average gross clinical payment per FTE, payments are summed for each physician who works in multiple jurisdictions. For example, a physician who earns \$50,000 in one province and \$50,000 in another will be included in the average payment calculations for each. He or she will contribute \$50,000 to the numerator of each provincial equation and his or her province-specific FTE value to the denominator. For national-level calculations, this doctor would contribute \$100,000 to the numerator and the sum of his or her province-specific FTE values to the denominator.

Group payments and specialty-level payments

In addition to individual physician APP payments, CIHI receives data on group payments and other aggregated payments made to physicians. Group payments are clinical payments made by the jurisdiction to an identified group of physicians; however, the manner in which the money is disbursed varies by group and by jurisdiction. To ensure that the group payments are included in the NPDB payment indicators, CIHI estimates that each group member receives an equal share of the total group payment.

Specialty-level aggregate APP payments are lump-sum clinical payments within a given specialty and jurisdiction; however, unlike the group payments, a list of physicians who receive these payments is not provided to CIHI. In an effort to include as much payment data as possible for the average payment and FTE indicators, CIHI distributes the aggregate

specialty payments equally to all physicians within the respective specialty for that jurisdiction. This is done only for those jurisdictions that provide aggregate specialty-level payment data and both physician-level fee-for-service and physician-level APP data to CIHI.

Adjustments

Differences among provincial and territorial fee schedules and assessment rules make it difficult to calculate comparisons between jurisdictions. In general, the data tends to be less comparable for visit services than for well-established and distinct surgical procedures. To compensate, CIHI adjusts service counts for certain procedures, visits and diagnostic/therapeutic procedures to improve the comparability of the data. Appendix F gives a complete list of adjustments.

1.6 Data limitations

Data exclusions

Medical services covered by third parties, such as hospital insurance and workers' compensation plans, are not included in this report. As well, members of the Canadian Armed Forces and inmates of federal and provincial prisons, together representing less than half of 1% of the population, are covered under other programs.

Certain payments made directly by patients are also omitted (e.g., amounts extra-billed or balance-billed by physicians for cosmetic surgery).

Because of concerns with comparability among jurisdictions, all anesthesia data is excluded from service counts and cost-per-service indicators, and anesthesiologists are excluded from FTE indicators, which are calculated in part using service counts.

Negative numbers

Because of adjustments or corrections applied by the provinces or territories, data submitted to the NPDB may contain negative payment values. CIHI includes both negative and positive payment amounts when calculating average gross payments, but if a physician's total billings sum to a negative number, they are excluded.

Gross and net payments

Because overhead expenses vary across jurisdictions and specialties and are not clearly reported, CIHI does not adjust payment figures to account for them. All average payment figures are based on gross payments.

Average gross clinical payments

The average payment is based on a head count. Each physician receiving clinical payments was counted equally regardless of level of activity (i.e., full time or less than full time).

Specialty designations

Provinces and territories are requested to provide 2 types of specialty information: the latest acquired certified specialty and the payment plan specialty. The former must be designated by the Royal College of Physicians and Surgeons of Canada, the Collège des médecins du Québec or the College of Family Physicians of Canada.

The payment plan specialty may be different, because it shows the area in which the physician was paid for his or her services. Latest certified specialty is not provided by all provinces and territories.

CIHI's FTE physician statistics and average gross payment per physician statistics may vary from provincial and territorial annual statistics because of differences in the way specialties are grouped. Appendix B gives CIHI's specialty groupings.

Imaging and laboratory physicians

Radiologists and pathologists, along with other imaging and laboratory physicians, are excluded from most of the NPDB data tables to improve interprovincial comparability, although payments for imaging and laboratory services performed by physicians who are not specialists in those areas are included. Radiologists and pathologists are included in reciprocal billing data. Payments to radiologists and pathologists may be included in alternative clinical payments for jurisdictions that do not submit physician-level payments.

Insured and de-insured or de-listed services

All provinces and territories across Canada insure core medically necessary services through provincial/territorial medical care plans, as guided by the *Canada Health Act*. However, some services that are covered in one province or territory may not necessarily be covered in all of them. Each jurisdiction has an independent schedule of medical benefits that outlines what services are insured (or not insured) within that specific jurisdiction.

From time to time, provinces and territories stop covering a service they once did, described as de-insuring, or reassign a certain service to another fee code, described as de-listing. These services may differ across jurisdictions or from year to year and may explain some minor fluctuations over the years or minor differences between jurisdictions.

Beginning in 2010–2011, the province of Quebec covers the cost of in vitro fertilization (IVF) services under certain circumstances (please see Quebec’s schedule of medical benefits for details). To maintain comparability of service groupings in the NGS, all services and payments for IVF in Quebec have been allocated to the NGS category “Miscellaneous services — Other identified.”

For further information on de-insured and de-listed services please contact the program lead, NPDB, CIHI, at physicians@cihi.ca.

1.7 Privacy and confidentiality

CIHI employs a variety of safeguards to protect the privacy and confidentiality of physician data.

UPI

CIHI uses encrypted physician identifiers created by data suppliers. They allow the same physician to be followed over time in Canada while maintaining anonymity.

Data suppression

CIHI suppresses data to minimize residual disclosure where there are 4 or fewer members of a medical specialty group in a jurisdiction. For tables A.1.6.1 to A.1.6.12 and A.9.1 to A.9.12 of the *National Physician Database — Payments Data, 2016–2017*, payment distributions are suppressed where there are 9 or fewer physicians. Suppressed data is excluded from both FTE and head counts by jurisdiction and in total. It is important to note that suppression rules are applied before any selection criteria, such as an income threshold; as a result, some cells may contain values that correspond to physician groups containing 4 or fewer individuals. In this case, the value that appears in the cell corresponds to physicians who meet the selection criteria and who belong to a physician group containing 5 or more members before the application of the selection criteria.

CIHI is committed to protecting confidential health information. Although the level of aggregation in this report prevents identification of single individuals in large jurisdictions, such as Ontario or B.C., it might be possible in some smaller jurisdictions, such as P.E.I. To ensure patient anonymity, cell counts with 1 to 4 services are suppressed. To do this, CIHI examined the service count summaries and excluded very low-volume services from provincial and territorial data columns and from aggregate-level row and column totals to avoid identification of individuals through subtraction or other methods of imputation.

Please note that in some cases the suppressed values may appear in the Total column even though the service count is greater than 4. This occurs when rows contain only zeros and suppressed values. For example, if in 1 row all provinces and territories reported they had done 3 of a particular service, the unsuppressed total service count would be 33, but CIHI suppresses the totals as well to avoid re-identifying the underlying suppressed numbers.

CIHI applies the same standards to avoid disclosure when it releases NPDB data through ad hoc queries and special analytical studies.

NPDB data access/release policy

CIHI maintains a set of guidelines to safeguard the privacy and confidentiality of data we receive. The document *Privacy Policy on the Collection, Use, Disclosure and Retention of Health Workforce Personal Information and De-Identified Data, 2011* is available on CIHI's website (ciji.ca) under About CIHI.

Appendix A: Population estimates

Table A1 Statistics Canada net population estimates (in thousands), 2015–2016 to 2016–2017

Year	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	Total
2015–2016	528.9	146.9	936.6	748.5	8,262.0	13,823.7	1,297.3	1,135.3	4,190.9	4,704.9	37.2	35,812.3
2016–2017	530.2	150.0	942.8	752.7	8,327.6	14,022.7	1,319.4	1,151.4	4,239.9	4,770.3	38.2	36,245.2

Notes

Estimates are updated postcensal estimates.

Net population estimates are produced by excluding from total estimates Canadian Armed Forces personnel and the number of inmates in federal and provincial institutions.

The estimates are based on 2011 Census counts, adjusted for net census under-coverage.

These figures have been rounded independently to the nearest hundred.

Source

Statistics Canada, 2015–2016 to 2016–2017, Net Population Estimates (in Thousands).

Appendix B: Physician specialty categories

Physician specialty categories as used in the NPDB

Specialty of family medicine

01 Family medicine

- 010 Residency
- 011 General practice
- 012 Family practice
- 013 Community medicine/public health
- 014 Emergency medicine

Medical specialists

02 Internal medicine

- 020 General internal medicine
- 021 Cardiology
- 022 Gastroenterology
- 023 Respiratory medicine
- 024 Endocrinology
- 025 Nephrology
- 026 Hematology
- 027 Rheumatology
- 028 Clinical immunology and allergy
- 030 Oncology
- 031 Geriatrics
- 032 Tropical medicine
- 035 Genetics

04 Neurology

- 040 Neurology and EEG
- 041 Neurology
- 042 EEG

05 Psychiatry

- 050 Psychiatry and neuropsychiatry
- 051 Psychiatry
- 052 Neuropsychiatry

06 Pediatrics

- 060 Pediatrics

07 Dermatology

- 065 Dermatology

08 Physical medicine/rehabilitation

- 070 Physical medicine and rehabilitation
- 071 Electromyography

09 Anesthesia

- 075 Anesthesia

Surgical specialists

- 10 General surgery**
 - 080 General surgery
- 11 Thoracic/cardiovascular surgery**
 - 086 Thoracic surgery
 - 087 Cardiovascular surgery
 - 088 Cardiovascular/thoracic surgery
- 12 Urology**
 - 090 Urology
- 13 Orthopedic surgery**
 - 095 Orthopedic surgery
- 14 Plastic surgery**
 - 100 Plastic surgery
- 15 Neurosurgery**
 - 110 Neurosurgery
- 16 Ophthalmology**
 - 115 Ophthalmology
 - 116 Ophthalmology/otolaryngology
- 17 Otolaryngology**
 - 120 Otolaryngology
- 18 Obstetrics/gynecology**
 - 126 Obstetrics
 - 127 Gynecology
 - 128 Obstetrics/gynecology

Technical specialists

- 26 Imaging specialties (reported in reciprocal billing only)**
 - 250 Diagnostic radiology
 - 251 Therapeutic radiology
 - 252 Therapeutic radiology and nuclear medicine

27 Laboratory specialties (reported in reciprocal billing only)

- 260 Nuclear medicine
- 261 Bacteriology
- 262 Biochemistry
- 263 Microbiology
- 264 Pathology
- 265 Anatomic pathology
- 266 General laboratory

Note: Although genetics is no longer a subspecialty of internal medicine, it is included in the internal medicine category because the number of physician records assigned to this specialty is relatively small.

Appendix C: Measurement of a full-time-equivalent physician

Historical measures

In Canada, physician supply has historically been measured in terms of the number of physicians available. This data is often used in physician-to-population ratios and has been used for planning and assessing policy. The number of physicians is considered an important health economic indicator because of the gatekeeper role that physicians play in the health care delivery system. Knowing how many physicians there are helps understand increases in the cost of medical care, determine how many physicians are needed and follow trends in physician remuneration.

However, using simple head counts implies that all physicians have equal capacity to provide patient care. This is clearly not plausible; many physicians work part time, some are semi-retired and others who are licensed may perform little or no clinical work and focus on research or hold administrative positions. To try to produce a more meaningful measurement of physician supply, the concept of counting both full-time and full-time-equivalent (FTE) physicians was adopted.

One method of defining full-time physicians involves the use of income thresholds. A dollar amount was specified and any practitioner whose income met or exceeded it was counted as one full-time physician. Physicians who billed less were excluded from the count. The system was not ideal because, depending on the choice of threshold, statistics could be generated that indicated anything from a serious lack of physician resources to a complete oversupply of all practitioner specialties. Later it was slightly improved by counting part-time physicians as fractions of full-time physicians.

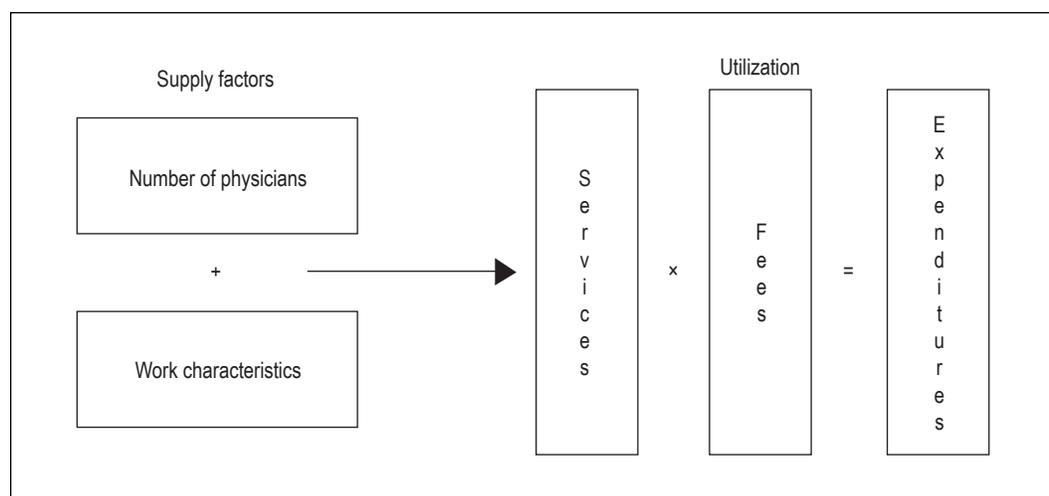
Apart from the problems caused by the arbitrary choice of income threshold, the statistics are not recommended for time-series analysis, because the subset of earnings above the benchmark will be affected over time by increases in fees. Pan-Canadian comparisons are also not advised because the provinces and territories may pay different amounts for the same services.

To achieve more robust jurisdictional, inter-specialty and time-series comparisons, a new approach defines a full-time practitioner as one billing among the top 60% of physicians. Percentile thresholds are preferred over dollar values because they implicitly adjust for changes over time, including fee increases and changes in service use or volume per physician. They also improve comparability among jurisdictions, although because fees still differ there is no guarantee the full-time benchmark in one province or territory reflects the same intensity of work as the benchmark anywhere else. FTE methods based on average or median earnings are variations on this methodology.

Development of an improved measure of full-time equivalence

A national working group initiated the development of a full-time equivalence measure in 1984 based on the following conceptual model:

Figure C1 Conceptual model of supply, utilization and expenditures



In an economic context, the number of physicians and hours of work are seen as measures of supply. Services produced by physicians are the most basic measure of utilization, while expenditure is the product of services and fees. The relationship between these 3 variables is illustrated in Figure C1. The realistic choices for estimation of full-time equivalence were hours of work, services provided and payments.

An internal study indicated a high degree of variability in income per hour worked by fee-for-service physicians, after standardizing for specialty, which meant that an FTE measure based on hours of work would not provide accurate estimates of the *potential output* (in terms of clinical services) of the physician population. As FTE measures are used most often in a context where output or expenditure is important, measuring output rather than hours of work (essentially an input measure) seemed preferable.

Services are measures of output, but they are not weighted for intensity or value. Expenditure, on the other hand, measures services weighted by fees — more difficult services are better paid. Payments to physicians were therefore chosen as the most appropriate measure of output for determining full-time equivalence.

Rationale

In the model adopted, gross income per physician is used to measure output or workload. But even in the same specialty, the amount of work doctors do can vary widely, so rather than using a single cut-off for full-time equivalence, the working group decided to use a range that would be realistic for a typical full-time physician. Because the range had to be statistically defined, the 40th and 60th percentiles of nationally adjusted payments were chosen as benchmarks to measure full-time equivalence.

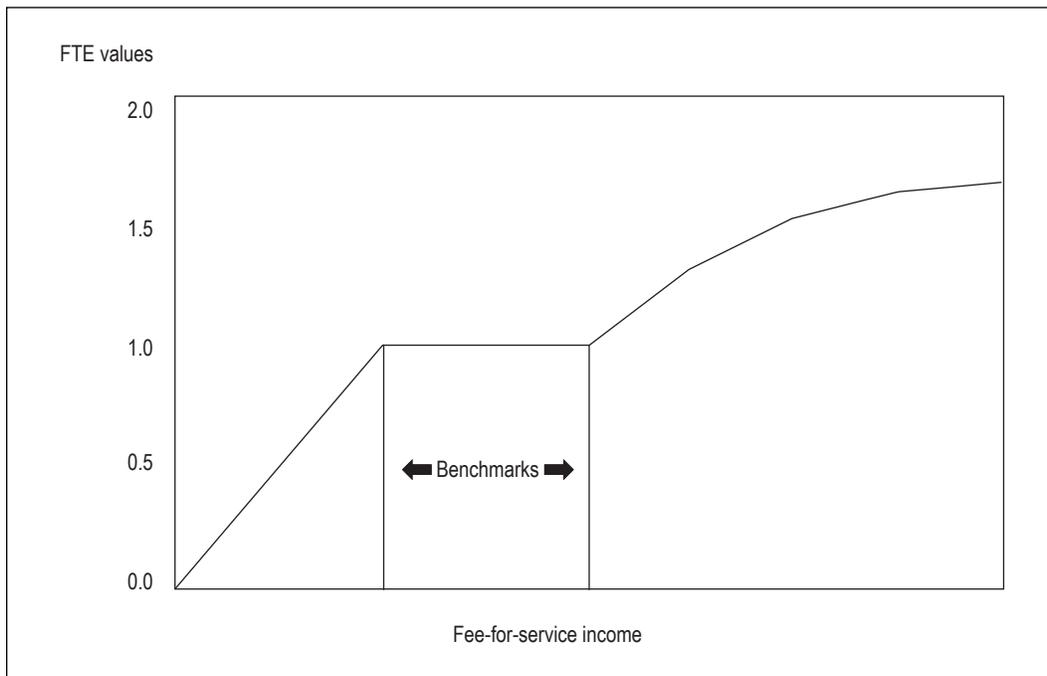
Simulations of alternative percentiles showed that the FTE counts were relatively insensitive to different benchmark ranges, as long as they were symmetric (e.g., the 30th to 70th percentiles yielded approximately the same total counts as the 40th to 60th percentiles).

Comprehensiveness

CIHI's full-time-equivalence methodology is designed to provide a weighted count of all physicians providing care paid for by medicare. Physicians with clinical payments less than the lower benchmark are counted as fractions of an FTE, physicians within or equal to the benchmarks are counted as 1 and physicians above the benchmark are counted as more than 1 FTE. The decision to count physicians above the benchmark as more than 1 FTE was based on a recognition that many physicians have large workloads, which should be reflected.

At the same time, an algorithm incorporating logarithms was used to prevent high-income physicians from having a very large FTE (e.g., a physician whose income is 3 times the upper benchmark will have an FTE of 2.1, while a physician whose income is 4 times the upper benchmark will have an FTE of 2.4). The relationship between income and FTE count is illustrated in Figure C2.

Figure C2 Relationship between income and FTE values



Consistency

For consistency across provinces and through time, the methodology removed the effects of different fee levels on physician income. It allows payments to each physician to be standardized for interprovincial fee differences in order to compute national benchmarks for a base year. The national benchmarks are then converted to provincial values. Each year, the provincial benchmarks are indexed by specialty-specific fee increases or decreases.

Benchmark values and FTE physician counts vary depending on the base year used for analysis. Previous physician reports for data years 1989–1990 to 1995–1996 were based on fee-for-service FTE benchmarks that were set using a 1985–1986 base year. Physician reports for 1996–1997 to 2001–2002 were updated and based on fee-for-service benchmarks using 1995–1996 NPDB data. In 2004, CIHI re-engineered the NPDB system, focusing on the application of payment source selection criteria at various stages of FTE data processing; from the 2002–2003 to 2013–2014 data years, fee-for-service FTE physician reports were produced using a 2000–2001 base year. This historical fee-for-service FTE data is no longer reported or produced, but it will be available through ad hoc custom data requests.

Starting with data year 2014–2015, the base year for benchmark calculations is fiscal year 2015–2016; the calculations are created by combining all available forms of physician-level clinical payments (including alternative and fee-for-service payments) reported to CIHI. CIHI intends to reset the base year for benchmark calculations every 5 years. For a detailed discussion of base year changes and the potential impact on FTE results, please see Appendix G.

Step-by-step calculation

FTE values are calculated per the following equation:

$$FTE_i = \begin{cases} \text{total payments}_i \div \text{lower benchmark}_j & \text{If physician } i \text{ earns less than} \\ & \text{the lower benchmark value } j \\ 1 & \text{If physician } i \text{ earns an} \\ & \text{amount equal to or within} \\ & \text{the benchmark values} \\ 1 + \ln(\text{total payments}_i \div \text{upper benchmark}_j) & \text{If physician } i \text{ earns more than} \\ & \text{the upper benchmark value } j \end{cases}$$

Where

- FTE_i is the FTE value assigned to the i th physician;
- Total payments $_i$ is the sum of all payments made to the i th physician;
- Lower benchmark $_j$ is the lower benchmark value set for the physician specialty group within the province or territory of practice of the i th physician; and
- Upper benchmark $_j$ is the upper benchmark value set for the physician specialty group within the jurisdiction of practice of the i th physician.

1. Select a base year for estimation

- Starting with the 2016–2017 data year, physician reports are produced using a 2015–2016 base year.

2. Create a national base year FTE database

- Select a cohort of physicians from the NPDB of all the records for physicians
 - Who made at least one fee-for-service or shadow billing claim during each quarter of the base year, in 1 or more jurisdictions, or who were paid only through an APP at the physician level without utilization information; and
 - Whose combined gross clinical payments were greater than \$0; and
 - Who received payments from only one jurisdiction; and
 - Who received payments under only one specialty; and
 - Whose group payments accounted for less than 10% of their combined gross clinical payments.
- Remove Saskatchewan and Alberta physicians after the above selection process because CIHI does not have physician-level alternative clinical payment information from these jurisdictions.
- To eliminate the interprovincial differences in payments, adjust the gross income of each physician by the relevant physician services benefit rates (PSBR) index.
 - Any jurisdictional specialties without a PSBR index value will be removed.
- Create 17 national-level medical specialty files corresponding to the medical specialty groups regularly reported in CIHI physician reports. Physicians are assigned to the single national medical specialty file that accounts for the majority of their payments. The national medical specialty data files contain each physician's combined gross clinical payments in the base year.
 - Physicians whose combined gross clinical payments are below 10% of the national average for their specialty are removed.

Note: FTE statistics are not calculated for specialties in imaging or laboratory medicine.

3. Calculate base-year lower and upper benchmarks

- Within each specialty, rank payments and establish the distribution of physicians by payment levels.
- Label the payment value corresponding to the 40th percentile rank as the national lower benchmark and the 60th percentile as the national upper benchmark.
- To calculate the provincial lower and upper benchmarks, adjust the national benchmarks by the PSBR index.

4. Calculate the benchmarks for years other than the base year

- Inflate or deflate provincial benchmarks for each specialty using specialty-specific annual fee increase/decrease percentages.

5. Create an FTE database of all physicians for estimation

- From the NPDB, select all the records for physicians who received a payment during a fiscal year for services provided within the physician's province of practice to in-province patients.
- For each province and each specialty, create a data set that includes each physician's combined gross clinical payments in the fiscal year. Saskatchewan and Alberta gross clinical payments are fee for service only because these provinces are unable to report physician-level or group-level APP data to CIHI.

6. Calculate the FTE statistics for physicians with positive combined gross clinical payments

- Count physicians with payments within or equal to the benchmarks as 1 FTE.
- Count physicians with payments below the lower benchmark as a fraction of an FTE equal to the ratio of their payments to the lower benchmark.
- Count physicians with payments above the upper benchmark using a log-linear relationship — that is, as 1 FTE plus the natural logarithm of the ratio of their payments to the upper benchmark.

Appendix D: Alternative payment programs in each jurisdiction

The provinces and territories have unique approaches to alternative payment programs; the following section gives details. This information was provided by each jurisdiction and reviewed by it in the preparation of this report.

Newfoundland and Labrador

Salary: Approximately 40% of salaried physicians are general practitioners (GPs), and the remaining 60% are specialist physicians. GPs affiliated with rural community hospitals, largely outside of the Avalon Peninsula, commonly practise on a salaried basis. Salaried physicians are employed by a regional health authority (RHA) and funded by the Medical Care Plan (MCP). While movement between fee-for-service and salaried payment modes is generally unrestricted, it requires a request to be submitted by the RHA and approved by the Department of Health and Community Services. In addition, physicians can convert to a salaried status from fee for service by making application through their RHA. Salary has been the predominant model for rural physicians for 2 reasons. First, relatively small practice populations make alternative payment modes more desirable, particularly for specialist physicians; and second, many physicians in rural areas are international medical graduates (IMGs) who are not fully licensed in Canada. To bill fee for service, IMGs must obtain sponsorship from an RHA or another physician (the sponsorship must be approved by the College of Physicians and Surgeons of Newfoundland and Labrador); the IMG must also complete a billing tutorial.

Sessional: Sessional payments are an option for fee-for-service physicians who staff hospital emergency departments, where they are the favoured method of payment. They are also used to pay for specialized care such as diabetes clinics, cystic fibrosis clinics and genetic counselling.

Block funding: Block funding arrangements exist for a number of programs (i.e., cardiac surgery, pediatric anesthesia, pediatric surgery, vascular surgery, adult hematology). These arrangements define set dollar amounts for prescribed services within physician specialty groups. Block funding arrangements are increasing in popularity, with a number of additional service areas now interested in exploring this modality of payment.

Population-based funding: Capitation is not used as a form of remuneration at present.

Prince Edward Island

Salary: Salaried physicians are employed by Health PEI and paid according to the negotiated terms of the Master Agreement; they also receive the Clinical Work Incentive, a method of additional compensation that is based upon the total value of an eligible physician's submitted and approved shadow billing claims. In addition to salary payments, physicians may be permitted to bill fee for service, for example, for after-hours work, walk-in clinics, on-call services and emergency department coverage. Physicians may also enter contractual agreements to provide coverage in areas such as long-term care or addictions.

Sessional: Visiting specialists have a choice of remuneration by fee for service or a sessional per clinical hour rate for professional services, in accordance with the Master Agreement. Hospitalists and emergency department physicians are also paid sessional rates. Permanent and locum emergency department physicians are eligible for the Clinical Work Incentive, a method of additional compensation that is based on the total value of an eligible physician's submitted and approved shadow billing claims.

Contract: All physicians on contract are considered independent contractors and are paid an hourly rate by Health PEI, in accordance with the Master Agreement. Contract physicians who are part of the complement also receive the Clinical Work Incentive, a method of additional compensation that is based upon the total value of an eligible physician's submitted and approved shadow billing claims. In addition to contract payments, physicians may be permitted to bill fee for service, for example, for after-hours work, walk-in clinics, on-call services and emergency department coverage. Locums who choose remuneration by contract are not eligible for the Clinical Work Incentive, a method of additional compensation that is based on the total value of an eligible physician's submitted and approved shadow billing claims, unless they are long-term locums.

Northern and underserviced areas: General practitioners who are willing to maintain active medical staff privileges and who participate in the provision of inpatient care receive an annual retention payment, paid in biweekly installments.

On call: Physicians receive an on-call retainer and also bill fee for service for the provision of on-call services. Salaried physicians have the alternative option of an on-call per diem amount.

Information collection: Shadow billing is used to collect information on services provided by most salaried, contract and sessional physicians.

Nova Scotia

Academic funding plans (AFPs): These plans are used to pay academic physicians in Nova Scotia Health Authority (NSHA) Central Zone and the IWK Health Centre. Currently, there are 12 AFPs: Surgery, Dalhousie Family Medicine, Radiation Oncology, Pathology, Gynecological–Oncology, Critical Care, Psychiatry, IWK Diagnostic Imaging, Medicine, Anesthesia, Emergency Medicine and Pediatrics.

Currently, there is 1 type of AFP payment methodology: block funding. The AFP agreement, signed on September 9, 2016, implemented the block funding model for all AFPs and provides for increased accountability. AFP departments now submit a series of quarterly and annual deliverables. High-level oversight is provided by the AFP Management Group.

Alternative payment plans (APPs): The number of physicians paid by APPs as opposed to the traditional fee-for-service mechanism is continuing to increase. The Nova Scotia Department of Health and Wellness has standard APP contracts in place for family practitioners, regional anesthesia, regional pediatrics, regional obstetrics and gynecology, geriatrics and palliative care. As of February 2017, there were approximately 225 individual and group APP contracts. Beyond the standard APPs, the Department of Health and Wellness is receptive to other alternative funding proposals that enhance patient care within the province. All physicians on contract are considered independent contractors, not employees. The Department of Health and Wellness does not have salaried physicians.

Rural emergency and on-call payments: Rural (i.e., non-tertiary) emergency departments in Nova Scotia are funded in a variety of ways:

- 9 regional and 2 large community emergency departments are funded hourly for all services provided. The number of hours per emergency department is determined using a standardized formula based on the volume and acuity of patients seen and the services provided at each site.
- Other community emergency departments are funded using a mixed funding model. For weekdays between 8 a.m. and 8 p.m., physicians are remunerated for their emergency department work on a fee-for-service basis. From 8 p.m. to 8 a.m. on weekdays, and 24 hours a day on weekends and holidays, physicians are remunerated on an hourly basis.
- Collaborative emergency centres are all funded hourly under comprehensive APP contracts. These agreements cover both urgent/emergent and primary care.

The Facility On-Call Program provides funding for specialty on-call services and family physician on-call services at regional and tertiary centres only. There are 4 categories of payment available under this program; these vary based on the expected volume and intensity of call coverage.

Sessional: Time-based sessional reimbursement is available for a range of pre-approved services. Sessional allocations are approved only to support services where the fee-for-service model does not adequately reflect the services being provided. Currently, sessional arrangements support selected services in addictions medicine, chronic pain management, geriatrics, collaborative family practice, heart function and heart/lung wellness, hematology, integrated stroke care, men’s and women’s wellness clinics, mobile outreach/street health services, multiple sclerosis, oncology, palliative care, physiatry, psychiatry, refugee health, sexually transmitted infection health and youth health. Other ad hoc clinics are supported from time to time.

Population-based funding and primary care: Capitation is not used.

Information collection: Shadow billing is used to collect information on clinical services provided in AFP settings and other contract payment arrangements. APP physicians are also required to submit annual activity reporting and to provide leave information for each fiscal year.

New Brunswick

Salary/contract: Some GPs and specialists doing clinical work in New Brunswick are remunerated through a salary, based on the Medical Pay Plan (MPP) and some clauses under parts I and III of the Public Service of New Brunswick. The MPP has 3 levels: GPs, uncertified specialists and specialists. A fourth level for department heads is for present incumbents only. In some instances, certain GPs and specialists can be paid only through salary (e.g., community health centre family physicians, pathologists). Salaried physicians can be found in specialties such as anesthesia, geriatrics, infectious diseases, internal medicine, rheumatology, neonatology, pediatrics, physical medicine, psychiatry, medical oncology, general surgery and general practice. Shadow billing is a requirement.

Sessional: All emergency departments in the province’s 8 regional hospital facilities, except 1, use sessional compensation on a 24/7 basis. 1 regional hospital’s emergency department physicians are compensated through an Alternate Funding Plan. Non-regional hospital facilities also use sessional compensation on a 24/7 basis except for 3 hospitals: 2 of them cover less than 24/7 coverage and the other uses a variety of payment options, including fee for service, availability stipends and the sessional rate. Funding arrangements are also created to remunerate physicians for clinical services provided in nursing homes, correctional centres, detox centres and mental health centres; various services such as oncology, palliative care, hospitalist and geriatric services; and several clinics including pediatric and reproductive health. Shadow billing is a requirement in most sessional arrangements except for emergency departments, nursing homes and correctional centres.

Population-based funding and primary care: Capitation is currently being explored through a living lab. The Blended Payment Model (BPM) includes capitation (age and sex modifiers are applied to a base value) and reduced fee for service (i.e., most services are paid at 40%, some services are paid at 100%). In addition, there are altered billing rules for office-based visits performed by nurses (most services paid at 35%), along with email and telephone communication with patients (these service codes are open to BPM physicians only). Physicians participating in this model receive a minimum guaranteed remuneration, and a reconciliation exercise at 6 months and 1 year determines whether they should be topped up to the BPM if the BPM is greater than the minimum guaranteed remuneration but not greater than 5% of the converted fee-for-service equivalent.

Contracts/alternative payments: Some physicians have an all-inclusive contract with remuneration, which is outside the scales of the MPP. It may include the possibility to do some fee-for-service work. Shadow billing is a requirement.

Guaranteed income: A few physicians have a guaranteed yearly income based on fee-for-service earnings. The physicians bill fee for service, and the department pays them the balance if they haven't reached their guaranteed income.

Alternate Funding Plan: Some physicians participate in 1 or more alternative funding plans where the health authority is given a lump-sum payment in exchange for a program deliverable. Physicians are paid on an hourly or sessional basis. For the purpose of FTE calculation, these monies are treated as sessional dollars. Shadow billing is a requirement.

Quebec

Salary: As sessional payments (among GPs) and weighted payments (among specialists) have become more popular, fewer doctors are being paid by salary. Since 2011–2012, only those who were already receiving a salary continue to be paid this way. Salary payments are found primarily among GPs employed in local community service centres (CLSCs) or practising in psychiatric settings.

Sessional: Sessional reimbursement is used mainly for GPs who practise in community health programs, in long-term geriatric units, in some psychiatric institutions and/or in remote areas.

Blended payments: This program was implemented in late 1999 as an alternative form of payment for specialists. Participating physicians are paid a flat daily rate plus a percentage of the fee-for-service rates for covered services. Blended payments for GPs were implemented in institutions in 2015. Physicians receive an hourly rate as well as a percentage of the fee for some services.

Block funding: This method of payment is not used.

Population-based funding and primary care: An annual fixed amount is paid to physicians by the Régie de l'assurance maladie du Québec (RAMQ) for each patient considered to be actively registered on January 1 of the calendar year. No invoice is required for the physician to receive the annual amount. A supplement is added if the patient is a member of 1 of 5 vulnerable population groups; this supplement varies according to the population. The total amount is payable on a quarterly basis and is applicable to GPs only. The payment is found in the “capitation” category.

Recognition of efficiency: In 2012–2013, a weighting system was put in place to take into account the workload of some practices. For every day greater than 180 days (up to 200 days), \$50 is paid; for every day greater than 200 days, \$200 is paid. Every counted day must have a minimum revenue.

Flexibility: An additional percentage of revenue is paid to a physician who practises in an institution, based on the number of patients registered in the practice. The physician receives an extra 2.5% for 700 to 999 registered patients; 5% for 1,000 to 1,499 patients; and 10% for 1,500 patients or more.

Information collection: All programs are administered by the RAMQ.

Ontario

Salary: Community health centres (CHCs) in Ontario have community boards and compensate physicians on salary. Currently, CHCs are managed by their respective local health integration networks. Some of the other alternative funding plans may pay physicians on salary once they receive funding from the ministry.

Sessional: Sessional reimbursement is paid to fee-for-service physicians who provide psychiatry, anesthesia and non-billable geriatric physician services to underserved areas and high-risk populations. Compensation is an hourly or sessional (multi-hour) rate for treating patients, often outside physicians' normal office practice. For emergency department payments, there are still a few hospitals paying physicians by the Scott sessional payments in lieu of fee-for-service payments recommended by the 1995 Scott report on physician services in small and/or rural hospital emergency departments.

Block funding: The majority of alternative payment plan funding for emergency departments, neonatal intensive care units, pediatric services and gynecological oncology physician services is block funding. The funding is paid to a group or association of physicians, which must create a formal structure guiding how the physicians are paid for the services covered in its contract with the province.

Population-based funding and primary care: There are 3 primary health care physician compensation models using population-based funding: family health networks (FHNs), family health groups (FHGs) and family health organizations (FHOs). These pay by capitation payment for a set number of services but allow fee-for-service billing for services outside that core.

Contractual: All Ontario alternative payment programs are arranged through a contractual agreement. The current preference for the ministry is to first centrally negotiate a template agreement with the Ontario Medical Association and offer it to eligible physician groups. Where this is not possible, contracts are usually negotiated with physician groups, the Ontario Medical Association and the Ministry of Health and Long-Term Care. Participating physicians receive a predetermined amount of funding to provide the list of in-scope services outlined in the negotiated contract. There is ongoing monitoring and evaluation of all contracts to ensure adequate service levels and that expectations are met.

Information collection: Reporting expectations are clearly outlined in all payment plan contracts. The most common form, shadow billing, counts services according to fee-for-service codes. In agreements where there is no shadow billing, other reporting methods are instituted to ensure adequate service levels and accountability. In addition, some contracts require shadow billing and other forms of reporting, depending on the deliverables. For example, the Emergency Department Alternative Funding Agreements report on Canadian Triage Acuity Scale scores, volumes, shadow billing and hours of coverage.

Manitoba

Salary/contract: Salary/contract arrangements are utilized in a number of different facilities/environments, including for physicians in Winnipeg community primary care centres (access centres). Physicians in Winnipeg teaching (Health Sciences Centre and St. Boniface General Hospital) and community hospitals are compensated through a blend of fee-for-service and alternative funding. Emergency department services provided in Winnipeg are compensated entirely through alternative funding. Physicians in mental health centres in Brandon and Selkirk are compensated through salary, as are hospital-based pathologists in Winnipeg and Brandon. Some physicians (primarily family physicians) in remote areas receive salary through the medicare plan.

Sessional: Sessional reimbursement is used in special circumstances, such as for itinerant physicians who service rural hospitals and personal care homes, some psychiatry services and specialist diagnostic services in hospital.

Blended funding arrangements: A combination of fee-for-service and alternative funding is used to remunerate the oncologists at Cancer Care Manitoba. Oncologists compensated under this arrangement are required to bill a minimum fee-for-service amount in order to qualify for the alternative funding top-up. Many surgical and medical specialists (particularly those who treat pediatric patients) in Winnipeg receive a combination of fee-for-service payments and alternative funding supplementation. Emergency department services provided in rural Manitoba are compensated through alternative funding, with contracts that also allow those physicians a fee-for-service billing window.

Population-based funding and primary care: Manitoba Health, Seniors and Active Living does not use capitation.

Information collection: Encounter-level data is collected by the medicare program for salaried GPs in rural and northern areas. Each paying agency is responsible for information from other modalities. Encounter-level data is not available from these paying agencies.

Winnipeg emergency department doctors are compensated through alternative funding. Rural emergency department doctors paid in accordance with the Basic A & B Agreement have a 12-hour fee-for-service billing window.

Saskatchewan

Note: In 2016–2017, health care in Saskatchewan was administered through regional health authorities. Effective December 4, 2017, the Saskatchewan Health Authority replaced the regional structure. Since the data pertains to fiscal year 2016–2017, the former regional structure is referenced in the descriptions below.

Salary: A relatively small percentage of Saskatchewan physicians is compensated through salaried arrangements. The regional health authorities provide options for salaried employment in some areas (mental health services, house officers), but the predominant arrangements are service contracts or sessional arrangements. The majority of physicians working in Saskatchewan's community clinics work on a salaried basis. A Northern Medical Services agreement with the University of Saskatchewan provides contracted and salaried reimbursement for family physicians working in remote northern communities. The Student Health Services at the University of Saskatchewan also employs family physicians to provide services on campus. Historically, physicians working in the Saskatchewan Cancer Agency were compensated through salaried reimbursement; however, there have been increasing numbers of contracted physicians in the agency.

Sessional: Regional health authorities contract a number of physicians to provide services on a sessional basis, including (but not limited to) contract psychiatrists and physicians providing some visiting/itinerant services to rural/remote communities or specific clinical locations (e.g., larger long-term care centres).

Service contracts: The large majority of physicians compensated on a non-fee-for-service basis are compensated through service agreements. These include most physicians contracted by the regional health authorities, including emergency physicians, pathologists and primary care physicians. Some physicians working at the College of Medicine do so on a service contract basis.

Health authority–administered fee for service: Some regions contract physicians to provide clinical services on a regionally administered fee-for-service basis using a fee schedule that resembles the Physician Payment Schedule. This is the predominant model for hospital-based diagnostic imaging.

Blended: Anesthetists in Regina and Saskatoon are for the most part paid on a fee-for-service basis. However, the provision of obstetrical anesthesia is funded through an alternative payment service contract. Most alternative payment contracts allow fee-for-service billing of services provided to out-of-province beneficiaries.

General practice rural emergency and on-call payments: The Emergency Room Coverage Program, implemented in December 1997, is administered through the Medical Services Branch using the claims processing system with fee codes defined as time-based items. A family physician on-call program for regional and rural hospitals was established in 2007.

Specialist Emergency Coverage Program: Implemented in July 2001, this program is jointly administered by regional health authorities, the ministry and the Saskatchewan Medical Association. Specialists on prescribed call rotation receive a daily stipend for being available for new emergency (unassigned) patients.

Academic Clinical Funding Program (ACFP): In an effort to improve the accountability structures within the College of Medicine, a phased implementation of the ACFP began in fall 2014 as part of its restructuring process. The ACFP is a whole-time, non-fee-for-service contract that combines academic, clinical, administrative and research deliverables into one individual service agreement. The program is jointly administered by the University of Saskatchewan College of Medicine, the regional health authorities and the Ministry of Health.

Information collection: Submission of encounter-level data is a requirement of all alternative payment contracts, but compliance varies. Claims are typically submitted through a shadow billing process that uses provincial fee schedule codes. Encounter-level data is submitted through this manner from the community clinics. Encounter data is not available on services provided through the Clinical Services Fund and by most hospital-based physicians (emergency, critical care associates, house officers, radiologists), Northern Medical Services physicians, contract psychiatrists, salaried cancer clinic physicians and pathologists.

Alberta

During 2016–2017, 55 clinical alternative relationship plans were in place that used 3 working models for funding physician services, as follows:

Capitation Alternative Relationship Plans: The capitation model compensates a physician or physician group based on an annual amount per rostered patient. Capitation rates are developed using a defined basket of insured health service codes that are adjusted for age group and gender risk factors associated with the patient roster. Rosters may be composed of enrolled patients or all patients within a defined geographic area. There were 2 Capitation Alternative Relationship Plans in Alberta in 2016–2017.

Annualized Alternative Relationship Plans: The model compensates a physician or physician group for a specified service delivery model based on insured health services per FTE physician per year. Funding under the contractual model is physician-based, and it increases as the number of physician FTEs within the Clinical Alternative Relationship Plan increases. This model was used in 35 contractual alternative relationship plans in Alberta in 2016–2017.

Sessional Alternative Relationship Plan: Under the Sessional Alternative Relationship Plan, the physician is paid a predetermined rate per hour for providing defined insured health services within an organized program to a defined patient group over a specified period. There were 18 Sessional Alternative Relationship Plans in Alberta in 2016–2017.

Academic Alternative Relationship Plans: These plans are pooled funding arrangements that amalgamate the various sources of funding to provide compensation to academic physicians for their clinical practice, teaching, administrative and research roles. These agreements have been successful in attracting needed specialists to the province and retaining them, supporting innovative clinical practice and enhancing the quality of Alberta's medical education and research. Academic Alternative Relationship Plans involve universities and faculties of medicine, participating physicians, the Alberta Ministry of Health, Alberta Health Services, the Alberta Medical Association, other funding bodies and related ministries, such as Advanced Education. There were 10 Academic Alternative Relationship Plans in Alberta in 2016–2017.

Collection of service event reporting (shadow billing information): Alternative relationship plan service event reporting is currently being collected, mainly using the existing fee-for-service codes.

British Columbia

B.C.'s Alternative Payments Program (APP) provides funds to the 5 regional health authorities and the provincial health authority to improve patient access to services through compensation models alternative to fee for service. The health authorities in turn contract with physicians to deliver health care services.

Alternative Payment Program payment modalities:

Service contracts/salary arrangements: The health authorities may apply to the APP for funding dedicated to the delivery of a specific program of health care services. The health authority and APP establish a funding agreement and physician resource plan with each other, and the health authority subsequently contracts with or employs physicians to deliver services within the APP envelope of program-specific funding. Service deliverables and physician payments are specified in the physician contracts, and these are aligned with the APP policy and the recent Physician Master Agreement (PMA). The PMA incorporates and replaces previous physician agreements between the government, the Medical Services Commission and Doctors of BC.

Sessions: In addition to service contract and salary arrangements, health authorities may apply to the APP for funding to pay physicians on a sessional arrangement, where a session equals 3.5 hours of physician time and may be broken into 15-minute increments. The health authority and B.C.'s APP establish a funding agreement and physician resource plan with each other, and the health authority subsequently contracts with physicians to deliver the services within the APP envelope of program-specific funding. The PMA outlines the terms and conditions for sessional payments.

Other alternative payment modalities:

Population-Based Funding Program — Primary Health Care: A population-based blended funding model for primary health care is administered through the Health Sector Workforce Division. Contracts for services are negotiated between the ministry and primary care sites for the delivery of a fixed basket of core services to a defined population through team-based care. Compensation of individual physicians is determined entirely within the private practice group. Funding for the services is blended: a combination of population-based funding for core services to the defined population plus fee-for-service payments for all other services. The population-based component of service funding uses a risk-adjusted capitation model that recognizes the impact of comorbidity on the utilization of resources. Funding and payment under the model are directly linked to timely and accurate submission of encounter and claims data, so compliance with reporting requirements under this model is high.

Information provision: Reporting is a condition of APP funding and is required to meet expectations for accountability. Along with reporting captured within the APP Physician Resource Plan, reporting from health authorities includes patient encounter information to support the data collection necessary for stewardship, evaluation and health service planning.

Yukon

Yukon physicians are primarily spread across 2 payment modes, with 61% billing fee for service and 39% billing mixed mode (alternative payment plans and fee for service). A very small percentage are paid by APPs only. Yukon's rurality and small population does not warrant many resident specialists, so specialist services are primarily provided by visiting specialists. General practice services are provided by a combination of resident physicians and locum physicians.

Alternative payment plans: These plans are used primarily for physicians who provide primary care services in rural communities. They are negotiated by Insured Health and Hearing Services with individual physicians, independent of the memorandum of understanding between the Yukon Medical Association and the Insured Health and Hearing Services Branch.

Information collection: Fee-for-service billings and shadow billings are entered electronically to collect information on the number, type and value of services provided within Yukon by both fee-for-service and APP physicians.

Northwest Territories

Salary: The Northwest Territories has hospital-based salaried physicians in the specialties of anesthesiology, general surgery, internal medicine, obstetrics/gynecology, orthopedics, otolaryngology, psychiatry and pediatrics. In addition, the Northwest Territories has salaried physicians in the area of family medicine who work in clinics and emergency departments and as hospitalists.

Sessional: Sessional physicians are used to fill vacancies in specialties and general practice. They are employed as independent contractors, and remuneration is based on a daily rate for services. In addition, travel costs are reimbursed and accommodations are provided.

Information collection: Salary and sessional expenditures were taken from Health Authority Trial Balances, and fee-for-service payments were extracted from SAM (PeopleSoft Financial System). Physician count and specialty classifications were taken from HR (PeopleSoft) and Health Management Information System (HMIS).

Appendix E: National Grouping System

Categories and strata

1. Consultations

Major, initial, ordinary, minor, repeat, regional and operative consultations performed in offices, hospitals, chronic care and convalescent hospitals and nursing homes, as well as psychiatric and obstetrical consultations where no special call is involved

- Major consultations
- Other consultations

2. Major assessments

General and specific assessments, reassessments, initial visits with a complete exam, new condition seen for first time and including complete history and exam, complete specific exam depending upon the physician specialty, annual exams, newborn/premature care and special eye exams performed in any location where no special call is involved

- Office
- Hospital inpatient: Newborn
- Hospital inpatient: Other
- Hospital outpatient
- Hospital unspecified
- Unspecified
- Special eye

3. Other assessments

Partial or minor assessments, regional exams, first or subsequent or repeat exams, ordinary, pre- and post-natal care, well-baby care in any location, chronic and convalescent care, outpatient visits and other visits when physician is in the hospital, intermediate and minor assessments, partial assessments, follow-up exams and regional exams, additional patients seen during a special call and detention

- Office
- Hospital inpatient
- Hospital outpatient
- Hospital unspecified
- Unspecified — Location
- Special calls — Add
- Detention

4. Hospital care days

Regular visits up to 28/30/31 or 35/42 days, more than 28/30/31 or 35/42 days, inpatient supportive care, continuing care, concurrent care, directive care, convalescent care, palliative care and daily management

- Up to 28/30/31 or 35/42 days
- More than 28/30/31 or 35/42 days
- Other

5. Special calls

Visits at night, on Saturdays, Sundays and holidays, requiring travel to offices, homes, nursing homes, outpatient and emergency departments; also includes special visits, consultations, specific assessments and reassessments, general reassessments, ordinary home visits, home summary and specific exams

- Out-of-hours/emergency
- Other regular hours

6. Psychotherapy/counselling

Individual psychotherapy, hypnotherapy, narco-analysis, diagnostic/therapeutic interviews, group and family psychotherapy and interviews, interviews for physical medicine and counselling for drugs, family, genetic, marriage and contraception, and case conferences on behalf of patients with allied workers, teachers, clergy, etc.

- Individual psychotherapy
- Group/family psychotherapy
- Counselling

7. Major surgery

Based on the 1988 Ontario Schedule of Benefits, these procedures have a fee of more than \$75.

Mastectomy and breast surgery

Simple, radical or modified radical; unilateral or bilateral; female or male; partial mastectomy or wedge resection; breast augmentation, reduction and mammoplasty

Breast tumour excision/biopsy

Tumour or tissue for biopsy and/or treatment

Other integumentary system

All other major surgery procedures performed on the integumentary system not listed above; for example, excisions, lesions, tumours, cysts, burn and skin grafts, pedicle and free island flaps, plastic planing, plastic surgery procedures

Fractures

Bone and joint fractures, including dislocations

Disc surgery

Procedures for disc removal and fusion, including discectomy

Arthroplasty — Hip

Total hip replacement, unipolar and bipolar arthroplasty and revisions

Arthroplasty — Knee

Knee arthroplasty and revisions

Other musculoskeletal system

All other major surgery performed on the musculoskeletal system not listed above, including bone grafts, arthrodesis, amputation, arthrotomy, bone, joint, muscle and tendon excision, reconstruction, orbito-cranial surgery and instrumentation

Sub-mucous resection

Septoplasty and resection

Rhinoplasty

Correction of nasal deformity

Other respiratory system

All other major surgery performed on the respiratory system not listed above, including excisions and repairs

Coronary artery bypass/repair

Coronary artery repair single, double, triple (or more) bypass; coronary endarterectomy

Coronary angioplasty

Percutaneous transluminal coronary angioplasty

Cardiac electrophysiology

Electrophysiological study (partial or full); HIS bundle; atrial pacing; catheter ablation; and insertion of pacemaker, defibrillator and VAD devices, including insertion of permanent endocardial electrodes, implantation of pack, permanent replacement and repair

Other heart/pericardium

All other major surgery procedures performed on the heart and pericardium system not listed above, including valves, septa of heart and heart transplant

Varicose veins/vein repair

Ligation and stripping of varicose veins but excluding injection of varicose veins; vein repair, venous anastomosis and suture of veins

Carotid endarterectomy

Endarterectomy, body tumour and bypass graft of the carotid artery

Other cardiovascular

All other major surgery performed on the cardiovascular system not listed above

Appendectomy

Excision of the appendix

Laparotomy

Any laparotomy performed as a surgical procedure

Gallbladder and biliary tract

All cholecystectomies and any additional payments made for other procedures performed at the same time; gallbladder removal, including cholecystostomy, cholecystotomy and all operations on the gallbladder, bile duct and biliary tract; includes lithotripsy/litholapaxy performed on the biliary tract and/or bile duct

Tonsillectomy

Both adult and child tonsillectomies and payments for adenoidectomies performed at the same time

Hernias

All forms of hernia repair surgery

Colon and intestines (colectomy)

Total and hemi-colectomies and payments for other procedures performed at the same time; surgical removal of all or part of the large intestine and other intestine surgery, entero-enterostomy, enterostomy, enterotomy or cecostomy; colostomy and colo-colotomy; colon surgeries not including colonoscopy (see NGS 103); small intestine, small bowel surgeries

Rectum/proctotomy/anus and hemorrhoidectomy

Hemorrhoidectomies by cryotherapy and banding are excluded; includes proctotomy and other anus, rectum, rectal prolapse and peri-rectal tissue operations

Other digestive

All other major surgery performed on the digestive system not listed above; includes operations on lips, mouth, throat (excluding tonsillectomy), esophagus, stomach, pancreas and liver, and gastrectomy, splenectomy, vagotomy, liver transplant and hepatectomy

Urinary system

All urinary system operations, including renal transplant, nephrotomy, nephrectomy, bladder, ureter and stress incontinence operations (male or female); includes all forms of lithotripsy/litholapaxy performed for renal/upper ureteral stone removal

Prostate surgery (male)

All forms of prostate surgery, such as perineal, suprapubic, retropubic, transpubic and transurethral resection

Vasectomy (male)

Unilateral or bilateral ligation

Other male genital system

All other major surgery performed on the male genital system not including the prostate and vasectomies

Prolapse in female genital system

All forms of prolapse repair surgery in female genital system; includes cystocele and/or rectocele repair, prolapse uterus and LeFort's operation

Hysterectomy (female)

Total, subtotal, abdominal or vaginal or radical hysterectomies

Sterilization (female)

Tubal occlusion/interruption/removal by any method or approach

Other female

All other major surgery performed on the female genital system not listed above

Cataract surgery

All forms of cataract surgery, dislocated lens extraction and insertion of intra-ocular lens when paid in addition to the above

Light coagulation

Photocoagulation and cryopexy

Tympanoplasty

Tympanoplasty, myringoplasty, tympanomastoidectomy and payments for other procedures performed at the same time

Other eye/ear

All other major surgery performed on the organs of special senses not listed above

Other major surgery

All other major surgery not listed above, such as operations on the nervous system, on the hemic and lymphatic systems and on the endocrine system

8. Minor surgery

Incision, abscess, etc.

Incision of abscesses or hematomas under local or general anesthesia

Removal of foreign body

Foreign body removal under local or general anesthesia

Excision, tumour, etc.

Excision of verruca, papilloma, keratosis, pyogenic granuloma, moles, etc.

Suture wound

Repair, debridement and dressing

Excision of nail

Excision and/or destruction of fingernail or toenail

Chalazion

Single or multiple under local or general anesthesia

Myringotomy

Unilateral myringotomy with insertion of ventilation tubes

Minor fractures

Fractures with a fee less than \$75

Other minor surgery

All other minor surgery not listed above

9. Surgical assistance

All services and payments for surgical assistance

10. Anesthesia

Nerve blocks

All forms of nerve blocks

Other anesthesia

All services and payments for anesthesia, excluding nerve blocks

11. Obstetrical services

Service at delivery

Attendance at delivery or Caesarean section, repair of third-degree/vaginal/cervical laceration, removal of retained placenta, scalp sampling, fetal monitoring and induction of labour

Delivery (excluding Caesarean section)

Delivery and multiple births, excluding Caesarean sections

Caesarean section

The procedure only

Therapeutic abortion

Therapeutic abortions only

Other obstetrical services

Fetoscopy, stress test, hypertension, fetal transfusion, toxemia of pregnancy, oxytocin challenge test, abortions (missed, threatened, without dilatation and curettage, incomplete, menstrual extraction and spontaneous), amniocentesis, ectopic pregnancy, suture for incomplete cervix during pregnancy, uterine inversion and emergency removal of sutures

12. Diagnostic/therapeutic services

ICU/resuscitation

Intensive care and resuscitation services

Allergy/hyposensitization

Tests for allergies and hyposensitization

Injection/aspiration of joint

Injection and/or aspiration of joints

Electrocardiogram

Services and payments for the professional component of electrocardiograms and the payments for the technical component

Esophagoscopy/gastroscopy

Services and payments for both these endoscopies as well as payments for procedures performed at the same time as the endoscopy

Laryngoscopy/bronchoscopy

Services and payments for both these endoscopies as well as payments for procedures performed at the same time as the endoscopy

Colonoscopy

Services and payments for this endoscopy as well as payments for procedures performed at the same time as the colonoscopy

Cystoscopy

Services and payments for this endoscopy as well as payments for procedures performed at the same time as the cystoscopy

Sigmoidoscopy

Services and payments for this endoscopy as well as payments for procedures performed at the same time as the sigmoidoscopy

Other endoscopy

All other endoscopies not listed above

Coronary angiography

Coronary angiography only

Procedures associated with imaging

Therapeutic radiology and radioisotopes

Dilatation and curettage

Dilatation and curettage and payments for procedures performed at the same time

Electroencephalography

Services and payments for the professional component of electrocardiograms and payments for the technical component

Cryotherapy

Any cryotherapy identified in the payment schedules

Cardiac catheterization

Left heart, right heart and selective coronary catheterization

Biopsy

All non-surgical biopsies

Other diagnostic/therapeutic services

All other diagnostic/therapeutic services not listed above

13. Special services

Injections and immunizations

Injections (subcutaneous, intramuscular and for varicose veins) and immunizations regularly performed by nursing personnel. In some jurisdictions these are treated as separate services, while in others they are included in visit fees. Not included are intravascular injections performed by physicians and lumbar myelograms, which are included in diagnostic/therapeutic services.

Papanicolaou smear

As with injections, this procedure is not always considered to be a separate service and is sometimes included in a visit fee

Insertion of intrauterine device

As with injections, this procedure is not always considered to be a separate service and is sometimes included in a visit fee

14. Miscellaneous services

Other identified

These are services that are not listed as fee items by a majority of the provinces and territories. Examples include sessional and standby fees (where identified by a fee code), mileage, telephone consultations, sexual assault exam for investigation and/or confirmation of alleged sexual assault and other services.

Unidentified

Most provinces and territories have coding errors or list codes that are unidentifiable. These include all services that are unidentified or are identified but paid for by social services, the attorney general, workers' compensation, etc. Examples include services related to impaired driving, to rape victims and as a result of injuries sustained at work.

Appendix F: Fee code adjustments for services

Not only are provincial and territorial fee schedules different, but periodic changes to definitions, fees or assessment rules make it difficult to compare jurisdictions. In general, visit services and minor procedures have more differences and are less comparable than well-established and distinct major surgical procedures. As a result, CIHI adjusts service counts for certain types of services, visit services and diagnostic/therapeutic procedures to improve the comparability of the data. A description of each adjustment follows.

Adjustment A

Sometimes what would be considered 1 service is billed with more than 1 fee code — for example, when 2 or more surgical procedures are performed at the same time. To minimize the double-counting of services, an Adjustment A is attached to the fee service code (FSC); this excludes the service count for the additional part of the procedure but keeps the payments.

Example

FSC 1 — Pyloroplasty (surgery to widen the lower portion of the stomach, so that stomach contents can empty into the small intestine)

FSC 2 — With suture of bleeding peptic ulcer, additional amount

The service count is retained only for FSC 1, while the payments for FSC 1 and FSC 2 are retained.

Adjustment B

While some types of care, such as setting a broken bone, are clearly comparable, others can be defined very differently in each jurisdiction. Adjustment B is designed to make these variable services more comparable. They include services such as psychotherapy, hospital visits, resuscitation, intensive care, pre- and post-natal care, standby fees and diagnostic or therapeutic tests. CIHI adjusts the service count by dividing the total payment for the FSC by the calculated fee for the standardized service. In other words, CIHI looks at how much was paid for the service and sees how many standard services could be had for that much money. Then it assigns this calculated number of standard services instead of the original count.

These are the Adjustment B criteria:

- **Psychotherapy** — The average duration for all psychotherapy services is assumed to be 30 minutes, and group therapy sessions comprise 4 persons.
- **Allergy tests** — Since the number of allergy and hypersensitivity tests differs among jurisdictions, CIHI adjusts the price for allergy test codes across jurisdictions to be the price of 10 single tests.
- **Detention** — Detention is payable when a physician spends considerable extra time in the treatment of a patient to the exclusion of other work. CIHI assumes the duration of a detention service is 15 minutes. Service counts are adjusted for jurisdictions that pay for either half an hour or 1 hour.
- **Intensive care** — The duration of 1 intensive care service or 1 intensive care per diem is assumed to be 1 hour.
- CIHI converts monthly rates to daily rates assuming 20 working days per month.

Adjustment C

This adjustment is used when a fee code is redefined during the year and the definitions apply to different categories — for instance, when laboratory surcharges apply to different procedures. This adjustment allows the services and payments for a specific FSC to be divided between 2 categories.

Adjustment D

This is the same as Adjustment B, except the service counts are revised on the basis of whether they were performed by a GP or other specialist, with a different fee for each.

Example

Fee schedule		Calculated fees	
General practitioner	\$14 per 15 minutes	General practitioner	\$56 per hour
Other specialist	\$18 per 15 minutes	Other specialist	\$72 per hour

Adjustment E

In many jurisdictions, physicians are entitled to premiums or additional fees for visits or procedures provided during off-hours such as evenings, nights, Saturdays, Sundays and statutory holidays, or if the visit or procedure is provided in an emergency. To eliminate double-counting, these premium codes are dropped and the payment for them is added to the primary code for the visit or service.

Example

FSC 1 — Surcharge for a consultation

The special charge for out-of-hours care is subtracted from the primary count, which is under Category 1, Consultations. The subtracted payments are calculated by multiplying the service count of FSC 1 by the fee for a consultation. In CIHI reports, Category 20, Out-of-Hours/Emergency, contains the services and payments for FSC 1 plus the payments removed from Category 1.

Adjustment F

Payment for obstetrical care may be all-inclusive fees (payment for delivery or Caesarean section and for all pre- and post-natal care) or by separate fees for delivery or Caesarean section and fees for associated pre- and post-natal services. To minimize the effect of these changes on comparisons among jurisdictions and over time, all-inclusive fees are separated into pre- and post-natal visits and deliveries or Caesarean sections.

Adjustment G

In the NPDB, there are some fee service codes that can be billed in addition to or in association with other service or procedural codes. The codes that a service can be billed with may be spread over a number of different NGS categories. Therefore, the services and payments must be proportionally allocated to each identified NGS category associated with the group of codes.

Adjustment H

There are some fee service codes that can only be billed in addition to or when a broad application is described without a listing of specific fee service codes. An example of such a broad application is the body mass index (BMI) surcharge fee service code in some jurisdictions, which can be billed in addition to any surgical fee code; this fee service code is utilized by physicians when operating on patients with a BMI considered to be in the obese or morbidly obese range.

Jurisdiction-specific adjustments

For various reasons, several adjustments to the data are also made that do not apply consistently to each province or territory. For example, premium fees for off-hour visits and procedures are claimed in several jurisdictions. To maintain consistency, the dollar amounts for such premiums are included, but the service counts are dropped to eliminate double-counting of the services.

Special calls adjustment

A special call is an assessment rendered following travel to attend to a patient. This will normally be initiated by someone other than the physician outside a hospital, including visits to a first patient at home, in a nursing home, rest home or other setting. A home visit will usually occur in an emergency or because of the patient's condition.

In Quebec, Atlantic Canada, Alberta and Yukon, a consultation or assessment done normally has a different fee code from one that is a special call. In the other jurisdictions — Ontario, Manitoba, Saskatchewan and B.C. — the same fee code is used in both circumstances, but an extra surcharge with its own fee code is added in the case of a special call. So, for example, in Nova Scotia all the payments and services would fall into the special call stratum, but in Ontario the payments and services would be split between consultations or assessments and special calls. This adjustment moves payments from consultations and assessments to special calls. It also deletes services in consultations and assessments there as a result of special calls.

Appendix G: Revisions to the NPDB full-time equivalent benchmarks

Introduction

In 2016, CIHI embarked on a project with its advisory group, supplemented by other experts from across Canada, to find an optimal approach to calculating a physician FTE that includes alternative clinical payment information. After examining several methodological options with the advisory group, CIHI decided on a modest change in the indicator: combining the physician-level alternative payments data with the fee-for-service data.

This appendix describes changes that were implemented to accommodate the alternative payment data information in the FTE indicator. It also compares the differences between the FTE indicator before and after the addition of alternative payments.

Summary of FTE methodology revisions starting in data year 2014–2015

1. Updating the FTE base year

The base years for CIHI's FTE benchmarks are updated on a periodic basis. Past base years have been 1985–1986, 1995–1996 and 2000–2001. With CIHI's success in collecting physician-level alternative payment data, the new base year for benchmark calculations will be fiscal year 2015–2016. The base year is created by combining all available forms of physician-level clinical payments (including alternative and fee-for-service payments) reported to CIHI and establishing benchmarks that will measure full-time equivalence.

2. Inclusion of alternative payments

CIHI has been collecting data on remuneration to physicians through APPs since 1999. In 2006, CIHI began receiving APP data at the physician level from 2 jurisdictions. As of data year 2014–2015, all jurisdictions (except Saskatchewan and Alberta) submit physician-level APP data to CIHI. This level of detail allows for the integration of physicians' fee-for-service and APP payments, which enables a more complete picture of physician compensation for clinical practice.

In addition to individual physician APP payments, CIHI also receives data on group payments and other aggregated payments made to physicians. Group payments are payments made to a group of physicians identified by the province; however, the manner in which the money is disbursed within the group is not known. Nova Scotia and B.C. are the only jurisdictions that submit group payments to CIHI.

Specialty and aggregate APP payments are similar to group payments: these payments are made to physicians within a given specialty or jurisdiction, and they are not currently identifiable at the physician level in the data that is provided to CIHI. In addition to physician-level data, CIHI reports aggregate payments from Nova Scotia, Ontario and B.C. The inclusion of specialty-level or other aggregated payments would introduce a systemic error that may bias the results, so they are excluded.

3. Selection of physicians who are active during the base year when setting FTE benchmarks

FTE benchmarks are set using data for physicians who are active for the full fiscal year during the base year. Earlier versions of the FTE benchmarking methodology used fee-for-service quarterly information only; to qualify, physicians needed to bill in all 4 quarters. Alternative payment data, however, can come with utilization data (shadow billing) or in an annual file. To accommodate the different levels of information, 2 selection criteria were implemented:

- Physicians with utilization data (fee-for-service and/or shadow billing data) must have utilization data in all 4 quarters; or
- Physicians who appear only in an annual APP file without utilization data are included.

After the 2 criteria are applied, the physicians' payments are nationalized (PSBR adjusted) and a third criterion is applied: their nationalized payments must be greater than 10% of the national average for their specialty. This additional criterion helps provide some estimated threshold of working through the full year for those physicians without utilization data, as well as eliminating those physicians that have very few billings.

Group payments are included in the computation of a physician's total payment. We've estimated that each group member receives an equal share of the total group payment. To ensure that these estimated values don't overly impact FTE results, we'd like to say with a degree of certainty that most of a physician's total payments are known. Therefore, physicians whose group-level payments account for more than 10% of their total payments are excluded from the benchmark-setting cohort.

Limitations

There are 2 acknowledged limitations:

1. Use of the PSBR: Alternative payment information is not included in the PSBR index calculation because these payments cannot be linked to the performance of any specific services. The missing alternative payment program utilization information in the PSBR means that the All Services Index used to adjust payments and benchmarks is based solely on fee-for-service data. The concern is that this has an unquantifiable and skewing effect on the FTE count and on the “comprehensive” average payment per FTE values in the respective columns of the table.
2. Use of fee-for-service fee increase and/or decrease percentages: Once the benchmarks are set for the base year, CIHI inflates or deflates provincial benchmarks for each specialty and year using specialty-specific annual fee increase/decrease percentages. There is concern that by using only fee-for-service fee adjustments, there might be skewing effects on non-base year FTE results.

Comparison of FTE counts before and after the inclusion of alternative payment information

The FTE and head counts that would have been calculated prior to changing the base year and the inclusion of the alternative payment information is compared with what is reported in the 2016–2017 report (Table G1).

Table G1 Comparison of before and after FTE results

Specialty	Before*		After†		Difference	
	FTE counts	Head counts	FTE counts	Head counts	FTE counts	Head counts
Family medicine	26,296.88	40,798	36,320.67	41,995	38.1%	2.9%
Medical specialists	16,974.99	20,978	18,886.33	21,979	11.3%	4.8%
Internal medicine	8,720.25	10,155	9,082.29	10,614	4.2%	4.5%
Neurology	819.68	1,094	950.58	1,118	16.0%	2.2%
Psychiatry	4,344.70	5,204	4,930.70	5,418	13.5%	4.1%
Pediatrics	2,172.77	3,437	2,939.38	3,732	35.3%	8.6%
Dermatology	520.60	604	568.73	606	9.2%	0.3%
Physical medicine	396.99	484	414.65	491	4.4%	1.4%
Anesthesia	**	**	**	**	**	**

Specialty	Before*		After†		Difference	
	FTE counts	Head counts	FTE counts	Head counts	FTE counts	Head counts
Surgical specialists	9,222.07	10,607	9,832.36	10,774	1.7%	1.6%
General surgery	1,914.95	2,263	1,957.57	2,308	2.2%	2.0%
Thoracic/cardiovascular surgery	336.19	456	418.61	463	24.5%	1.5%
Urology	677.78	735	657.52	741	-3.0%	0.8%
Orthopedic surgery	1,431.63	1,713	1,485.46	1,726	3.8%	0.8%
Plastic surgery	529.44	611	524.36	614	-1.0%	0.5%
Neurosurgery	235.07	323	272.73	338	16.0%	4.6%
Ophthalmology	1,675.68	1,342	1,254.60	1,350	-25.1%	0.6%
Otolaryngology	695.79	814	745.40	816	7.1%	0.2%
Obstetrics/gynecology	1,725.54	2,350	2,066.11	2,418	19.7%	2.9%
Total specialists	26,197.06	31,585	28,268.69	32,753	7.9%	3.7%
Total	52,493.94	72,383	64,589.36	74,748	23.0%	3.3%

Notes

* Base year 2000–2001 adjusted to data year 2016–2017.

† Base year 2015–2016 adjusted to data year 2016–2017.

** Anesthesia specialists were suppressed.

Source

National Physician Database, Canadian Institute for Health Information.

All specialties' FTE counts increased except for urology, plastic surgery and ophthalmology. Family medicine had the highest change, which is expected given its high proportion of alternative payments. The small percentage change in head counts shows that 97% of family medicine physicians received at least one fee-for-service payment during the year.

While there are limitations to the new improvements, the overriding view was that the addition of alternative payments to the FTE was a substantial improvement over the fee-for-service-only FTE of the past. The limitation that the benchmark calibration is based only on fee-for-service information (PSBR and fee percentage adjustments), although an important notation to the methodology, can hopefully be addressed in the future.

Appendix H: Text alternatives for images

Text alternative for equation on pages 7 and 23

If the physician earns less than the lower benchmark, the FTE value is equal to his or her total payments divided by the lower benchmark. If the physician earns an amount equal to or within the benchmark values, the FTE value equals 1. If the physician earns more than the upper benchmark value, the FTE value equals 1 plus the natural logarithm of the ratio of his or her total payments to the upper benchmark.

Text alternative for Figure C1: Conceptual model of supply, utilization and expenditures

The physician supply factors (i.e., number of physicians and work characteristics) lead to the utilization factor of services. Services multiplied by fees in turn equals expenditures.

Text alternative for Figure C2: Relationship between income and FTE values

For physicians whose fee-for-service income is less than the lower benchmark, the relation is linear. For physicians whose fee-for-service income is between the lower and upper benchmarks, the relation is constant and equal to 1. For physicians whose fee-for-service income is greater than the upper benchmark, the relation is logarithmic.

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