



**Saskatchewan
Ministry of
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**HEALTH SERVICES DATABASES:
INFORMATION DOCUMENT**

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I. INTRODUCTION

Saskatchewan is one of the ten provinces and three territories in Canada. It has a population of about one million people, or about 3.2% of the population of Canada.

Saskatchewan has a publicly funded health system. Within this system, the Saskatchewan Ministry of Health, a provincial government department, 12 regional health authority (RHA) boards and the Athabasca health authority provide health services to the citizens of Saskatchewan. With funding from the Saskatchewan Ministry of Health, the RHA boards plan and deliver most services to people within their geographic jurisdictions based on the needs of their residents. The Ministry of Health coordinates province-wide programs such as the Prescription Drug Plan and Medical Services.

In almost all of the provincially-funded programs, residents of the province enjoy universal health insurance. As a by-product of these universal health care programs, Saskatchewan has accumulated a large amount of health care information in computerized databases over a number of years.

The databases have been recognized as a resource for drug utilization review, pharmacoepidemiology, health economic, and other health services research. Publications of studies based on the data reflect the value of the databases for this research (see VII. Publications and Technical Reports).

II. A BRIEF DESCRIPTION OF THE DATABASES

A general overview of the major databases in Saskatchewan and the data elements currently available in each are outlined below. The databases are not integrated and linkage and refinement are required for each study. Specific data elements are described to enable researchers to better tailor their study methodology to the data; many data elements, however, may not be released at the level of detail described here. As well, there have been changes in program features and data collection over time. Researchers are strongly encouraged to consult with staff in the Ministry of Health while developing protocols intending to use Saskatchewan data. (See Section VI.)

POPULATION REGISTRY

The population registry includes all residents eligible for Saskatchewan Health benefits (the "covered population"). As of June 30, 2009, the eligible population was 1,036,284 (521,200 females; 515,084 males).

The registry is updated daily for name or address changes, births, deaths, new residents, departing residents, and those qualifying for social assistance supplementary health coverage. Information contained in the registry includes:

- name
- health services number (HSN)
- sex
- date of birth
- residence information

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- dates of coverage initiation and termination
 - reason for coverage termination (e.g., death, left the province)
 - indicator for registered Indian status
 - indicator for current social assistance recipients receiving extended health benefits.

PRESCRIPTION DRUG DATA

The Drug Plan provides coverage to eligible Saskatchewan residents for drugs which are listed in the Saskatchewan Formulary and prescribed for outpatients. Residents ineligible for coverage under the Drug Plan include approximately 9% of the population (primarily registered Indians) who have their prescription costs paid for by another government agency.

Drugs covered by the Drug Plan are listed in the Saskatchewan Formulary. Some drugs may be listed with restricted status and approved for coverage only when used for certain indications. The current Saskatchewan Formulary is accessible on the Internet at <http://formulary.drugplan.health.gov.sk.ca/>.

Data are available from September 1975 to the present. (Incomplete data were captured between July 1, 1987 and December 31, 1988.)

Each prescription record includes:

1. *Patient Information*
 - health services number
 - sex, year of birth
 - designation of special status (e.g., Saskatchewan Assistance Plan recipient)
2. *Drug Information*
 - pharmacologic-therapeutic classification of drug (based on the American Hospital Formulary Service classification system)
 - drug identification number (DIN - assigned by Health Canada)
 - drug active ingredient number (AIN - also assigned by Health Canada)
 - generic and brand names
 - strength and dosage form
 - date dispensed
 - quantity dispensed
3. *Provider Information*
 - prescriber identification number (which can be linked with the physician registry for additional information such as location of practice and prescriber specialty)
 - dispensing pharmacy identification number
4. *Cost Information*
 - unit cost of drug materials
 - dispensing fee and mark-up
 - consumer share of total cost
 - government share of total cost
 - total cost.

HOSPITAL SERVICES DATA

All members of the covered population are eligible to receive benefits for medically necessary hospital services without charge.

Data are collected from all hospitals in the province. Included in the database are all acute care in-patient separations, day surgeries, and in-patient psychiatric separations on patients treated in general hospitals. Out-of-province hospital separations for Saskatchewan beneficiaries are also captured, but the level of detail may vary. The data are accessible electronically from 1970 to the present.

Each hospital separation record includes:

1. Patient Information
 - health services number
 - sex, year and month of birth
 - residence
2. Diagnostic and Treatment Information
 - most responsible diagnosis
 - other diagnoses (number potentially available varies depending on the time period)
 - principal procedure
 - other procedures (number potentially available varies depending on the time period)
 - accident code (external cause code)
3. Other
 - admission and discharge dates
 - length of stay
 - admission and separation types
 - case mix group
 - resource intensity weight
 - attending physician
 - attending surgeon (if applicable)
 - hospital identification number.

For data to March 31, 2001, diagnoses are recorded using four-digit codes based on the International Classification of Diseases, Ninth Revision (ICD-9) and procedures are recorded using four-digit codes based on the Canadian Classification of Diagnostic, Therapeutic, & Surgical Procedures (CCP). Effective April 2001, diagnoses and procedures are recorded using five-digit codes based on the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Canada (ICD-10-CA) and the Canadian Classification of Health Interventions (CCI).

Inpatient medical records are stored in the facilities. Health authorities have permitted access to medical records in their facilities, under certain conditions, for validation (see Section III).

MEDICAL SERVICES DATA

All members of the covered population are eligible to receive benefits for insured medical services including anesthesia, diagnostic, obstetric, and surgical services. A small number of medical services are not insured (e.g., cosmetic surgery, examinations for employment or insurance purposes).

Data collected are based primarily on physicians' claims for payment on a fee-for-service basis. There are also a number of physicians on other payment arrangements (e.g., salary, contract). Under these arrangements, physicians may submit shadow or dummy billings, however, not all services provided may be captured consistently. Data are accessible from 1975 forward.

In addition to the above, data are also available for a limited number of other services (e.g., chiropractic, optometric and insured dental services).

Medical claims data include:

1. Patient Information
 - health services number
 - age, sex
 - location of residence
 - indicator for registered Indian status
2. Physician Information
 - physician specialty
 - referring physician, if applicable
 - physician identification number (which can be linked with the physician registry for additional information such as physician's age, gender, place and year of graduation, and practice type)
3. Services and Diagnostic Information
 - date of service
 - service code
 - type of service
 - diagnosis
 - location of service (e.g., office, inpatient, outpatient, home, or other)
 - payment information (e.g., amount paid, date of payment).

In data prior to 1979, diagnoses are reported using three-digit codes based on the International Classification of Diseases, Eighth Revision (ICD-8). Since 1979, diagnoses are reported using three-digit ICD-9 codes.

Service codes (billing codes) are established through consultation between Saskatchewan Health and the Saskatchewan Medical Association.

Information on the program features and annual service utilization is available in the Medical Services Branch Annual Statistical Report.

CANCER REGISTRY

The Saskatchewan Cancer Agency (SCA) provides a program which encompasses the prevention, early detection, diagnosis, treatment, and follow-up as well as research and education for malignant or premalignant disease. Provincial legislation mandates that information from medical professionals and hospital records required to complete the cancer registration must be provided to the Saskatchewan Cancer Agency (SCA). The cancer registry was established in 1932 and includes records for all people in the province diagnosed with cancer. Patients who move out of the province receive continued surveillance through correspondence with the patient or, in some cases, the appropriate cancer clinic within Canada. All cases of invasive cancer, except nonmelanoma skin cancers, are maintained on a follow-up program for a minimum of 10 years. The rate of loss-to-follow-up has been less than 2% since 1932.

Complete computerized data for all cancer sites are available since 1967. For research purposes, data are usually only used from 1970 forward because these data have been used more and are considered more stable than the 1967 to 1969 data.

Basic information contained in the cancer registry includes:

1. Patient Information
 - health services number
 - name
 - sex
 - date and place of birth
 - address
 - marital status
2. Case Information
 - registration information (including tentative diagnosis, height, and weight, referring and family doctors)
 - final diagnostic information (ICD-O, behaviour, grade)
 - staging information (as reported but most complete for breast and colorectal)
 - collaborative staging (starting in 2005, for breast, colorectal and prostate cancer)
 - metastases at diagnosis
 - date of diagnoses
 - method of diagnosis
 - diagnostic confirmation (effective for 2004 cases forward)
 - pathology report and hospital record numbers
 - type of surgery, chemotherapy and radiotherapy treatment indicators at diagnosis (within four months)
 - disease status (with or without evidence of disease at end of treatment)
 - follow-up type
3. Review Information
 - review date
 - physician identifier
 - type of review
 - recurrence, metastases, and treatment information (surgery, chemotherapy, radiotherapy)
 - performance status
 - disease status
 - weight

4. Death Information (as reported by Vital Statistics)

- date and place of death
- primary and secondary cause
- disease status at death
- autopsy status.

VITAL STATISTICS

All birth, death, stillbirth, and marriage data are collected by Information Services Corporation of Saskatchewan (ISC) in the Vital Statistics Registry.

Live birth registrations record obstetrical and infant information. Completion of the Live Birth Registration Form is the responsibility of the family. Although health information regarding the infant is not captured on this form, some information regarding the health of the infant, especially major congenital anomalies, may be found in the hospital services database because most births (over 98%) occur in a hospital. Stillbirth registrations include a Medical Certificate of Stillbirth that is completed and signed by a physician or coroner.

Cause of death is recorded by a physician or coroner on a Medical Certificate of Death form. The causes of death recorded on this form are keyed electronically and an algorithm is applied to determine the underlying cause of death in accordance with World Health Organization criteria. If updated information such as an autopsy diagnosis is received, it takes priority over the previously submitted Medical Certificate of Death information. For events occurring up to and including 1999, four-digit ICD-9 codes are used to report cause(s) of death; since January 2000, coding is based on the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10).

Although Vital Statistics data prior to 1992 do not include the HSN, those records can be searched by name or by the Vital Statistics registration number for linkage with other databases.

OTHER DATABASES

A variety of other health services data exist. The tenure and completeness of the information in these databases are variable, and the suitability of these data for research would be dependent on the particular project.

III. USE OF MEDICAL RECORD INFORMATION

Hospital record abstraction has been used for a number of studies to collect additional information to complement or validate information derived from the administrative databases. Records in hospitals are accessible upon approval from individual RHA boards and affiliated facilities. Records are accessed by Saskatchewan Ministry of Health personnel. Personal identifiers are available to the abstractor but are removed before information leaves the facility. The final records are coded with a pseudo-identifier. Record retrieval rates have been excellent and typically exceed 95%.

IV. USE OF SURVEY INFORMATION

Information collected directly from study subjects may be linked with the individuals' health services data with consent of the individual.

The consent form must address the Ministry's requirement for informed consent. Researchers are strongly encouraged to consult with Ministry staff during development of the consent form.

V. GUIDELINES FOR USE OF THE DATA

Researchers interested in using the data may submit proposals to the Ministry of Health. Criteria and procedures are in place that enable the use of the data while maintaining the confidentiality and integrity of the databases.

All data linkage projects must be reviewed and approved by the Ministry's Data Access Review Committee (DARC). The Committee reviews proposals from two perspectives:

- to ensure that the provision of data, as requested, is technically feasible and to identify any peculiarities in the data that may impact on the research (e.g., changes drug coverage over time); and
- to ensure that confidentiality will be maintained and that the fiduciary relationship the Minister of Health and the Ministry of Health jointly have as a trustee of personal health information is respected and maintained.

The criteria for research use of data are as follows:

- Researchers shall not be given direct access to any of the files and shall not be given identifiable information in any form except with the consent of the individual (e.g., names and addresses of patients, clients, or service providers).
- Information collected directly from study subjects will not be linked with the administrative data without the informed consent of the study subjects.
- To prevent individuals from being identified through combinations of data, a minimum cell size is applied to all data release (e.g., if fewer than five individuals fall within the same set of variables, such as people age 85 at a given postal code, then further aggregation would be required to prevent possible identification).
- Data will only be provided on a need-to-know basis, determined through specific, well-defined research purposes.

Research projects which require linkage with data not maintained by the Ministry of Health (e.g., cancer registry data collected by the Saskatchewan Cancer Agency; hospital record information residing in health authorities) require approval by an approved research ethics committee.

The terms and conditions for the release of data for research are stated in a formal Agreement signed by the Province and the researcher.

All use and release of information is subject to the terms and conditions of *The Freedom of Information and Protection of Privacy Act* and *The Health Information Protection Act*.

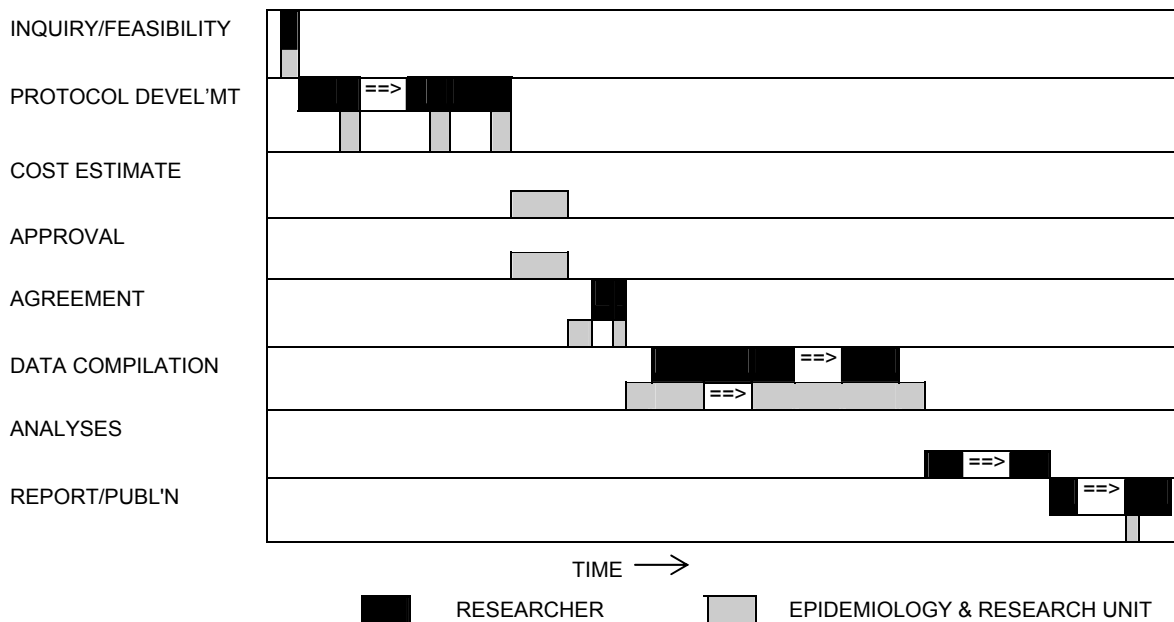
VI. PROCESS FOR USING THE DATA

Researchers interested in using information from Saskatchewan's health services databases should contact the Epidemiology and Research Unit, Population Health Branch to discuss the project. A written proposal must be submitted and should include:

- name, address, research qualifications, and experience of the principal investigator and any collaborating investigators;
- information on the working hypotheses and objectives of the proposed research project;
- a detailed description of the proposed methodology including: proposed measures and variables; data collection; data analysis;
- a detailed description of the output being requested (e.g., a description of the tables required or, if requesting a customized, summary dataset for statistical analyses off-site, a detailed description of the variables to be included in the dataset).

A cost estimate for each project will be determined in advance based on requirements outlined in the protocol; changes made to the protocol after the estimate has been provided will be evaluated to determine the impact on the charge. Prior to starting work on the project, a formal Agreement will be signed by both the Province and by the researcher. (A sample of the standard contract is available on request.)

The stages of a typical project are summarized below:



Interested researchers should contact the Epidemiology and Research Unit (see Page i for contact information).

VII. PUBLICATIONS AND TECHNICAL REPORTS

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