Data Quality in the Therapeutic Abortion Survey – 2003

(Survey number 3209)

Background

The Therapeutic Abortion Survey was originally designed to measure all legally induced abortions performed in Canada (and to the extent possible, abortions performed in the US on Canadian residents). Statistics Canada was responsible for the survey up to the 1994 data year. As of the 1995 data year, the Canadian Institute for Health Information (CIHI) assumed data collection, compilation and processing responsibilities. Statistics Canada remains involved in the approval of the final annual file and plays a major role in the dissemination of data from the survey.

Data sources

There are several data sources and formats used in the creation of the Therapeutic Abortion Survey database. CIHI obtains data from provincial/territorial/state departments of health, or directly from hospitals and clinics.

Depending upon the source, the format can also vary from a single sheet of paper with aggregate counts to detailed electronic records submitted through the Discharge Abstract Database (DAD).

The reconciliation of various data sources and formats has the potential to affect accuracy. For example, 1) lack of standardization increases the potential for variations in definitions and concepts, such as the calculation of gestation period; 2) an increased risk of data entry errors when processing paper reports; 3) loss of detail when mapping values used in one collection system to that used in the Therapeutic Abortion Survey. A continuous high level of data quality surveillance is necessary.

As of the 1999 data year, the DAD is being used as the data source for hospital abortions for those provinces that submit to the DAD. This move has resulted in increased standardization and quality control.

See Table A-1 in the Appendix for individual provincial/territorial sources and formats.

Coverage

CIHI estimates that the Therapeutic Abortion Survey database represents approximately 90% of all abortions performed in Canada involving Canadian residents.[1] Coverage improved even more in the 2001 data year due to the submission of counts from a facility in British Columbia that had previously not participated in the survey. Although 90% of

[1] Canadian Institute for Health Information. Privacy impact assessment of the Therapeutic Abortions Database. June 2003. Page 4.

abortions are accounted for in the database, many of these abortions are reported only as aggregate counts. See the next section on Unit and Item Response.

At the national level, the percentage of abortions performed on non-residents of Canada that are included in the database is not known. The percentage of abortions performed in the United States on Canadian residents that are represented in the survey's database is also not known.

Limitations to Coverage

1. Medical (pharmaceutical) abortions: With the recent introduction of medical abortions, it is becoming increasingly difficult to ensure the collection of data on all induced abortions. For example, it is not known if medical abortions are being initiated in physician offices, in addition to the traditional locations of hospitals and clinics. The Therapeutic Abortion Survey currently collects information on abortions performed in hospitals and clinics.

2. Non-residents: Information on hospital abortions performed on non-Quebec residents in Quebec is available for only those cases for which a detailed record was submitted. As of the 1999 data year, Ontario clinic abortion statistics include insured residents of Ontario only. The ministries of health in Quebec (hospital and clinic abortions), and Ontario (clinic abortions) are assumed to report only abortions on insured residents of their province. As well, there is a question of whether the counts of insured abortions have a cap. [See next section on Unit and Item non-response for more details on the current situation in Ontario.] In 2001, private clinics in British Columbia stopped reporting the residency of patients, thus eliminating information on non-residents receiving a clinic abortion in that province. Since 2002, however, British Columbia has also provided broad residency information: Canadian or International. All counts indicated as Canadian were assigned a residence of British Columbia; the international counts were assigned to the non-resident of Canada category.

3. Survey frame: Frame validation and maintenance of the survey is a complex procedure because many data sources are involved. CIHI maintains and validates as much as possible the list of facilities it receives from its data sources (e.g., DAD, ministries of health). Detecting facility non-response is a continuing major challenge due to the many changes made to facility numbers due to mergers and closures. Facility-specific frames are not available for data sources that submit counts.

4. United States reports: On average, CIHI receives reports from 13 American states, mainly those situated along the Canada-US border. For example, for data year 2003, CIHI received reports from Hawaii, Idaho, Maine, Michigan, Minnesota, Montana, New Mexico, New York state, North Dakota, South Dakota, Oregon, Vermont and Washington state. No reports are received from states such as Massachusetts, Connecticut, Ohio, Pennsylvania, Florida and California.

5. Prince Edward Island has not reported to the Therapeutic Abortion Survey since 1983, mainly because non-emergency abortions are not allowed in Prince Edward Island. Cases of the occasional emergency abortion are not reported.

6. Survey not treated as mandatory: Coverage of abortions performed in Canada was considered to be 100% prior to 1988. In January 1988, the Supreme Court of Canada struck down the 1969 abortion law, and some hospital and provincial ministry respondents interpreted this action as the basis for no longer having to report to the Therapeutic Abortion Survey. The law had included a provision enabling provincial ministries of health to obtain abortion data from hospitals. At the federal level, however, Statistics Canada surveys (including the Therapeutic Abortion Survey) are mandatory unless otherwise specified, but Statistics Canada chose to treat the Therapeutic Abortion Survey as 'voluntary' but encouraged respondents to continue to supply data for health-related purposes.

7. Nunavut reported data for only the last three months of 2002 and the first nine months of 2003. As a result, statistics for those years exclude Nunavut.

Unit and Item Non-response

There are no known instances of complete non-response. That is, the survey obtains at least some response from identified respondents. The type of response, however, ranges from the provision of aggregate counts of abortions performed to detailed records for each abortion case. This range in type of response is the major limitation of the Therapeutic Abortion Survey.

Induced abortions by type of facility

Reference Year	Type of facility	Number of Abortions	Percentage with detailed records
1998	Hospital	68,290	69%
	Clinic	42,230	48%
	Total	**110,520**	**61%**
1999	Hospital	63,832	71%
	Clinic	42,030	11%
	Total	**105,862**	**47%**
2000	Hospital	63,535	72%
	Clinic	42,134	11%
	Total	**105,669**	**48%**
2001	Hospital	61,259	71%
	Clinic	45,239	12%
	Total	**106,498**	**46%**
2002	Hospital	58,536	72%
	Clinic	46,999	16%
	Total	**105,535**	**47%**
2003	Hospital	56,089	72%
	Clinic	47,530	13%
	Total	**103,619**	**45%**

The number of submissions of aggregate counts instead of individual records is increasing. In reference year 1998, only 61% of total reported abortions had individual records. In 1999 this percentage fell to 47%, largely due to the absence of detailed records for abortions performed in clinics in Ontario. In 2003, 45% of abortions were reported with detailed records.

The Therapeutic Abortion Survey identifies the type of facility in which the abortion was performed (i.e., hospital or clinic). The table shown above indicates that the increased submission of aggregate counts is mainly a problem with clinic abortions. This is definitely a concern, especially since the proportion of clinic abortions to total abortions is rising. In 1996, abortions performed in clinics represented 33% of total abortions and rose to 46% in 2003.

All hospital abortions, with two exceptions, are reported in individual record format. British Columbia submits counts aggregated by age group and initial procedure. In 2003, only 53% of hospital abortions performed in Quebec were reported with detailed records.

On the clinic side, as of 1999, Alberta became the only province that submits detailed records. Previously, Ontario had been the only other province that submitted detailed records for clinic abortions. In 1999, Ontario began to report only aggregate counts of clinic abortions based on the provincial billing information. Prior to 1999, Ontario's data collection methodology provided complete demographic and medical information on women obtaining abortions in clinics in that province. A comparison of data obtained from the old and new sources for the years 1995 to 1998 revealed undercoverage of about 5.5% per year. The undercoverage was mainly attributed to uninsured services, which are excluded from the counts. The new data source is based on claims made by the physicians, which does not include cases where the patient has paid out-of-pocket for the services. It also excludes cases of residents from other provinces obtaining abortions in Ontario.

Item Non-Response

The analytical data elements found on the detailed record are:

- Province of report
- Facility information (clinic or hospital)
- Province of residence
- Age in single years
- First day of last menses or gestation in weeks
- Date of abortion
- Complications
- Inpatient days of care
- Number of previous deliveries
- Number of spontaneous abortions
- Number of induced abortions
- Initial procedure
- Subsequent procedure
- Type of sterilization

As illustrated in the previous table, detailed records were submitted for only 45% of abortions performed in 2003. Detailed records have virtually 100% response at the item level.

In cases where only counts are submitted instead of detailed records, the counts are aggregated by age group and/or surgical procedure. For example, the British Columbia ministry of health submits counts of hospital and clinic abortions aggregated by age group and initial procedure. Quebec supplies aggregate counts by age group for all clinic abortions and approximately 47% of hospital abortions. Ontario counts of clinic abortions are aggregated by age-group.

Impact of item non-response

a) Area of residence

Only aggregate counts are supplied for abortions performed in British Columbia. The two sources of data from that province are the ministry of health and private clinics. The ministry of health supplies counts aggregated by age group and initial procedure. Records are generated from these counts, and a residence of British Columbia is assigned to all records. [Since 2002, however, British Columbia has also provided broad residency information: Canadian or International. All counts indicated as Canadian were assigned a residence of British Columbia; the international counts were assigned to the non-resident of Canada category.] Prior to data year 2001, the private clinics reported the number of non British Columbia residents. As of 2001, however, the clinics no longer supply residency information, thus all records are now assigned a residence of British Columbia.

b) Age group imputation:

Age group is the only other data element for which a value other than unknown or unspecified is imputed. This information is required for input into the calculation of pregnancy statistics, especially teen pregnancy.

- The ministries of health in British Columbia, Quebec, and Ontario as of 1999, supply counts by age group. For clinic counts where no age group breakdown is provided, an age group is imputed using the known age group distribution observed in hospital abortions. Counts from clinics that do not supply age group constitute approximately 2% of total abortions performed in Canada in 2003.

- Age in single years (which is available only on detailed records) is important in the calculation of teenage pregnancy. Respondents who submit aggregate counts by age group provide counts for only one teen group: 15-19. However, teenage pregnancy statistics are presented in the subgroups 15-17 and 18-19 years of age because the experiences of the 15-17 age-group are known to be different from the 18-19 age-group. Therefore, estimations are done to subdivide the 15-19 year old age group that is reported or imputed in the Therapeutic Abortion Survey

database. Estimations are done using the same methodology used to impute age groups in the database; that is, the known age distribution (in single years) for hospital abortions is applied to those abortions that were reported as counts.

- For PEI residents obtaining an abortion in another province/territory that reports only counts by residency, the national age distribution is used.

- Counts of abortions performed in the US on Canadian women are submitted by age group. In 2003, there were 149 reports received from the US.

c) Diminishing Core Data Set

Although the survey's database contains some demographic and medical information, it is increasingly difficult to respond to requests since only 45% of total abortions contain detailed information. Requests for information on, for example, the percentage of reported complications by age group of mother, or gestation period of the fetus can only be fulfilled by using detailed records. Therefore, clients are always informed that such statistics are based only on detailed records. This is more of a problem when looking specifically at clinic abortions.

The current challenge is to provide at least a minimal data set at the national level. Beyond this goal, there are many client requests that the survey cannot meet. For example, the survey does not collect data elements such as education or income level of mother, reason for the abortion, and any complications arising after discharge.

Identifying and correcting errors

Detailed records submitted to the survey undergo an edit process. The edit system checks for internal consistencies, compatibilities and completeness of each data item reported. There are 29 edits and 39 cross-edits. The edit system is reviewed and updated periodically. In calendar 2003, the number of errors detected at the initial edit process was 1,814 (3.9%) out of 46,528 detailed records. These errors consist of ‘hard’ errors in which the reported values are invalid and ‘soft’ errors in which the reported values should be confirmed.

Error reports are generated for the facilities that supplied detailed records. These reports are sent to the applicable ministries of health. If corrections are provided, revisions to the data are made. In the absence of any further clarification, invalid codes are changed to a default value 'Unknown'. In calendar 2003, there were 361 records (0.8% of total detailed records) that contained invalid data defaulted to ‘Unknown’.

Upon receipt of a clean file and supporting documentation from CIHI, Statistics Canada carries out a series of quality checks that include: 1) reviewing the record layout and data processing reports, 2) producing basic tabulations to ensure that STC and CIHI results are the same, 3) checking for internal consistencies, e.g. running frequencies on certain data elements, and 4) comparing the most recent data year with past data years to detect any

unusual or unexpected changes. After Statistics Canada approves the final file, a public release is announced in *The Daily*.

Other Accuracy Issues

1. Internal provincial discrepancies have been detected in cases where there are two data sources for the same abortion event. In British Columbia and Quebec, some clinic abortions are reported by the respective ministry of health and by the clinic that performed the abortion. CIHI reconciles these numbers, and if a discrepancy is found, the higher number is used.

2. The gestational age is about a week later when the gestation age is calculated from date of last menses than when gestational age is reported as the number of weeks of gestation. The problem is with the rounding method used in calculating weeks rounded from the date of last menses. This problem is significant, as gestation period appears to be gradually shifting down as more records (especially those obtained from the download from DAD) have clinical gestation reported rather than date of last menses.)

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APPENDIX

Table A-1: Therapeutic Abortion Survey Sources, 2003 reference year

Province/Territory	Facility Type	Source	Mode of Submission	Level of detail
Newfoundland	Hospitals	Hospitals	Electronic	All data elements
	Clinics	Clinics	Paper form	Aggregate counts
Prince Edward Island [1]				
Nova Scotia	Hospitals	Hospitals	Electronic	All data elements
	Clinics	Clinics	Paper forms	Aggregate counts
New Brunswick	Hospitals	Hospitals	Electronic	All data elements
	Clinics	Clinics	Paper forms	Aggregate counts
Quebec	Hospitals	Ministry of Health	Paper forms and Electronic	A combination of aggregate counts and all data elements
	Clinics	Clinics and Ministry of Health	Electronic	Aggregate counts
Ontario	Hospital	Hospital	Electronic	All data elements
	Clinics	Ministry of Health	Electronic	Aggregate counts
Manitoba	Hospitals	Ministry of Health	Electronic	All data elements
	Clinics	Clinics	Paper forms	Aggregate counts
Saskatchewan	Hospitals	Hospitals	Electronic	All data elements
Alberta	Hospitals	Ministry of Health	Electronic	All data elements
	Clinics	Ministry of Health	Electronic	All data elements
British Columbia	Hospitals	Ministry of Health	Electronic	Aggregate counts
	Clinics	Clinics and Ministry of Health	Electronic and Paper forms	Aggregate counts
Yukon	Hospitals	Hospitals	Electronic	All data elements
Northwest Territories	Hospitals	Hospitals	Electronic	All data elements
Nunavut [2]	Hospitals	Hospitals	Electronic	All data elements
US Reports	Type of facility not stated	State departments of health	Paper forms	Aggregate data

1. Prince Edward Island has not reported to the Therapeutic Abortion Survey since 1983.
2. In 2003, Nunavut reported abortions for only the last nine months of the year. As a result, Nunavut data are excluded from abortion statistics for 2003.