

Data Impact Challenge Answer Submission Template

(Diagnostic Imaging Exams)

Template:

- Question:
“What is the rate of repeated diagnostic imaging tests within a (90) day period?”

Team and list of all team member names:

(all team members must have agreed to challenge rules through registration)

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Describing the Data and Analysis

- Data Custodian Organization(s) and data sources:
Alberta Health
- List of Datasets Used (e.g. names of database and/or data origins):
Alberta Health Care Insurance Plan (AHCIP) Physician Claims Database, Alberta Health Ambulatory Care Data, Alberta Health
Alberta Hospital Discharge Abstract Databases (DAD), Alberta Health

- Exclusions:

The information provided was not restricted to Alberta registrants. Instead, all individuals who received inpatient, ambulatory care services, or had reported provider claims within Alberta were included in the data. However, individuals with a Personal Health Number (PHN) of zero (i.e. insured resident of Alberta but PHN missing) or missing in the Inpatient or Ambulatory Care data were excluded. Similarly, individuals with a missing unique lifetime identifier (ULI) in the Claims data were also excluded.

- Nature and Size of Cohort (e.g. geographic area covered, number of patients included):

All Alberta residents or otherwise with a reported non-zero PHN, who presented to Alberta hospitals or ambulatory care facilities for a diagnostic imaging (DI) related intervention are included in the information provided below. In addition, in-province reported provider claim information for the same cohort of individuals is provided separately.

- Data timeframe:

The information is provided for a number of 15-month time periods in order to allow for a full year of data (with at least 90 days within which a repeated DI intervention can occur) to be

captured in each period. Three such periods were selected for data provision (Apr 1, 2011 – Jun 30, 2012; Apr 1, 2012 – Jun 30, 2013 and Apr 1, 2013 – Jun 30, 2014).

- Please provide a brief summary of the analysis methodology:

Ambulatory care, inpatient and claim information related to DI exams was extracted for each of the three periods of interest. DI exams were tracked through the Canadian Classification Index (CCI) codes in ambulatory care and inpatient data, and through CIHI CCP extended health service codes (CCPX) for physician claims data. Since a one-to-one mapping could not be established between the two classifications systems results were provided separately for the two sets of data. The codes CCI codes used for DI exams were “3AF – 3ZZ”, while the CCPX codes used were those starting with an “X”.

All intervention codes and associated intervention dates were captured as distinct records in the ambulatory and inpatient data. The data was subset on and the ambulatory care and inpatient data was grouped together into one dataset. The data was then subset on DI exam codes; ambulatory care and inpatient data was grouped together into one dataset. Physician claims data was left as is since each claim record had only one CCPX health service code associated with it.

Individual records with missing or zero PHNs, or missing ULIS were omitted from each dataset (ambulatory care and inpatient grouped; respectively, claims).

The DI information for the 15-month periods was retrieved as follows. All DI data from the first full year of the period was retained. For individuals with these records, further DI related records within the first 3 months of the following fiscal year were retrieved and added to the first fiscal year of DI records.

DI exams with either the same CCI code or the same CCPX code, which occurred within 90 days from the previous exam for a particular individual, were flagged as repeated. This flag was used to compute the total number of repeated DI exams during each period, which when dividing by the overall number of exams within each period yielded the desired proportion of repeated DI exams. Different proportions were calculated for ambulatory and inpatient combined, and separately for claims (for each of the three time periods).

Describing the Findings

- Numerator and Denominator (as specified in the question definition)

Numerator: Number of repeated same DI exams within 90 days’ time, reported either in Alberta ambulatory/inpatient settings, or captured through provider billings.

Denominator: Total number of DI exams diagnostic imaging exams within 90 days’ time, reported either in Alberta ambulatory/inpatient settings, or captured through provider billings.

- Please also provide a brief summary of the findings including any key limitations or interpretation issues (may also include one figure/table)

For the most recent time period (Apr 1, 2013 – Jun 30, 2014), the proportion of repeated same DI exams reported through Alberta ambulatory care and hospital facilities was 16.54%. When looking at the trend over time, the proportion increased gradually from 15.71% in period 1 to 16.54% in period 3. A similar trend was seen in the in-province (AB) provider claims data, where the proportion of claims with repeated DI related health service codes within 90 days was 6.55% in Apr 1, 2011 – Jun 30, 2012 and 7.25% in Apr 1, 2013 – Jun 30, 2014.

Note: When restricting the data to individuals residing in Alberta the proportions remained virtually unchanged.

Ambulatory & Inpatient Data	Period 1: Apr 1, 2011 – Jun 30, 2012	Period 2: Apr 1, 2012 – Jun 30, 2013	Period 3: Apr 1, 2013 – Jun 30, 2014
Number of Distinct Individuals	844,005	878,256	907,681
Number of Repeated DI Exams Within 90 Days	353,154	382,239	401,738
Number of DI Exams	2,247,434	2,338,450	2,429,590
Proportion of Repeated DI Exams Within 90 Days	0.1571 (15.71%)	0.1635 (16.35%)	0.1654 (16.54%)
Provider Claims Data	Period 1: Apr 1, 2011 – Jun 30, 2012	Period 2: Apr 1, 2012 – Jun 30, 2013	Period 3: Apr 1, 2013 – Jun 30, 2014
Number of Distinct Individuals	1,045,893	1,075,249	1,144,480
Number of Repeated DI Exams Within 90 Days	201,500	225,441	258,136
Number of DI Exams	3,075,289	3,225,052	3,560,784
Proportion of Repeated DI Exams Within 90 Days	0.0655 (6.55%)	0.0699 (6.99%)	0.0725 (7.25%)

- Limitations:

Ambulatory care data diagnostic imaging exams are reported using CCI intervention codes and the reporting of these codes is required (if DI is performed) because it impacts the way in which the record is grouped in CACS methodology. On the other hand, in the inpatient data, reporting of DI interventions is not mandatory because there is little to no impact on CMG+ grouping. As such, the DI interventions in the inpatient data are underreported. In addition, private setting data is not reported in inpatient and ambulatory care data.