



# **Inpatient Data Quality Re-abstraction Project**

## **Executive Report**

**July 2004**

## **ACKNOWLEDGEMENTS**

The results of this study could not have been achieved without the support provided by the sites participating in the review, the coding specialists, and the review study partners.

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## 1 BACKGROUND

Data is becoming increasingly important in today's healthcare environment. The significance of complete and accurately reported data is growing with its intensified use for research, epidemiological studies, outcomes and statistical analyses, evaluation of quality of care, strategic planning, and equitable funding allocations.

In order to assess the quality of reported inpatient data in Alberta, the Canadian Health Information Management Association (CHIMA) and the Alberta Health Record Association (AHRA), in collaboration with the Canadian Institute for Health Information (CIHI) completed the Alberta Inpatient Data Quality Re-abstraction Study on behalf of Alberta Health and Wellness (AHW). The goal of the study was to evaluate the accuracy and consistency of inpatient data reported by the selected health regions to AHW and to identify areas for potential data quality enhancement based on the selection criteria defined by AHW.

The objectives of the study were:

- To identify areas of coding excellence and opportunities for data quality improvement;
- To establish the level to which coded inpatient data can be used with confidence;
- To determine if there are variances in coding practices between urban, regional, and rural facilities within patient record types included in the review;
- To establish a baseline to compare future results;
- To identify education session topics that would foster professional growth for coding practitioners; and
- To identify areas where additional coding standards and data quality edits would enhance data quality.

The following activities were performed to complete the re-abstraction process:

- Patient records from 2002/2003 fiscal year were randomly chosen by CIHI from eight selected Alberta facilities based on selection criteria defined by AHW;
- Seven Health Information Management (HIM) professionals from the province were seconded to the project and completed a one-week training session provided by CIHI;
- In teams, the coding specialists visited eight facilities, including four urban, two regional, and two rural facilities, and re-abstracted a total of 1152 records, an average of 144 records at each site. The coding specialists used a software re-abstraction application provided by CIHI to assign discrepancy and reason codes to all diagnosis and intervention coding variances;
- Data processing, verification and error checking were performed by CIHI;
- Results of the comparison of original and re-abstracted data were reported by CIHI for the three levels of facilities participating in the review (i.e., urban, regional, and rural) and for each individual site;
- Three HIM professionals, representing the AHRA, analyzed the tables and reported observations; and
- CHIMA reviewed the information and developed three study reports, which included key findings, recommendations, and next steps.

### 1.1 What Is A Re-Abstraction Review

HIM professionals employed by facilities are specialists trained to collect health data by capturing defined data elements and coding data using national diagnoses and intervention coding classification schemes. These coding schemes are ICD-10-CA (International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Canada) and CCI (Canadian Classification of Health Interventions), which were implemented in Alberta for inpatient and ambulatory care data collection commencing with 2002/2003 fiscal year. The process of coding diagnoses and interventions and collecting prescribed data elements is termed “coding and abstracting.”

In a re-abstraction review, patient records previously coded and abstracted are re-coded and re-abstracted by specially trained coding specialists. The results are then compared to the information contained in the original submission stored in CIHI’s Discharge Abstract Database (DAD).

### 1.2 Site Selection

In order to include a broad range of facilities in the review, the following criteria were used for the selection of the eight facility sites:

- Sites must be from various facility types, locations (i.e. northern, central, and southern Alberta), health authorities, and sizes;
- Sites must be from urban and non-urban health authorities;
- Some sites must have a large volume of discharges to be more reflective of inpatient activity reporting; and
- Sites must not have participated in CIHI’s 1999/2000 or 2000/2001 Discharge Abstract Database (DAD) Data Quality Re-abstraction Study.

### 1.3 Patient Record Selection Criteria

It was decided to re-abstract patient records from the 2002/2003 fiscal year as this was the first year that the ICD-10-CA and CCI Classification systems were used in Alberta for inpatient and ambulatory care coding and abstraction. Re-abstracting data from a previous fiscal year, which was reported using the ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) classification system, would limit comparative results for future re-abstraction reviews where data would be reported using ICD-10-CA/CCI. The 2002/2003 data was also the most current complete fiscal year of data available.

Selection criteria were developed in order to determine which patient records to include in the re-abstraction initiative. Based on the study objectives the following four criteria were chosen:

- Short Stay - Records with actual length of stay less than 80% of the estimated length of stay for typical cases (those where the patient received a course of treatment in a single institution and was discharged);
- Signs and Symptoms - Records with two or more signs and symptoms (S&S) diagnoses reported as pre or post admission co-morbidities i.e. assigned a Diagnosis Type of 1 or 2;
- Medical - Records grouped to a Major Clinical Category in the medical partition of the 2002 Grouper; and
- Surgical - Records grouped to a Major Clinical Category in the surgical partition of the 2002 Grouper.

CIHI randomly selected records reported by the study sites from each of the four selection criteria. Because records could meet multiple selection criteria CIHI made them mutually exclusive and exhaustive by assigning the records to the one criterion group for which they were chosen and by which they could be split out and analysed. In this way, weighted estimates from the study will be representative of all patient types for these eight facilities.

A total of 1100 records was targeted for re-abstraction because it was thought that this was a manageable number of records for an initial review while still providing a credible baseline on which to compare future reviews. This sample was initially divided into 150 records for each urban and regional facility, and 100 records for each rural facility.

However, in order to compensate for unavailable patient records and potential increased re-abstraction productivity by coders, additional patient record numbers were selected. For each urban and regional facility, 40 additional records were selected. For each rural facility, 30 additional records were selected. This gave a total of 1400 records that were randomly selected for re-abstraction.

Table 1 shows the target number of records to be re-abstracted at each facility along with the actual number of records selected and total number of records re-abstracted. There were 1152 records re-abstracted, exceeding the target number of 1100 records by 4.7%.

**Table 1** Response rates for record selection per facility

Institution	Facility Type	Number of Re-abstractors	Target Number of Records	Actual Number of Records Selected	Number of Records Re-abstracted	% of Target Records Re-abstracted
1	Urban	3	150	190	152	101.3
2	Urban	3	150	190	175	116.7
3	Urban	3	150	190	122	81.3
4	Urban	3	150	190	154	102.7
5	Regional	3	150	190	152	101.3
6	Regional	3	150	190	150	100.0
7	Rural	2	100	130	129	129.0
8	Rural	2	100	130	118	118.0
<b>Total Records</b>			<b>1100</b>	<b>1400</b>	<b>1152</b>	<b>104.7</b>

Table 2 provides a breakdown of the number of records re-abstracted for each of the four selection criteria.

**Table 2** Counts of re-abstracted records by selection criteria

Selection Criteria	Number of Records Re-abstracted	Weighted Estimates
Actual length of stay less than 80% of estimated length of stay	256	41,766
Two or more signs and symptoms with diagnosis types of 1 or 2	139	1,528
Medical CMG assignment	378	27,533
Surgical CMG assignment	379	31,359
<b>Total</b>	<b>1152</b>	<b>102,186</b>

The number of records selected for each indicator was allocated as equally as possible among the participating facilities.

More medical and surgical records were chosen for re-abstraction because of their known proportionately large volume across all facilities. Re-abstraction findings from these records would help provide an overview of general coding and abstracting practices.

The records re-abstracted in the study were weighted to accurately reflect the distribution of records at the facility from which they were chosen. The weighted records were used to obtain estimated values and it is on these estimated values that data analyses were performed. **It is important to note that the estimated values pertain only to the sites involved in the review and cannot be generalized to represent provincial reporting.**

To achieve the objective of helping AHW understand the observed variation in facility case mix, the review identified the major causes of the variation and quantified their respective impacts on Resource Intensity Weight (or RIW<sup>TM 1</sup>) and Expected Length Of Stay (ELOS) values.

Also presented in this report are a series of recommendations on how to best improve the quality of Alberta's acute care clinical data. The recommendations suggest a broad course of actions that affect AHW, CIHI, CHIMA, AHRA, Regional Health Authorities, and the College of Physicians and Surgeons of Alberta. It is clear that the active support of each of these stakeholder groups is essential if the quality of inpatient data is to be improved and the data is to be applied effectively to planning, evaluative, and funding activities.

<sup>1</sup> Registered trade-mark of the Canadian Institute for Health Information

## 2 FINDINGS<sup>2</sup>

### 2.1 Resource Intensity Weights and Expected Length Of Stay

#### What they are and how they are used

##### Resource Intensity Weights

The Resource Intensity Weight (RIW™) system is a relative resource allocation methodology for estimating a facility's inpatient specific costs. Resource refers to the total facility service cost. Intensity refers to the amount of services utilized. Weight refers to the relative value of each case compared to the "average case," which is the value of "1.000". The RIW methodology is used to standardize the expression of facility case volumes recognizing that not all patients require the same health care resources. RIW values are not dollar values. RIW values indicate expected relationships of costs between patient types. They establish the relative weights for the "average patient". In using the RIW system/values, it is then possible to determine how much or less than the average each patient costs, or to monitor utilization of acute health care services. The RIW methodology measures the relative cost of acute care resources by patient types. By applying RIW values, volumes can be expressed in terms of weighted cases.

For typical inpatient cases, RIW values are calibrated based on the Case Mix Group (or CMG™) level and the complexity/age split that a particular record falls into.

RIW values have been used in Alberta's population based funding since the 2001/2002 funding year. An RIW multiplier - i.e., dollars per RIW value - is calculated for every funding year. For example, for the 2004/2005 funding year (based on 2002/2003 inpatient data), the RIW multiplier in Alberta was \$4003. In order to attach a dollar value to each inpatient record, the RIW value for every record is multiplied by the RIW multiplier. The resulting dollar value is then used to calculate inpatient funding capitation rates which are then used in the population-based funding formula.

The following table reflects the summary of RIW changes by facility type:

**Table 3 Summary RIW changes by facility type**

	Medical	Signs & Symptoms	Short Stay	Surgical	Total
<b>All Facilities</b>	0.1420	0.0733	-0.0951	-0.0054	-0.0012
<b>Urban</b>	0.1550	0.0504	-0.1038	-0.0042	-0.0026
<b>Regional</b>	0.1006	0.6853	-0.0525	-0.0247	0.0079
<b>Rural</b>	0.0749	-0.7804	-0.0758	0.0430	-0.0018

The original RIW (a value that depicts the "weighted" average cost of a patient) in the DAD was 1.5079 and the re-abstracted RIW was 1.5067 for a difference in RIW of -0.0012 (decrease of .08% in average RIW value).

<sup>2</sup> Note: a) Table and figure totals may not sum due to rounding; b) Project findings pertain only to the eight facilities participating in the re-abstraction project; and c) All findings pertain to the estimated value



**Expected Length Of Stay**

The Expected Length Of Stay (ELOS) assignment is an estimate based on the most current patient length of stay data available from the DAD. It is adjusted for Complexity and age where warranted. The ELOS value is calculated on typical cases only.

**Table 4** Summary of ELOS changes (re-abstracted to original) by facility type

	Medical	Signs & Symptoms	Short Stay	Surgical	Total
All Facilities	0.50	-0.50	-0.40	0.20	0.00
Urban	0.60	-0.40	-0.40	0.30	0.00
Regional	-0.40	-2.30	-0.60	0.00	-0.30
Rural	0.50	-0.90	-0.70	0.00	-0.10

The original ELOS in the DAD was 5.3 days and the re-abstracted ELOS was also 5.3 days. Therefore, while there were ELOS changes in all the categories studied and for regional and rural facilities, there was no change in the overall expected length of stay for the weighted estimates.

**2.2 Case Complexity**

**What it is and how it is used**

Complexity (or Plx™) is an overlay on the CMG methodology and enhances the prediction of resource utilization in acute care. Complexity identifies diagnoses in the Discharge Abstract Database (DAD), over and above the main diagnosis, for which prolonged length of stay and treatment could reasonably be expected. Comorbid conditions that may have been present at the time of admission, or conditions that arose during the hospital stay potentially influence complexity. This information is obtained from diagnosis type assignment. Cases are assigned to one of four Plx levels. A Plx assignment of 9 means that the complexity overlay is not applied to these CMG cells, as it is already incorporated in the CMG methodology for these cases.

**Table 5a** Shift in complexity level - two way comparison

**Comparison of Complexity Counts Before and After Re-abstraction - Estimated Counts**

Original Plx Level <sup>1</sup>	Re-abstracted Plx Level					Total	% Same Plx in Orig
	1	2	3	4	9		
1	73,848	2,596	1,679	579	511	79,212	93.2
2	4,602	7,180	874	146	119	12,921	55.6
3	1,761	1,209	1,675	512	0	5,158	32.5
4	256	706	341	3,308	283	4,894	67.6
<b>Total</b>	<b>80,468</b>	<b>11,691</b>	<b>4,569</b>	<b>4,546</b>	<b>913</b>	<b>102,186</b>	

**Table Notes:**

<sup>1</sup> Plx Levels are described as:

- 1 - No Complexity    2. Chronic Conditions    3. Serious Conditions    4. Life-Threatening Conditions    9. Complexity Not Assigned

The greatest shift in complexity occurred for Plx level 3 where only 32.5% of the records remained in the Plx level 3. Most commonly, records are assigned to Plx level 1 where 93.2% of the records remained in the same Plx level.

**Table 5b** Shift in complexity level - one way comparison

**Comparison of Complexity Counts Before and After Re-abstraction - Estimated Counts**

Complexity (Plx) Level <sup>1</sup>	Original DAD Data		Re-abstracted Data		Net Change	
	Estimate	%	Estimate	%	#	% Net Change
1	79,212	77.5	80,468	78.7	1,255	1.6
2	12,921	12.6	11,691	11.4	-1,231	-9.5
3	5,158	5.0	4,569	4.5	-589	-11.4
4	4,894	4.8	4,546	4.4	-348	-7.1
9	0	0.0	913	0.9	913	0.0
<b>Total</b>	<b>102,186</b>	<b>100.0</b>	<b>102,186</b>	<b>100.0</b>	<b>0</b>	

The one-way comparison of shifts in complexity demonstrates a small increase in Plx level 1 cases after re-abstraction (1.6%); and a decrease in Plx levels 2, 3, 4 cases after re-abstraction (-9.5%, -11.4%, -7.1%).

**Table 6** Changes in complexity for all facilities

Complexity Level	Percentage of Total Records					Net Change
	Matched	Changed	Decreased Plx	Increased Plx	Change to Plx Level 9	
1 – No complexity	72.3	5.2	n/a	4.7	0.5	4.7
2 – Chronic conditions	7.0	5.6	4.5	1.0	0.1	-3.5
3 – Serious conditions	1.6	3.4	2.9	0.5	0.0	-2.4
4 – Life Threatening conditions	3.2	1.6	1.3	n/a	0.3	-1.3
Total	84.2	15.8	8.7	6.2	0.9	-2.4

- ❑ There was a net change in Plx level of -2.4%. Net change refers to the percentage of records with an increase in complexity level less the percentage of records with a decrease in complexity level and excludes moves to Plx level 9;
- ❑ 6.2% of the records experienced an upward shift while 8.7% of the records experienced a downward shift in Plx level; and
- ❑ 0.9% of the records moved to Plx level 9.

**Complexity Summary Tables**

**Table 7** Facility type - changes in complexity

	All	Urban	Region	Rural
	Percentage of Total Records			
Matched	84.2	83.9	86.2	83.8
Changed	15.8	16.1	13.8	16.2
Net Change	-3.3	-2.7	-5.7	-9.7

There was a decrease in complexity for all facilities combined as well as for each facility type.

**Table 8** Record type - changes in complexity

	Medical	Signs & Symptoms	Short Stay	Surgical
	Percentage of Total Records			
Matched	79.6	59.8	82.5	91.6
Changed	20.4	40.2	17.5	8.4
Net Change	0.4	-11.4	-7.4	-0.8

The percentage of records that remained at the same Plx level after re-abstraction was 84.2%.

Note that Tables 7 and 8 include changes in Plx levels 1-4 and to Plx level 9. Net change is calculated by subtracting the percentage of records with a decrease in complexity level and the percentage of records that changed to Plx level 9 from the percentage of records with an increase in complexity level.

**2.3 Diagnoses and Diagnosis Typing**

**How diagnoses codes and types are assigned and how the data are used**

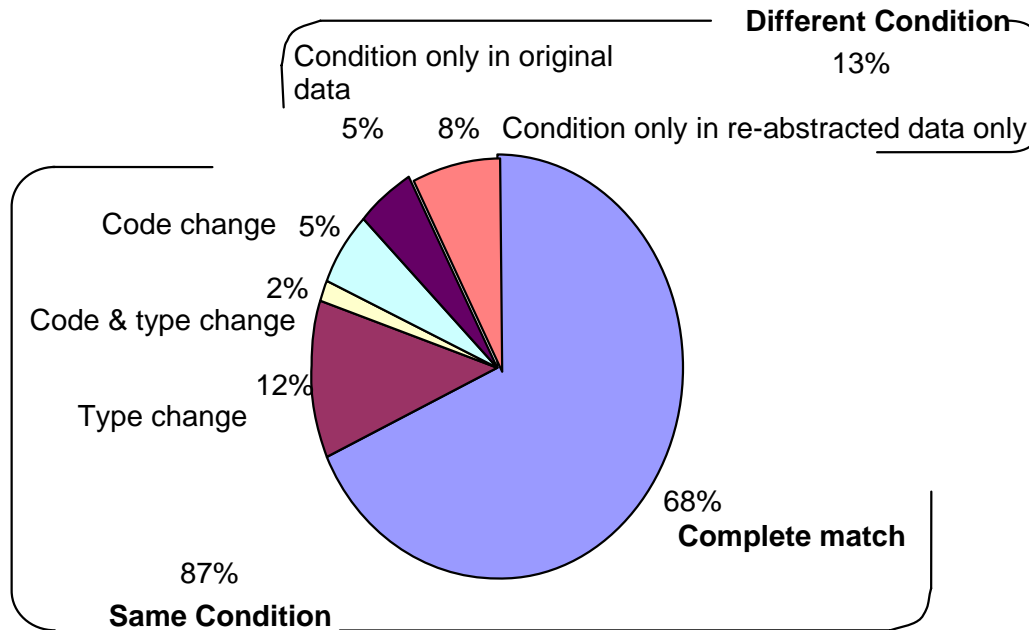
CIHI publishes the classification standards that are used to code diagnoses and interventions within the DAD inpatient abstract (currently these are ICD-10-CA and CCI).

The diagnosis type is a one-digit code used to indicate the relationship of the diagnosis to the patient's stay in hospital. A diagnosis type is required for every ICD-10-CA code collected in the DAD abstract. The purpose of diagnosis typing is to differentiate conditions that influence the patient's stay from those that do not, and to flag codes that are pre- or post-admission comorbidities. The diagnosis code and type are required data elements for CMG category and Plx level assignment.

The Most Responsible Diagnosis (MRDx) is the one diagnosis or condition that can be described as being the most responsible for the patient's stay in hospital that contributes the most towards the patient's treatment or length of stay.

Diagnosis Summary Tables

Table 9 All diagnosis discrepancies (original and re-abstracted)



There was a 68% complete match on both selection of diagnosis code and typing between the original data in the DAD and re-abstracted data. Upon re-abstraction there was a variance of 13% in conditions coded that were either not originally in the DAD or only re-abstracted, of which 8% were not originally in the DAD.

The following table reflects the summary of the reasons for diagnosis discrepancies:

**Table 10** Reasons for diagnosis discrepancies

Percent	Discrepancy	Reason
13.6% *	Diagnosis type assignment	<ul style="list-style-type: none"> <li>Diagnosis did not have significant impact on patient's treatment or LOS</li> </ul>
7.4% *	Different code selected	<ul style="list-style-type: none"> <li>Code assignment did not follow code book properly</li> <li>Code specificity was not supported by the record</li> </ul>
5%	Condition coded only in original data (over-capture)	<ul style="list-style-type: none"> <li>Different interpretation of documentation</li> <li>Coding contrary to CIHI standards</li> </ul>
8%	Condition coded only on re-abstraction (under-capture)	<ul style="list-style-type: none"> <li>Information missed on patient record</li> </ul>

\* Some diagnoses had both a typing and a coding discrepancy

**Table 11** Changes involving MRDx by facility grouping

	All	Urban	Regional	Rural
<b>Type of Discrepancy</b>	% of all original or re-abstrated MRDx codes			
Original MRDx changes	4.8	4.7	5.1	6.3
Conditions Re-abstrated as MRDx	10.4	11.0	6.6	11.8

There was a 95% match on the Most Responsible Diagnosis (MRDx) found in the original data submitted to CIHI with what was re-abstrated. The main reason for discrepancies in the MRDx was the difference in interpretation of the documentation.

## 2.4 Interventions

### How intervention codes are assigned and how the data is used

The Canadian Classification of Health Interventions, referred to as CCI, is a multi axial classification of health-related interventions, developed and maintained by CIHI. The term "intervention" is used instead of "procedure", reflecting an expanded scope addressing the application of this definition beyond traditional medical/surgical settings. The term "principal intervention" is the intervention considered to be the most significant during the patient's hospital stay.

**Intervention Summary Table**

**Table 12** All intervention discrepancy rates by facility groups

Type of Discrepancy	All	Urban	Regional	Rural
	% of all Interventions – on original, on re-abstraction or both			
Principal intervention discrepancies	5	5	3	1
Other (non-principal) intervention discrepancies	11	11	13	4
Attribute discrepancies	1	1	2	0
Out Of Hospital (OOH) indicator discrepancies	0	0	0	0
Intervention code different	9	9	12	7
Intervention date different	0	0	0	0

Of all Interventions originally reported, there is a 5% discrepancy rate associated with principal interventions. The main reason for discrepancies was that information on the chart was missed. Of the same set of Interventions, an 11% discrepancy rate was associated with the other interventions and attributed to the same reason.

**2.5 Observations**

The most significant variance found on re-abstraction was diagnosis typing discrepancies. Reporting variations were also noted between facility types and within facility types. For example, diagnosis typing discrepancies found on re-abstraction ranged from 11% to 23% between facility types (urban, regional, and rural). Between facilities, diagnosis typing discrepancies ranged from 12% to 41%.

The most common reason for the 13.6% discrepancy rate for diagnosis typing was that the diagnosis did not have a significant impact on treatment or length of stay. This was because the original data was submitted as a comorbidity but the coding specialist determined it was a secondary diagnosis that did not affect treatment or length of stay. This finding continues to reinforce the need for CIHI to clarify any ambiguities in the typing standards and the need for hospital administration and health record “coders” to follow standards as set by CIHI.

The most common reason for the 7.4% discrepancy rate for code selection was not using the Canadian Coding Standards for ICD-10-CA properly. This indicates the need for continued education sessions to teach or reinforce the Canadian Coding Standards for ICD-10-CA. Other reasons for coding discrepancies cited by the coding specialists included code specificity or lack thereof not supported by the record, different interpretation of the documents, and code assignment contrary to CIHI standards. These findings indicate there is an opportunity for continued education for coders by attending CIHI coding and diagnosis typing education sessions and reviewing CIHI related documentation. Continuing education would promote consistent and appropriate interpretation and application of CIHI standards and guidelines, which are essential to data quality.

The most common reason for the 8% of conditions not originally submitted to the DAD, but which were re-submitted by the coding specialists, was that the information on the chart was missed. It is difficult to know if the information was due to coder error in not following the coding standards or whether the information was actually missed or not

available at the time of initial coding. This indicates that there is opportunity to work with care providers to ensure that complete, comprehensive and timely completion of documentation is available. Coding specialists require this documentation at the time of coding in order to assign codes that accurately describe a patient's condition and services provided. Descriptive documentation is also critical to assigning appropriate diagnoses types. Quality documentation supports quality data reporting.

### 3 Project Outcomes

The AHW study had six outcomes that will be addressed in this section of the report. Based on a detailed review of hospital-specific diagnoses and intervention discrepancies, reason codes, and trained coding specialists' notes; the following summary of opportunities for improvement have been identified.

#### 3.1 Outcomes

##### 3.1.1 Identify areas of coding excellence and opportunities for improvement

The re-abstracted results of this study showed a minimal decrease of 0.08% in Resource Intensity Weight, a value that depicts the "weighted" average cost of a patient.

While there were estimated length of stay (ELOS) changes in all categories and at all facilities, the overall ELOS for the records in this study remained the same at 5.3 days.

Overall, 84.1% of original diagnoses remained at the same complexity level after re-abstractation and there was a 95% match on the Most Responsible Diagnosis in the original DAD.

##### Opportunities for Data Quality Improvement

Only 59.8% of the records in the Signs and Symptoms category remained in the same Plx level after re-abstractation. There was a shift in all Plx levels. The greatest shift in Plx was experienced in Plx 3 level whereupon re-abstractation only 32.5% remained in the same Plx level.

Diagnosis typing discrepancies were most prevalent in the study with 12% of re-abstracted diagnosis types not matching those originally reported. Of this group, the largest portion of discrepancies resulted from comorbidities (pre and post admit) in the original data being re-abstracted as a secondary diagnosis. There is clear indication that CIHI's typing standards need to be reviewed by coders and applied. As well, CIHI needs to review diagnosis type assignment standards to ensure clarity.

Re-abstractation findings also indicate that the Canadian Coding Standards for ICD-10-CA and CCI instructions are not being followed properly. Part of the code assignment discrepancies and typing discrepancies may be due to incomplete documentation at the time of initial abstraction.

##### 3.1.2 Establish the level to which coded inpatient data can be used with confidence

It is difficult to establish a level of confidence for the use of inpatient data reported by the sites included in the re-abstractation project because of the lack of availability of related benchmark information. However, re-abstractation findings indicated that there was a 95% match on MRDx; 95.3% match on Principal Procedure; decrease of only .08% in RIW; no change in ELOS, which remained at 5.3 days; and a -3.3% net change in Plx level (includes changes to Plx level 9).



### **3.1.3 Determine the variances in coding practices between urban, regional and rural facilities within patient types**

Reporting variances were noted within facility types and between facilities. For example, diagnosis typing discrepancies found on re-abstraction ranged from 11% to 23% between facility types (urban, regional, and rural). In addition, diagnosis typing discrepancies ranged from 12% to 41% between facilities. This was one of the most significant variances found on re-abstraction.

There were variances in diagnosis discrepancy rates among the individual facilities; and by facilities within the same facility type. Conclusions about the quality of diagnosis coding by facility types, as they were identified in this study should be taken into consideration.

### **3.1.4 Establish a baseline to compare future results**

The results of this study may be used to establish a baseline on which to compare future similar patient record reviews in Alberta.

Currently CIHI conducts regular re-abstraction studies. In addition, Ministries of Health in various jurisdictions are also conducting similar studies. Provinces and constituents will ensure that data quality initiatives are ongoing by continuing to compare and share information cross jurisdictionally. It is suggested that the results of the Alberta study be shared widely and amongst all key stakeholders, and that AHW continue to solicit feedback on the results of this study from HIM professionals involved in data collection and data quality.

### **3.1.5 Identify education session topics that would foster professional growth for coding practitioners**

The findings indicate that there is opportunity for Alberta coding experts to attend CIHI coding and diagnosis typing workshops. The study showed that common reasons for coding discrepancies were that the “initial code assignment was contrary to CIHI standards and that “the diagnosis did not have significant impact on treatment or the length of stay.”

### **3.1.6 Identify areas where additional coding standards and data quality edits would enhance data quality**

There is a need for dialogue with physicians/residents and other health care professionals to ensure that health records are complete at the time of coding. Emphasis should be on documentation requirements for coding that do or do not impact treatment and/or LOS, as there are implications of coding when the source documents may be incomplete.

AHW and HIM professionals should continue to lobby for a seat on CIHI Data Quality committees and task teams to influence CIHI standards.

## 4 Conclusions

The AHW inpatient data quality re-abstraction project was a key component of the AHW Information Management Branch data quality management plan. The purpose of the re-abstraction was to assess data quality and to establish a baseline against which to measure future inpatient data quality reviews.

There were important discrepancies found between the original and re-abstracted records, however these discrepancies had a marginal impact on RIW values and no overall impact on ELOS values, at the global level.

The majority of discrepancies occurred where the coding specialist disagreed with the original abstractor on the assessment of the clinical importance of diagnoses (i.e. diagnosis type assignment). CIHI has provided definitions of diagnoses types as well as provided specific guidelines and examples explaining diagnosis type assignment. Given the number of diagnosis type assignment discrepancies identified during the re-abstraction review, it appears that the guidelines were not consistently followed, the guidelines are open to interpretation, and/or they are difficult to apply. The coding specialists noted that in some instances patient record documentation was incomplete, which could have had an impact on how the diagnosis typing definitions were applied.

CIHI also has specific standards indicating how and when the results of diagnostic tests should be used to determine the Most Responsible Diagnosis and co-morbid conditions. It may be that these standards have not been adopted, are open to interpretation, or are unclear.

It should be noted that 2002/2003 was the first year of ICD-10-CA/CCI implementation. Coders would have experienced a learning curve in applying the new coding classification schemes.

It should also be noted that CIHI began delivering a new two-day education session that included a comprehensive review of coding standards and diagnosis type assignment in late 2003. Records included in the re-abstraction review would have been reported prior to coders having the opportunity to attend the education session.

A salient point is the frequency of discrepancies found between the data originally submitted to CIHI and the re-abstracted data. Given the important and ever-expanding application of these data to planning, evaluative, and funding purposes, it is clear that a broad and rigorous data quality strategy is important.

### 4.1 Quality Improvement Actions

Based on a detailed review of the findings of this study, CHIMA and AHRA have proposed a number of quality improvement actions to support the enhancement of Alberta's Discharge Abstract Data.

### **Standardization of Coding**

- AHW should review the regulations relating to the content of the health record from the Alberta Health Information Act, and the Alberta Hospital Act and ensure that all relevant regulations are being implemented;
- The College of Physicians and Surgeons of Alberta should lobby medical schools to incorporate teaching the importance of high quality and timely completion of clinical documentation in their medical student training curriculum; and
- CIHI should ensure that their coding standards allow for the capture of diagnoses based on evidence in the patient's record from all members of the clinical team involved with a patient's care.

### **Understanding the Necessity of Data Quality Accountability**

- AHW should lead the establishment of a broad data quality strategy involving wide stakeholder representation. This strategy should include a regular data quality monitoring and measurement process, including continued re-abstraction studies;
- CIHI's redevelopment of the CMG grouper should take into account the findings of this study;
- Regional Health Authorities should ensure that every person involved in the coding of health records is a certified health information professional and that they attend CIHI's Canadian Coding Standards for ICD-10-CA and CCI and Diagnosis Typing Workshops;
- Health information professionals should be accountable for their continuing professional education;
- Regional Health Authorities should be accountable to AHW for the quality of the data they report to AHW.

These points were designed to involve and assign accountabilities to all stakeholder groups that have the ability to improve the quality of Alberta's patient activity data. AHW needs to assume the lead responsibility for the development and implementation of a robust provincial data quality strategy.

## 5 RECOMMENDATIONS

Based on the detailed review of the re-abstraction findings and seconded coders' notes, the following four key recommendations are made in support of data quality enhancement:

- ❑ Work with key stakeholders, including AHW, CHIMA, AHRA, CIHI and Regional Health Authorities to review the existing standards, particularly those related to the typing of diagnoses, and promote their consistent and appropriate interpretation and application in Alberta acute care hospitals;
- ❑ Facilitate the highest quality and timely completion of health provider clinical documentation in Alberta Hospitals in order to improve the accuracy of health information coding;
- ❑ Ensure adequate levels of continuing education are available for HIM professionals to support professional excellence and data quality improvement; and
- ❑ Clarify accountabilities for data quality amongst appropriate stakeholders.

Collaboration amongst the key stakeholders is necessary in order to address data quality issues and to achieve enhanced data quality with the ultimate result of better data available at both provincial and national levels. All stakeholders must share the responsibility for the proposed recommendations in order to accomplish the goal of improved data quality and integrity.