Using Administrative Data to Identify FASD Cases among First Nations and Non-First Nations Individuals Alberta, Canada

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BACKGROUND

- **Defining a case with Fetal Alcohol Spectrum Disorder (FASD) using administrative data is a challenge.**
  - **FASD includes FAS and other birth defects caused by maternal alcohol consumption during pregnancy - difficult to diagnose**
  - **the corresponding ICD code(s) may not be available in administrative data (e.g., ICD-9=760.71) , even if the diagnosis is made**
  - **the pattern of health care utilization may vary by population groups**

- **Many diagnostic codes are proposed in the literature: ICD-9:760.71, 317-319, …, ICD-10=Q86.0, F70-F79, ...**

- **Epidemiology of FAS and FASD: varies significantly**
  - **FAS: 1-3 per 1000 live births, USA**
  - **FASD: 9.1 per 1000 live births, USA**
  - **Approximately 36,000 Albertans currently have FASD (Teresa O'Riordan, Northwest Central Alberta FASD Services Network, Aug 30, 2013)**

Overview of Administrative Health Datasets

- **Alberta Health is the custodian of extensive, but not exhaustive, administrative information about the health care system in Alberta**

- **Datasets Include the following:**
  - **Inpatient (Discharge Abstract Database (DAD)/Hospital Morbidity)**
  - **Ambulatory Care (ACCS, includes Emergency Department)**
  - **Practitioner Payments (fee-for-service claims, CLM)**
  - **Population Registry (REG, includes basic demographic and geographic information)**
  - **Alberta Blue Cross Pharmacy Claims (ABC, seniors and persons on assistance only)**
  - **Other Datasets (including Vital Statistics with permission)**

DIAGNOSTIC CODING

- **International Classification of Diseases (ICD) codes for FASD are not currently available**
- **Fetal Alcohol Syndrome (FAS) is the only expression of FASD that has garnered consensus among experts to become an official ICD-9 and ICD-10 diagnosis.**
- **ICD-9-CM Diagnosis Code 760.71 = Alcohol affecting fetus or newborn via placenta or breast milk**
- **In Alberta, diagnoses in practitioner claims are coded in ICD-9, but only to the first decimal point.**
- **ICD-9-CM Diagnosis Code 760.7 = Noxious influences affecting fetus or newborn via placenta or breast milk**

DIAGNOSTIC CODING (Cont'd)

- **As this code refers to other substances in addition to alcohol, practitioner claims data in Alberta cannot be used for case definition**
- **ICD-10-CM Diagnosis Code Q86.0 (2013) = Fetal alcohol syndrome (dysmorphic)**
- **Q86.0 is a more FAS-specific code but it does not allow for separate coding of other conditions such as pFAS, ARND, ABRD, etc.**
- **In Alberta, diagnostic coding in hospital inpatient and ambulatory care records use ICD-10-CA since April 2002**

STUDY OBJECTIVE

1. **To assess the sources of diagnostic information on FASD in administrative databases (DAD, ACCS, Claims) in Alberta from April 2002 to March 2013**

2. **To examine the distribution of FAS Diagnosis by First Nations and other population groups in Alberta, Canada**

CASE DEFINITION

- **Focus on Fetal Alcohol Syndrome (FAS)**
  - **4-digit diagnostic code (Q86.0) for FAS is available in Inpatient and ambulatory care data system since April 2002**
  - **Allows examination of the distribution of ICD-9 diagnostic code(s) in the practitioner Claims data system of the Province**
- **Case Definition: A person who is hospitalized or visited ambulatory care facility, with a FAS diagnostic code (ICD-10-CA = Q86.0) in**
  - **Discharge Abstract Database (DAD): >= 1 hospital separation, any diagnostic code available, during the study period***
  - **Ambulatory Care Classification System (ACCS): ED or day procedure/services, >= 2 person-day visits, any diagnostic code available, during the study period***

Note: * Between April 1, 2002 and March 31, 2013

Data Sources Enabling Linkage

Alberta Health Care Insurance Plan (AHCIP) & Personal Health Number

- **AHCIP Registry**
  - established to enable premium collection and assessment of registrant eligibility for services claimed by medical practitioners
  - Comprised of all individuals residing in Alberta with a unique Personal Health Number (PHN)

- **Defines First Nations and other population groups**

- **PHNs in ACCS and DAD are re-coded to be able to match to PHNs in AHCIP**

FIRST NATIONS

- First Nations are identified using an Alberta Health First Nations Registry
- An individual registered with Alberta Health having Treaty Status at any time since 1982 is considered to be First Nations
- First Nations individuals are linked to the extracted FASD data tables by their personal health number (PHN)

METHODOLOGY

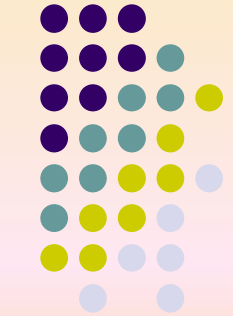
- **Extract all records with FAS diagnosis, all diagnoses available, from DAD and ACCS between April 1, 2002 and March 31, 2013**

- **Validation of sex and DOB from the extracted FAS records to make sure consistent DOB and sex across time in the FAS dataset**

METHODOLOGY (Cont'd)

- **Develop a person-day database for FAS: DAD, ACCS and DAD+ACCS combined between April 1, 2002 and March 31, 2013**
- **Develop a FAS Case cohort: All individuals who met the criteria for case definition – PHN, DOB, sex, First Nations status during the 11-year study period**
- **Code data source of FAS: DAD, ACCS, or DAD+ACCS**
- **Extract records from Claims (medical claims only) for defined FAS cases**

FAS CASE POPULATION



Total FAS cases: N=4,375

All Alberta Health Care Insurance Plan (AHCIP) registrants with FAS diagnosis from the Alberta inpatient and/or outpatient care data system, from April 1, 2002 to March 31, 2013

- **From Ambulatory Care (ACCS): n=3107**
- **From Inpatient (DAD): n=1939**

Including

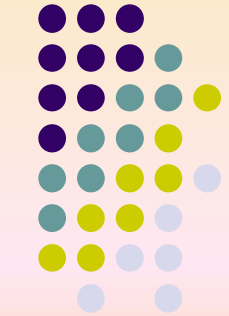
- **First Nations: (n=1790)**
- **Non-First Nations (n=2585)**

Demographic Characteristics

Percent Distribution of FAS Case Population, 2002/03-2012/03 Combined

Characteristics	First Nation(FN) N=1790	Non-FN N=2585	FN/Non-FN Ratio
Male	58.2	60.2	0.96
Age Group (Years)			
Less than 5	22.1	14.5	**1.53**
5-14	39.7	45.8	**0.87**
15-24	25.0	26.0	0.96
25-34	8.6	8.4	1.02
35 and over	4.6	5.3	**0.87**

Distribution of FAS Diagnostic Information by Data Source: FN vs. Non-FN



Data Source	First Nations (%) N=1790	Non-First Nations (%) N=2585	Total (%) N=4375
Ambulatory (ACCS)	51.6	58.5	55.7
Inpatient (DAD)	30.2	28.1	29.0
ACCS+DAD	18.2	13.4	15.4
% of Total case	40.1	59.9	100.0

Distribution of FAS Cases by Stringency of Case Definition: FN vs. Non-FN

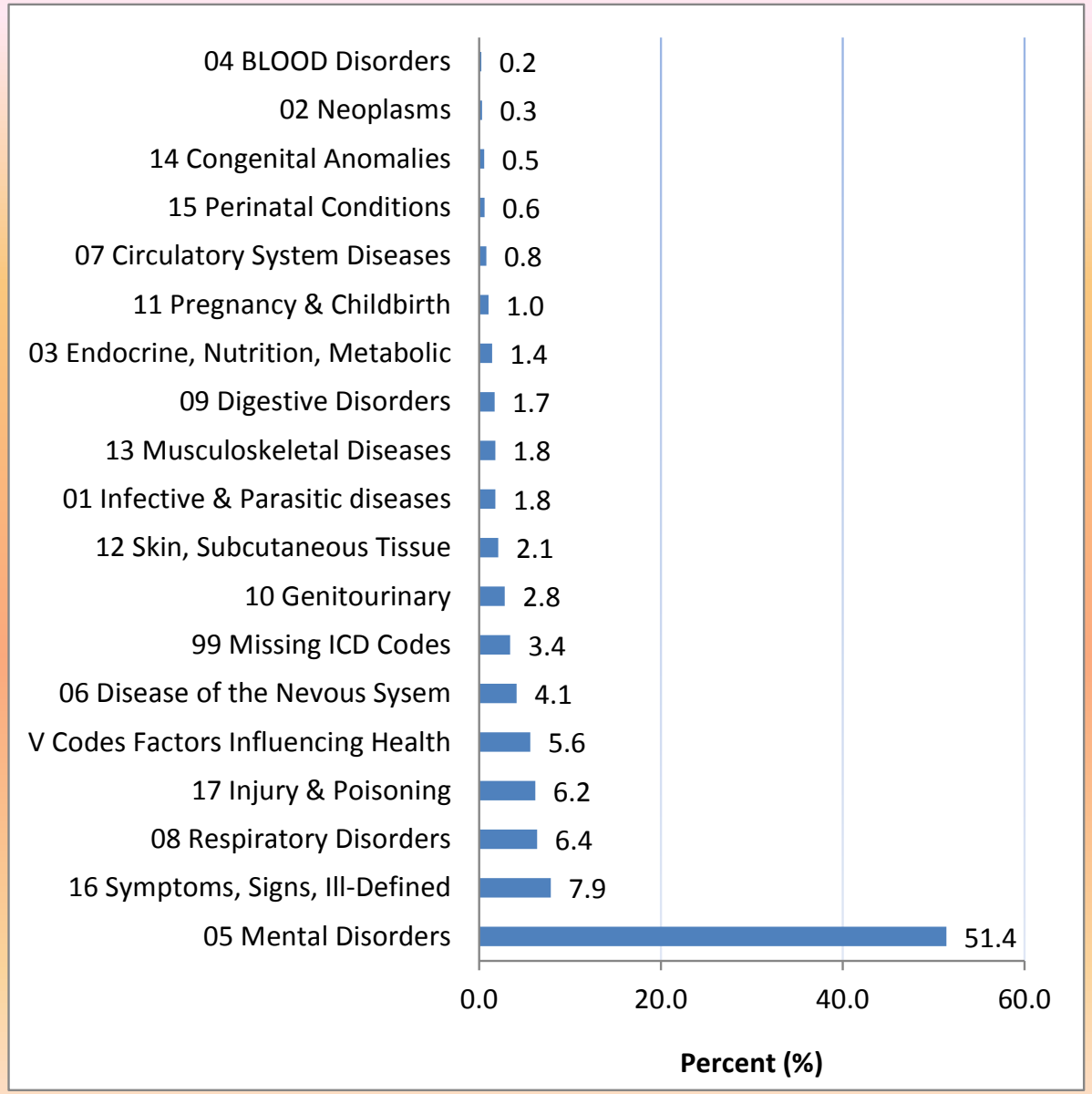
Stringency of Case Definition (day visit/year)	First Nations (%) N=1790	Non-First Nations (%) N=2585	Total (%) N=4375
High: >=1 DAD or >=4 ACCS visits	43.8	45.1	44.6
Medium: 2-3 ACCS visits	16.4	17.6	17.1
Low: 1 ACCS visits	39.8	37.3	38.3

Distribution of FAS Diagnostic Information by Order of Diagnosis and Data Source

Order of Diagnosis	Ambulatory (ACCS) N=14,706	Inpatient (DAD) N=3,120	Claims * N=1,534
1st	5,379 (36.6%)	153 (4.9%)	744 (48.5%)
2nd	6,032 (41.0%)	641 (20.5%)	497 (32.3%)
3rd	1,875 (12.7%)	716 (22.9%)	295 (19.2%)
4th to 10th	1,420 (9.6%)	1,505 (48.2%)	NA
11th to 25th	NA	105 (3.4)	NA

Note: *ICD-9=760.7 for Claims data

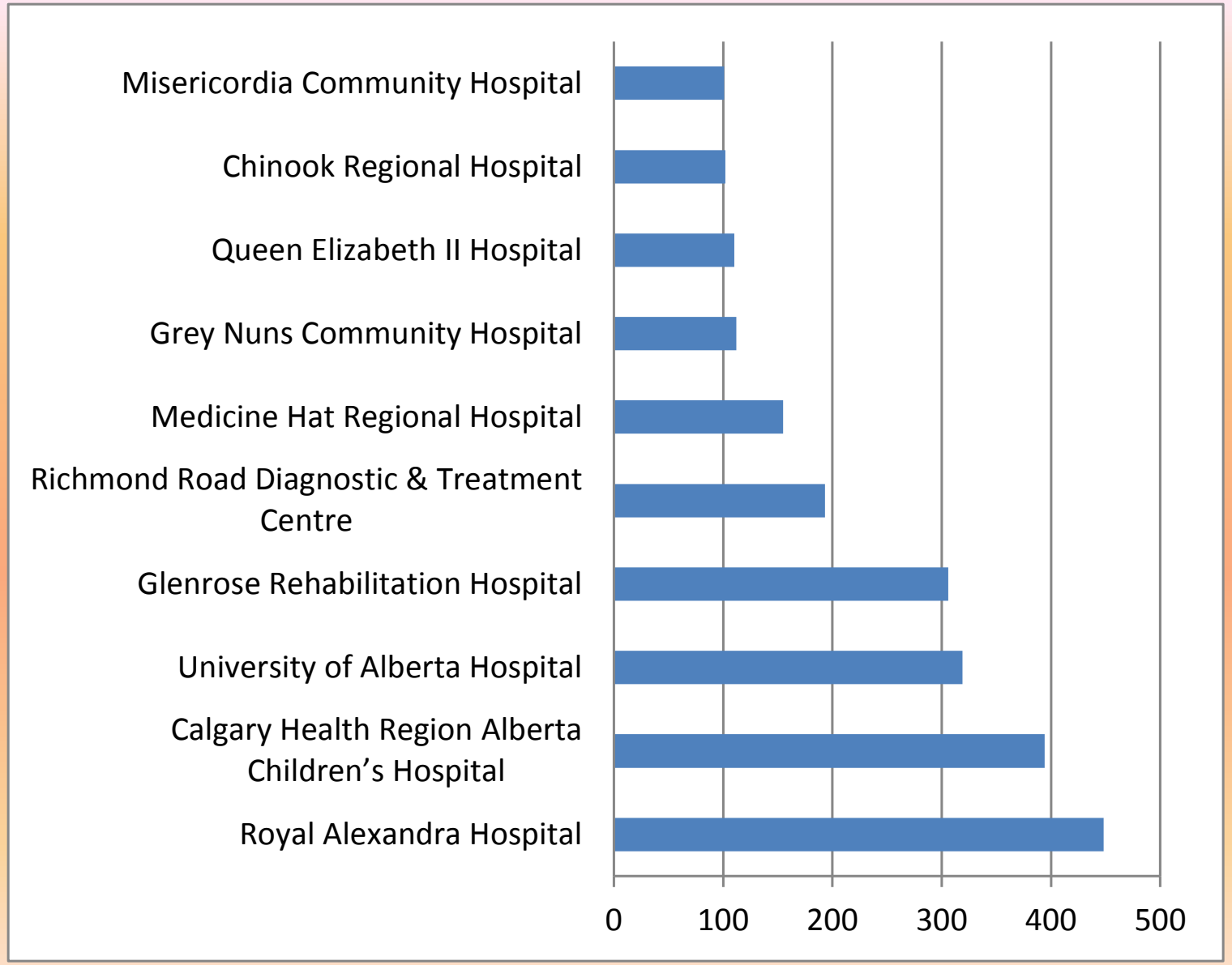
What diagnosis was given in Claims Data for linked FAS cases?



Mean Person-Day Visit Per FAS Case by Data Source: FN vs. Non-FN, in 11 Years

Data Source	First Nations (Mean) N=1790	Non-First Nations (Mean) N=2585	FN/Non-FN Ratio
Ambulatory (ACCS)	7.2	7.7	0.93
Inpatient (DAD)	3.4	3.1	1.10
Both (ACCS+DAD)	4.9	3.9	1.26

Where are FAS cases being diagnosed in Alberta (Top 10 in ACCS data)?



Limitations

- Only FAS cases using DAD and ACCS data system are examined, under-estimation of FASD
- No clinical diagnosis and evaluation data on FASD available for this study
- No validation for FAS, no maternal alcohol consumption data was used
- No follow-up of each person over the 11 years was done
- No examination of co-morbidity and health care utilization including costing for FAS and FASD

Conclusion

- There are significant differences in FAS prevalence between First Nations and Non-First Nations, population age/sex groups
- Among administrative datasets with diagnostic codes in Alberta, Ambulatory care data captures the majority of FAS, and likely FASD cases, with an average of two person-day visits each year.
- First diagnosis is not the major source of diagnostic information for FAS; About 64% of diagnostic information for FAS in ACCS and 90% in DAD is from 2nd to 10th diagnosis
- About 12% of the FAS cases have a diagnostic code of ICD-9 = 760.7 (Noxious influences) in Claims, 50% have codes 290-319 (mental disorders), and 8% have codes 780-799 (Symptoms, Signs and ill-defined). This is followed by injuries, respiratory disorders, disease of nervous systems and sense organs.
- In fact, the diagnostic codes vary considerably. A special fee code for FASD in the Claims dataset will help better capture FASD cases.

Questions

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