



# Context is everything: a recommendation for selecting case definitions when using linked administrative health data in HIV research

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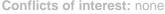
Track: Epidemiology and Public Health Sciences

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## Administrative health data



- Healthcare data collected for non-research purposes: e.g.,
  - Outpatient physician billings ('MSP')
  - Hospitalizations ('Discharge Abstract Database')
  - Prescription drug data ('PharmaNet')
    - Source: BC Ministry of Health
- With administrative data, the researcher does NOT:
  - Generate research questions / hypotheses prior to data collection
  - Decide what is measured (collected)
  - Create the measurement tools (e.g., questionnaires)
  - Administer the measurement tools (no interaction with participants)

HEALTH CARE AND HEALTH SERVICES



Medical Services Plan Payment Information (MSP) (BC Ministry of Health)

> PharmaCare (BC Ministry of Health)

Discharge Abstract Database (Hospital Separations) (BC Ministry of Health)

Home and Community Care (Continuing Care) (BC Ministry of Health)

Mental Health (BC Ministry of Health)

BC Cancer Registry (BC Cancer)

Patient Centered Measurement (various)

Perinatal Data Registry (Perinatal Services BC)

PharmaNet (BC Ministry of Health)

National Ambulatory Care Reporting System (NACRS) (BC Ministry of Health)

popdata.bc.ca/data

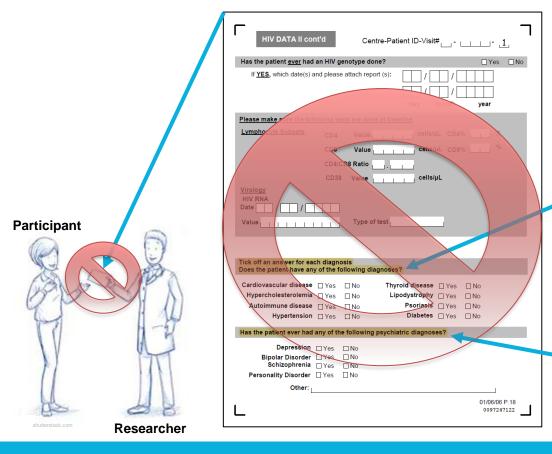


# Secondary data



- Secondary data analyses: linked administrative health data studies
  - Participants do <u>not</u> routinely fill out questionnaires / surveys \*
  - Often use admin data to define measurements (e.g., health conditions)





# 'Tick off an answer for each diagnosis:'

'Does the patient have any of the following diagnoses?'

'Has the patient ever had any of the following psychiatric diagnoses?'

#### COAST & STOP HIV:

Include other linked datasets that contain primary data (from questionnaires)

However: many measurements are still derived entirely from administrative data



# **Case definitions**



- Case definition: collection of codes (e.g., ICD-9, ICD-10-CA, DIN) that are used to measure the presence / absence of a condition
  - Frequency (e.g., two ICD-9 codes)
  - Time-window (e.g., within one year)
  - Datasets (e.g., within the outpatient data)
- **Example:** "The case definition for depression requires 1 hospitalization or 2 physician visits in one year with the following ICD codes..."
- Note: 50B = BC-specific diagnostic code used in outpatient data ('Anxiety / Depression')

Case Definition Type:	Cumulative Prevalence ⊠ Episodic Prevalence □ Annual Prevalence □ Annual Service Utilization Prevalence □ Annual Prevalence □ Annual Prevalence □ Trevalence □ Annual Prevalence □ Annual
Case Definition: The ca	ase definition for Depression requires one hospitalization or two physician visits in one year with ICD code(s) specified below. The case definit and older.

CASE DEFINITION - DEPRESSION

Signed-off BC Case Definition: Yes ☒ - V2017 No ☐

Algorithm: 1H or 2P in 1Y with ICD code(s) specified below.

Notes: None

Age Restriction: Age 1 +

Millian
PRITICIA
BRITISH COLUMBIA
Ministry of Health

Data Source	ICD Code/Procedure Code/Rx	ICD Code/Procedure Code	Diagnosis Type	Hospital Care Level
		Position		
Hospital ICD-10	F32, F33	First Position Only	M-Most Responsible Diagnosis 🛛	Acute Care 🗵
		All Positions ⊠	1-Pre-Admit Comorbidity 🛛	Rehabilitation 🗵
Hospital	F32, F33	Others	2-Post-Admit Comorbidity 🛛	Day Surgery ⊠
i iospitai	1 32, 1 33	N/A □	3-Secondary Diagnosis 🗵	
ICD 40			4-Morphology Code ⊠	
ICD-10			5-Admitting Diagnosis ⊠	
			6-Proxy Most Responsible Diagnosis	
			9-External Cause of Injury Code 🛛	
			0-Newborn ⊠	
			W,X,Y- Service Transfer Diagnosis ⊠	
Hospital ICD-9	296, 311	First Position Only	M-Most Responsible Diagnosis 🛛	Acute Care 🛛
		All Positions ⊠	1-Pre-Admit Comorbidity	Rehabilitation 🛛
Hospital	296, 311	Others	2-Post-Admit Comorbidity 🛛	Day Surgery 🗵
	290, 311	N/A □	3-Secondary Diagnosis 🗵	
ICD-9			4-Morphology Code ⊠	
166-3			5-Admitting Diagnosis ⊠	
			6-Proxy Most Responsible Diagnosis 🛛	
			9-External Cause of Injury Code	
			0-Newborn ⊠	
			W,X,Y- Service Transfer Diagnosis 🛛	
Physician Claims ICD-9	296, 311, 50B (see note)	First Position Only	N/A	N/A
Outpatient	206 211 EOD	All Positions ⊠		
•	296, 311, 50B	Others		
ICD-9		N/A □		
PharmaNet Drug History	N/A	N/A	N/A	N/A

ICD-9/10	Description		
F32	Depressive episode		
F33	Recurrent depressive disorder		
296	Affective psychoses		
311 Depressive disorder, not elsewhere classified			
MSP DX Code 50B	Anxiety/Depression		

Procedure Code: N/A

F32: Depressive episode

F33: Recurrent depressive 296: Affective psychoses

311: Depressive disorder

50B: Anxiety / Depression

www.bccdc.ca/resource-gallery/Documents/Chronic-Disease-Dashboard/depression.pdf



## Recommendation



#### Abstract

**Background:** Despite not being collected for research purposes, administrative data are increasingly being used in epidemiology. In British Columbia (BC), the Comparative Outcomes And Service Utilization Trends (COAST) and STOP HIV/AIDS studies are based on linkages between HIV-related clinical data and provincial administrative datasets. In such studies, we define health outcomes using 'case definitions': e.g., a depression definition may require one hospitalization (ICD-9: 296/311, ICD-10: F32/F33) or two outpatient (ICD-9: 296/311/'50B') codes within one year. The objective of this abstract is to promote discussion regarding the use of administrative data in HIV research.

**Methods:** Given the expanding use of administrative data, our centre created an 'Administrative Data Working Group.' This group is tasked with equipping researchers with the knowledge to rigorously analyze such data. To date, we have focused our discussions on the selection of case definitions.

Results: We put forth the following recommendation: when available, researchers should use case definitions that are tailored to their jurisdiction; we use definitions from the BC Ministry of Health (BC-MoH). Unlike definitions based on combinations of codes from other settings, the BC-MoH's definitions consider factors that, if ignored, introduce misclassification bias. For example, known differences in the detail of outpatient (limited to three-digits) and hospitalization (four- or five-digits) ICD codes in BC are incorporated. Inaccuracies in coding are also considered: e.g., the BC-MoH's definitions often require two outpatient codes to appear within a single year. Lastly, BC-specific codes, such as the '50B' code for 'anxiety/depression,' are included; omission of '50B' results in substantial under-ascertainment.

**Conclusion:** Context is everything: the BC-MoH's definitions incorporate information that is critical to the validity of administrative data-derived measures in our jurisdiction. While published validation studies from other settings may present highly sensitive and specific definitions, we have found their direct applicability to the BC context to be limited.

#### **Context is everything**

- BC Ministry of Health definitions incorporate information critical to the validity of admin data-derived measures in BC
  - i.e., Differences in the detail & accuracy of ICD diagnostic codes in outpatient vs. hospital data
  - i.e., Inclusion of BC-specific codes
- Conclusion: think carefully before using a definition from another country, province, etc., in your studies