NB Chronic Obstructive Pulmonary Disease Health Information Platform (NB-CHIP)-
Horizon Health Network
HH04

Compiled by: NB-IRDT Staff

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Table of Contents

About This Codebook

This reference guide is intended for users of the New Brunswick Chronic Obstructive Pulmonary Disease (COPD) Health Information Platform (NB-CHIP) PD0042 data set, provided by the Horizon Regional Health Authority. PD0042 is one of two components of NB-CHIP and should be used in conjunction with PD0053: The Vitalité Health Regional Health Authority component.

This guide provides an overview of the data, the general methodology used in its creation, and important technical information. It contains operational procedures as well as table and field descriptions of variables in the data set. The development of this document is an ongoing process that will be updated with changes that occur in the NB-CHIP dataset.

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Due to the operational nature of administrative data sets, there is potential for discrepancies between the names of variables and their corresponding definitions. In the case of such a discrepancy, the variable definition should be considered the most accurate representation.

Overview

The New Brunswick COPD Health Information Platform (NB-CHIP) was developed collaboratively by the New Brunswick Institute for Research, Data and Training (NB-IRDT), the New Brunswick Department of Health, and the New Brunswick Regional Health Authorities (RHAs): Horizon Health Network and Vitalité Health Network. NB-CHIP data is laboratory data collected during regular care practice. In New Brunswick, pulmonary function testing, including spirometry, is primarily completed by a Registered Respiratory Therapist (RRT) following referral by a physician. The NB-CHIP data set contains pulmonary function data obtained from test results.

1. Sample Universe

This data set contains all recorded pulmonary function tests from the following Horizon RHA 4 sites:

- Dr. Everett Chalmers Regional Hospital
- Miramichi Regional Hospital
- Saint John Regional Hospital
- The Moncton Hospital
- Upper River Valley Hospital

2. Date Range

January 2007- December 2017

3. Data Source

Horizon Health Network
NB-IRDT

4. How to Cite this Codebook

New Brunswick Institute for Research, Data and Training. (2020). NB Chronic Obstructive Pulmonary Disease Health Information Platform (NB-CHIP) – Horizon Health Network Codebook for Years 2007-2017. Fredericton, NB: New Brunswick Institute for Research, Data and Training.

5. Acknowledgements

NB-CHIP data is used with the permission of Vitalité Health Network and Horizon Health Network. Funding to create NB-CHIP was provided in part by the Maritime SPOR SUPPORT Unit, the New Brunswick Health Research Foundation, and AstraZeneca.

About this Product

6. Purpose of the Product

The purpose of the NB-CHIP data set reference guide is to provide information on the linkable pulmonary function data held at the New Brunswick Institute for Research, Data and Training (NB-IRDT). This data is accessible to researchers and is particularly relevant for research areas related to public health, epidemiology, and chronic diseases, as well as for the development of population estimates and projections.

7. Content

This version of the NB-CHIP dataset contains 6 groups of data elements:

Group	Description
1	Demographic information
2	Physical characteristics
3	Clinical information
4	Smoking information
5	Test administration info
6	Pulmonary function test results

Each group includes the name, type (character or numeric), length, label, and count of non-missing values of the data elements.

General Methodology

Spirometry is a shortened version of a full pulmonary function test (PFT) that measures how much air a patient is able to fully inhale and fully exhale with maximum effort. In order for a patient to be referred for a PFT, they usually present to their primary care physician with complaints of a lingering cough, a cold that won't go away, etc. Lesser numbers of PFTs come from hospital in-patient referrals by respiratory therapists. Healthcare professionals may suggest PFTs if signs and symptoms lead them to suspect chronic lung conditions such as

- Asthma,
- COPD, or
- Pulmonary fibrosis.

When a patient receives the test date, they are asked to withhold from using all puffers for four hours prior to testing. They arrive at the testing site and are weighed and measured (used to calculate reference values) and are asked questions about smoking habits, medications, shortness of breath, cough, and other health indicators. The patient is then given instruction on how to perform the test. Some patients require much coaching to inhale maximally and forcefully exhale; PFTs are effort dependent and require skill in coaching the patient to obtain the best results.

Airflow rates and volumes are recorded prior to and following the administration of a bronchodilator to determine if the patient has any improvement in air flow rates due to the bronchodilator. Bronchodilators are used during PFTs because they open the airways (allowing for more airflow), and as such interpretations and diagnoses are always made based on these "post" (or after) values. Major differences in pre/post bronchodilator values are essential in the diagnostic process, allowing for differential diagnoses of obstructive (asthma, COPD) or restrictive (pneumonia) airflow limitations. Obstructive airflow limitations are partially reversible, and as such are sensitive to the application of bronchodilators. The degree of responsiveness to a bronchodilator, as described in the change between pre/post values, can also help (though not definitively) in differentiation between different obstructive disorders such asthma and COPD.

PFTs are administered in labs throughout NB, and results are stored in specific systems (Breeze, VMax) locally. Staff from the RHAs coordinate the collation and comparability of the two distinct data sets. Upon arrival at NB-IRDT, the two data sets are combined by staff into a single file for storage on the NB-IRDT platform. NB-IRDT then stores the data securely for authorized access for researchers.

Technical Specifications

8. Demographic Information

Variable Name	Type	Length	Label	Mandatory/optional
Age	Num	8	Age	Derived from DOB
Birthdate	Num	8	Date of birth	M
Gender	Char	6	Gender at birth	M
Race	Char	21	Race	O

The type 'Num' refers to numeric values while 'Char' refers to both alphabetic and numeric characters.

Age
Patient's calculated age at time of PFT

Date of Birth
Patient's date of birth in the format DD/MM/YYYY

Gender at Birth
Gender at birth, not identified gender
Gender at birth is required, as size of chest affects the predicted values, and size of chest is dictated by genetics. Selected by therapist from list:

Code
Female
Male

Race
Patient's race/ethnicity

Code
Caucasian
Black
Asian
Hispanic
African-American
Hispanic-American
Blank

9. Physical Characteristics

Variable Name	Type	Length	Label	Mandatory/optional
Height	Num	8	Height	M
Weight	Num	8	Weight	M
BMI	Num	8	BMI	M (Derived)

The type 'Num' refers to numeric values while 'Char' refers to both alphabetic and numeric characters.

Height
Patient's height in centimeters. If the patient cannot stand, arm span is an accepted alternative, as it closely matches height.

Weight
Patient's weight in kilograms

BMI
Patient's body mass index, calculated from height and weight input

10. Clinical Information

Variable Name	Type	Length	Label	Mandatory/optional
Cough	Char	7	Cough	O
Diagnosis	Char	215	Diagnosis	O
DyspneaExercise	Char	7	Dyspnea Exercise	O
DyspneaRest	Char	7	Dyspnea Rest	O
Productive	Char	7	Productive	O
Medications1_3	Char	255	Medications 1-3	O
Medications4_5	Char	255	Medications 4-5	O

The type 'Num' refers to numeric values while 'Char' refers to both alphabetic and numeric characters.

Cough
Patient-reported cough

Code
Yes
No

Diagnosis
Free text

Therapist input. Some locations use physician-provided diagnosis, other locations use patient-reported reason for referral. May not accurately reflect true diagnosis.

Dyspnea Exercise
Shortness of breath with exertion, patient-reported

Code
Yes
No

Dyspnea Rest
Shortness of breath at rest, patient-reported

Code
Yes
No

Medications 1-3
Therapist entered from patient interview

Medications 4-5
Therapist entered from patient interview

Productive
Defines if the patient produces daily phlegm, patient-reported

Code
Yes
No

11. Patient reported smoking information

Variable Name	Type	Length	Label	Mandatory/optional
Cigarettes	Char	7	Cigarettes	O
Smoker	Char	7	Ever smoked	O
PackYrs	Num	8	Pack Years	O
Quit	Char	7	Quit	O
Stopped	Num	8	Years Quit	O

The type 'Num' refers to numeric values while 'Char' refers to both alphabetic and numeric characters.

Cigarettes
Does the patient smoke cigarettes specifically

Code
Yes
No

Ever Smoked
Has the patient ever smoked

Code
Yes
No

Pack Years
Standard way to quantify smoking. Product of years smoked and packs per day.

Quit
Has the patient quit smoking?

Code
Yes
No

Years Quit
Number of years the patient been tobacco free

12. Test Administration Information

Variable Name	Type	Length	Description	Mandatory/optional
Room	Char	21	Room	O
testdate	Num	8	Test date	M
fac	Num	8	Facility Code	M
fac_desc	Char	50	Facility Description	M

The type 'Num' refers to numeric values while 'Char' refers to both alphabetic and numeric characters.

Room

Location test was administered. Time is often used as an additional field for capturing data and often does not contain a location.

Test date

System stamped date

Facility Code & Description

The facility where test was administered

Facility Code	Facility Description
	Dr. Everett Chalmers Regional Hospital
	Miramichi Regional Hospital
	Saint John Regional Hospital
	The Moncton Hospital
	Upper River Valley Hospital (Waterville)
	Dr. Everett Chalmers Regional Hospital
	Centre hospitalier universitaire Dr-Georges-L.-Dumont
	Hôpital régional de Campbellton
	Hôpital régional Chaleur3
	Hôpital régional d'Edmundston

13. Spirometry Results Information
14.

Variable Name	Type	Length	Description	Mandatory/optional
_2575_perchg	Num	8	PEF 25-75% (% change)	M
_2575Post	Num	8	PEF 25-75% (ref)	M
_2575Post_per	Num	8	PEF 25-75% (post % ref)	M
_2575Pre	Num	8	PEF 25-75% (pre)	M

_2575Pre_per	Num	8	PEF 25-75% (post)	M
_2575Ref	Num	8	PEF 25-75% (% ref)	M
DLCO	Num	8	DLCO	O
DLCO_perRef	Num	8	DLCO (% ref)	O
DLCO_VA	Num	8	DLCO/VA	O
DLCO_VA_perRef	Num	8	DLCO/VA (% ref)	O
DLCO_VARef	Num	8	DLCO/VA (REF)	O
DLCORef	Num	8	DLCO (ref)	O
ERV	Num	8	ERV	O
ERV_perRef	Num	8	ERV (% ref)	O
ERVRef	Num	8	ERV (ref)	O
FET100_perchg	Num	8	FET100% (% change)	M
FET100_perPost	Num	8	FET100% (post % ref)	M
FET100_perPre	Num	8	FET100% (% ref)	M
FEV1_FVC_perchg	Num	8	FEV1/FVC (% change)	O
FEV1_FVCPost	Num	8	FEV1/FVC (post)	O
FEV1_FVCPost_per	Num	8	FEV1/FVC (post % ref)	O
FEV1_FVCPre	Num	8	FEV1/FVC (pre)	M
FEV1_FVCPre_per	Num	8	FEV1/FVC (ref)	M
FEV1_FVCRef	Num	8	FEV1/FVC (% ref)	M
FEV1_perchg	Num	8	FEV1 (% change)	O
FEV1_perRef	Num	8	FEV1 (% ref)	M
FEV1Post	Num	8	FEV1 (post)	O
FEV1Post_per	Num	8	FEV1 (post % ref)	O
FEV1Pre	Num	8	FEV1 (pre)	M
FEV1Ref	Num	8	FEV1 (ref)	M
FRC	Num	8	FRC	O
FRC_perRef	Num	8	FRC (% ref)	O
FRCRef	Num	8	FRC (ref)	O
FVC_perChg	Num	8	FVC (% change)	M
FVCPost	Num	8	FVC (post)	M
FVCPost_per	Num	8	FVC (post % ref)	M
FVCPre	Num	8	FVC (pre)	M
FVCPre_per	Num	8	FVC (% ref)	M
FVCRef	Num	8	FVC (ref)	M
IC	Num	8	IC	O
IC_perRef	Num	8	IC (% ref)	O
ICRef	Num	8	IC (ref)	O
PEF_perchg	Num	8	PEF (% change)	M

PEFPost	Num	8	PEF (Post)	M
PEFPost_per	Num	8	PEF (post % ref)	M
PEFPre	Num	8	PEF (Pre)	M
PEFPre_per	Num	8	PEF (% ref)	M
PEFRef	Num	8	PEF (Ref)	M
PIFPost	Num	8	PIF (Post)	M
PIFPre	Num	8	PIF (Pre)	M
RV	Num	8	RV	O
RV_perRef	Num	8	RV (% ref)	O
RV_TLC	Num	8	RV/TLC	O
RV_TLC_perRef	Num	8	RV/TLC (% ref)	O
RV_TLCRef	Num	8	RV/TLC (Ref)	O
RVRef	Num	8	RV (Ref)	O
TLC	Num	8	TLC	O
TLC_perRef	Num	8	TLC (% ref)	O
TLCRef	Num	8	TLC (Ref)	O
VA	Num	8	VA	O
VA_perRef	Num	8	VA (% ref)	O
VARef	Num	8	VA (REF)	O
VC	Num	8	VC (SVC)	O
VC_perRef	Num	8	VC (% ref)	O
VCRef	Num	8	VC (REF)	O

Pre: measured value. Observed values generated from the initial PFT which occurs prior to the application of a bronchodilator

Post: measured value. Observed values generated from the second PFT, which occurs following the application of a bronchodilator

Ref: System stored values. Predicted values based off of age, sex, race, and BMI

Pre_per: System generated value (Pre value/ Ref value)*100. Describes the difference between the pre value and reference value.

Post_per: System generated value (Post value/ Ref value)*100. Describes the difference between the pre value and reference value.

perRef: System generated value (Pre value/ Ref value)*100. Describes the difference between the pre value and reference value. (Same as Pre_per, but for measured variables where no bronchodilator is applied

perChg: System generated value. Describes the percent change between pre and post values.

perRef= System generated value (value/ reference value)*100. Describes the difference between measured value and expected value

The type 'Num' refers to numeric values while 'Char' refers to both alphabetic and numeric characters.

_25-75% (FEF/PEF)
Forced (or Peak in Breeze) expiratory flow over the middle ½ of the FVC, measured in liters/second

DLCO (Diffusing capacity of lung for carbon monoxide: Pre, ref, %ref)
Absolute diffusion capacity independent of actual lung volumes

DLCO_VA (diffusion capacity/ alveolar volume)
Ratio of diffusion capacity with respect to alveolar volume

ERV (Pre, ref, %ref)
Expiratory reserve volume, measured in liters

FET100%
Forced expiratory time (length of time to fully exhale), measured in seconds

FEV1 (Pre, ref, %ref, post, %post ref, % change)
Forced exhaled volume in the first second, measured in liters

FVC (Pre, ref, %ref, post, %post ref, % change)
Forced vital capacity, measured in liters

FEV1 (Pre, ref, %ref, post, %post ref, % change)
Forced exhaled volume in the first second divided by total lung capacity. Indicates the amount of air that the patient can forcefully exhale in the first second of testing. Reflective of obstruction of airflow.

FRC (Pre, ref, %ref)
Functional residual capacity, measured in liters

IC (Pre, ref, %ref)
Inspiratory capacity, measured in liters

PEF [referred to as FEF in Breeze] (Pre, ref, %ref, post, %post ref, % change, 25-75%)
Peak expiratory flow, measured in liters/second

PIF (Pre, Post)
Peak inspiratory flow, measured in liters/second

RV (Pre, ref, %ref)
Residual volume, measured in liters
The amount left in the lungs at the end of a complete exhaustion

RV/TLC (Pre, ref, %ref)
Residual volume as a percentage of the total lung capacity

TLC (Pre, ref, %ref)
Total lung capacity, measured in liters. Total amount of air that can be stored in the lungs.

VA (Pre, ref, %ref)
Alveolar volume measured in liters

VC (SVC) (Pre, ref, %ref)
Vital capacity (taken from slow vital capacity during testing), measured in liters.
The amount of air that can be blown out in a slow exhalation, from full inhalation to full exhalation.

Document History

Version	Author	Nature of Change	Date
1.0	Kyle Rogers & Keri Clark	Creation of Document	12-5-2020
1.1	Meg Pike	Review of document and formatting	01-28-2022
1.2	Meg Pike	Final review before posting	06-15-2022