NV-HAP Detection Programs

Overview

The NV-HAP detection programs are a set of SAS macros to identify events meeting the criteria for NV-HAP candidate definitions as defined here.

Data Elements and Coding Conventions

The input data files must contain certain elements that are coded in specific ways. The required elements and coding are described in the Data Specification (see attachment list). Input datasets can contain additional variables, but at minimum must contain the variables marked *required* in order to run successfully.

SAS Macros

%study_population(*episode*=,*daily*=,*studyidpfx*=)

Creates episode and daily NV-HAP study population datasets. These datasets are subset to include patients with a length of stay 3 and have patients meeting any of following exclusions removed:

· Age < 18

· Missing gender or gender= UNKNOWN

· missing all diagnoses (admitting_diagnosis_1- and diagnosis_1-)

· service_group=EXCLUDE on any hospital day

· service_group=PSYCHIATRY on hospital day 2

Parameter	Required	About	Example
Episode	✓	Input episode dataset, with or without libname	indata.nvhap_test_episode
Daily	✓	Input daily dataset, with or without libname	indata.nvhap_test_daily
studyidpfx		Character prefix to add to patid to create unique study identifier for combining data. If omitted patid is used as studyid.	studyidpfx=A, patid=00001 studyid=A00001

%nvhap_def1(*devicefile*=)

Creates dataset, derived.nvhap_def1, with NV-HAP definition #1 population: respiratory deterioration population. Must be run after % study_population.

Parameter	Required	About	Example
devicefile		Filename (with extension) to output cross tab of respiratory deterioration devices to excel file.	checkdevices.xlsx

Output dataset can have multiple records per patient-hospitalization. Multiple definition 1 events can occur within single hospitalization if > 14 days apart from last definition 1 event.

%nvhap_def2(*abxlist*=)

Creates dataset, derived.nvhap_def2, with patients meeting nvhap definition # 2: new antibiotic started on the first day of respiratory deterioration or the day following respiratory deterioration and continued for at least 3 calendar days with exceptions for death. Must be run after %nvhap_def1.

Parameter	Required	About	Example

abxlist	✓	List of antibiotics to use to check for new pneumonia antibiotic. Must be in xlsx file with sheet name *antibiotics* and column names *antibiotic_name* and *include*.	abx_mapping_v01.xlsx

%nvhap_def7(*tempunit*=,*wbcunit*=)

Creates dataset, derived.nvhap_def7, with NV-HAP definition #7 population: meets definition 1 and definition 2 plus has chest imaging and meets either WBC or max temperature critera. Must be run after %nvhap_def2.

Parameter	Required		Example
tempunit	✓	Temperature unit of measurement F: Fahrenheit C: Celsius	F
wbcunit	✓	WBC unit of measurement mm3: cells per cubic millimeter kmm3: thousand cells per cubic millimeter	12,000 -> mm3 12 -> kmm3

%nvhap_def9(*tempunit*=,*wbcunit*=)

Creates dataset, derived.nvhap_def9, with NV-HAP definition #9 population: meets definition 1 and definition 2 plus has either chest imaging or pulmonary culture and meets either WBC or max temperature criteria. Must be run after %nvhap_def2.

Parameter	Required		Example
tempunit	✓	Temperature unit of measurement F: Fahrenheit C: Celsius	F
wbcunit	✓	WBC unit of measurement mm3: cells per cubic millimeter kmm3: thousand cells per cubic millimeter	12,000 -> mm3 12 -> kmm3

Program Setup

1. Download all SAS macro files
2. Download antibiotic file
3. Define two SAS libraries needed to store output datasets: *tmp* and *derived*
    a. ***tmp***

        library to store temporary datasets

⚠ It is suggested that you create a new folder for tmp. After each macro runs everything in this directory will be deleted.

b. ***derived***

    library to store permanent output datasets. These datasets will be overwritten each time a macro is run

Example Program

The following program will run all five SAS macros and produce the output datasets listed above.

```
/* optional- can add or remove as needed */
options compress=yes nodate nonumber formdlim='-';

/* macro path*/
%let macros=X:\Projects\CDC_NVHAP\Programs\Macros;

/* path to mapping files */
%let mappath=X:\Projects\CDC_NVHAP\Mapping;

/* data libraries */
/* EVERYTHING IN TMP LIBRARY WILL BE DELETED AFTER PROGRAM RUNS */
libname tmp "X:\Projects\CDC_NVHAP\Datasets\tmp";
libname derived "X:\Projects\CDC_NVHAP\Datasets";

%include "&macros\nvhap_study_population_v01.sas";
%include "&macros\nvhap_def1_v01.sas";
%include "&macros\nvhap_def2_v01.sas";
%include "&macros\nvhap_def7_v01.sas";
%include "&macros\nvhap_def9_v01.sas";

%study_population(episode=derived.test_data_episode
                    ,daily=derived.test_data_daily);

%nvhap_def1;

%nvhap_def2(abxlist=&mappath\abx_mapping_v01.xlsx);

%nvhap_def7(tempunit=F,wbcunit=kmm3);

%nvhap_def9(tempunit=F,wbcunit=kmm3);
```

Running each macro individually at first is recommended to check for errors.

These macros must be run first and in the following order: `%study_population`, `%nvhap_def1`, `%nvhap_def2`.

Current Files

File	Modified
nvhap_def2_v05_01.sas	Apr 22, 2021 by Cara Smith
NVHAP_data_spec_v01_03.docx	Apr 12, 2021 by Cara Smith
nvhap_def1_v05.sas	Mar 01, 2021 by Cara Smith
nvhap_def9_v02.sas	Feb 08, 2021 by Cara Smith
nvhap_def7_v02.sas	Feb 08, 2021 by Cara Smith
NV-HAP antibiotics list VA Partners new drugs revised 20200130.xlsx	Jan 30, 2020 by Aileen Ochoa

nvhap_study_population_v01.sas	Jan 03, 2020 by Aileen Ochoa
NVHAP_protocol_v02.docx	Dec 12, 2019 by Cara Smith

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File	Modified
nvhap_def2_v05.sas	Apr 12, 2021 by Cara Smith
nvhap_def2_v04.sas	Mar 25, 2021 by Cara Smith
nvhap_def1_v04.sas	Feb 23, 2021 by Cara Smith
nvhap_def2_v03.sas	Feb 08, 2021 by Cara Smith
nvhap_def1_v03.sas	Feb 08, 2021 by Cara Smith
nvhap_def1_v02.sas	Dec 03, 2020 by Cara Smith
nvhap_def2_v02_01.sas	Feb 27, 2020 by Cara Smith
nvhap_def2_v02.sas	Feb 05, 2020 by Cara Smith
NVHAP_data_spec_v01_02.docx	Feb 05, 2020 by Cara Smith
nvhap_def9_v01.sas	Jan 03, 2020 by Aileen Ochoa
nvhap_def7_v01.sas	Jan 03, 2020 by Aileen Ochoa
nvhap_def2_v01.sas	Jan 03, 2020 by Aileen Ochoa
nvhap_def1_v01.sas	Jan 03, 2020 by Aileen Ochoa
NVHAP_data_spec_v01_01.docx	Dec 17, 2019 by Cara Smith

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