Defense Medical Epidemiology Database (DMED) 5.0 Users Guide V. 1.0

Prepared by the

Armed Forces Health Surveillance Branch

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Introduction

General Overview

The purpose of the Defense Medical Epidemiology Database (DMED) is to provide authorized users a tool to query active component service member personnel and medical event data. It standardizes the epidemiologic methodology used to collect, integrate and analyze Tri-Service personnel and medical event data, and allows remote access to user-definable queries of a subset of Defense Medical Surveillance System (DMSS) data (non-privacy).

Authorized users are U.S. military personnel (DoD CAC users) with a need to view or evaluate the health of active component service members. It is also available to federal partners and civilian collaborators in military health surveillance operations and medical research with a verified need for access.

The DMED application can be accessed from the Armed Forces Health Surveillance Branch's (AFHSB) website at https://www.health.mil/dmed/.

Key Information

Data Sources

The Defense Medical Surveillance System (DMSS) contains up-to-date and historical data on diseases and medical events (e.g., hospitalizations, ambulatory visits, reportable diseases, immunizations, HIV tests, etc.) and longitudinal data relevant to personnel characteristics and deployments for all active and reserve component service members. The DMED provides remote access to a subset of data contained within the DMSS (only data on active component service members). The DMED application provides a user-friendly interface through which users may perform queries regarding medical health care, including disease and injury rates and relative burdens of disease, for active component service members.

DMED provides access to four types of data relevant to active component service members: demographic, hospitalization, ambulatory and reportable events data.

Demographic data includes service, gender, age category, race, pay grade, and marital status.

Hospitalization data includes data from DoD Medical Treatment Facilities (MTFs) as well as outsourced (non-DoD) hospitalization healthcare provided to active component service members. For each hospitalization of an active component service member, at the time of discharge, up to eight diagnoses are recorded (using standard diagnostic codes, International Classification of Diseases (ICD) 9th and 10th revision).

Ambulatory data includes data from MTFs as well as outsourced (non-DoD) ambulatory healthcare provided to active component service members. For each ambulatory visit of an active component Service member up to four diagnoses are recorded (using standard diagnostic codes, ICD 9th and 10th revision).

Reportable Event data contain information on medical events that are considered "reportable" as defined in the Armed Forces Reportable Medical Events Guidelines and Case Definitions. These data are a subset of information provided by the Disease Reporting System Internet (DRSi).

Disclaimer

The overall quality of medical surveillance data depends on completeness, validity, consistency, timeliness and accuracy. With over 800 million rows of data (from more than 20 different sources) currently in DMSS, much effort is made to ensure a standardized, consistent approach to data processing and validation. However, receipt of large data inputs from multiple sources makes it impractical to correct all inaccurate or miscoded records. The following are known characteristics of the data available through DMED.

Population Statistics:

All data on DoD Service members contained in DMSS are validated against DoD personnel data. Stratum data elements (i.e., gender, age, grade, race/ethnic, and marital status) for a medical event are derived from personnel data considered to be current on the date of a medical event. Overall and stratum-specific population statistics (i.e., person year denominators) are calculated based on longitudinal personnel data. Stratum-specific unknown (or missing) data are excluded from the stratum-specific calculations.

Hospitalization Data:

Only hospitalization records considered complete are processed into DMSS and then captured in DMED.

Ambulatory Data:

Only ambulatory records considered complete are processed into DMSS and then captured in DMED.

Reportable Event Data:

DMSS and DMED included Army reportable event data for calendar years 1995 to present, and Navy and Air Force data from calendar years 2000 to present.

Privacy issues

DMED provides summary level data on groups of active component service members. It does not provide access to individual patient-level information.

Login / Password Information

Login

To create a DMED account or login to your account, go to the following link on the DHA website: https://www.health.mil/dmed/

Forgot password

If you have forgotten your user id or password contact the DMED administrator via email at dha.ncr.health-surv.mbx.afhs-dmed@mail.mil.

Performing queries with DMED

Getting Started

There are five different types of queries possible with DMED. Within each query, there are multiple filters and other functions to customize each query.

Types of Queries

<u>ICD codes:</u> A Detailed Query and a Top Ten Diagnosis query can be performed separately for both ICD-9 and ICD-10 codes. The user can choose between ICD-9 (1990-2015) and ICD-10 (2016 - present) codes for the query.

<u>Detailed Query:</u> Displays all available hospitalization, ambulatory and reportable event data on a particular condition(s) in a specified population. The user can filter the request to include all occurrences of a particular condition or just the first occurrence (eliminates multiple encounters for the same condition).

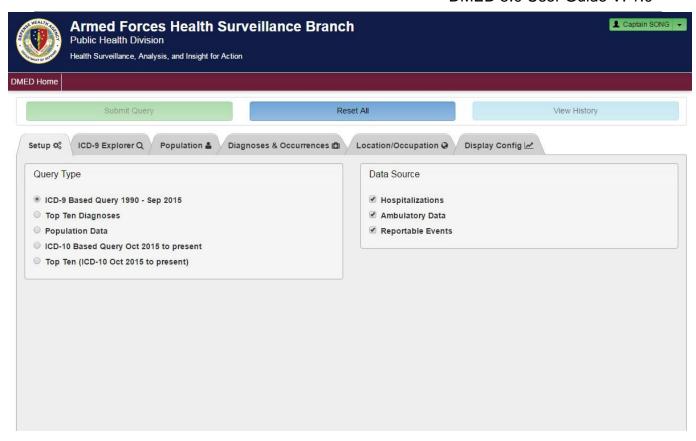
<u>Top Ten Diagnoses:</u> Displays the ten most commonly occurring medical encounters (hospitalizations, ambulatory, or reportable event) for specified ICD range and population. For hospitalization and ambulatory data queries, a filter is available to limit the scope to one or all of the major ICD-9/10 diagnostic categories. As with a Detailed Query, population filters for location and occupational groups are available to more specifically define the population of interest.

Population Statistics: Provide demographic data on a specified active component population. This query allows for filtering of location and occupational groups to more specifically define the population of interest. The results of this query are also available on the results tab of the 'Disease Summary' and 'Detailed Query'.

Application overview

<u>Program Functions:</u> The main functions of DMED can be accessed through tabs located on the top of the screen. Select the button for the type of function you would like to perform.

1. <u>Customizing Queries:</u> To facilitate creating a query, each query screen is set up as a series of tabs (e.g., ICD-9/10 Explorer, Population, Diagnoses & Occurrences, Location/Occupation, Display Config, Results). Move left to right through the tabs to select the desired information on each tab. One or more population values can be selected independently. Location and occupational group filters allow the user to specifically define the population of interest. One or more location and occupational group values can be selected (maximum of five selections for each). On the Display Config tab, choose how the rates are calculated by selecting the X-axis and Strata value.



- 2. <u>Submit Query:</u> When you are ready to submit your query to the database, click the Submit Query button at the top of the screen. The results of your query will appear on the Results tab. For more complex queries involving specific selections of Location(s) and/or Occupational Groups, more time may be needed to execute your query, approximately 1 3 minutes. For these types of queries, you will be prompted with a dialog box displaying this information. You may choose to continue or cancel your query. In addition, you can choose to disable the dialog box for future queries.
- 3. <u>Displaying Results:</u> Detailed query results will be displayed as multiple tabs, which include a table of counts, a table on the population (person-years), a rate table, a rate line chart, and a rate bar chart. For the rate table and figures, the user can change the rate denominator from the default of "rate per 1,000 persons per year" to range from 10 to 1,000,000 persons per year. Current year results will display as counts only.

Supplemental Information

 Query History: Retains the ten most recent queries you have performed during a session. A user can access the query history function by clicking on the View History button at the top of the screen. The View History screen will display the results of the most recently run query. There are numbered buttons across the top allowing you to select up to ten previously performed queries.

- 2. <u>Printing query results:</u> Any result screen can be printed directly from DMED by clicking the Print button at the bottom of the screen. The displayed results will appear on the printout. Choose landscape mode to view the entire printout.
- 3. **Export Data:** Any results from queries can be exported to Excel directly from DMED by clicking the Export to Excel button at the bottom of the results screen.

Main Menu - Step by Step Overview

The main functions of DMED include five different types of queries: ICD-9 Detailed Query, ICD-10 Detailed Query, ICD-9 Top Ten Diagnoses, ICD-10 Top Ten Diagnoses, and Population Data. To perform a query, simply select the button (located vertically in the Query Type box) for the type of query you would like to perform. Three different data sources can be searched: Hospitalizations, Ambulatory Data and Reportable Events.

How to perform a query

How to Perform a Query

- Select the type of query you would like to perform (ICD-9 Detailed Query, ICD-10 Detailed Query, ICD-9 Top Ten Diagnoses, ICD-10 Top Ten Diagnoses, or Population Data). Depending on the type of query you select, the appropriate selectable tabs will appear horizontally across the top. Use these tabs, and move across left to right to design your query.
- Select ICD-9 Codes from ICD-9 Explorer Tab or ICD-10 Codes from ICD-10 Explorer Tab.
 - A search box is provided to lookup ICD-9 or ICD10 codes by their number or by character/word search within the description.
 - A maximum of fifteen codes/ranges may be selected for Hospitalization or Ambulatory queries.
- 3. Select the **Population** Tab.
 - Choose Service(s).
 - Choose Demographics of Interest.
 - Choose Time Frame of interest.

4. Select the **Diagnoses & Occurrences** Tab

- Choose the diagnostic position to search (Primary Diagnosis, Any of Top 3 Diagnoses, or Any Diagnosis).
- Choose to filter the codes of interest based on All Occurrences (counts/rates
 of all encounters) or First Occurrence (counts/rates of first occurrence per
 person for the specified query).
- Only one code may be selected for the First Occurrence query.

5. Select the **Location/Occupation** Tab.

- Select the location(s) and occupation(s) of interest.
- A maximum of five locations and five occupations may be selected.
- Your selection(s) will appear in the selected box on the screen.

6. Select the **Display Config** Tab.

- Choose x-axis variable.
- Choose the strata variable (note: the strata variable must be different than the x-axis variable).

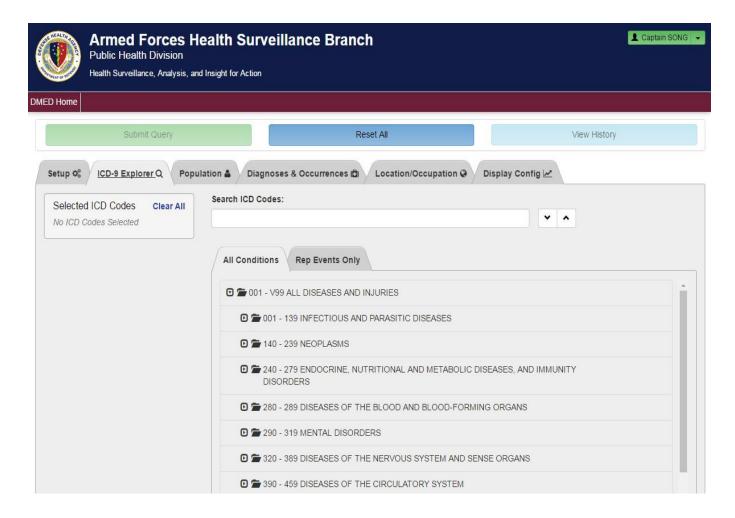
7. Press the **Submit Query** button.

The results should return within 30 seconds. For more complex queries containing multiple location and multiple occupation selections, results may take anywhere from 1 - 3 minutes.

Procedure and Screenshots for each tab

ICD-9/10 Explorer Tab

The ICD-9/10 Explorer also has a search function enabling you to search by code or text. Type the code or text string you desire in the **Lookup** box on the right of the screen and click on the **Search** button. The desired item will be highlighted. Click the left mouse button to select the highlighted item. To clear all selections and begin over, click on the **Clear All** button.

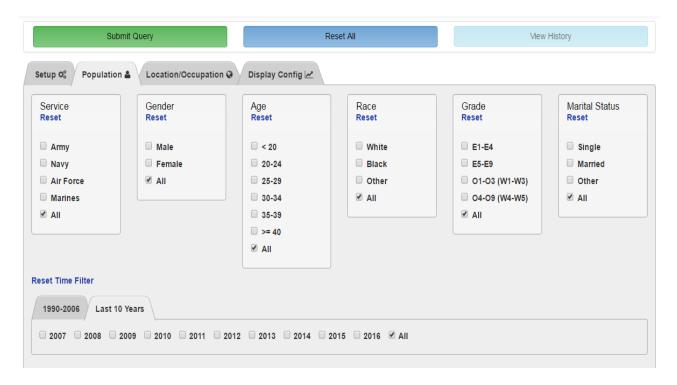


Clicking on the **arrow** sign next to a displayed range expands the display to show the next level of detail. Select codes or code ranges by clicking on them with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected Codes** box on the screen.

Population Tab

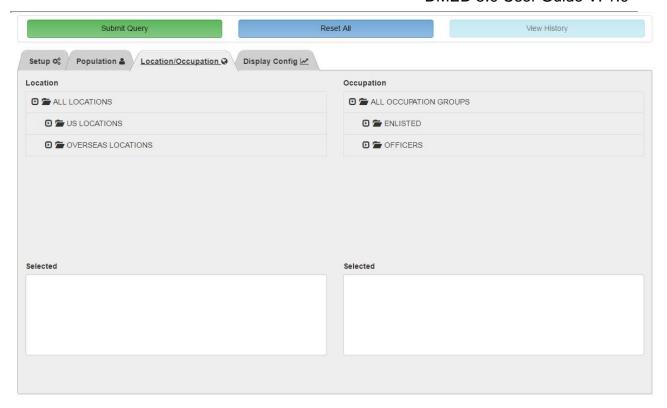
The Population tab displays the cumulative person years contributed during the

calendar years of interest for all active component members of the population substrata selected. These are the denominators for the rate calculations. (Not available for current year data).



Location/Occupation Tab

The user may select up to five locations and five occupations from the **Location/ Occupation** tab. Both the location and occupation explorers are laid out in a tree structure. Clicking on the **arrow** sign next to a displayed range expands the display to show the next level of detail. To select a specific location or occupation, click on it with the left mouse button. Your selection(s) will be highlighted and appear in the **Selected** box on the screen. To select (or deselect) multiple codes, hold down the **Ctrl** key and click on each desired code.



Please note that when selecting specific **Location(s)**, the population data being used in your query is defined as the active component population **ASSIGNED** to a particular location (or group of locations) that you select. Therefore, for a query, the results returned show the selected diagnoses for the active component population **ASSIGNED** to the **Location(s)** you selected, along with the other demographic selections you have made. Your results **DO NOT** show the selected diagnoses for the active component population **TREATED** at the location(s) you selected.

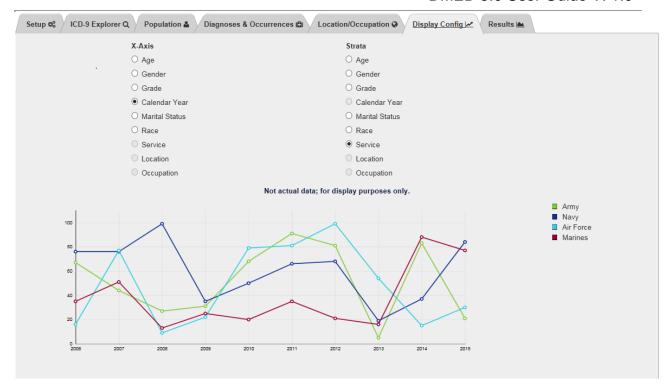
For more information on DoD Primary Occupational Codes, please refer to:

DoD Occupational Conversion Index enlisted/officer/civilian DoD 1312.1-1 Publication issued March 1997 Document currently maintained online by Defense Manpower Data Center

Display Config Tab

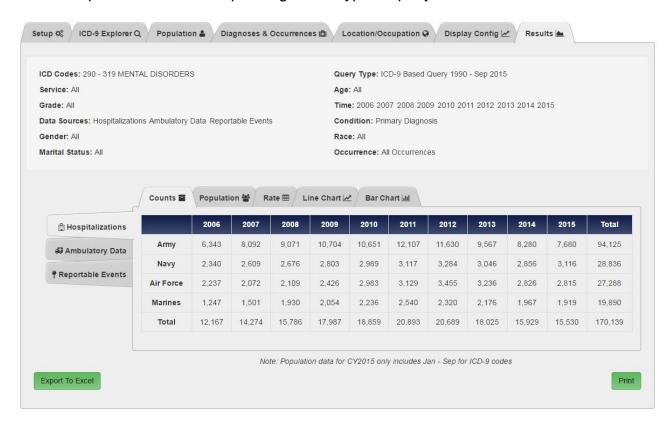
The user selects the values to be used for data display by selecting the X-axis and Strata variables. The same variable cannot be selected for both the X-axis and Strata.

A graphical representation will display how your data will be represented. Please note the sample graph is for *display purposes only*. The data provided in the sample graph are **not** the information you queried.



Results Tab

The Results tab is automatically displayed after a query is submitted. The Results tab contains up to five sub-tabs depending on the type of query submitted:



Counts - displays the count of the cases of the selected outcome of interest for the population substrata selected. These are the numerators for the rate calculations.

Population - displays the cumulative person years contributed during the calendar years of interest for all active component members of the population sub-strata selected. These are the denominators for the rate calculations. (Not available for current year data).

Rate - displays rates of the selected outcome of interest (rounded to 2 decimal places) for the population substrata selected. The default rate is counts per 1,000 persons per year.

Line Chart - graphs the rates in line chart format.

Bar Chart - graphs the rates in bar chart format.

View History

Retains the ten most recent queries you have performed during a session. Access the query history function through the View History button on the top of the screen. The View History screen will display the results of the most recently run query. There are numbered buttons across the top allowing you to select up to ten previously performed queries.

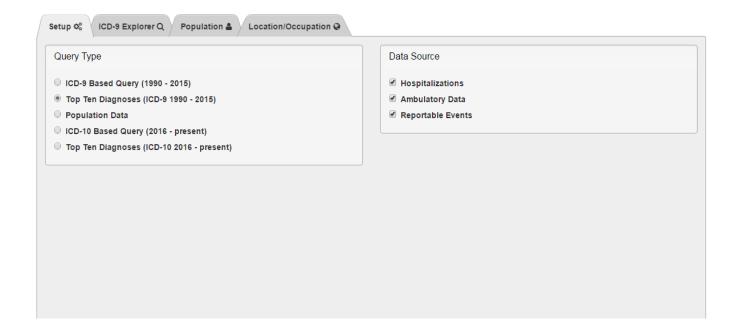


Top Ten Query

Top Ten Overview

The top ten diagnoses query displays the most commonly occurring conditions for the specified ICD code range and populations. ICD-9/10 codes for this query are specified at the 3-digit level only. The following steps are necessary to perform a Top Ten Diagnoses query.

- Choose the ICD-9 or ICD-10 Top Ten Diagnoses button.
- Choose the data source of interest or leave all selected: Hospitalizations, Ambulatory Data, or Reportable Events.
- Selectable query design tabs are: ICD-9/10 Explorer, Population and Location/Occupation.



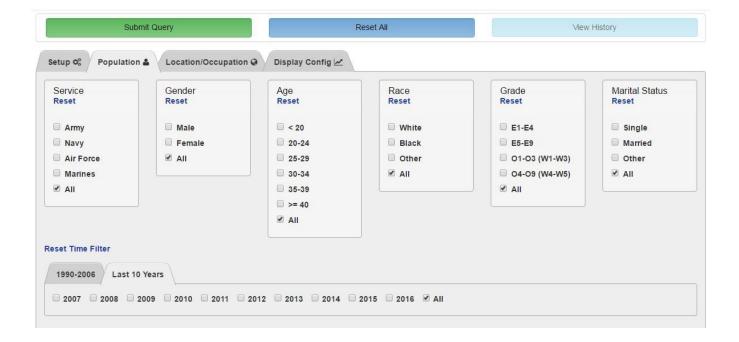
Population Query

Population Statistics

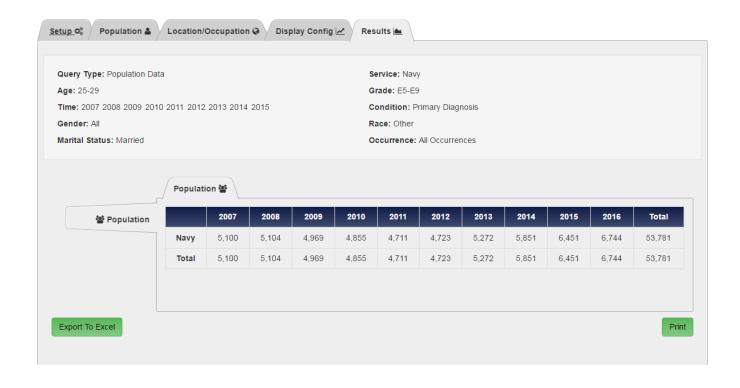
DMED also allows queries on population statistics (the total number of person years documented in the database for the population specified). No diagnosis information is included in these figures.

To obtain population statistics:

- 1. Select the **Population Button.**
- 2. The DMED will automatically go to the **Population** tab. Click on the check box next to the population you wish to study.



- Next, select the Location/Occupation Button. Select the desired Location and Occupational Group filters.
- 4. Select the Submit Query button. For more complex queries involving specific selections of Location(s) and/or Occupational Groups, more time may be needed to execute your query, approximately 1 3 minutes. At this time, you will be prompted with a dialog box with this information. You may choose to continue or cancel your query. In addition, you can choose to disable the dialog box for future queries.
- 5. Your query results will be displayed on the **Results** tab in table format



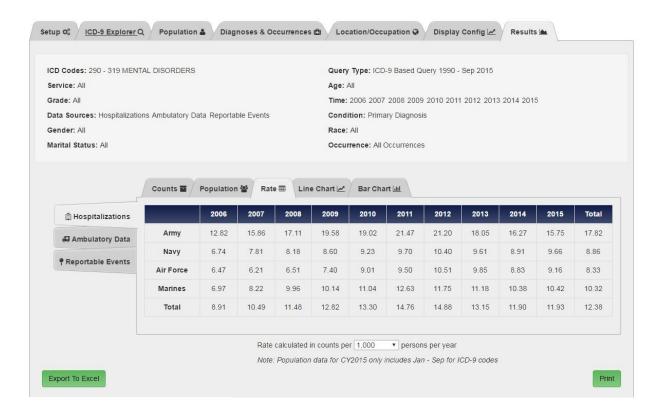
Information about query results

Changing rate calculations

All rates in DMED query results are calculated per 1,000 persons per year and rounded to two decimal places. When a rate is calculated to less than .01 per 1000, the rate is displayed as <0.01. In such instances, an exact rate can be manually calculated by viewing the results in count tab and dividing that number by the corresponding population tab person-time count. The formula is:

Rate = counts / person-time * 1000

DMED provides the ability to change the scale of the rate calculation through the drop down box at the bottom of the **Results** tab.

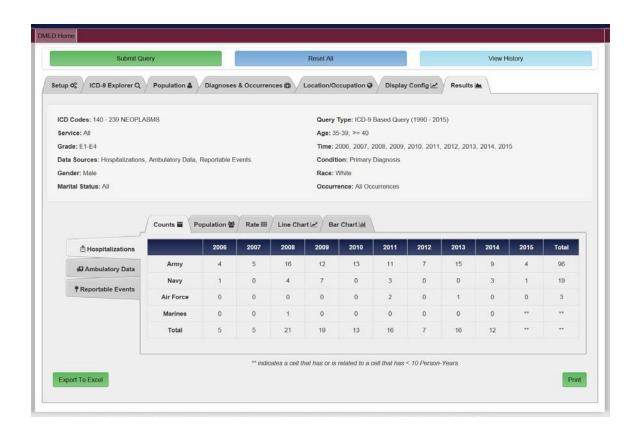


Unknown / missing data

Unknown values are included in calculations for strata where **All** is selected. However, unknown values are not included in calculations for strata where multiple discrete values are selected.

Small cell counts

DMED provides summary level data on groups of active component service members. It does not provide access to individual patient-level information. Because of this, DMED requires a minimum of 10 person years per table cell in order to calculate results. If less than 10 person years of data are available, results are not totaled and "**" is displayed in the appropriate cell in the table.



Additional Features

Exporting data

To export the results of a query to a tab-delimited ASCII text file: Click the **Export** button on the Results screen. This file is easily migrated into commonly used spreadsheet programs (e.g. Excel) for further analysis, graphing and printing. When this option is selected, a file panel appears allowing you to select the directory in which to save the query results file.

Printing results

Choose the **Print** button to print results screens.