



UNC
SCHOOL OF MEDICINE



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**
Division of Public Health

Using NC DETECT for Mental Health Surveillance

JULY 25, 2023

Thank you for coming to our NC DETECT webinar today. The topic for today is how to use NC DETECT for mental health surveillance.

Webinar Overview

Background on data sources in NC DETECT

NC DETECT Public-Facing Mental Health Dashboard

Using the NC DETECT Web App to access MH reports

Discussion; Q & A

I'm going to start with a brief background on what is available in NC DETECT although I will be focusing on the emergency department visit data.

I want to point out a public facing resource that uses the NC DETECT the emergency department or ED visit data.

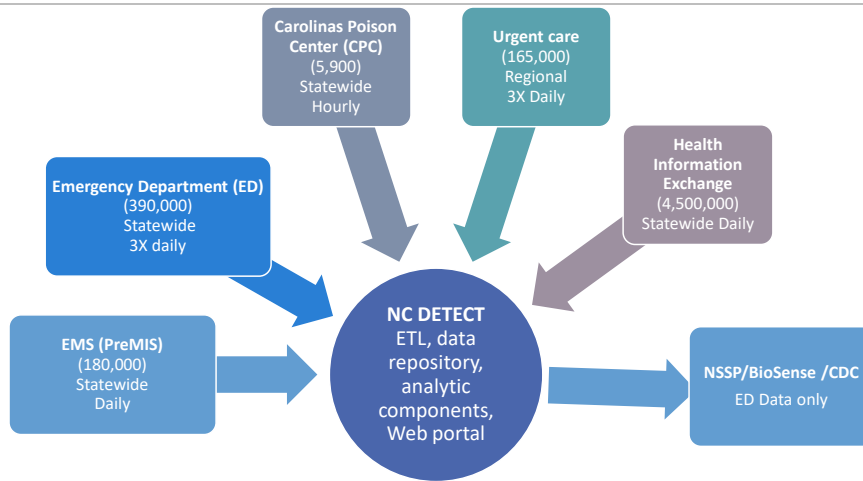
I will highlight some tools available on the NC DETECT web application and how to use them for mental health surveillance. And then we will have an open discussion for any additional questions or topics.

MH-related Topics Sent During Registration

- Suicide vs Suicide Attempts vs Suicidal Ideation
- Suicide Attempts by Disposition
- MH for specific age groups
- Depression
- Mental health surveillance during and after natural disasters
- Long ED stays for MH
- Substance abuse with MH
- Homelessness

Thank you to those who suggested specific mental health topics to cover today. I have tried to summarize them here and as I go through my slides I will try to cover all of these. But again, if you have any questions about anything I show you today please put a question into the chat.

NC DETECT Data Flow (monthly average volume)



While I am going to be focused on the emergency department or ED visit data today just a reminder that we have several other data sources available in NC DETECT. There is a self-harm indicator in the EMS data that may be of interest. We also have statewide poison control center data, regional urgent care data and data from the statewide health information exchange. If you set up a one-on-one training we can go over these data sources if that is of interest. Access to these data sources is controlled by user role – let me know if you have any questions about that.

Sharing ED Data with Partners

- When making ED data available publicly, please follow data suppression guidelines: <https://ncdetect.org/data/sharing-nc-detect-ed-visit-data-with-non-nc-detect-users/>
 - No data sharing by ED Facility
 - Suppress counts < 5 if count of total ED visits for that group is < 500

We hope that you will leverage the ED data in NC DETECT in your community health assessments and other reports. Just a reminder though to follow the data suppression rules posted on the NC DETECT website. In a nutshell, do not share any data by emergency department facility; instead share the data by county. While you can share counts under 5 for annual data by county, if you want to share any counts under 5 for time periods less than one year or for a subgroup, for example, patients under 18 years old with suicidal ideation, just make there are at least 500 ED visits for that subgroup for that time period. Of course, if you don't want to do those specific denominator calculations you can just suppress any counts under 5.

ED Data Considerations

- We track **ED visits** with a diagnosis/condition (not the number of people)
- Transition from ICD-9-CM to ICD-10-CM on 10/1/2015 may impact trends
- Hospital internal workflow changes / data quality issues may impact trends
- **Definitions include all ICD codes which may reflect co-morbid conditions and not the primary reason for the ED visit**
- For injuries, if intent is not clearly documented in the electronic health record physician documentation it *defaults* to unintentional per coding guidance.
 - <https://www.cms.gov/files/document/fy-2022-icd-10-cm-coding-guidelines-updated-02012022.pdf> (see pages 79, 86)

In the web app you can search on ED data as far back as 2009. Note, that there was a huge transition in ICD coding in the fall of 2015 thought that may impact your trends. In NC DETECT we have several definitions that include both ICD-9-CM and ICD-10-CM codes and trend changes may reflect the coding standard change and not necessarily a true change in ED visits for that condition.

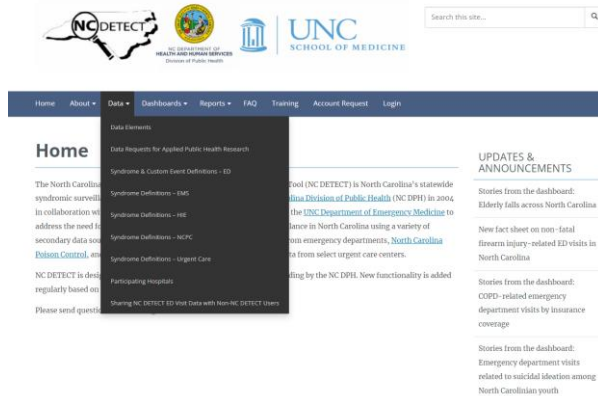
Additionally if you see trend changes in your local data they may reflect changes in hospital documentation workflows or coding guidance rather than a change in disease incidence. Please reach out to us if you have questions about this. We don't necessarily have all of the answers but can at least confirm if we know of any behind the scenes changes.

This bullet point that is bolded is especially important for mental health surveillance. The diagnosis code order in the ED visit data sent to NC DETECT does not convey any meaning. In other words, just because an ICD-10-CM Code is listed first in the list of diagnoses for an ED visit that does NOT mean it was the primary reason for that ED visit. I will show examples of this later on. What this means is that when we search for diagnosis codes to track something, for example, depression, we are looking at all of the codes received for that visit. The depression code may be for a co-morbid

condition and not the primary reason for the ED visit.

If you are looking at mental health conditions that involve an injury, for example an intentionally self-inflicted firearm injury, note that federal coding guidance directs hospital coders to default injury intent to be unintentional unless there is clear physician documentation of other intent. So the ED visit data is most likely under counting intentional self-harm injury (as well as assaults).

Syndrome and Custom Event Definitions



As a reminder you can view the detailed information about the definitions on our public-facing website: ncdetect.org. Just go to the Data Menu and select the data source of interest. If you have any questions about definitions please contact us.

NC DETECT MH Dashboard

[HTTPS://NCDETECT.ORG/MENTAL-HEALTH-DASHBOARD/](https://ncdetect.org/mental-health-dashboard/)

(WILL BE UPDATED IN AUGUST TO INCLUDE 2022 ANNUAL DATA &
FACILITATE EASIER DATA DOWNLOAD)

So let's start looking at some actual data. I want to go first to the NC DETECT mental health dashboard that we have available.

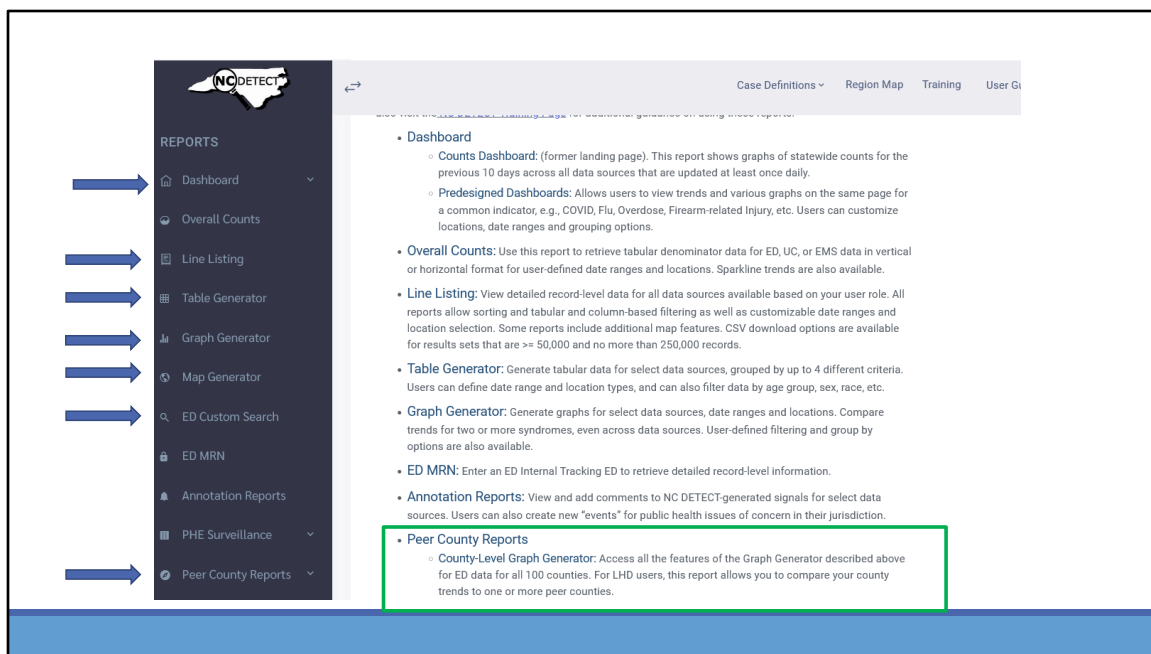
Next month we will be updating this to include annual data for 2022 and also to add dashboard tabs specifically to make it easier to download the data from the dashboard.

NC DETECT Web App

[HTTPS://NCDETECT.US/LOGIN](https://ncdetect.us/login)

[HTTPS://NCDETECT.US/ACCOUNT-REQUEST](https://ncdetect.us/account-request)

I want to now go to the web app to share some tips for getting multi-year data.




I'm going to briefly touch on the table generator, the graph generator in the peer county reports section and then the map generator and a newer report called the ED custom search.

For local health department or hospital-based users, the peer county reports section is where you can view aggregate data for all 100 NC counties. This can be useful to compare your county to peer counties or to look at the community as a whole where your hospital is located.

Predesigned Dashboard

The predefined dashboards provide at a glance views of several graphical outputs all on one screen. This is a great starting place if you are new to NC DETECT or if you don't use the web application that frequently

Predesigned Dashboards

 Note: Date ranges include buffers to accommodate potential data delays. By date searches have a 2-
The default date parameters are by week. For the COVID-19 and Flu dashboards the default dates start w

Dashboard Options: [Check All](#) [Uncheck All](#)

☒ Data Quality ☒ COVID-19 ☒ Firearm ☒ Flu ☒ Overdose ☒ Mental Health

Select Data Source: **ED** **UC**

Location Options:

Location Type: **County** **Region** **Hospital**

Location:

Parameters: [Change Default Parameters](#)

Search

Select Dashboard(s) of Interest

Location(s) based on user role

Change dates and outputs here

We add the mental health dashboard last month. It includes the same indicators as on the public facing one. You can deselect any dashboards that you don't want to run to save a little time.

This dashboard is available for ED data only,

Depending on your user role you can select a county, region or hospital locations.

The default output is the previous 12 weeks but you can change that by clicking on the change default parameters link.

Predefined Dashboards

Note: Date ranges include buffers to accommodate potential data delays. By date searches have a 2-day buffer, by week searches update every Tuesday and the default date parameters are by week. For the COVID-19 and Flu dashboards the default dates start with week ending June 26, 2021. For other dashboards the default date parameters are by week.

Dashboard Options: [Check All](#) [Uncheck All](#)

☒ Data Quality ☒ COVID-19 ☒ Firearm ☒ Flu ☒ Overdose ☒ Mental Health

Select Data Source: **ED** UC

Location Options:

Location Type: County **Region** Hospital

Location: 4 RTP AREA X

Parameters: [Use Default Parameters](#)

Include graphs (if available) that stratify data by: [Check All](#) [Uncheck All](#)

☒ Overall Counts ☒ Gender ☒ Age Group 6 ☒ Disposition ☒ Transport Mode ☒ Insurance Coverage ☒ Race ☒ Ethnicity ☒ Definition

Graph X-Axis Options: Date Week **Month**

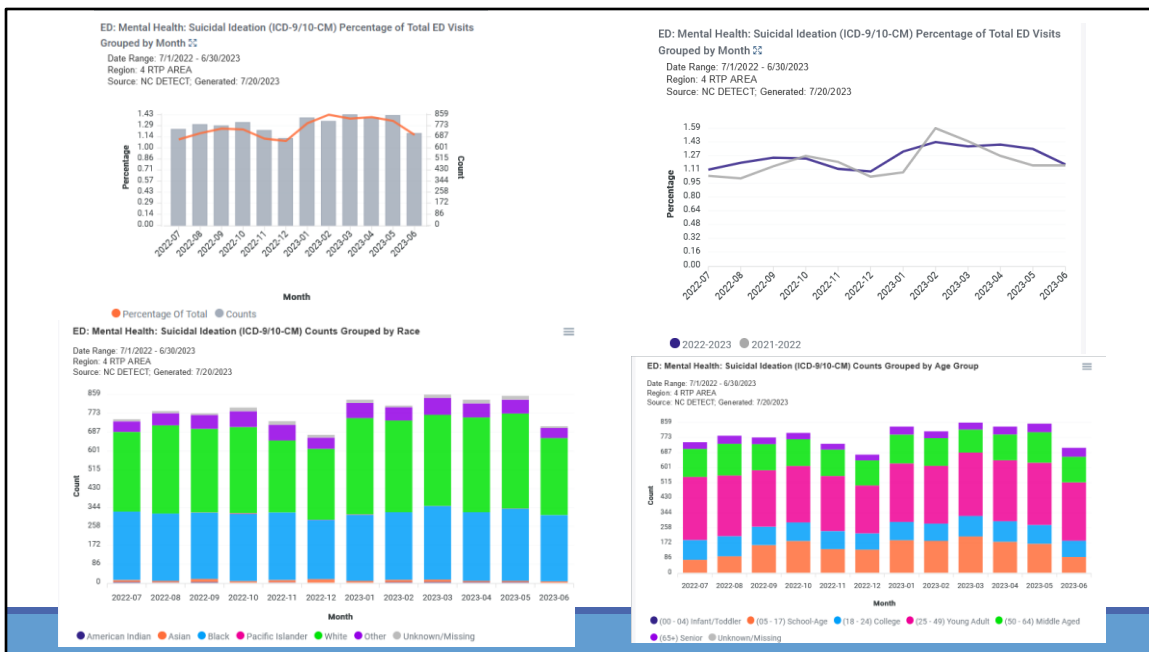
Date Range Options: 3 months 6 months **12 months** Other

Include Previous Year: **Yes** No

Search

Here is an example of changing the default parameters to show data by month for the previous 12 months.

I have also selected “Yes” to include previous year. This will add a line to the overall counts graphs to show the trends for the previous year.



This slide shows select graphs from my previous search. You can see the graph on the right has a grey line indicating the previous year.

The graph on the left shows both counts and the orange line reflects the percentage of ED visits.

The bottom left graph shows counts by month and by race category and the bottom right graph shows counts by month by age group.

This current version of the dashboard does not include graphs showing these trends as a percentage of total ED visits but you can do that easily on the graph generator.

You can download any of these graphs by using the hamburger menu on the top right, or by taking a screenshot.

We recommend taking a screenshot at this time as there is a bug in the download that leaves off the graph legend. To take a screenshot use Windows-Shift-S or right click and select the screenshot option (this functionality can be depending on your browser).

Graph Generators

Graph Generator VS. Peer County GG

Graph Generator	County-Level Graph Generator
Select Graph Type: Time Series Graph Vertical Bar Graph	Select Graph Type: Time Series Graph Vertical Bar Graph
Select Data Source: ED EMS HIE-I HIE-O UC NCPC DEATHS	Select Data Source: ED
Select Definitions: <input type="text" value="Select..."/>	Select Definitions: <input type="text" value="Select..."/>
From: <input type="text" value="07/10/2023"/>	From: <input type="text" value="07/11/2023"/>
Date Range: To: <input type="text" value="07/20/2023"/>	Date Range: To: <input type="text" value="07/21/2023"/>
Select Location Type: County Region Hospital	Select Location Type: County Region
Select Location: <input type="text" value="All is selected"/>	Select Location: <input type="text" value="All is selected"/>
	Optional Filters: <input checked="" type="checkbox"/> Select all
	Graph Options: <input checked="" type="checkbox"/> Alamance
	Stratify Data By: <input checked="" type="checkbox"/> Alexander
	<input checked="" type="checkbox"/> Alleghany

Like the predesigned dashboards, the graph generator is available both for your specific locations in the peer county section for all 100 counties and associated regions for ED data. In the main graph generator, you can access all data sources available to your user role compared to the peer county graph generator that is currently available for ED data only.

County-Level Graph Generator

Select Graph Type: **Time Series Graph** Vertical Bar Graph

Select Data Source: **ED**

Select Definitions: ED: Mental Health: Suicidal Ideation (ICD-9/10-CM) x ED: Injury: Suicide Attempt or Self-Harm (ICD-9/10-CM) x ED: CDC Suicide Attempt V2 x

Date Range: From 01/01/2019 To 06/30/2023

Select Location Type: **County** Region

Select Location: All is selected x

Optional Filters: Yes No

Graph Options

Stratify Data By: **Definition**

X-Axis options: Date Week **Month**

Y-Axis options: Counts **Percentage of Total**

Generate Graph

The graph generator is great for comparing trends across different data sources and definitions.

In this example from the peer county graph generator I have selected three definitions: suicidal ideation, suicide attempt or self-harm / also referred to as self-inflicted injury, and suicide attempt. The first two definitions are based on ICD codes only while the CDC definition includes chief complaint terms.

I have included all 100 counties in my search and am grouping the data by month, and outputting my results as a percentage of total ED visits.

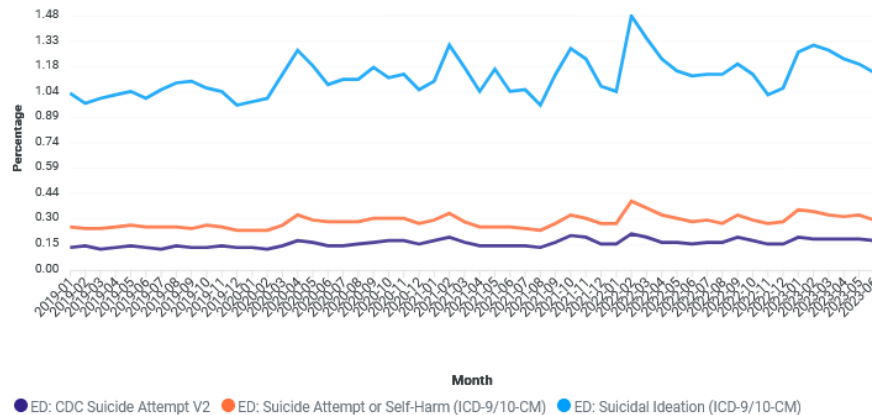
SI VS. Self-Harm VS. Suicide Attempt

Percentage Of Total ED Visits by Definition

Date Range: 1/1/2019 - 6/30/2023

County: All NC Counties

Source: NC DETECT, Generated: 7/20/2023



Here is the graph from the previous search. You can see that a significantly higher number of ED visits have the diagnosis code for suicidal ideation compared to self-inflicted injury and suicide attempt. You can also see that the monthly trends are similar across all three definitions.

County-Level Graph Generator

Select Graph Type:

Time Series Graph

Vertical Bar Graph

Select Data Source:

ED

Select Definitions:

ED: Mental Health: Suicidal Ideation (ICD-9/10-CM) x

ED: Injury: Suicide Attempt or Self-Harm (ICD-9/10-CM) x

ED: CDC Suicide Attempt V2 x

From

01/01/2019

To

06/30/2023

Select Location Type:

County

Region

Select Location:

All is selected x

Optional Filters:

Yes

No

Optional Filters:

Yes

No

Check All

☐ (00 - 01) Infant
 ☐ (02 - 04) Preschool
 ☐ (05 - 09) Elem. School
 ☐ (10 - 14) Middle School
 ☒ (15 - 18) High School
 ☐ (19 - 24) College
 ☐ (25 - 44) Young Adult
 ☐ (45 - 64) Middle Aged
 ☐ (65+) Senior
 ☐ Unknown/Missing

Check All

☐ (00 - 04) Infant/Toddler
 ☐ (05 - 17) School-Age
 ☐ (18 - 24) College
 ☐ (25 - 49) Young Adult
 ☐ (50 - 64) Middle Aged
 ☐ (65+) Senior
 ☐ Unknown/Missing

Check All

☐ Female
 ☐ Male
 ☐ Unknown/Missing

Check All

☐ American Indian

You can also compare trends across data sources for a one of more specific age groups.

In this screenshot I have kept my search criteria exactly the same but I have set the optional filters to Yes.

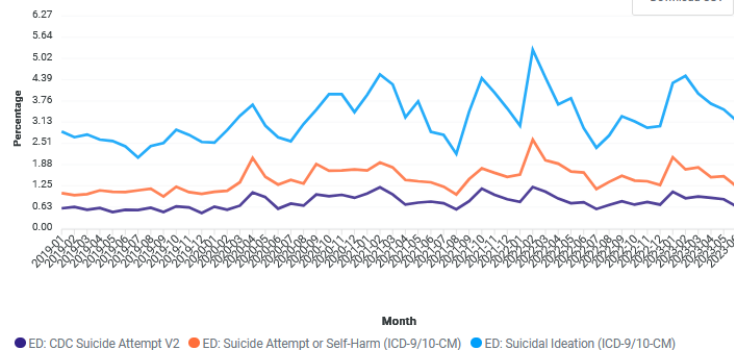
In the optional filters I have selected the High School Age Group which will include ED visits for patients aged 15 through 18.

19

SI VS. Self-Harm VS. Suicide Attempt: Ages 15-18

Percentage Of Total ED Visits by Definition

Date Range: 1/1/2019 - 6/30/2023
County: All NC Counties
Age Group: (15 - 18) High School
Source: NC DETECT, Generated: 7/20/2023



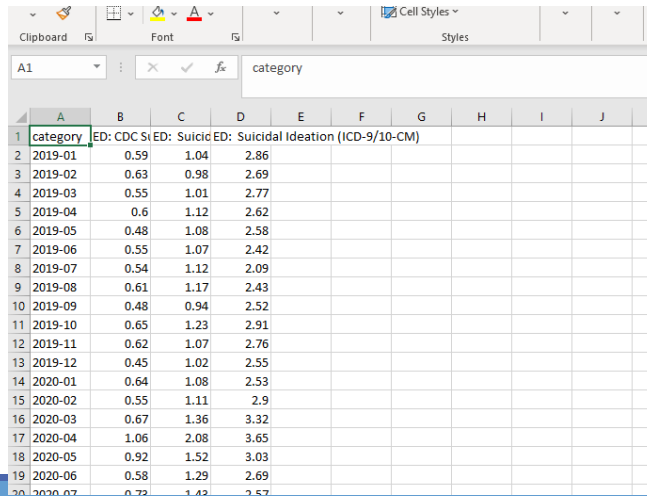
You can see that there isn't a much separation across the three definitions for this age group compared to the trend in all ages.

Also the percentage of total ED visits is significantly higher for all three.

In addition to using the hamburger menu to download the graph you can also download the data behind the graph as a CSV file.

This is a nice feature if you want to make your own graphs in another tool like Excel.

.csv file available in Graph Generators



category	ED: CDC SI	ED: Suicid	ED: Suicidal Ideation (ICD-9/10-CM)
2019-01	0.59	1.04	2.86
2019-02	0.63	0.98	2.69
2019-03	0.55	1.01	2.77
2019-04	0.6	1.12	2.62
2019-05	0.48	1.08	2.58
2019-06	0.55	1.07	2.42
2019-07	0.54	1.12	2.09
2019-08	0.61	1.17	2.43
2019-09	0.48	0.94	2.52
2019-10	0.65	1.23	2.91
2019-11	0.62	1.07	2.76
2019-12	0.45	1.02	2.55
2020-01	0.64	1.08	2.53
2020-02	0.55	1.11	2.9
2020-03	0.67	1.36	3.32
2020-04	1.06	2.08	3.65
2020-05	0.92	1.52	3.03
2020-06	0.58	1.29	2.69
2020-07	0.72	1.42	2.57

Here is what that CSV file looks like in Excel for the previous graph.

Compare Counties Graphically (Counts)

The screenshot shows the 'County-Level Graph Generator' interface. The configuration is as follows:

- Select Graph Type:** Time Series Graph (selected), Vertical Bar Graph
- Select Data Source:** ED
- Select Definitions:** ED: Mental Health: Depression - CMS (ICD-10-CM) x
- Date Range:**
 - From: 01/08/2023
 - To: 07/08/2023
- Select Location Type:** County (selected), Region
- Select Location:** Mecklenburg x, Wake x, Guilford x
- Optional Filters:** Yes, No (No is selected)
- Graph Options:**
 - Stratify Data By:** None, County (selected), Age Group 9, Age Group 6, Gender, Race, Ethnicity
 - X-Axis options:** Date, Week (selected), Month
 - Y-Axis options:** Counts (selected, highlighted with a green box), Percentage of Total, Proportions
- Generate Graph** button

Continuing with the graph generator, here is a graph showing how to compare trends for one definition across counties. In this example I'm looking at ED visits with a diagnosis of depression for Mecklenburg, Wake and Guilford.

To get a line for each county, make sure you select stratify data by County

I am grouping the data by week and I am just outputting ED visit counts.

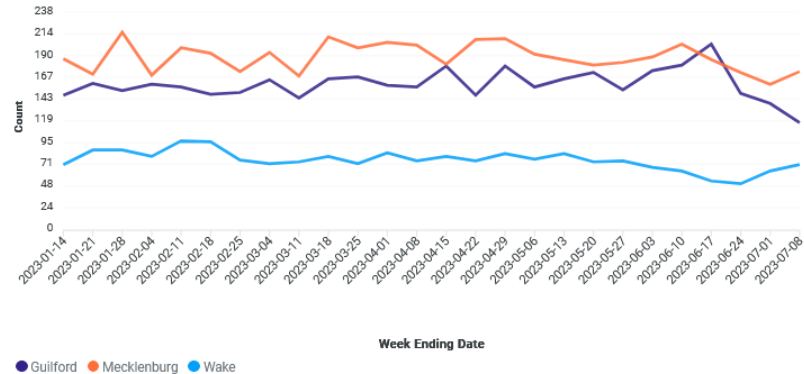
Compare Counties Graphically (Counts)

ED: Depression - CMS (ICD-10-CM) Counts by County

Date Range: 1/8/2023 - 7/8/2023

County: Guilford, Mecklenburg, Wake

Source: NC DETECT; Generated: 7/20/2023



The graph from by previous search is shown here. You can see that Mecklenburg county has a more ED visits with a diagnosis of depression compared to Guilford or Wake except for the week ending June 17, 2023.

Compare Counties Graphically (% of Total ED Visits)

County-Level Graph Generator

Select Graph Type:

Select Data Source:

Select Definitions: x

From:

Date Range: To:

Select Location Type:

Select Location: x x x

Optional Filters:

Graph Options

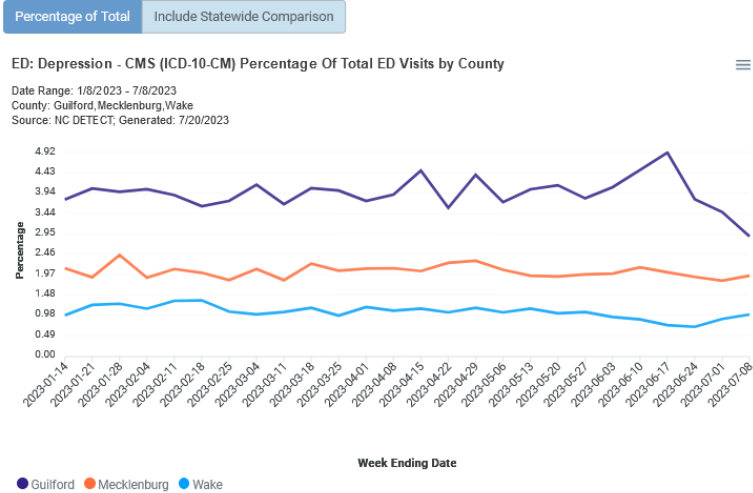
Stratify Data By:

X-Axis options:

Y-Axis options:

So we do not have population denominator data in the web app but you can graph data as a percentage of total ED visits rather than just counts. When comparing counties this can be a useful way to account for underlying differences in overall ED utilization .

Compare Counties Graphically (% of Total ED Visits)



You can see that when graphing based on depression as a percentage of total ED visits that Guilford has the highest percentage, even though Mecklenburg was highest for most weeks when looking at the count of ED visits with a diagnosis of depression.

Graph Generator: more than one data source

The screenshot shows the 'Graph Generator' interface. The 'Select Graph Type' section has 'Time Series Graph' selected. The 'Select Data Source' section has 'DEATHS' selected. The 'Select Definitions' section has three definitions selected: 'ED: CDC Suicide Attempt V2', 'ED: Injury: Suicide Attempt or Self-Harm (ICD-9/10-CM)', and 'DEATHS: Suicide'. The 'Date Range' section has 'From' set to '01/01/2020' and 'To' set to '06/30/2023'. The 'Select Location Type' section has 'County' selected. The 'Select Location' section has 'All is selected'. The 'Optional Filters' section has 'Yes' selected. The 'Graph Options' section has 'Stratify Data By' set to 'Definition', 'X-Axis options' set to 'Month', and 'Y-Axis options' set to 'Counts'. A 'Generate Graph' button is at the bottom.

You can use the main graph generator to compare trends across data sources based on your user role for the locations that you have access to.

We don't include death certificate data on the data sources slide I showed at the beginning because these data are updated only once per month and are provisional, but they are available in the web app.

In this example I'm comparing suicide attempt ED visits , self-harm ED visits and suicide deaths.

My date range is January 2020 through June 30, 2023 and I'm grouping the counts by month.

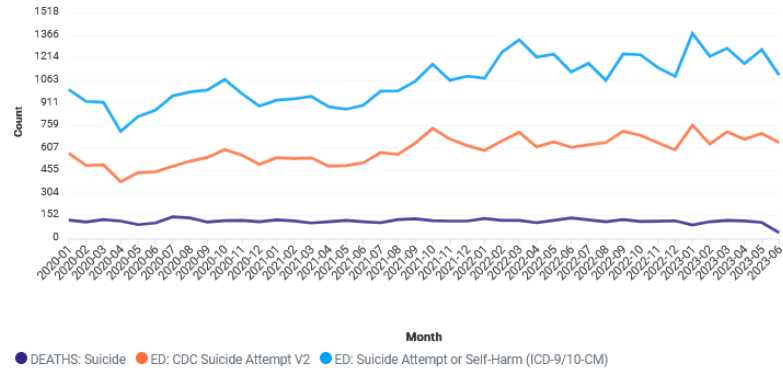
Self-Harm vs. Suicide Attempt vs. Suicide

Counts by Definition

Date Range: 1/1/2020 - 6/30/2023

County: All NC Counties

Source: NC DETECT, Generated: 7/21/2023



Here is the output from this graph.

You can see that all three data sources dip in June 2023 which may increase as we receive data updates for June ED visits and June deaths.

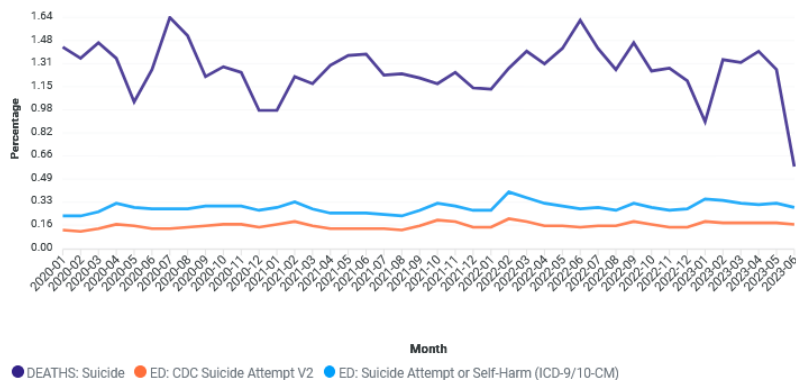
Self-Harm vs. Suicide Attempt vs. Suicide (%)

Percentage of Total by Definition

Date Range: 1/1/2020 - 6/30/2023

County: All NC Counties

Source: NC DETECT; Generated: 7/24/2023



Here is the output with the search criteria the same except for changing the Y axis to be percentage of total.

For ED visits this is the percentage of total ED visits and for death certificate data this is the percentage of total deaths.

Table Generator

Table Generator

The screenshot shows a web interface titled "Table Generator". It contains several sections for configuring data queries:

- Select Data Source:** A row of buttons: ED (selected), EMS, HIE-I, HIE-O, UC, NPCC, and DEATHS.
- Select Definition:** A text input field containing "ED: CDC Suicide Attempt V2".
- Date Range:** Two input fields labeled "From" and "To". "From" contains "01/01/2022" and "To" contains "06/30/2023".
- Select Location Type:** A row of buttons: County (selected), Region, and Hospital.
- Select Location:** A dropdown menu showing "All is selected" with a clear (X) and expand (v) icon.
- Optional Filters:** Two buttons: Yes and No (selected).
- Group Results By:** A dropdown menu showing "Disposition".
- And By:** A dropdown menu showing "None".
- Results include Subtotals:** Two buttons: Yes and No (selected).

At the bottom right is a large blue button labeled "Generate Table".

In the table generator you can stratify the data by up to 4 groups. The default output includes subtotal percentages as well as percentage of total ED visits.

One way I repeatedly use the table generator is to look at the percentage of ED visits that result in admission to an inpatient unit for a given syndrome definition. In this screenshot you can see that I have searched on the CDC suicide attempt definition for January 2022 through June 2023 and am grouping the data by disposition.

Table Generator

Search Criteria:

- Definition: ED: CDC Suicide Attempt V2
- Date Range: 1/1/2022 - 6/30/2023
- County: All NC Counties

Show 100 [Export ALL Results to Excel](#) [Export Filtered Results to Excel](#)

Showing 1 to 7 of 7 records, page 1 of 1 [Clear All Column Search Filters](#)

Disposition search (7) ...	Definition Count search (7) ...	Percentage of Definition Counts search (7) ...	Total ED Visits search (7) ...	Percentage Of Total ED Visits search (7) ...
Discharged	3467	29.14%	5175811	0.07%
Admitted	2656	22.33%	859182	0.31%
Admitted - Psych	3796	31.91%	42087	9.02%
Died	210	1.77%	17664	1.19%
Transferred	1220	10.26%	229296	0.53%
Left AMA / Discontinued Care	92	0.77%	350031	0.03%
Unknown/Missing	455	3.82%	352596	0.13%

<< < Page 1 of 1 1 > >>

Here is my output.

You can see for this time period that 22.33 % of ED visits in the suicide attempt definition were admitted and 31.91 % of ED visits were admitted to an inpatient psych unit. 29.14 % were discharged and 10.26% were transferred.

Please note that in the ED data a disposition of DIED that means that the patient died in the ED. If the patient comes into the ED for a suicide attempt, gets admitted and died, that disposition will be admitted. If the patient is discharged home and later dies that ED disposition will be documented as discharged.

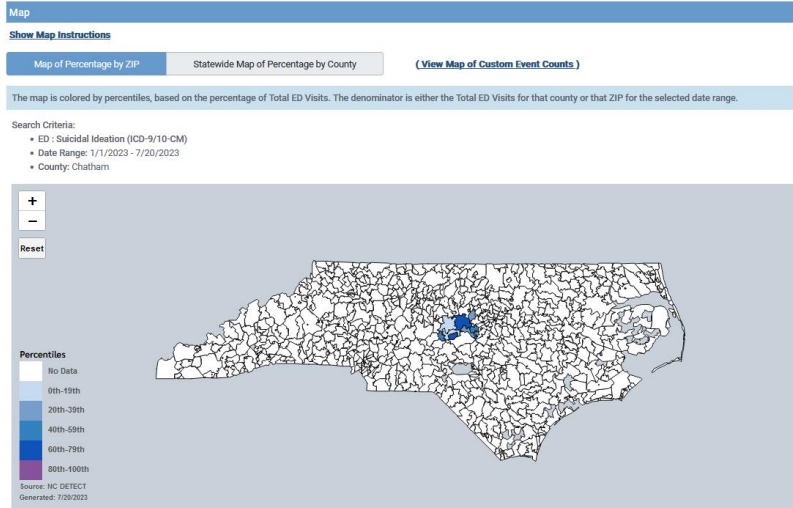
Map Generator

Map Generator: ZIP Code

The screenshot shows the 'Map Generator' interface. At the top, there's a 'Hide Search Parameters' button. Below it, 'Select Data Source' has tabs for ED, EMS, HIE-I, HIE-O, UC, and NCPC. 'Select Report Type' has tabs for Syndrome, Custom Event, and Basic. The 'Select Custom Event' dropdown menu is open, showing a list of medical events. 'Mental Health: Suicidal Ideation (ICD-9/10-CM)' is highlighted. Other events include Chronic Disease: Acute MI, Injury: Yellow Jasmine Poisoning, Mass Events: State/County Fair, Mass Events: World Equestrian Games, Mental Health: Anxiety Disorders, Mental Health: Anxiety V2, Mental Health: Depression - CMS, Mental Health: Depression V2, Mental Health: Involuntary Commitment, Mental Health: Suicidal Ideation CDC V1, Mental Health: Trauma- and Stressor-Related, Oral Health: Non-traumatic dental, Overdose: Benzodiazepine Overdose, Overdose: Cocaine Overdose, Overdose: Heroin OD Unint/Undet, Overdose: Med or Drug OD, Overdose: Stimulant Overdose, Polysubstance: OD on 2+ Drugs of Interest, and Polysubstance: Opioid OD/Intox w/Benzo OD. The 'Date Range' and 'Optional Filters' sections are partially visible on the left.

In the map generator you can create a ZIP code map for your county. For this map I'm going to select Suicidal Ideation from the Custom Events drop down menu. You can't see the location type but in this example I've selected Chatham county.

Map Generator: ZIP Code

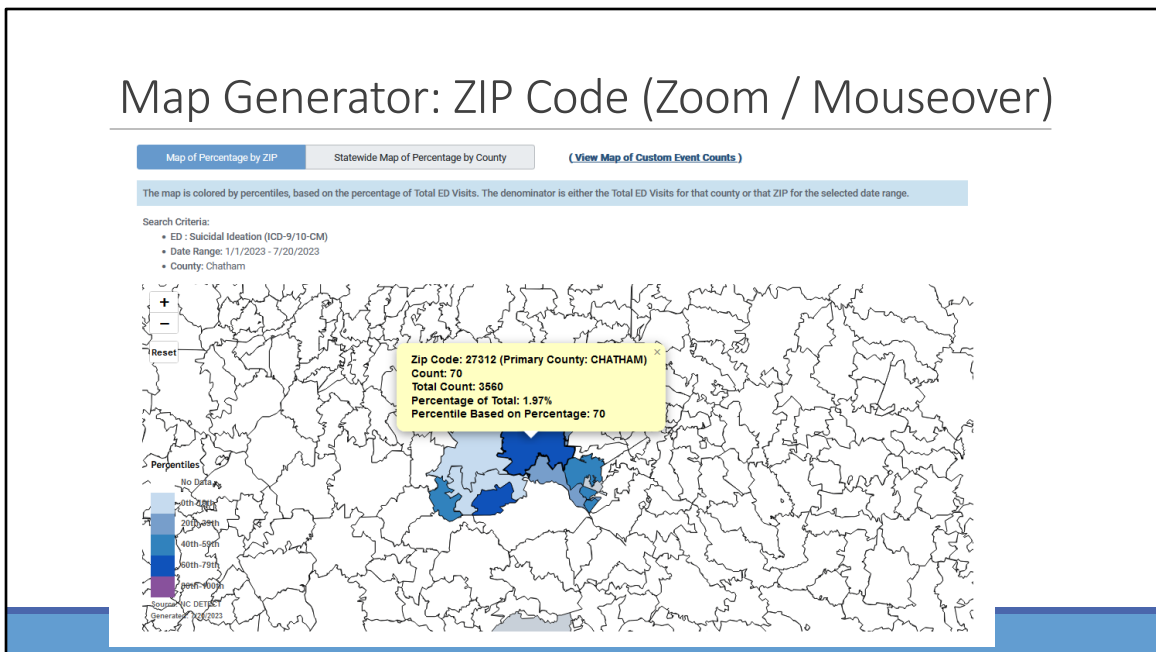


Here is what the map looks like by default.

You can use the plus icon in the top left to zoom in or use your mouse.

The reset button is available in the top left in case things get wonky with your map.

Map Generator: ZIP Code (Zoom / Mouseover)



Here is what a zoom-in view looks like. If you mouse over a ZIP code it will show you the ED visit count for your syndrome – in this example suicidal ideation, the total number of ED visits and the percentage of ED visits. It will also give you an indication of where that percentage falls compared to other ZIP codes.

We assign a ZIP to its primary county, with the knowledge that ZIP codes do cross county lines.

You can see statewide ZIP-based maps in the public-facing dashboard.

Line Listing Reports

Why Use Line Listing Reports

- Improve understanding of how definitions work
- Appreciate challenges with ICD codes, including code order
- Look for co-morbidities and SDOH indicators, e.g., substance use, homelessness
- Review free text fields, e.g., ED triage notes, EMS narrative
- Download datasets for analysis in other programs, e.g., Excel, SAS, R, EpiInfo, etc.

Even if you are primarily interested in coming to NC DETECT to look at aggregate data I strongly recommend that you review the line listing reports at least once for your syndromes or indicators of interest.

This will help you to understand the strengths and limitations of the definitions and how they work. You will see concrete examples of the ED data disclaimers I summarized at the beginning of the webinar. It also allows you to see the free text data that can provide important context to the ED visit. Although I don't show it today – the EMS line listing data includes a detailed narrative that is extremely useful. Finally, you may want to download these data for use in another program.

Line Listing

Line Listing

Select Data Source:

ED EMS HIE-I HIE-O UC NCPC DEATHS

Select Line Listing Type:

Syndrome Custom Event BT Agent / Emerging Threats Basic

Select Syndrome:

CDC Suicide Attempt V2

Date Range:

From 07/10/2023 To 07/20/2023

Select Location Type:

County Region Hospital

Select Location:

All x

Search

Most mental health related definitions are **custom events**

In the graph and table generators all of the ED definitions are in one long drop down. On the line listing reports and in the map generator you saw earlier they are grouped into syndromes, custom events, bioterrorism agents / emerging threats and basic. (BT agent / emerging threats indicators have very small counts so these are not on the map generator).

Most mental health definitions are under the Custom Event tab. The primary difference between syndromes and custom events is behind the scenes data processing. Syndromes are syndromes because they are 1) very complicated query syntax and/or 2) used for detecting clusters in a county or a hospital.

In this example I have selected a syndrome – CDC Suicide Attempt.

CDC Suicide Attempt V2

Chief Complaint	ICD-10-CM Codes
SI-ems	Z72.89 Other problems related to lifestyle ; T14.91XA Suicide attempt, initial encounter ; R45.851 Suicidal ideations
Suicidal	F17.210 Nicotine dependence, cigarettes, uncomplicated ; F10.20 Alcohol dependence, uncomplicated ; R45.851 Suicidal ideations ; Y90.8 Blood alcohol level of 240 mg/100 ml or more ; Z04.6 Encounter for general psychiatric examination, requested by authority ; T42.6X2A Poisoning by other antiepileptic and sedative-hypnotic drugs, intentional self-harm, initial encounter ; Z20.822 Contact with and (suspected) exposure to COVID-19 ; F32.A Depression, unspecified
Overdose yesterday	N30.00 Acute cystitis without hematuria ; R45.851 Suicidal ideations ; T50.902A Poisoning by unspecified drugs, medicaments and biological substances, intentional self-harm, initial encounter ; F32.A Depression, unspecified

It's difficult to show the line listing in a webinar like this but in one-on-one trainings we can review the line listing data elements in detail.

This table shows excerpts from the CDC suicide attempt definition.

You can see that the first listed diagnosis code is often not a significant health condition and not necessarily representative of the primary reason for the ED visit. You can also see how this CDC definition works. In the first example, the ED visit has a diagnosis code for suicide attempt which is what classified it into this syndrome. The next two ED visits have a combination of a diagnosis code of suicidal ideation AND a self-harm code which is what binned these two into this definition.

Depression

Chief Complaint	ICD-10-CM Codes
Depression	F32.A Depression, unspecified
Enterocolitis	F32.A Depression, unspecified ; E78.5 Hyperlipidemia, unspecified ; K52.9 Noninfective gastroenteritis and colitis, unspecified
Weakness	J18.9 Pneumonia, unspecified organism ; I26.99 Other pulmonary embolism without acute cor pulmonale ; I10 Essential (primary) hypertension ; E11.9 Type 2 diabetes mellitus without complications ; F32.9 Major depressive disorder, single episode, unspecified ; E11.65 Type 2 diabetes mellitus with hyperglycemia ; C22.1 Intrahepatic bile duct carcinoma ; D69.6 Thrombocytopenia, unspecified ; D64.9 Anemia, unspecified ; C79.9 Secondary malignant neoplasm of unspecified site ; N20.1 Calculus of ureter ; R10.9 Unspecified abdominal pain ; K72.00 Acute and subacute hepatic failure without coma ; R53.1 Weakness ; E87.20 Acidosis, unspecified

Here are line listing excerpts from the depression custom event.

You can see that the definition will include ED visits that may not have a depression-specific chief complaint but depression is included as a diagnosis. We do not have the full medical notes to understand how depression factored into the ED visit. Some ED visits include triage notes which can provide additional context, of course, you have the additional diagnosis codes that also provide insights into what the patient is going through.

Example: MH with Documented Homelessness

Chief Complaint	IVC W/O Paperwork
Triage Notes	Pt presents in police custody. Police report they were called by bystanders for a man standing on a bridge over the interstate. Pt reports he has previous attempts of jumping off bridge. Pt also presenting with laceration to left AC. Pt attempted to cut himself. Pt calm and cooperative in triage.
ICD-10-CM Codes	F15.24 Other stimulant dependence with stimulant-induced mood disorder ; X80.XXXA Intentional self-harm by jumping from a high place, initial encounter ; Y92.89 Other specified places as the place of occurrence of the external cause ; S40.819A Abrasion of unspecified upper arm, initial encounter ; T14.91XA Suicide attempt, initial encounter ; Z59.00 Homelessness unspecified ; Z20.822 Contact with and (suspected) exposure to COVID-19

ICD-10-CM includes many codes for social determinants but they are not used systematically across all hospitals.

But this is one example of how to identify ED visits with a mental health diagnosis for unhoused populations.

The Injury and Violence Prevention Branch is also working on a definition to identify ED visits for any reason for unhoused populations and we hope to implement that next month.

A Note About Long ED Stays for MH Conditions

- ED Discharge Date Time & Hospital Discharge Date Time added in late 2022
- Still a work in progress; under evaluation

Chief Complaint	ED Arrival Time	Disposition	ED Discharge Time (beta)	Hospital Discharge Time (beta)
OD	2023-05-17 18:18:00.0	Admitted	2023-05-20 07:15:00.0	2023-05-23 14:06:00.0

Two additional fields you will see in the line listing are ED discharge time and Hospital Discharge Time. We started receiving these at the end of last year to assist in a NC DHHS project looking at long stays in emergency departments for behavioral health-related issues. The patient stays in the ED for over 24 hours waiting for psychiatric treatment services. Please note that the ED discharge time requires some calculation for patients that are admitted to an inpatient unit. This is an ongoing project, and we continue to evaluate new additional time fields.

ED Custom Search

ED Custom Search

The screenshot displays the 'ED Custom Search' interface. At the top, there are two links: 'Hide Search Parameters' and 'Go back to my Table of Definitions'. The form includes several sections: 'Data Source' with a dropdown set to 'ED'; 'Date Range' with 'From' and 'To' date pickers both set to '03/10/2023'; 'Select Location Type' with radio buttons for 'County' (selected) and 'Hospital'; 'Select Location' with a text input showing 'All x'; 'Optional Filters' with 'Yes' and 'No' buttons; and 'Custom Search Options' with 'Search by Keywords' and 'Search by Diagnosis Codes', each having 'Yes' and 'No' buttons. At the bottom of the form, there are links for 'View Custom Search Definition' and 'Save Custom Search Definition'. A large blue 'Search' button is positioned at the bottom center of the interface.

You can always ask us to add a syndrome definition to NC DETECT but if you want to do some exploring on your own then the custom search is a great report to use. Currently the custom search is available only as a line listing so you would need to download the data to Excel to do aggregate analyses for your custom definition.

The custom search is a great tool to use if you want to look at ED visits with one or more diagnosis codes AND one or more additional diagnosis codes. In the screenshots that follow I'm going to use the example of ED visits with a diagnosis of suicidal ideation and a diagnosis of alcohol intoxication.

ED Custom Search: SI & Alcohol (Part 1)

Search by Keywords:

Search by Diagnosis Codes:

Search Diagnosis Codes:

Search Diagnosis Codes Option:

- Use the left panel to select codes. Search codes using the filter, click the left side box in a row to select a code. To select all codes on the current page, click in the box on the column header row.
- The selected codes are listed on the right panel. Use View Definition to view definition for the selected codes.
- To remove selected codes, uncheck the codes on the left panel, or use Delete on the right panel. Use Clear All Selected Diagnosis Codes to clear all selected codes.

Select Diagnosis Codes:	
<input type="checkbox"/>	Diagnosis Code
<input type="checkbox"/>	Q, suicidal ideation
<input type="checkbox"/>	R45.85 - Homicidal and suicidal ideations
<input checked="" type="checkbox"/>	R45.851 - Suicidal ideations

10 50 100 Showing page 1 of total 1 pages (2 codes) < 1 >

Selected Diagnosis Codes:	
Total Number of Selected Codes: 1 View Definition	
R45.851	
R45.851 - Suicidal ideations	Delete

[Clear All Selected Diagnosis Codes](#)

In this screenshot I have elected to search only by diagnosis codes – no keywords. I have used the diagnosis selector and typed in suicidal ideation. When I click on the box next to the code it moves it to the right – it is now part of my search criteria.

ED Custom Search: Save your Definition

Do you want to require one or more diagnosis codes (Boolean AND) with the diagnosis code(s) already included in your definition?

Yes

No

Do you want to exclude diagnosis codes?

Yes

No

[View Custom Search Definition](#)

[Save Custom Search Definition](#)

Search



The nice thing about the custom search is that you can save your definition for future use. You can do this after to run the report to check your results or beforehand if you want to make sure you don't forget to save it.

If you want to save your definition after you run the report, just click on the show search parameters link and it will take you to this same Save Custom Search Definition link.

ED Custom Search: Results



Export ALL Results to Excel		Export Filtered Results to Excel
Clear All Filters		
	Disposition search (76) ...	Diagnosis codes search (76) ...
	or 240 mg/100 ml or more show less	
f Pt re	Admitted	R00.0 Tachycardia, unspecified ; F41.9 Anxiety disorder, unspecified ; F10.10 Alcohol abuse, uncomplicated ; F10.929 Alcohol use, unspecified with intoxication, unspecified ; E87.29 Other acidosis ; R45.851 Suicidal ideations Show less
	Discharged	F10.929 Alcohol use, unspecified with intoxication, unspecified ; R45.851 Suicidal ideations ; Z59.00 Homelessness unspecified Show less
oy re	Discharged	F10.920 Alcohol use, unspecified with intoxication, uncomplicated ; R45.851 Suicidal ideations ; F32.A Depression, unspecified Show less

Here is some example output from the query I just ran. You can see that the results include ED visits with the ICD-10-CM code for suicidal ideation and one or more of the alcohol intoxication codes I selected.

Please contact us for assistance!!

Visit <https://ncdetect.org> for more training videos.

One-on-one trainings using live data can be scheduled at anytime.

We can also assist with “pulling” data.

ncdetect@listserv.med.unc.edu

