



Working with RHINO

A Handbook for Using Healthcare Encounter Data in Washington
State



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For more information, contact the RHINO Program (DOH)
RHINO@doh.wa.gov

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov

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Using This Guidebook

Getting Started with RHINO Data

Why a guidebook?

This guidebook is intended to be both an introduction to using RHINO data and an overview of the ESSENCE platform in which most of our users interact with RHINO data. This guidebook grew out of our desire to have a single place where users could turn for common needs, such as standard practices for [monitoring influenza-like illness](#) or [learning about frequently used analysis tools](#).

What other resources are available?

RHINO has a [Community of Practice SharePoint](#) site with a variety of additional resources in its library. Additionally, the [Appendix](#) has a section with more resources from RHINO and other organizations like the National Syndromic Surveillance Program (NSSP).

What if I have more questions?

While we have tried to make the guide both intuitive enough for a novice user and comprehensive enough to support expert-level analysis needs, it is possible that you will have additional questions or need assistance from RHINO staff. If that is the case for you, we offer virtual trainings and bimonthly surveillance topic calls. Please do not hesitate to [contact us](#) if you need additional help or are looking for resources.

Understanding RHINO Data

Syndromic Surveillance and RHINO

About Syndromic Surveillance

Syndromic surveillance is a near real-time, all-hazards surveillance system. It is the real-time collection, analysis, interpretation, and dissemination of health-related data to enable the early identification of the impact of potential human or veterinary public health threats, which require effective public health action. Syndromic surveillance is often interpreted in combination with other information and is not intended to be a standalone surveillance system.

Originally intended for bioterror detection, syndromic surveillance data are now used to monitor and assess a wide variety of public health topics including communicable diseases, interpersonal violence, and drug overdose events. Local, state, federal, and international cooperation continually expands the list of use cases for the data.

About RHINO

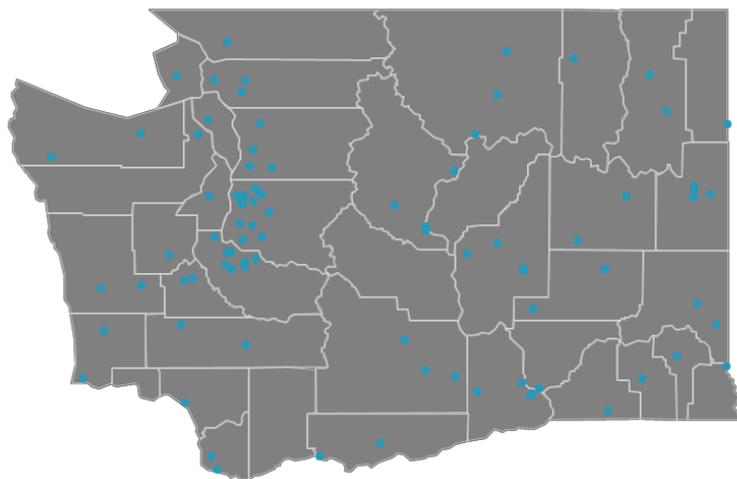
At the Washington State Department of Health (DOH), the Rapid Health Information NetWOrk (RHINO) program gathers, maintains, and disseminates Washington's syndromic surveillance data and is the only source of outpatient data and one of two for emergency department data. From here forward we will refer to this dataset as healthcare encounter data.

Facility onboarding

All of Washington State's emergency departments are required to participate in syndromic surveillance reporting in accordance with [RCW 43.70.057](#). Additionally, many primary and specialty clinics voluntarily submit data.

Data validation is ongoing as we work to improve our coverage across the state, particularly in urgent care settings. To the right is a map of the locations of Washington's emergency departments by ZIP Code.

RHINO's onboarding page for facilities interested in participating is located [here](#). You can also identify which facilities are reporting in each jurisdiction in specific timeframes on our [website](#). If you have questions about a specific facility in a jurisdiction, please contact syndromic.surveillance@doh.wa.gov.



Potential Use Cases for RHINO Data

As an all-hazards surveillance system, healthcare encounter data are a versatile tool for monitoring various aspects of public health. Some sample use cases from Washington and around the country are below.

- **Adult falls:** monitor emergency department visits for falls among patients aged 65 years and older and use triage notes to contextualize visits.
- **Emergency department care utilization:** identify trends in potentially avoidable emergency department visits across age groups.
- **Exposure during extreme weather events:** monitor visits potentially associated with extreme weather events, including temperature and wind-based events.
- **Gastrointestinal illness:** identify visits for gastrointestinal illnesses, including those associated with foodborne illness outbreaks.
- **Influenza-like illness:** monitor trends in both emergency department and outpatient clinic visits for influenza-like illness. Stratify emergency department visits by [patient class](#) to identify hospitalizations. Stratify by facility to view localized trends or trends by [facility type](#).
- **Motor vehicle collision injuries:** identify visits for motor vehicle collision injuries at both emergency departments and outpatient clinics and use triage notes to contextualize visits.
- **Respiratory illness during poor air quality events:** Monitor visits in both emergency department and outpatient clinics for a variety of conditions potentially associated with poor air quality events.
- **Drug Overdose:** identify visits and monitor trends for suspected drug overdose, including opioid and fentanyl-involved suspected overdoses.
- **Suicide and self-harm:** Identify visits for suicidal ideation, suicide attempts, and self-harm behaviors and use triage notes to contextualize visits.

RHINO Community of Practice

To facilitate cooperation between local health jurisdictions (LHJs) and other public health organizations using RHINO data, we maintain a Washington Community of Practice for data users to collaborate. We host bimonthly webinars on using healthcare encounter data for a variety of topics and have available ESSENCE skills trainings. There is a [SharePoint](#) site for members with resources on RHINO data and relevant updates.

Anyone is welcome to use the Community's resources. If you would like to participate in the Washington Community of Practice, please contact RHINO@doh.wa.gov.

Data Best Practices and Limitations

Clinical Data Best Practices

- All users should have a basic understanding of RHINO data to be able to use it effectively. **You don't need to be an epidemiologist to use sound science!** Always consult with other jurisdictions when using their data, whether at the state, tribal, or local health level. Solicit their expertise regarding local trends and health issues. **If you do not have contact for the other partners included in your data, RHINO can help facilitate a connection.**

- Whenever possible, RHINO encourages you to collaborate with hospitals and clinics. They may have additional context regarding trends and workflows, which could enhance your analysis. **If you do not have a contact for the facilities in your data, RHINO can help facilitate a connection.**
- Consider alternative explanations for the trends you observe. Consult with subject matter experts and the literature on the health issue to see if your data align with expected trends.
- Know what is normal for your data quality.
 - Know the formats of diagnoses. Do they provide one diagnosis or multiple? Do they include the decimal point in their ICD-10 codes?
 - Know the formats of chief complaints. Do your facilities report a single term, standardized terms, or free text?
 - Which optional data elements do your facilities report (e.g., triage notes, procedure codes, clinical impression)? How complete are they?
- Check that your [syndrome definitions and queries](#) are appropriately defined for the question you would like to answer. Invite collaboration with colleagues.
- Know [which of your facilities](#) are sending production-quality data and when they started sending data. Watch for new facilities which can change visit volumes if you are querying based on counts.
- Know which kinds of facilities you have (e.g., emergency department, inpatient, or outpatient – urgent care, primary, and specialty care).
- Know the reporting patterns of your data. Do facilities send their visits every hour or every 24 hours? Weekly counts may give you a more stable picture than daily counts because of reporting procedures. Remember counts from the most recent weeks may not yet be complete.
- Use counts and percentages. After you query, check that counts are the expected magnitude and have not changed dramatically. If counts are much higher or lower than expected, you may need to modify your query parameters. As a result of this potential variability, consider using percentages instead of counts as they can provide more stable trend information.
- Establish and maintain relationships with your facilities. Knowing your data providers will increase the likelihood both that you are informed of potential changes in the data (e.g., data drop-offs, implementation of pick lists) and of successful collaborations during an outbreak.
 - Let your facilities know you use and value their data!
- View RHINO data as a tool in your public health surveillance and preparedness toolbox, rather than as a standalone surveillance system.
 - Healthcare encounter data are not cleaned or curated. Data is automatically received directly from the electronic medical record (EMR) and, consequently, can be noisy or occasionally lead to inaccurate conclusions.
- RHINO data is appropriate for:
 - Generating hypotheses,
 - Strengthening information gathered from other sources,
 - Investigating rumors or interventions, and
 - Conducting preliminary assessments of the health effects of an emergency.

Clinical Data Limitations

- Data drop offs can occur for brief periods (1-2 days) and occasionally for longer (weeks to months). These are likely the result of electronic medical record system migrations and data gaps can often be filled in with time.

- Data are variable in areas like reporting timeframe, electronic health record vendor, facility types, quality of data reported, and variables included. Data may change because of changes internal to the facility, which may not be communicated or readily apparent to public health.
- Data are always preliminary. Because data is real-time, it fills in over time and it is difficult to know if you have a complete dataset. Using a longer time resolution or limiting your query to visits which occurred a week or more in the past may provide more stability.
- Availability of information will often depend on patient types and clinical workflows. For example, inpatient diagnoses will likely be more delayed as this information is typically not available until after a patient is discharged.

Accessing RHINO Data

Data Release Framework

Requesting Access to RHINO Data

To request RHINO data, first review the data release framework below, and then [fill out and submit forms that apply to your situation](#). Data sharing agreements and confidentiality agreements will be provided after your data request has been requested and approved.

- The guidelines contained here reflect typical practice. RHINO staff are available to discuss exceptions to these guidelines, including research projects which do not require staff time to pull data and evaluations with IRB approval that necessitate more identifiable patient information (e.g., name).
 - RHINO also maintains a more detailed flow chart for our data release policies.
 - Users may only use the MRN field to identify a patient when investigating a notifiable condition or public health threat.
- “Researcher” includes students who are interested in using RHINO data for their work.
 - All research requires consent or exemption from an institutional review board (IRB). Researchers may use an IRB from their state, territory, or providence of residence.

Data Release Framework						
Requestor	Intended Purpose	Process for Access	Data Provided	Method of Access	IRB Approval Needed	Cost
<i>Washington State Department of Health</i>	Surveillance, community health assessment, program evaluation	Data sharing agreement, RHINO data request form; confidentiality agreement	Aggregate or line-level data from Washington State	Periodic data pulls, NSSP ESSENCE account, or custom report	No	No charge for access
<i>Local and Tribal health</i>			Aggregate counts or line-level details of relevant visits			
<i>Other public health partner organization</i>						
<i>Data providers</i>						
<i>Public health agency outside of Washington</i>						
<i>Researcher</i>	Research as defined in RCW 42.48.10		Case-by-case		Yes	Hourly charge
<i>Public Records Request</i>	Public information	Identifiable data is exempt from public records requests	Aggregate data as appropriate	Data pulled by RHINO staff	No	

- “Public health agencies outside of Washington” includes other state, federal, territorial, and provincial health authorities.

- “Other public health partner organization” includes groups like the Washington Poison Control and the Washington State Hospital Association who intend to use RHINO data as part of their public health practice.
- RHINO data are not subject to public records requests under [RCW 43.70.057](#).

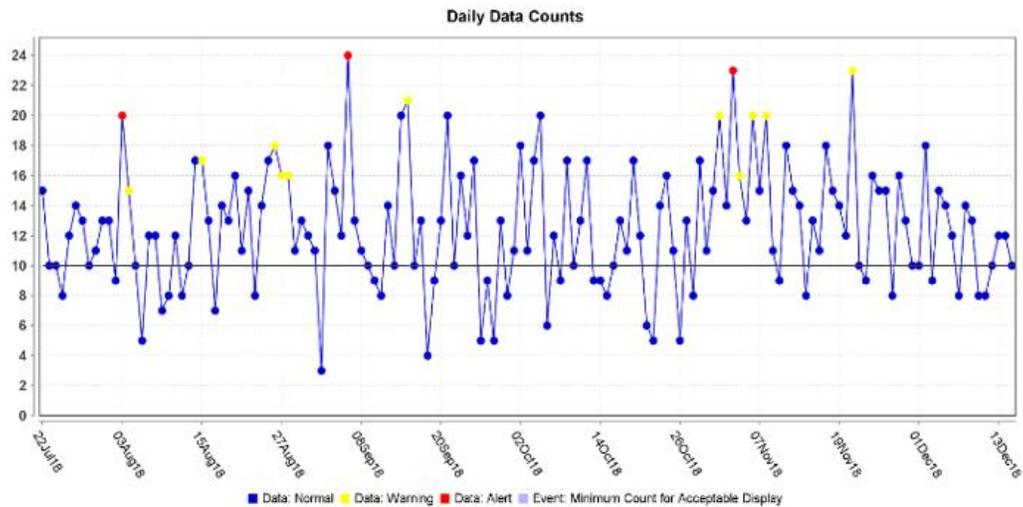
Publishing Guidelines

Quick Tips and Reminders

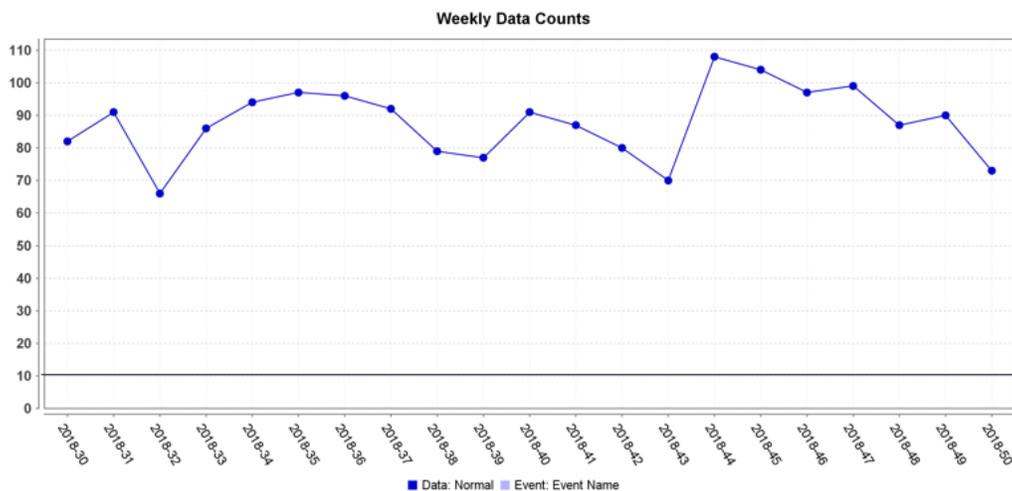
It is acceptable to publish data in presentations, newsletters, and peer-reviewed journals. However, precautions must be taken to protect patient privacy. The ***RHINO team must approve publications for peer-review and presentations before submission*** and you should attribute the data to RHINO. The guidelines below apply to use of RHINO data for public release, not internal practices. A [decision tree](#) is included in the appendices of this guidebook.

- **Data attribution:** RHINO Data, Rapid Health Information Network (RHINO) Program, Division of Disease Control & Health Statistics, Washington State Department of Health.
- Local Health Jurisdictions (LHJs) should not publish data including residents of other jurisdictions without consulting those jurisdictions.
- When possible, avoid publishing data from a single facility.
 - If only a single facility is relevant or eligible for your publication, publish only visit percentages or rates per 10,000 visits instead of counts to protect patient confidentiality.
- RHINO encourages you to collaborate with the facilities included in your analysis.
 - Notification – Media, government, and government affairs staff at hospitals would welcome reviewing publications before submission. This could also represent an opportunity to coordinate messaging about press releases.
 - Preview period – It is good practice to give hospitals enough time to review the data so they can ask questions and offer additional context before submission.
 - Data details – It may be helpful to provide your hospital partners with the data details of the encounters you are including in your analysis.
- As much as possible, aggregate data. Elongating the time resolution (e.g., weekly to monthly) of your query may facilitate this.
- Suppress all non-zero numbers less than 10. Counts less than 10 may be represented as "<10" in tables or reports.
- Suppress rates or percentages derived from counts less than 10.
- Assure that suppressed cells cannot be recalculated through subtraction, by using secondary suppression as necessary.

The graph below shows daily counts of visits over a period in 2018 (intentionally unlabeled to protect patient confidentiality). The dark grey line across the graph indicates dates for which ESSENCE captured at least 10 visits. Because several time points do not meet this minimum threshold, the dates cannot be displayed as counts, rates, or proportions according to [DOH’s small numbers publication guidelines](#).



Thankfully, it is easy to correct this issue and create visualizations that are acceptable for public disclosure! The first option is to change the **time resolution** from daily to weekly counts. As we can see below, this change increases the visit counts far above the minimum threshold.



Had this change not sufficiently increased our visit counts to meet publication guidelines, alternative solutions might include removing some limiters (e.g., age groups or sex), further increasing our time resolution (e.g., to monthly counts), or shifting the time window we display to one with higher visit counts. For more information on publication standards, please see our [Small Numbers Publication Decision Tree](#).

Linking Guidelines

Linking RHINO Data with Other Datasets

To protect public health, authorized users may link RHINO data with data from other sources. Linking may not be done for purposes of commercial gain or levying criminal prosecution. Any linked dataset containing RHINO data elements are subject to the terms of the Data Sharing Agreement, similar

agreements governing datasets to which you are linking RHINO data, and all state and federal laws that govern any included datasets.

Fields that may be available for linkage include patient first and last name, ZIP Code, sex, date of birth or age, facility name, visit date and time, and medical record number. Access to this information requires a custom data pull by RHINO staff, which can be requested through submission of the appropriate form found on the [RHINO website](#). If you have questions about the feasibility or acceptability of linking RHINO data, please contact RHINO@doh.wa.gov.

Interacting with RHINO Data

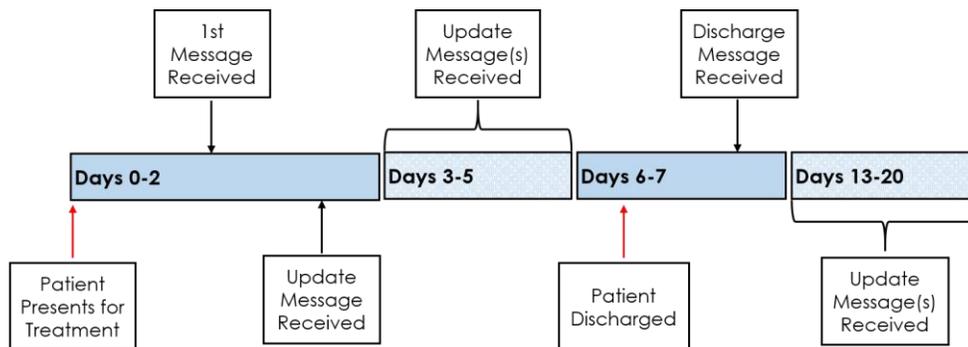
Data Sources and ESSENCE Platform Comparison

About RHINO Data

RHINO data in Washington State has grown since its launch in 2003. Under [RCW 43.70.057](#), all Washington State emergency departments must report healthcare encounter data to the Department of Health. RHINO data incorporates a variety of data elements from several sources to provide a flexible, population-level picture of public health in the state.

Example Information Flow Timeline

The graph below shows an example of how a patient record may fill in over time as more information is added or updated.



Data Elements and Timeline

The tables below give a sample of data elements RHINO gathers for healthcare encounters.

Required Data Elements				
Facility Information	Visit Information	Patient Demographics	Clinical Information	Other
<ul style="list-style-type: none"> • Name • Address • Type: <ul style="list-style-type: none"> ○ Primary Care ○ Specialty ○ Urgent Care ○ Emergency ○ Inpatient 	<ul style="list-style-type: none"> • Visit Date/Time • Patient Class • Discharge Date/Time • Discharge Disposition 	<ul style="list-style-type: none"> • Age* • Gender* • Race* • Ethnicity* • Address* • Pregnancy status* • Employer & occupation* • Email & phone number* 	<ul style="list-style-type: none"> • Chief Complaint/Reason for Visit* • Admit Reason * • Diagnosis* • Diagnosis Type* • Procedure Codes* • Procedure Date/Time • Triage Notes • Clinical Impression • Death (Y/N)* • Death Date/Time* • Onset Date* • Initial temperature* • Hospital unit* 	<ul style="list-style-type: none"> • Date of Birth* • Patient Name* • Unique Patient ID (e.g., MRN) • Unique Visit ID
*Required to be reported if collected in the patient's Electronic Medical Record				

Optional Data Elements				
Facility Information	Risk Factors	Clinical Information	Vital Signs	Other
<ul style="list-style-type: none"> • Assigned Patient Location 	<ul style="list-style-type: none"> • Smoking Status • Height • Weight 	<ul style="list-style-type: none"> • Acuity • Diagnosis Date/Time • Lab Orders/Results 	<ul style="list-style-type: none"> • Temperature • Pulse Oximetry • Blood Pressure 	<ul style="list-style-type: none"> • Insurance Information • Unique Physician ID • Recent travel information

Key Data Elements to Support Surveillance

RHINO data includes many data fields. Below is a highlight of the most frequently used fields for public health surveillance. For a more in-depth understanding of data element composition please see the [NSSP Data Dictionary](#).

Data Elements		Description
Geography	Region	Regions in ESSENCE are made up of groupings of ZIP Codes, which roughly correspond to our counties in Washington State. When using the Patient Location data sources, region will refer to the region where the patient lives. When using the Facility Location data source, it will refer to the region where the facility at which the patient sought care is located.
	State	If you would like to limit to visits only by Washington State residents, you may do so using the State parameter in ESSENCE so long as you are also using a Patient Location data source. If you have access to more than one site or state's data in ESSENCE, you may use this field to limit your query to only visits at Washington State facilities when you are using a Facility Location data source.
	ZIP Code	As with other geographic parameters, this data element will limit your query to either the residential ZIP Code of the patient (if using a Patient Location) data source or to the ZIP Code where the facility is located (if using a Facility Location data source).
	Region (Other Fields)	In addition to simply limiting your query by ZIP Code as described above, you may also limit your query to ZIP Codes for which a specified racial or ethnic group percentage of the population or be the percentage of the population or which fall into a specified income range. The geographic unit in ESSENCE attaches to social indicators. Please note that the thresholds built into ESSENCE for these parameters are based on US Census Data, but not necessarily the most recent data releases.
	Site	Site refers to the entity, which is submitting data to NSSP. This is often a state but may be a county or grouping of counties. If you have access to data from multiple sites and would like to limit to a subset of them, you might use the Site filter.
	Miles from Home	Limit your query to visits for which the patient travelled a specified distance from the center point of their residential ZIP Code to the center point of the ZIP Code where the facility is located using the operators equal, does not equal, less than, less than or equal, greater than, greater than or equal, and between.
Facility Information	Facility	You may limit your query to specific facilities using the Facility data element. This may be helpful if you know a particular patient of interest was seen at a specific facility (e.g., investigating a notifiable condition) or if you are only interested at visits which took place at a specific facility.

	Facility Type	You may also limit your query to specific facility types (e.g., only primary care or emergency department visits) using the Facility Type parameter in ESSENCE. Note that facilities with multiple practice types may not be included in your query results depending on what you choose and their practice type. For example, choosing primary care as your facility type will not include facilities which also provide urgent care. More information is available here .
Patient Age	Age Group	Limit your query to either include or exclude patients in specific age groups or those for whom age is currently unknown. Age groups are 00-04, 05-17, 18-44, 45-64, 65+, and unknown.
	CDC ILI Reporting Age Group	Limit your query to either include or exclude patients in specific age groups or those for whom age is unknown in age groups established by the CDC for Influenza-like illness (ILI) reporting. Age groups are 00-04, 05-24, 25-49, 50-64, 65+, and unknown.
	Ten Year Age Group	Limit your query to either include or exclude patients in specific age groups or those for whom age is unknown in 10-year increments. Patients 80 years and older are combined into 80+.
	School Age Group	Limit your query to specific age groups which approximate school ages. Age groups are 00-04, 05-11, 12-17, 18-25, 26-34, 35-44, 45-54, 55-64, and 65+.
	Age Range	Limit your query to patients in a specific age range using the operators equal, does not equal, less than, less than or equal, greater than, greater than or equal, and between.
Patient Demographics	Patient Sex	Limit your query to either include or exclude patients of a specific sex. You may also limit your query to patients for whom sex is unknown or unreported. Please note that Washington State facilities receive the following values: male, female, other, and unknown.
	Patient Race	Limit your query to either include or exclude patients by race. Limiters for this parameter include American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, "other race," white, and "not reported." Please note that we do not have information about the collection methodologies specific facilities use for gathering this information, but we are able to receive more than one classifier for a given patient where that is present in the clinical record.
	Patient Ethnicity	Limit your query to either include or exclude patients by ethnicity. Limiters include Hispanic or Latino, Not Hispanic or Latino, and "not reported." Please note that we do not have information about the collection methodologies specific facilities use for collecting this information.

Chief Complaint and Discharge Diagnosis	Chief Complaint (Original)	Create custom queries using key words from the <i>original</i> chief complaint text. Please note that the original chief complaint is sometimes incorrect (e.g., for sexual assault where the patient did not feel comfortable disclosing what occurred) or may be “uninformative” (e.g., a room number). In these circumstances, you may not be able to identify all desired visits using this field.
	Chief Complaint History	Create custom queries using key words from all chief complaint updates. This is the field which RHINO recommends using for searching records based on chief complaint text.
	Discharge Diagnosis	Create custom queries using ICD-10 diagnostic codes present in the patient record. Because some facilities do not include the decimal point in their coding (e.g., T40.1 vs T401), you must include the codes written both ways in your query syntax.
	Diagnosis Combo	View each diagnostic code present in the discharge diagnosis field parsed with its meaning. This may be particularly useful for manual review and identifying fewer familiar codes which are present in your captured visits output. For example, “A28.0 Pasteurellosis; W55.01XA bitten by cat, initial encounter; S61.451A open bite of right hand, initial encounter.”
	CC and DD	Create custom queries using key words in a field, which combines the Chief Complaint (Original) and Discharge Diagnosis fields. Note that, as described above, using the Chief Complaint (Original) fields may not return all desired visits. In lieu of using this field, RHINO staff generally apply the query syntax to both the Chief Complaint History and Discharge Diagnosis fields (in addition to others when appropriate).
	CC and DD Category	CC and DD Category allows the user to identify visits using pre-made queries built by other users and indexed in ESSENCE. These pre-made queries are typically developed and validated by multiple public health jurisdictions. More information about CC and DD Categories is available on the CC and DD Categories page of NSSP ESSENCE.
Other Clinical Information	Clinical Impression	Create custom queries using free text and diagnostic codes, which may be present in the clinical impression field of the patient record. The clinical impression field is generally used by a clinician for notes regarding the patient’s condition and relevant historical information, making it like the chief complaint and triage notes fields. For example, “pt states mid/L upper abd pain started yesterday with vomiting. States hx of pancreatitis.”

	Triage Notes Original	Create custom queries using key words, which may be present in the triage notes field. The richness of reporting standards varies widely across facilities and facility networks, with some providing a workup of the Social Determinants of Health and others only cursory clinical information. Regardless, the field is valuable for validating queries and often for understanding the context of what led a patient to need care for their condition.
	Procedure Code	Create custom queries using procedure codes present in the clinical record. Note that this field was not available from all hospitals prior to March 2020.
	Procedure Combo	View each procedure code present in the Procedure Code field parsed with its meaning. Please note that this field was not available from all hospitals prior to March 2020.
Patient Identifiers	Date of Birth	While you cannot search for visits in ESSENCE by date of birth, you can view it in the data details output. For notifiable conditions case-finding, it is acceptable to contact the facility for more information. Facilities will generally require that you provide both the MRN and date of birth. Note that this field was incomplete prior to March 2020.
	Medical Record Number	While Medical Record Number is not a required field, a unique patient identifier is required and MRN is encouraged. You are able to search for this field (C_Unique_Patient_ID or Medical_Record_Number) in ESSENCE.
	C_BioSense ID	Each healthcare encounter in ESSENCE has a unique identifier associated with it—the BioSense ID. You can create queries using lists of BioSense IDs (separated with commas). For encounters potentially related to COVID, you may also cross-reference the BioSense ID with WDRS where it will be listed as “RHINO ID.”
Patient Class	Has Been Fields	RHINO recommends using these fields for limiting your query by patient class. You may query by patients who Have Been Emergency, Have Been Inpatient, or Have Been Outpatient. You may also utilize multiple fields to identify visits which had more than one patient class (e.g., came to the emergency department and were admitted to the hospital). HasBeenAdmitted is also an option, but RHINO recommends using HasBeenInpatient for patients admitted into a hospital as HasBeenAdmitted is a calculated field. For more information on these fields, see the relevant section of this guidebook.
	Patient Class	Query for records based on the patient’s <i>last reported</i> patient class for that visit. Note that this field will only look at the most recent patient class, so querying for patients using Emergency will <i>not</i> identify patients who were subsequently admitted inpatient from the emergency department during their visit.

Patient Class

While monitoring all visits for a condition can be informative, it is generally more helpful to view them in smaller, meaningfully divided units. A primary method for that is to stratify by patient class. These distinctions can be particularly important when monitoring conditions like influenza-like illness (ILI) or when you are using [percent queries](#) and need to be mindful of your query’s denominator.

Patient Class	Reference Value
Emergency	E
Inpatient	I
Outpatient	O
Recurring	R
Obstetrics	B
Observation	V

While there are several data fields that allow you to select specific patient class limiters for your query, the **Has Been** fields are easiest to use and include all visits that have ever had that patient class. The similar **Patient Class** data field is *not* recommended because it will only identify visits for which the *most recent* patient class matches your selection. For example, if you selected Emergency, your query would not show emergency department visits during which the patient was subsequently admitted as an inpatient from the emergency department.

The table below details the four **Has Been** fields.

Has Been Emergency	Will display records for visits, which have ever had “emergency” as their patient class during the clinical encounter.
Has Been Inpatient	Will display records for visits, which have ever had “inpatient” as their patient class during the clinical encounter. RHINO recommends this field to search for hospital admissions rather than HasBeenAdmitted due to recent data quality issues.
Has Been Admitted	Will display records for visits, which have ever had “inpatient” as their patient class during the course of the clinical encounter and/or the discharge disposition indicates the patient was admitted.
Has Been Outpatient	Will display records for visits, which have ever had “outpatient” as their patient class during the course of the clinical encounter.

Facility Type

Another parameter to consider carefully while creating your queries is the facility type. Facility types in RHINO data include emergency departments, inpatient practice settings, primary care clinics, urgent care clinics, and specialty care clinics. Thinking about the types of facilities you are interested in monitoring while creating your query will help limit the output to those visits most relevant to your question.

It is also important to remember that facilities may have several practice types (e.g., providing **both** primary and urgent care services). Facilities with multiple practice types may not be included in your query results depending on the facility type you select. For example, choosing primary care as your facility type will exclude primary care facilities that **also** provide urgent care. Facility type is based on a hierarchy described in the table below; if a facility provides urgent care, the facility type is “urgent care”, regardless of other types of care it provides (i.e. primary, specialty). If the facility provides primary care services (and not urgent care) the facility type is “primary” even if the facility also provides specialty care. If a facility

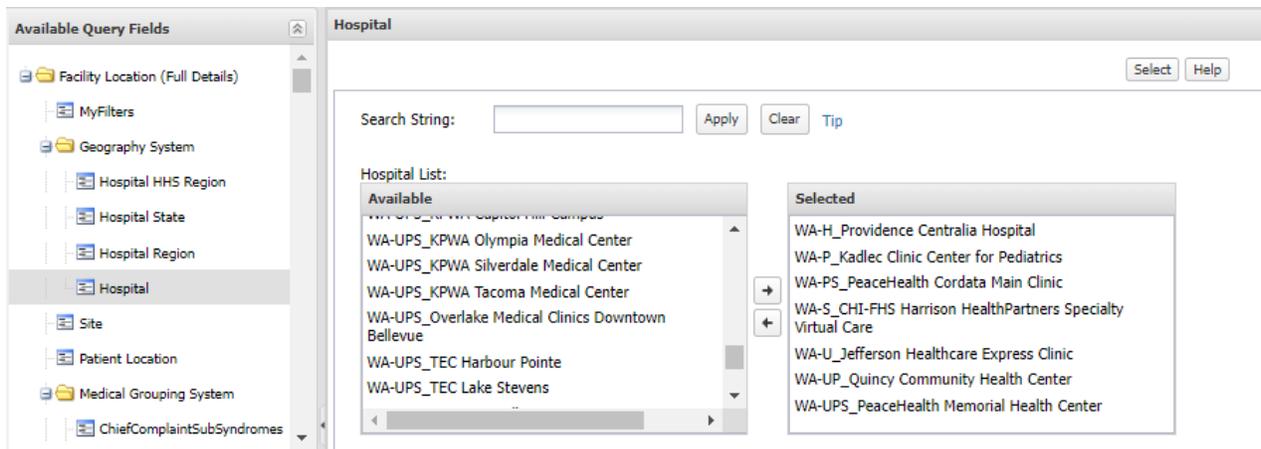
does not provide urgent or primary care, the facility type is “specialty”.

Facility Type	Care Setting	Patient Classes	Facility Prefixes
Emergency department	Hospital	E, I, R, B, V	WA-H
Inpatient Practice Setting	Hospital	I, B, V	WA-H
Primary Care	Outpatient	O	WA-P, WA-PS
Urgent Care	Outpatient	O	WA-U, WA-UP, WA-UPS, WA-US
Specialty Care	Outpatient	O	WA-S

Facility Names in RHINO Data

To assist you in identifying facilities based on their name, RHINO has developed a standard practice for naming healthcare facilities.

- All Washington State facilities begin with **WA-**
- **Hospitals** begin **WA-H_** (e.g., WA-H_Providence Centralia Hospital)
- **Primary care** clinics begin **WA-P_** (e.g., WA-P_Kadlec Clinic Center for Pediatrics)
- **Specialty care** clinics begin **WA-S_** (e.g., WA-S_CHI-FHS Harrison HealthPartners Specialty Virtual Care)
- **Urgent care** clinics begin **WA-U_** (e.g., WA-U_Jefferson Healthcare Express Clinic)
- Facilities with a **combination of practice areas** will begin **WA-PS_**, **WA-UP**, **WA-US_**, or **WA-UPS_** depending on their scope of practice.



Developing Syndrome Definitions

Steps in Building a Syndrome Definition

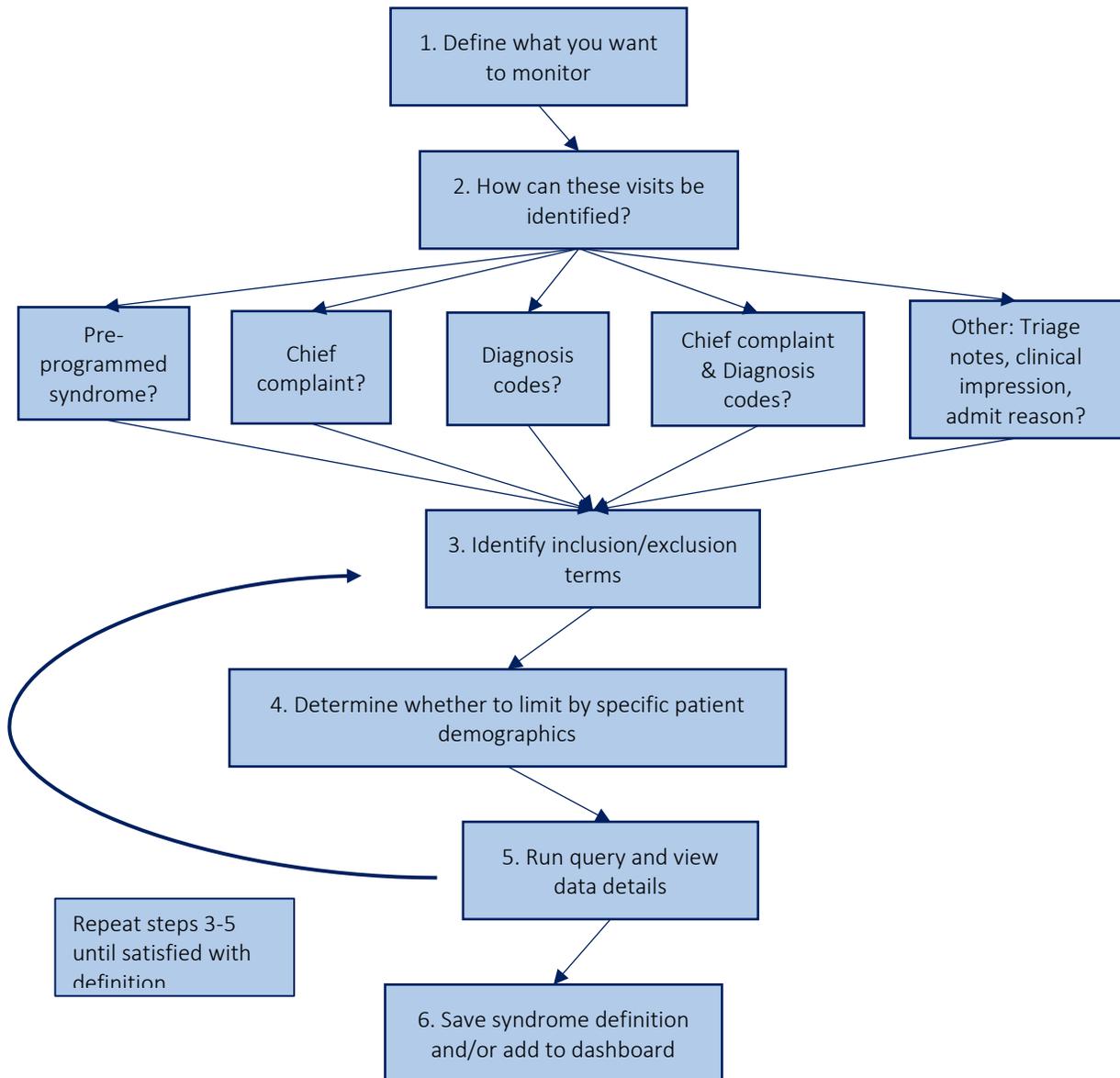
There are many methodologies for developing a syndrome definition. RHINO uses the one depicted below. When building a syndrome definition consider:

- Searching through the Knowledge Repository, Slack channels, and ESSENCE to determine if there are existing definitions you can use for your condition of interest
- Reviewing NSSP’s Query Development Aid: [Query Development - Community and Technical](#)

[Resources \(cdc.gov\)](https://www.cdc.gov)

- Exploring initial versions of the new definition in ESSENCE
 - This guide from the NSSP Syndrome Definition Committee is a good resource: [SDC Syndrome Definition Guidance document FINAL.PDF \(prod-knowledge-repository.s3-us-gov-west-1.amazonaws.com\)](#)
 - During the iterative manual review process, you can use this tool to compare different versions of the definition: [Syndrome Definition Evaluation](#)

Keep in mind that syndrome definitions are distinct from case definitions. Syndrome definitions are used to classify visits based on the presence of key terms or codes in visit fields and do not indicate that a visit is a case. Instead, these definitions help us determine whether the visit is “condition-like” to either understand trends or investigate further as part of a case-finding workflow.



NSSP ESSENCE Fundamentals

Accessing NSSP ESSENCE

To access the NSSP ESSENCE system you will need to:

1. Navigate to the National Syndromic Surveillance Program's (NSSP) [Access and Management Center](#) site.
2. Enter your Access and Management Center (AMC) credentials.
 - o These credentials were sent to you in an auto-generated email from NSSP when your account was created.
3. If it is your first time logging into the AMC, you will need to change your password and accept the Code of Conduct.
4. Select ESSENCE from the **NSSP Applications** list.
5. Click the [ESSENCE—NSSP \(1.22\)](#) link.
6. Enter your NSSP ESSENCE credentials.
 - o These will be the same as your AMC credentials, but not the same as Washington ESSENCE.
7. NSSP will send you an email reminder every 90 days to reaccept the Code of Conduct and update your password. If you do not update your password or reaccept the Code, NSSP will lock your ESSENCE account.
8. If you need additional assistance, please contact RHINO@doh.wa.gov.

NSSP ESSENCE Homepage



ESSENCE is a powerful platform and intended to be accessible for more than just epidemiologists. Orienting yourself to the navigation ribbon above is an excellent first step to becoming a confident user.

- **Home** – Return to the ESSENCE homepage from anywhere on the site
- **Alert List** – View a tabulated list of NSSP ESSENCE syndrome daily alerts
- **myAlerts** – create, manage, and view customized alerts
- **MyESSENCE*** – create, manage, and view custom dashboards of your queries
- **Event List** – describe findings warranting further investigation and note your recommendations; document data anomalies

- **Overview Portal** – monitor multiple stratified time series graphs on a single page
- **Query Portal*** – perform and save queries
- **Stat Table** – compare syndrome and subsyndrome statistics to previous years and all data contributed to the NSSP
- **Map Portal** – map temporal and spatial alerts
- **Bookmarks** – view bookmarked pages
- **Query Manager*** – manage and execute saved queries.
- **Data Quality*** – examine and assess data quality metrics like completeness, value mapping, and the status of data processing by facility
- **Report Manager** – create customized reports of time series graphics and maps with interpretative text
- **More** – explore other useful information on ESSENCE and syndromic surveillance including information on pre-defined syndrome definitions and detector algorithms

Expert User Tip

Using your browser's back button in ESSENCE may cause you to lose your work. Instead, use the navigation ribbon to move between tools and open links in new tabs.

*Most frequently used for public health surveillance.

Query Composition

Composing a Custom Query

You can also search for specific patient encounters by creating custom queries for specific terms or diagnoses. Several clinically relevant fields support free-text queries, including chief complaint, triage notes, clinical impression, discharge diagnoses, and CCDD (a combination of the chief complaint and discharge diagnosis fields). More information about the various fields and times when you might use them is available [here](#).

To compose a custom query, you may use wildcards (^) to search for text containing your term of interest, regardless of text that appears before or after. Boolean operators (e.g., and, or, andnot) may be used to combine and exclude terms. Parentheses can also be used to group search terms together. *You must separate wildcards, Boolean operators, and parentheses with commas. You must also open and close parenthetical expressions with commas.* [Free-text Coding in NSSP-ESSENCE: Part 1](#) from the CDC is a great resource.

Expert User Tip

Because some facilities do not include the decimal point in their diagnosis codes, *you must include them both ways in your query.*

Topic	Query Syntax	Apply to Fields
<i>Carbon Monoxide</i>	(,^carb^,AND,^monox^,),OR,^T58^,OR,^T59.7^,OR,^T597^	Chief Complaint History, Discharge Diagnosis
<i>Chlamydia</i>	^A74.9^,OR,^A749^,OR,^A55^,OR,^A56.11^,OR,^A5611^,OR,^chlam^	Chief Complaint History, Discharge Diagnosis
<i>Traumatic Amputation</i>	(,^traum^,AND,^ampu^,),OR,^S08^,OR,^S28.[1-2]^,OR,^S28[1-2]^,OR,^S38.[2-3]^,OR,^S38[2-3]^,OR,^S[4-9]8^	Chief Complaint History, Discharge Diagnosis

“Apply Search String To”

If you would like ESSENCE to apply your search string to multiple fields, you may use the “apply search string to” tool to accomplish that.

- 1) Hold down Shift to select a continuous series of values simultaneously
- 2) Hold down Ctrl to select multiple values simultaneously (with potential for gaps between them)

Enter the syntax for your query and then select the fields you would like to include (hold down the Shift key to select multiple fields). This will use an **or** operator to apply your syntax to the fields you have selected.

Ordinarily, ESSENCE would apply your syntax across limiters (across the boxes in the right column) using an **and** operator, meaning that your syntax would need to apply to *all* selected fields. The “apply search string to” feature provides more flexibility to tailor your approach broadly across fields since information may be spread across several data elements. You can find more information about data elements [here](#).

Enter value(s) for Chief Complaint History...

Also apply the search string to:

- Triage Notes Orig
- Discharge Diagnosis
- ICD10 Discharge Diagnosis
- CC and DD
- CC and DD Category Free Text
- Syndrome Free Text
- SubSyndrome Free Text
- Chief Complaint (Orig) Free Text

Resolution: [Dropdown] Detector: Regression/EWMA 1.5 [Dropdown] As Percent Query: No Percentage Query [Dropdown] Start Date: 11Mar23 [Calendar] End Date: 09Jun23 [Calendar]

Query

Patient State: Washington AND CC and DD Category: CDC Assault Firearm Injury v1 AND Has Been Emergency: No AND Has Been Inpatient: Yes AND Has Been Outpatient: Yes

The query is all visits with the specified patient state, CC and DD category, has been emergency, has been inpatient, has been outpatient, and has been admitted.

Select

Table Builder Time Series Data Details Text Analysis Graph Builder Overview Adv Qry **Explain Qry** Reset

Selected Query Fields

- Geography System: Patient State
- Patient State: Washington
- Medical Grouping System: ESSENCE Syndromes
- CC and DD Category: CDC Assault Firearm Injury v1
- Has Been Emergency: No
- Has Been Inpatient: Yes
- Has Been Outpatient: Yes

Please note that applying negations to multiple fields may result in some relevant records inadvertently being excluded. For help with negation terms, please contact [the RHINO team](#)

Share What You Know!

If you create a novel query (or improve an existing one), please consider sharing it with others. You could request that it be indexed in ESSENCE to run faster, share it on one of our Community of Practice calls, add it to the NSSP Slack channel, or all three! The syndromic community *always* benefits from user contributions and *all contributions* (even questions!) have value for advancing the field.

Syndromes and SubSyndromes

Syndromes and SubSyndromes in ESSENCE

ESSENCE contains many pre-built queries in the platform. Among them are **syndromes** and **subsyndromes**. In the early development of syndromic surveillance, these syndromes formed the backbone of surveillance work. Although you may find that your capture is better when you compose a custom query (because you can include other data fields), these pre-made queries are often a good place to start and may run more quickly because they are already indexed in ESSENCE. A table of the 12 syndromes included in ESSENCE is below.

Chief Complaint Syndromes		
Bot_like	Hemr_ill	Rash
Exposure	ILI	RecordsOfInterest
Fever	Injury	Resp
GI	Neuro	Shk_coma

Syndromes in ESSENCE are groupings of subsyndromes, which are, in turn, made up of weighted chief complaint terms. A sample of the 132 subsyndromes is included below.

Chief Complaint SubSyndromes		
Abuse	Fall	Legionnaires
AlcoholUse	FeverOrChills	Firearm
COPoisoning	DrowningOrSubmersions	Pertussis
LeadPoisoning	Rash	InfectiousHepatitis

While you may sacrifice nuance by querying with syndromes, there are times when it is helpful to see the percentage of visits for a broad topic like injuries or respiratory issues. To better illustrate how syndromes are constructed, we have included the contents of the injury syndrome as an example.

Injury Syndrome Composition		
BiteOrSting	CutOrPierce	DrowningOrSubmersion
Electrocution	ExcessiveHeat	Fall
FireBurnExplosives	MotorVehicle	Occupational
Overexertion	Poisoning	StruckBy
ToolsOrMachinery	Firearm	NonMotorVehicle
Suffocation	Assault	ForeignBody
SuicideOrSelfInflicted	Watercraft	SportsOrExerciseRelated

Weighting Chief Complaint Terms

ESSENCE weights chief complaint terms by assigning positive or negative values to specific words (or word combinations) which may appear in the chief complaint text. If the values associated with the terms

appearing in a record's chief complaint add up to 6, the record will be considered a match and appear in your query output. The chief complaint weighting for the ChestCongestion and DifficultySpeaking subsyndromes are below.

For the ChestCongestion subsyndrome, a record containing chest (2) + congested (4) would be considered a match, but not if it also included nasal (-2). Similarly, chest (2) + infection (4) would be considered a match, but not if nose (-2) was also included.

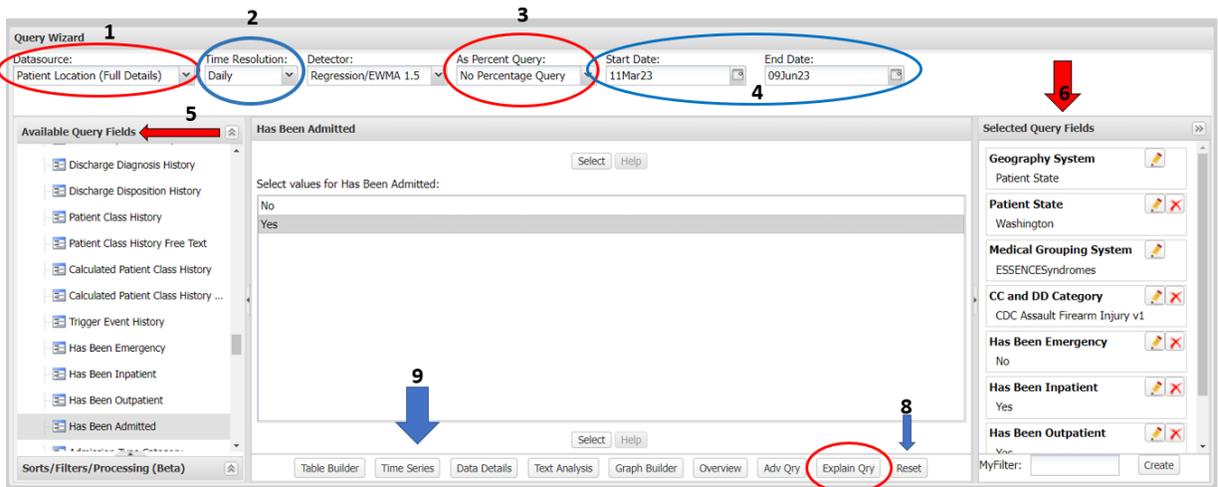
ChestCongestion subsyndrome		
Chest (2)	Congested (4)	Congestion (4)
Head (-2)	Infection (4)	Nasal (-2)
Nose (-2)	Urinary Tract Infection (-4)	

For DifficultySpeaking, dysarthria (10) will always be counted as a match, as would speech (4) + disturbance (2). However, just talking (4) appearing in the record (e.g., if the patient was "talking about his fall" or had "trouble talking") would not appear in your query output.

DifficultySpeaking		
Cannot (2)	Cant (2)	Difficult (2)
Difficulty (2)	Disturbance (2)	Disturbed (2)
Dysarthria (10)	Hard (2)	Speak (4)
Speaking (4)	Speech (4)	Talk (4)
Talking (4)	Trouble (2)	Unable (2)

Frequently Used Analysis Tools

Query Portal



Create a query to view information about specific visits:

1. Select your **Datasource** (see [the section on data sources](#) for more information). Note that you must choose your data source first. If you specify your other parameters and then try to select your data source, you will lose your work.
2. From the **Query Wizard** toolbar, select the **Time Resolution** for your query. This will toggle whether you want to visualize your data on a daily, weekly, monthly, or yearly basis.
3. If desired, choose the numerator value for a **Percent Query** to view output as percentages. (More on [creating percent queries later.](#))
 - If you are unsure which fields are included in your denominator, use the **Explain Qry** button at the bottom of the Query Wizard to display a visualization of your query.
 - More information about querying visit percentages is available [here](#) in the Common Tasks section.
4. Choose the **Start** and **End Dates** of interest for your query.
5. From the left-hand menu **Available Query Fields**, select the fields you would like to use to restrict your search (e.g., race, syndrome/subsyndrome, ZIP Code).
6. Verify that you have moved all the selections you desire into the **Selected Query Fields Menu**.
7. If you will reuse the parameters you have set, consider using the **MyFilter** feature to save them for next time.

8. If you would like to reset the Query Wizard, click the **Reset** button next to the Explain Qry button.
9. Once you are finished, select an output option using the bottom bar.

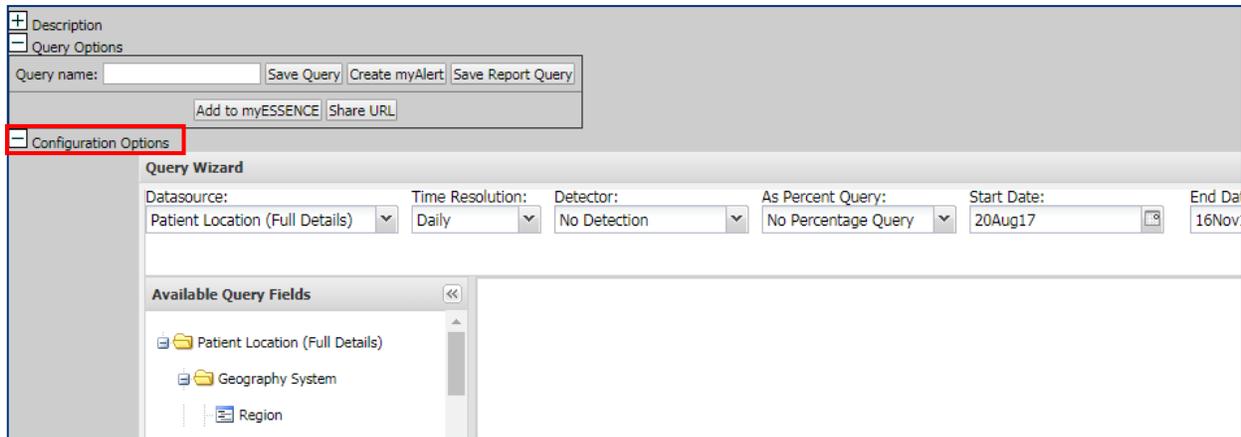
- **Table Builder:** Create a **table** of your query (see right) to view tabulations of visit data by various parameters.
- **Time Series:** Create a **time series** of your query to view counts or percentages over time. More information about interacting with time series graphs is available [here](#).
 - **Data Details:** View the visit-level (line-level) **data details** of your query results, including chief complaint and demographic fields associated with each visit. More about using data details output is available [here](#).
 - **Text Analysis:** Explore chief complaint **text analysis** with n-grams and text association webs. More information about text analysis tools is available [here](#).
 - **Graph Builder:** Build graphs of your query results, including word clouds and calendar heat maps using **Graph Builder**.
 - **Adv Qry:** Build more complex queries using the **Adv Qry** tool.

Sample Table Builder Output

Ten Year Age Group	Sex		
	Female	Male	Unknown
00-09	184	229	0
10-19	184	203	1
20-29	300	331	0
30-39	222	311	0
40-49	197	286	0
50-59	222	270	0
60-69	180	208	0

Modifying a Query

If you would like to change the limiters for your query after you have run it (regardless of your chosen output), open the **Configuration Options** dropdown above your query output. It will open a **Query Wizard** window identical to the one in the [Query Portal](#). Make whichever changes you desire and then *reselect your output to run the query*.



myESSENCE Dashboard Manager

When you open myESSENCE from the taskbar ribbon, ESSENCE will open an overview page with all of the dashboards, which either you have built or which have been shared with you. Using the **myESSENCE Overview** tab, you can manage your dashboards, share them, or archive them for later use.

1. View the titles of your dashboards.
2. Description of dashboard contents or purpose.
3. Organize your dashboards by reordering them.
4. Open the [myESSENCE Dashboard Library](#) where you can view and download dashboards built and shared by other NSSP ESSENCE users around the country.
5. Export your selected dashboard as a MS Word Document.
6. View the number of people with whom the dashboard has been shared and whether it is a **managed tab**, which will automatically update as the original creator updates their version of the dashboard.
7. Individual who shared the dashboard with you (if you did not create it).
8. Individual who manages the tab, if it was shared with you as a managed tab.
9. View whether you have archived the dashboard.

The screenshot shows the myESSENCE Dashboard Manager interface. At the top, there is a navigation ribbon with tabs like Home, Alert List, myAlerts, myESSENCE, Event List, Overview Portal, Query Portal, Stat Table, Map Portal, Bookmarks, Query Manager, Data Quality, Report Manager, and More. Below the ribbon is a search bar and a menu with options like Open, Offline Edit, New, Share, Copy, Edit, Delete, Hide, Group, Order, Library, Export to MSWord, and Help. The main area displays a list of dashboards with columns for Tab Title, Tab Description, Person, Note, Shared With, Shared By, Managed By, and Hidden. The dashboards are grouped into sections: COVID_LHJ Support, COVID-19, and COVID-19. Callouts 1-9 point to specific elements: 1 points to the search bar, 2 to the Tab Description column, 3 to the Order button, 4 to the Library button, 5 to the Note column, 6 to the Shared With column, 7 to the Shared By column, 8 to the Managed By column, and 9 to the Hidden column.

Tab Title	Tab Description	Person	Note	Shared With	Shared By	Managed By	Hidden
COVID_LHJ Support							
<input type="checkbox"/> LHU Surveillance Report				5			<input type="checkbox"/>
<input type="checkbox"/> COVID-Related Micro Graph Comparisons	Displays micrographs of age group breakdown...			22			<input type="checkbox"/>
<input type="checkbox"/> LHJ COVID Monitoring	Viewing visits (emergency and inpatient) key ...			6			<input type="checkbox"/>
<input type="checkbox"/> COVID-Related Quick View	Created as a quick view companion to COVID...			116			<input type="checkbox"/>
<input type="checkbox"/> COVID-Related_By Age Groups	Year-over-year all age and age stratified look... Created with the specific aim to support surveillance effo...			102			<input type="checkbox"/>
COVID-19							
<input type="checkbox"/> Additional Indicators for COVID Response				2			<input type="checkbox"/>
<input type="checkbox"/> Injury and Violence Indicators				7			<input type="checkbox"/>
<input type="checkbox"/> Baseline Indicators				6			<input type="checkbox"/>
<input type="checkbox"/> Behavioral Health Indicators				7			<input type="checkbox"/>
<input type="checkbox"/> Coronavirus	Developed to identify and monitor patients t...				Natasha Close	Natasha Close	<input type="checkbox"/>
<input type="checkbox"/> ED_Stress					Natasha Close		<input type="checkbox"/>

myESSENCE Dashboards

You can easily monitor multiple conditions (or subpopulations and other stratifications) by saving your queries in **myESSENCE** dashboards.

1. You may add queries to a **myESSENCE** dashboard from the **Time Series** viewer by adding a name to your query and clicking **Add to myESSENCE**. You can find the box in the **Query Options** drop down.

The screenshot shows the Query Options drop-down menu. It contains a text input field for 'Query name:', followed by buttons for 'Save Query', 'Create myAlert', and 'Save Report Query'. Below these are buttons for 'Add to myESSENCE', 'Share URL', and 'API URLs'. A callout 1 points to the 'Add to myESSENCE' button.

2. Make sure you have created a new dashboard tab.
Confirm your query title and the correct tab, then click submit.



Save TimeSeries to Portal

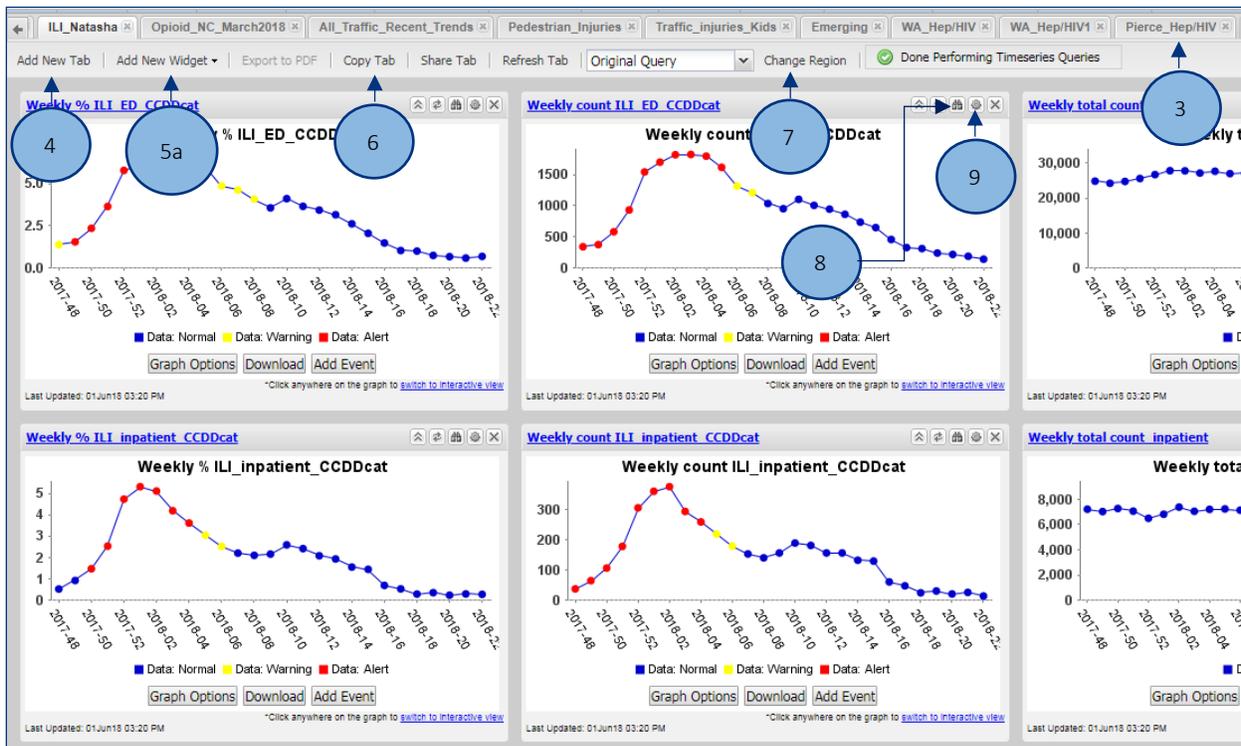
Portlet Name:

Tab Name:

- Consider choosing a strong naming convention for your queries. Many times, the only information you will have about queries you have made in ESSENCE (or which someone else made and sent to you) is the title unless you review the configuration each time. Having a series of descriptors in the title (e.g., weekly Pct ILI_emergency_King County) can help you remember in 6 months what it was that you were trying to monitor.

3. View and organize saved queries using customizable tabs (see screenshot below).

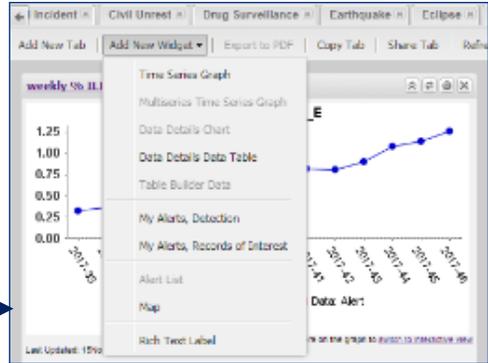
4. Add a **New Tab** to create a new dashboard (see screenshot below).



5. Add a **New Widget** to your dashboard choosing from a drop down list of items like **Time Series**, **Data Details**, **MyAlerts**, **Rich Text Labels**, and **Maps** (5a in screenshot above). Screenshot 5b below shows the drop down menu for adding widgets.

- Time series graphs and maps are staples of dashboards and allow you to quickly visualize trends in both time and geographic distribution of the condition(s) you are monitoring.
- You may find the text boxes helpful while organizing your dashboard so that either you or another user can easily scan the dashboard for relevant information using the context you provide there.
- If you would like to add a statistical alert for a saved query to your dashboard, select **My Alerts, Detection**. For more details on myAlerts, please refer to [that section](#) of the guidebook.
- Data details outputs can be customized with a variety of fields to view the record-level information for your visits of interest. The RHINO team has found these particularly helpful in topical dashboards for conditions like vaping-associated lung injuries, measles, and e-scooter injuries. Screenshot 5c below is a sample configuration options window.
- If you would like to add an alert for any records matching a saved query, select **My Alerts, Records of Interest**. For more details on myAlerts, please refer to [that section](#) of this handbook.

5b



6. **Share** your **myESSENCE** dashboard tab with another ESSENCE user (6 in screenshot above).
7. Modify the geographic ([regional](#)) parameter for your queries (7 in screenshot above).
8. Click the binocular button above widgets to view the parameters of the query (8 in screenshot above).
9. Click the gear to modify the parameters of a widget's query (9 in screenshot above).
10. Once you have opened the configuration options box, select the data elements you would like and click **submit**.

Dashboard Library

To make sharing dashboards easier, NSSP and JHU-APL created the myESSENCE Dashboard Library. From the overview page, click the **Library** button in the myESSENCE Overview menu bar.

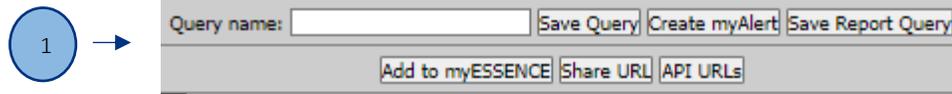
To download a dashboard, simply tick the box next to the title and then click **download**. When you return to your myESSENCE Dashboard Overview page, the new dashboard will be loaded and ready to use.

<input type="checkbox"/>	Tab Title	Tab Description	Uploaded By ↑	Uploaded Date	Managed	Geography Cleared
<input type="checkbox"/>	COVID-Related_By Age Groups	Year-over-year all age and age stratified look...	Amanda Morse, Washington State Department of Health	03/11/2020	✓	✓
<input type="checkbox"/>	COVID-Related Quick View	Created as a quick view companion to COVID...	Amanda Morse, Washington State Department of Health	03/11/2020	✓	✓
<input type="checkbox"/>	Behavioral Health Indicators	Intended to facilitate monitoring of behaviora...	Amanda Morse, Washington State Department of Health	05/21/2020	✓	✓
<input type="checkbox"/>	ILI Dashboard	No description	Caleb Wiedeman, Tennessee Department of Health	12/05/2019		
<input type="checkbox"/>	AirQualityPM2.5		Eunice Santos , UDOH	01/09/2020		
<input type="checkbox"/>	No CC Available Hospital Daily Percent	Data Quality check for CC. Add myAlert for n...	Eunice Santos , UDOH	05/14/2020		
<input type="checkbox"/>	Home	No description	Haydee Dabritz, Yolo County Dept of Health - CA	02/05/2020		
<input type="checkbox"/>	Home	No description	Haydee Dabritz, Yolo County Dept of Health - CA	02/05/2020	✓	
<input type="checkbox"/>	Pulmonary & Vaping	Monitor visits associated with severe lung inj...	Kacey Potis, Washington State Department of Health	12/09/2019	✓	✓
<input type="checkbox"/>	WA_COVID-19_surveillance_rpt		Kacey Potis, Washington State Department of Health	03/02/2020	✓	✓
<input type="checkbox"/>	Measles	Monitor measles and measles-like visits, diag...	Kacey Potis, Washington State Department of Health	11/22/2019	✓	✓
<input type="checkbox"/>	AZ_HEOC_COVID-19	This dashboard is being shared as a template ...	Krystal Collier, Arizona Department of Health Services	04/17/2020	✓	✓
<input type="checkbox"/>	Lab Data for COVID-19 Response	Developed to identify and monitor Coronavir...	Lakshmi RadhakrishnanOA, Surveillance and Data Branch	03/19/2020	✓	
<input type="checkbox"/>	Home	No description	Leah Welker, Arkansas Department of Health	03/17/2020		
<input type="checkbox"/>	Home	No description	Leah Welker, Arkansas Department of Health	03/17/2020		
<input type="checkbox"/>	Visits of Interest	Data details of records with "visit of interest" ...	Natasha Close, Washington State Department of Health	12/03/2019		✓
<input type="checkbox"/>	ILI	Primary dashboard to monitor influenza-like i...	Natasha Close, Washington State Department of Health	12/03/2019	✓	✓
<input type="checkbox"/>	Cold-Related Illness (environmental)	Trends in Cold-related illness (CRI) such as hy...	Natasha Close, Washington State Department of Health	12/03/2019		✓
<input type="checkbox"/>	Coronavirus	Developed to identify and monitor patients t...	Natasha Close, Washington State Department of Health	01/21/2020	✓	
<input type="checkbox"/>	Cold-Related Illness (environmental)	Trends in Cold-related illness (CRI) such as hy...	Natasha Close, Washington State Department of Health	02/04/2020		
<input type="checkbox"/>	County and AZ Comparison		Sara Chronister, Maricopa County Department of Public Health	12/05/2019	✓	
<input type="checkbox"/>	Home		Spencer Cunningham, Massachusetts DPH	03/11/2020		
<input type="checkbox"/>	COVID19 Like by Region		Stacey Hoferka, Illinois Dept. of Public Health	03/19/2020		
<input type="checkbox"/>	Home		Suzi Turner, ADPH	03/25/2020		
<input type="checkbox"/>	Home		Suzi Turner, ADPH	03/25/2020		
<input type="checkbox"/>	NSSP Severe Weather		Taylor DiasOA, SDB Op_Access	02/10/2020	✓	✓

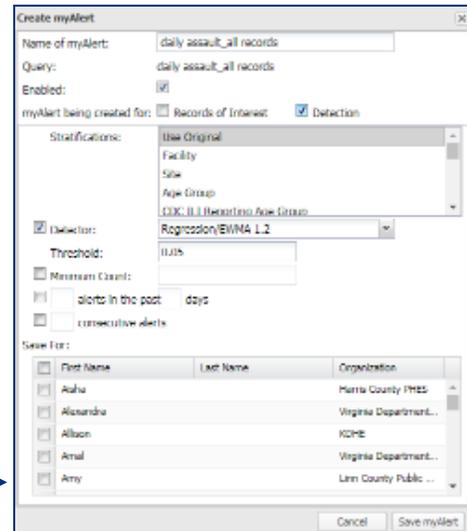
myAlerts

Create alerts for saved queries and receive emails from ESSENCE when records of interest or higher than expected visit counts are detected.

1. You can create alerts for queries from the **Time Series** viewer by adding a name to your query and clicking **Create myAlert**.

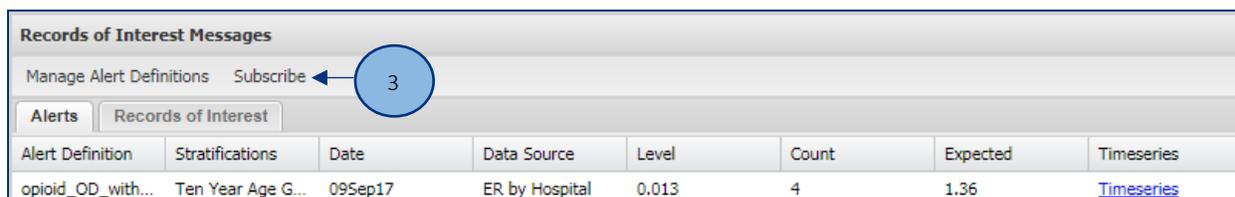


2. Consider choosing a strong naming convention for your queries. Again, many times, the only information you will have about queries you have made in ESSENCE (or which someone else made and sent to you) is the title. Including descriptors in the title (e.g., weekly PctILI_emergency_King County) is beneficial. Once you click **Create myAlert**, a window will appear, and you can set your alert parameters.

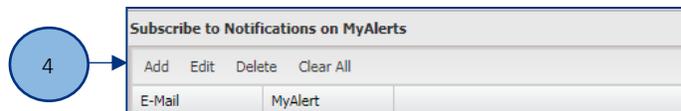


- Confirm your query title and then choose whether you would like alerts for **records of interest** or a specific **detection** threshold (i.e., visits above what would be expected).
- Choose any **stratifications** you would like for the records in your alert.
- If you would like alerts for a detection level, choose your model (or leave as the default) and choose your threshold (or leave as the default, 0.05). Alternatively, you may choose alerts for exceeding a minimum count of records, a specific number of alerts over a defined period of days, or a defined number of consecutive statistical alerts.
- If desired, you may share your alert with any other NSSP ESSENCE user in the system.

3. In your **myAlerts** page, view your alerts for **detection** levels or **records of interest**. To receive email alerts for your alerts, click the **subscribe** button in the toolbar.



4. In the popup window, you can view, **edit**, or **delete** your current subscriptions. To add a new alert subscription, click **add**.



- In the popup window, enter your email address and then select the alert(s) to which you would like to subscribe to automated emails of alert notifications.

5

Overview Portal

If you would like to quickly monitor all syndromes or facility visit total counts in your jurisdiction's data outside of [myESSENCE dashboards](#), you may use the **Overview Portal**.

1

- After opening the portal, select your desired **data source** ([more on data sources here](#)).

2

- Select an **overview parameter**.

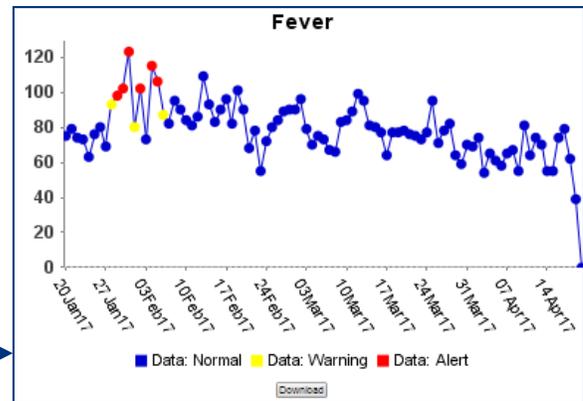
- Open the **Configurations Options** window in the upper left corner and select query limiters as you would in **Query Portal** ([more here](#)).

3

- If you identify a condition you would like to investigate more closely, you can easily do so.

- If a time series contains a data point you would like to investigate, you may click on it to view the line-level data details. It is helpful to use a right click and open in a new tab so that you can return to the Overview.
- If desired, you may use the **download** button below any graph to save it to your device. Graphics may be published in compliance with RHINO's Data Sharing Agreement (publication guidelines [here](#) and [here](#)) and relevant state and federal laws.

4



If you decide to modify your configuration options, you will need to click **overview** and repeat steps 1 and 2.

Query Manager

Manage your saved queries in the **Query Manager**:

Saved Query Manager							
Expand All Groupings		Collapse All Groupings		Multiseries Time Series	Intersecting Time Series	Create myAlert	Edit View URL Share Delete
<input type="checkbox"/>	Label	Link	Link (Today)	Date Created	Shared By	Start Date	End Date
<input type="checkbox"/> Grouping: Chronic Disease (2)							
<input type="checkbox"/>	Asthma	Show	Show (Today)	12Oct16		14Jul16	12Oct16
<input type="checkbox"/>	Cardiac	Show	Show (Today)	12Oct16		14Jul16	12Oct16
<input type="checkbox"/> Grouping: Communicable Disease (3)							
<input type="checkbox"/>	Daily Fever	Show	Show (Today)	12Oct16			
<input type="checkbox"/>	ILI	Show	Show (Today)	12Oct16		14Jul16	12Oct16
<input type="checkbox"/>	Rash	Show	Show (Today)	12Oct16		13Jul16	11Oct16
<input type="checkbox"/> Grouping: Injury/Violence (2)							
<input type="checkbox"/>	Assault	Show	Show (Today)	12Oct16		14Jul16	12Oct16
<input type="checkbox"/>	Hypothermia	Show	Show (Today)	12Oct16			

- Create a **Multi Series Time Series** (i.e., an overlay) of two or more saved queries. Note: these cannot be exported via API.
- Create a **myAlert** to monitor your saved query ([more here](#)).
- **Edit** the category of your saved query or add notes to it.
- **Share** your saved query with another user.
- **Delete** your saved query.
- Select a **Link** option to run the query using the original date parameters.
- Select a **Link (Today)** option to run the saved query for the last 90 days.
- Verify the **Start** and **End** dates of the original saved query.

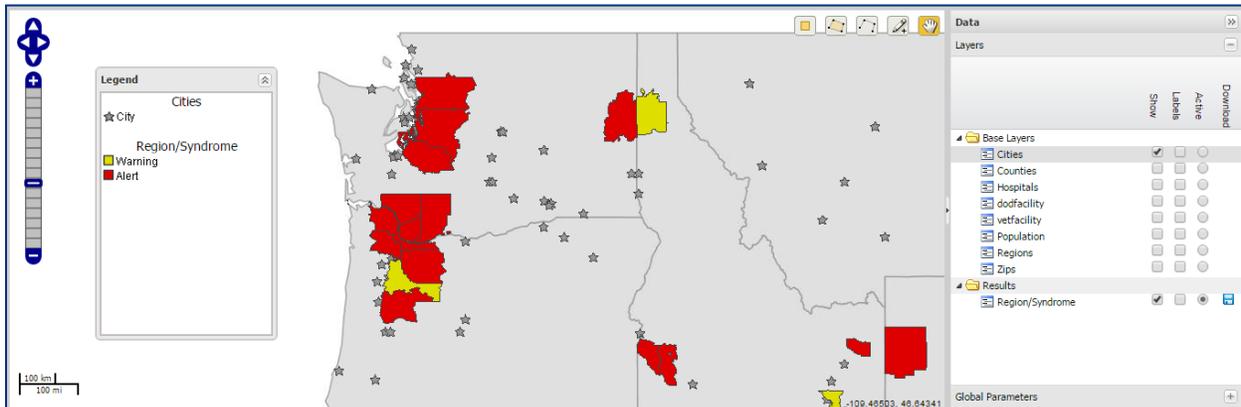
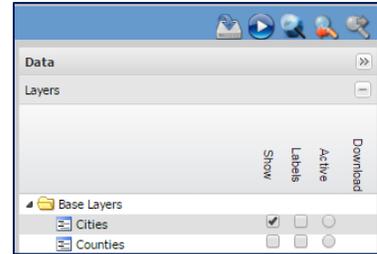
Map Portal

Create visualizations of alerts in your region, either for a specific syndrome or for all alerts, over a specified time period.

1. Select an option from the ESSENCE Alert List (e.g., Region/Syndrome, Hospital/Syndrome, Spatial) to configure your map.
2. Select the syndrome(s) you wish to map.
3. Select the time range for your map.
4. Once you have created your map, you can add layers to label your map.
5. Add base layers to your map by clicking the **show** box for each desired layer. Click **show** and **labels** to include base layer labels.

Select Alert List:	Region/Syndrome	
Select Syndrome:	<input type="checkbox"/> All <input type="checkbox"/> Bot_Like <input type="checkbox"/> Exposure <input type="checkbox"/> Fever <input type="checkbox"/> GI	
Select Start Date:	18Jun16	Select End Date: 18Sep16
Submit		

- Scale your image with the bar on the left side of the map window.
- Alert colors are shown in yellow or red. Yellow indicates a p-value between 0.05 and 0.01. Red indicates a p-value less than or equal to 0.01.
- Select certain features of your map using these tools.
- To download your map, click the hard drive icon above the Base Layers menu.



Common Tasks in NSSP ESSENCE

Interacting with a Time Series Graph

Stratifying Your Time Series

- If you would like to stratify your time series, you may do so in the **Data Series Options** dropdown once you have created the timeseries.
- Use the **Within Graph Stratification** dropdown options to stratify within a single graph.
- Use the **Across Graph Stratification** dropdown options to stratify across several graphs.
- Choose the display option for your time series graph(s).
- If stratifying **within graph** by **year**, select your query starting point.

- When your query stratification selections are complete, click **Update**.

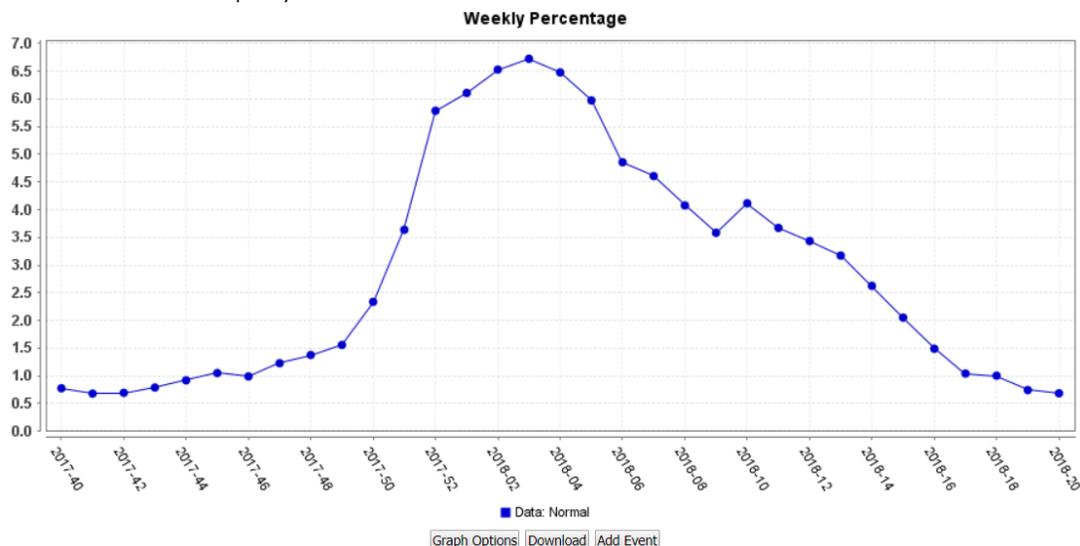
Data Series Options

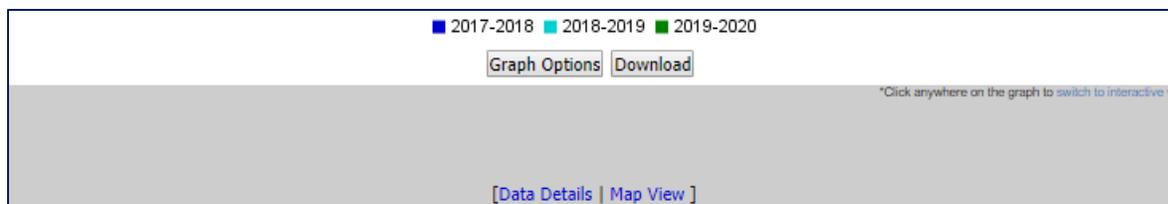
Data Series Options	
Within Graph Stratification:	<input type="text" value=""/>
Across Graphs Stratification:	<input type="text" value=""/>
Graph Options:	<input type="radio"/> Single Graph <input checked="" type="radio"/> Multiple Graphs (Small) <input type="radio"/> Multiple Graphs (Large) <input type="radio"/> Micro Graphs
Remove Zero Series: Help	<input checked="" type="checkbox"/>
Graph Start Week:	<input type="text" value="1"/>
<input type="button" value="Update"/>	

Graph

Modifying Your Time Series Display

- Edit the title and axis notations for your graph in the **Graph Options** tool. ESSENCE does not allow all characters and will not update your graph title and axes if you have included unsupported characters (e.g., hyphens, %, etc.).
- If desired, you may use the **download** button below any graph to save it to your device. Graphics may be published in compliance with RHINO’s Data Sharing Agreement (publication guidelines are available [here](#) and [here](#)) and relevant state and federal laws.
- Use the **Add Event** feature to add either a line or shading to designate an event (e.g., showing respiratory illness season when showing [influenza-like illness](#) graphs. You are also able to notate thresholds using this option.
- Instead of stratifying your time series, you may also create an overlay from the same or another data source. The **Add Overlay** button will open a **Query Wizard popup**. This is particularly helpful for comparing clinical records and weather events. For more information about other non-clinical data sources in NSSP ESSENCE, see the [data sources section](#) of this guidebook.
- Use the **Intersecting Time Series** button to open the query wizard and create an intersecting time series with a second query.





Using Text Analysis Tools

Using N-Grams

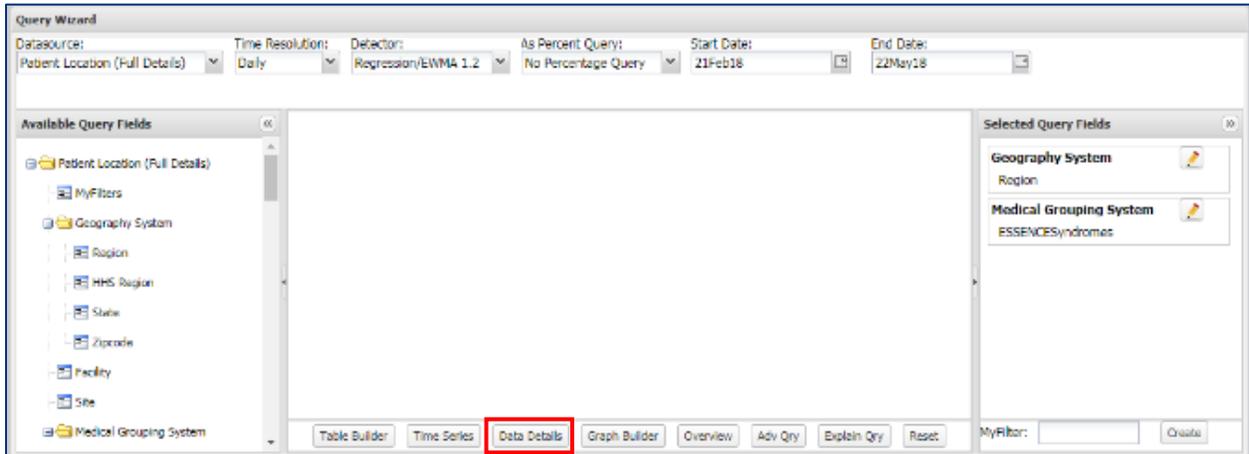
ESSENCE has several n-gram options available for you to explore the relationships between chief complaint terms.

- **Top 50 unigram frequencies – chief complaint parsed** will show the 50 most common single terms in the chief complaint text of your query results, (e.g., assault, sexual, alleged).
- **Top 50 bigram frequencies – chief complaint parsed** will show the 50 most common combinations of two terms in the chief complaint text of your query results (e.g., sexual assault, alleged assault, suicide attempt).
- **Top 50 unigram frequencies – discharge diagnosis codes** will show the 50 most common single diagnostic codes in your query results (e.g., T74.21XA, T76.21XA).
- **Top 50 bigram frequencies – discharge diagnosis codes** will show the 50 most common combinations of two diagnostic codes in your query results (e.g., T74.21XA, Z23).

Chief Complaint

To better understand the relationships between common chief complaint terms, you can use the **top 250 term associations – chief complaint parsed** feature in the text analysis output. This feature will show associations between the 250 most common chief complaint single terms, allowing you to better look for associations, which might not be visible otherwise.

- Hovering over an individual term with your mouse will show the associations for that single term.
- You can hold a term and drag it to another area to better organize the term web.



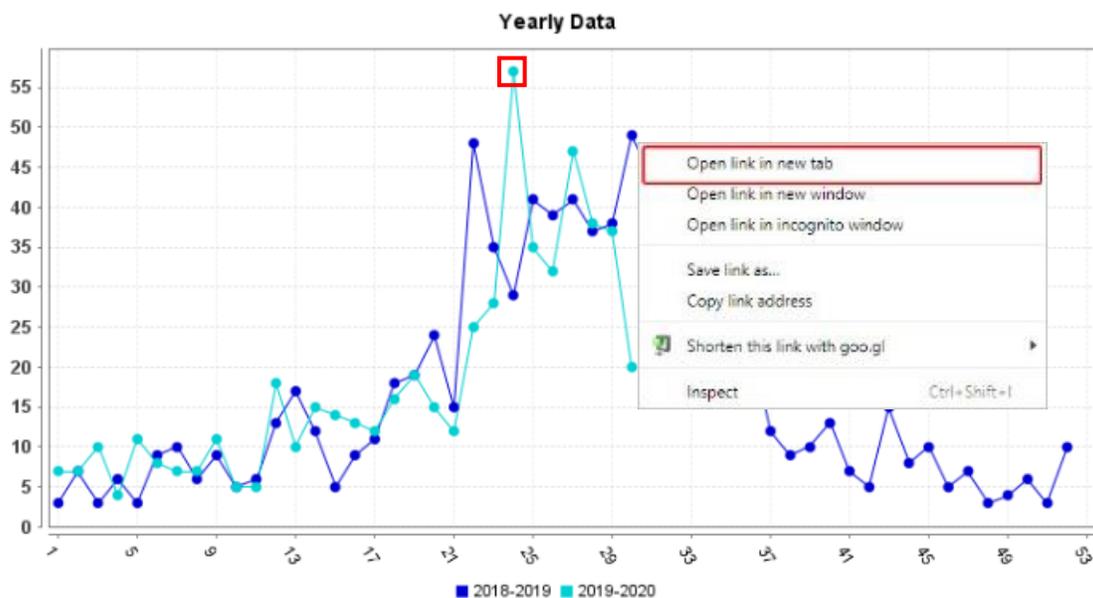
Opening Data Details Output for a Single Point on a Time Series Graph

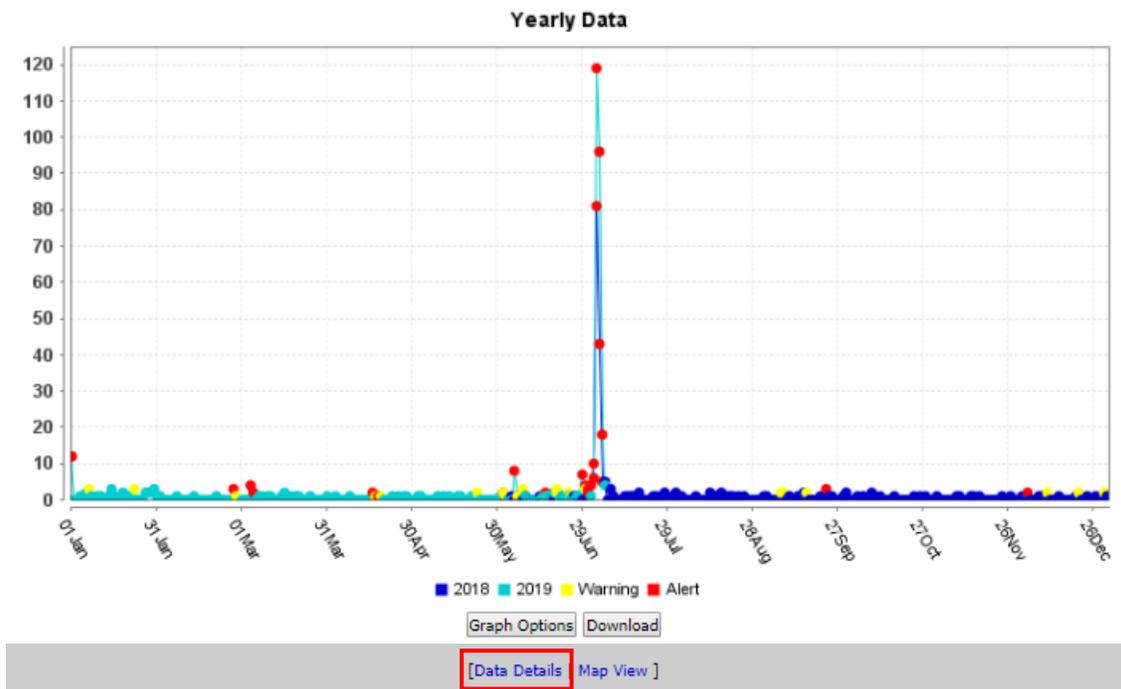
When viewing a time series graph, you can also open the data details for the visits associated with a single time point on a time series graph. This can be done from a standard time series graph or from a [time of day graph](#). If you are viewing a time series graph and would like to investigate the visits associated with a data point, you can do that by clicking directly on that data point.

Because ESSENCE does not always respond well to the back button in browser windows, **we recommend right clicking on the data point and then opening it in a new tab**. Note that you may need to click on the graph once to “switch to interactive view” before opening the data point.

Viewing Data Details for All Visits from a Time Series

If you are viewing a time series display and would like to view the record-level details for all of its associated visits, you can do so using the **Data Details** hyperlink below your time series graph.





Organizing the Data Details Output

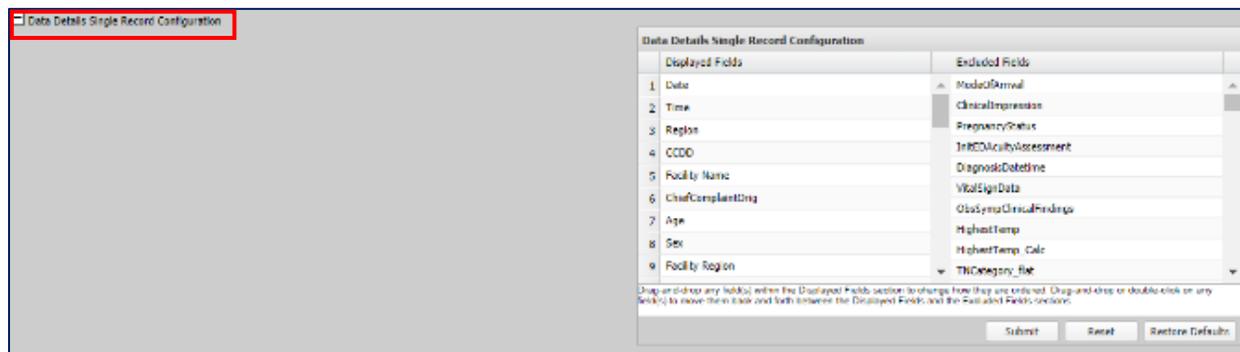
If you find that the default organization of the data details output does not suit your needs, you can easily reorder the columns of the output using the **data details table configuration** dropdown. To reorder fields, click and hold them to drag. To exclude fields, double click them or drag them over to the excluded fields column. Please note that excluded fields will affect available fields in data details API pulls. To avoid issues with data details API pulls, it is best to reset to default organization before pulling.

Viewing a Vertical Data Details Display for Individual Visit Records

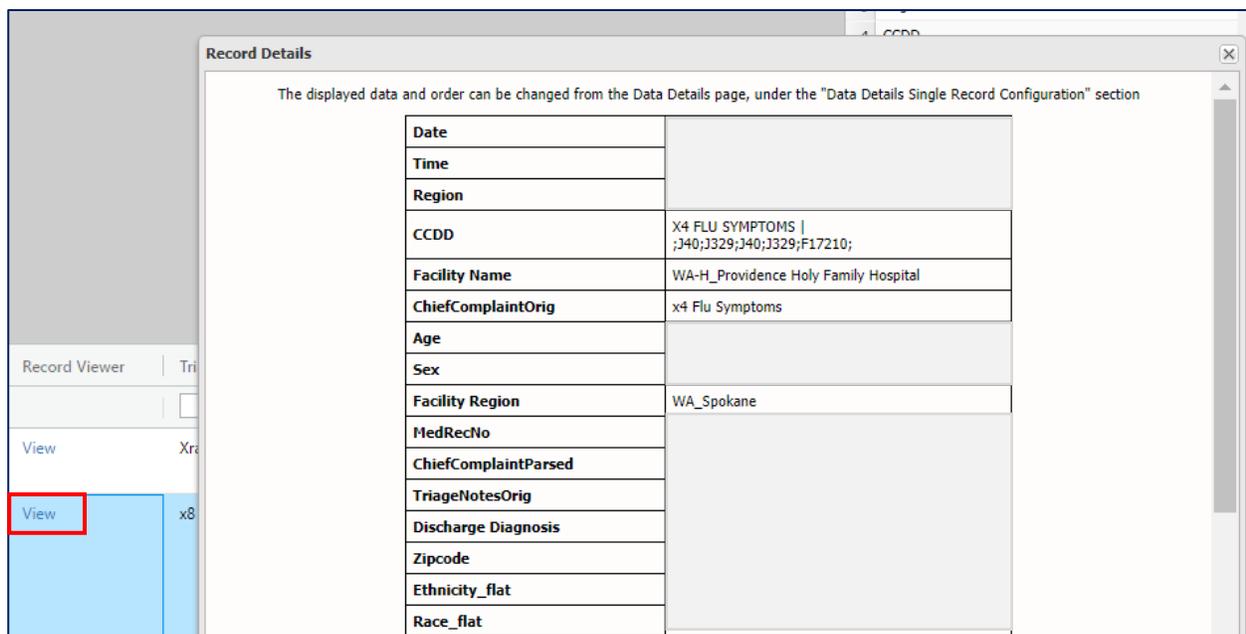
If you would like to view an individual visit's details in a vertical format (i.e., with text wrapping), you can configure your display format using the **data details single record configuration** dropdown option and select your fields of interest. Please note, to view any fields in the single record display, you must select them.



Once you have established your configuration options, you can click the **view** button in the first column of the data details table to view a vertical output of the record-level details for that visit.



Please note that in the display shown above, several data elements have been masked to protect patient privacy.



Exporting Record-Level Details for Smaller Visit Volumes

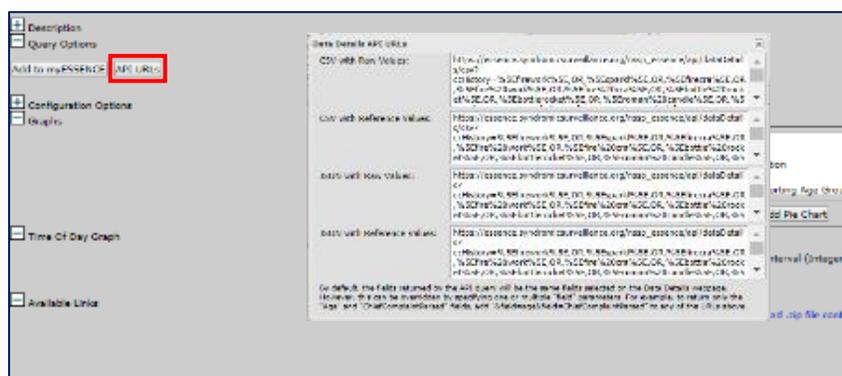
If you would like to download the record-level details for further analysis, it's easy to export the data from ESSENCE. ESSENCE will allow you to download the data as a plain text file with raw values, a plain text file with reference values, an Excel sheet with raw values, or an Excel sheet with reference values. Raw and reference values refer to the format in which the data is transmitted to RHINO (raw values) and how it is transformed when it flows into ESSENCE (reference values). An example of raw and reference values is patient administrative sex being transmitted as m, f, o, or u then being transformed to the standard values of male, female, other, unknown.



For data security standards, please refer to our [data sharing agreement](#). RHINO data exported from ESSENCE or any other interface must be stored on a secure drive and handled in accordance with the standards in the data sharing agreement.

Using APIs to Pull Large Volumes of Visits

Because pulling the record-level details for large volumes of visits can stress the servers which feed into ESSENCE, it is good practice to only use the methods described above for smaller ($\leq 5,000$ visits) datasets. For larger volumes of data, you can use an Application Programming Interface (API) to pull the visits into another analysis tool like R or SAS.



Begin by opening the data details output for your visits of interest. Above and to the left of the data details table, open the **Query Options** drop down and click the **API URLs** button. This will open a popup with several link options to pull down the records. You can use these links to pull large volumes of data into other analysis platforms.

RHINO, NSSP, and JHU all recommend that you initially run your API for a short window of time—no more than a few days. Once you have created it, you can change the URL calls for the start and end points to reflect the timeframe you need for your project. If you are pulling the data repeatedly, RHINO has R code to modify these dates at the top of your code to expedite this process.

- &endDate=11Jan2021
- &startDate=9Jan2021

More information about [using APIs to pull data into R](#) is available in [that section](#) of this guidebook and in the [NSSP Knowledge Repository](#).

Using APIs to Extract Data from ESSENCE into R

Overview of APIs

Application Programming Interfaces (APIs), at their most basic level, are a method for computers to talk to each other. It allows one system to make a “call” to another to provide certain data parameters, which are defined in the API’s unique URL.

APIs have a number of advantages for informatics and surveillance work, including:

- Allowing you to pull data out of ESSENCE and into another platform (like R) where you can complete more sophisticated analyses
- Creating visualizations more attractive than what is available in ESSENCE
- Incorporating ESSENCE data into a report
- Conducting repeated tasks, such as pulling data or graphics for reports and analyses

Creating Your API in ESSENCE

ESSENCE allows for the creation of APIs from most data outputs. To access the API for a dataset or visualization, you should first [build your query](#) in the normal way. From there, you should open the **Query Options** drop down and click the **API URLs** button. This will open a popup with several link options for APIs.

- For a time series graph, you will have the option to choose a .PNG file or a .csv of the data from which the graph is compiled.
- For the table builder output, you can choose a .csv or a .json file. You do not need to actually load the table to access the API, just to set the column and row values. If you are pulling record-level details from the data details output, more information is available [here](#).

Some Key Considerations

If you are pulling large volumes of data (e.g., many, many records from the data details output or a table with many stratifications), there are some key considerations you should consider while you work.

1. First, evaluate if you really need all the raw data. Can it be aggregated? If so, consider pulling the data in smaller timeframe chunks.
2. Consider which fields you need (this might help with aggregation!).
3. For repeated data pulls, consider saving an “historical” data file and only pull more recent data and append.
4. Run large data pulls after business hours or on the weekend.
5. Turn off VPN and any other devices using internet.

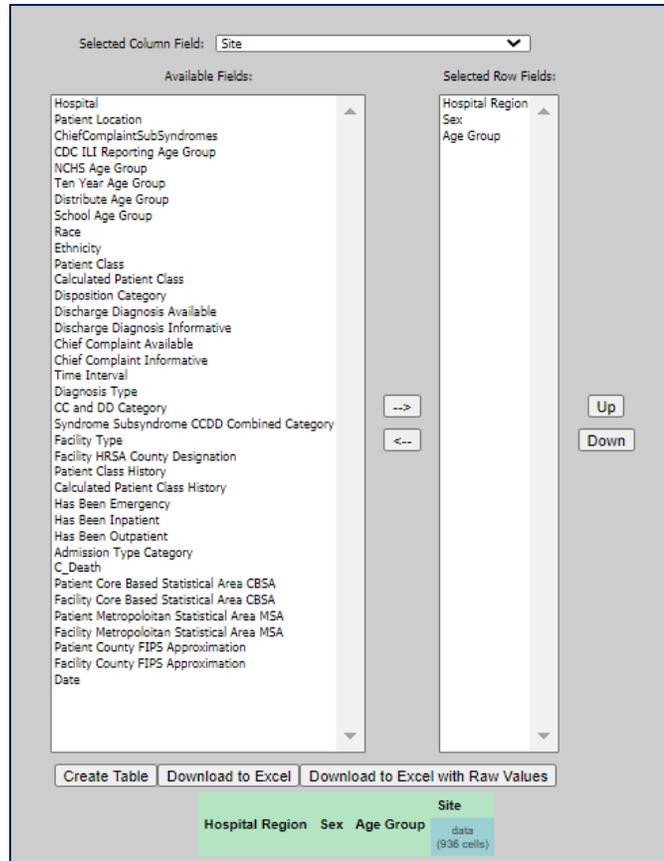
Pulling Tidy Tables

You may find that, as you build increasingly complex tables in ESSENCE, they become unwieldy when you export them. If this is the case, RHINO has some tips to improve their ease of use:

Expert User Tip

You can use TableBuilder to quick build APIs (it is much faster and easier than other methods).

- When you build your query, try setting Site = Washington. This will allow you to set a single value (Site) as your **column value** and all stratifications of interest as **row values**
 - HasBeenE can also do this if you are pulling emergency department visits
- If you use a percent query, your output will include columns for:
 - Numerator (relevant counts)
 - Denominator (total counts), and
 - Percentage (relevant counts/total counts)
- You only need to design the table in ESSENCE to generate the API URL
 - If there are too many cells in table builder, you can still pull the data via API
- If you stratify by facility or region, you will get ALL options in the system
 - Explicitly select facilities or regions of interest when you build your query to avoid this unfortunate outcome



Setting Your ESSENCE Credentials in Windows Credential Manager

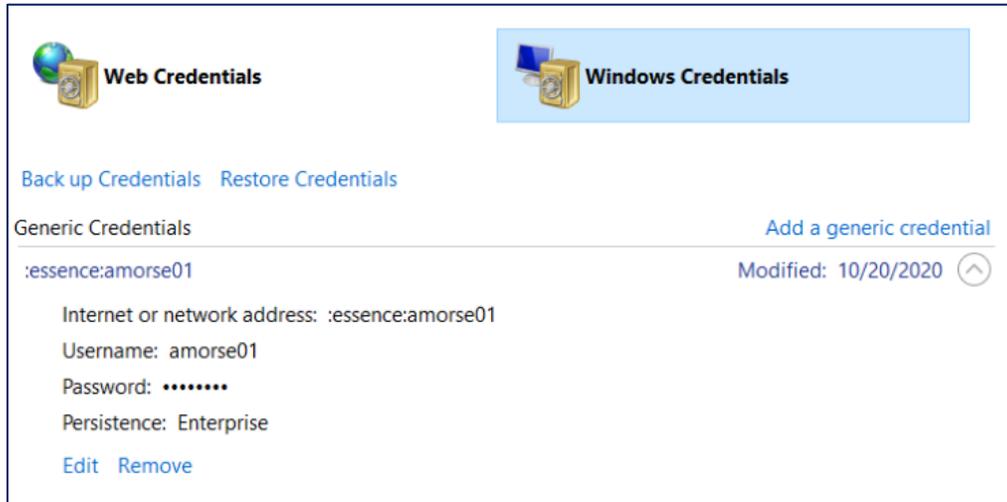
Because RHINO data needs to be accessed securely, it is necessary that R be able to authenticate your identity using your ESSENCE credentials when you are using an API to pull data. There are two primary ways to do this, the easiest being the [Rnssp package](#) in R. When you run the code, a pop-up will appear in RStudio for you to enter your AMC username and password.

Option 1: manually enter AMC username and password into pop-up

- This will create a user profile object of the credentials.
- It stores your username in the code, meaning that anyone else who runs it would need to modify the script before they run it.

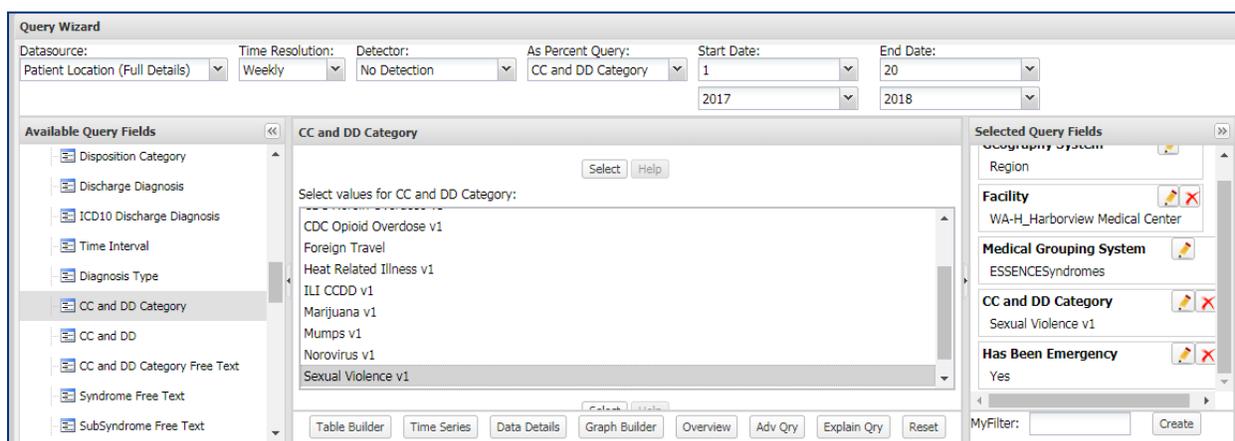
Option 2: save credentials in Windows Credential Manager

- You won't need to enter your password every time you run your script (which can be annoying).
- Many people can run the shared code without needing to modify the script (which can also be annoying).
- You will need to change your password in the credential manager every 90 days when you update it in ESSENCE.



Creating a Percent Query

Create a percent query to analyze the percentage of visits meeting the parameters of your query.



- From the **Query Wizard toolbar**, select the **Datasource** of interest.
- Select the **Time Resolution** for your query.
- Choose the **Start** and **End Dates** of interest for your query.
- Choose the parameters for your query in the **Available Query Fields** menu.
- Choose the desired parameter within the **As Percent Query** field. The selected parameter within this field will determine the formatting and overall interpretation of the queried percentages.
- Selected **As Percent Query** parameters **will** be present in the numerator but **will not** be in the denominator of the percentage calculation. Verify that all your selections are listed in the **Selected Query Fields Menu**.
 - Be mindful to include the parameter you chose for the percent query. For example, if you want to see the percentage of visits among females, the query should be limited to Sex = Female and percentage query parameter should be sex.

- It is also helpful to see a visual depiction of your percentage query, by clicking the **Explain Qry** button along the bottom bar.
- Create your **time series**. Yellow points indicate a p-value between 0.05 and 0.01. Red indicates a p-value less than or equal to 0.01. *To view line level details, of a particular data point select a data point and click on it.*
- To add the query to your **myESSENCE** dashboard, name the query and select **Add to myESSENCE**. To save the query to your **Query Manager**, select **Save Query**.

Sample Explain Query Display

AS Percent Query: CC and DD Category

Numerator		
Hospital WA-H_CHI-FHS Harrison Medical C...	AND	Has Been Emergency Yes
	AND	CC and DD Category ILI CCDD v1

Denominator	
Hospital WA-H_CHI-FHS Harrison Medical C...	AND Has Been Emergency Yes

The numerator is all visits with the specified hospital, has been emergency, and CC and DD category. The denominator is all visits with the specified hospital, and has been emergency.
Since CC and DD category is selected as a percent, CC and DD category is only filtered in the numerator.

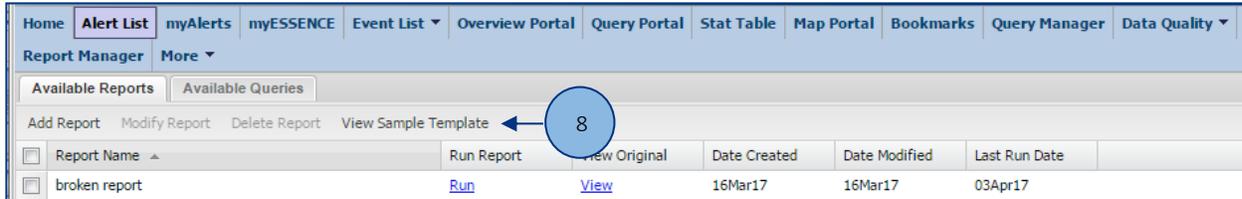
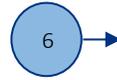
Creating a Report

Create customized report templates to publish your jurisdiction's data. The process can be a bit *clunky*, but once you have gone through the process it is easy (or easier) to replicate.

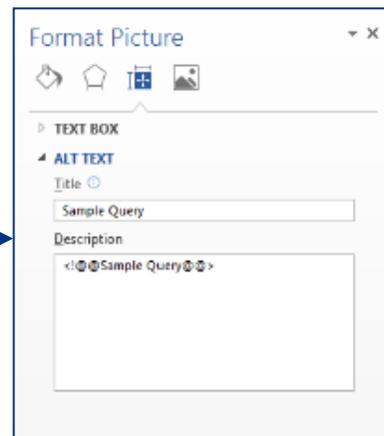
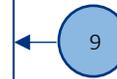
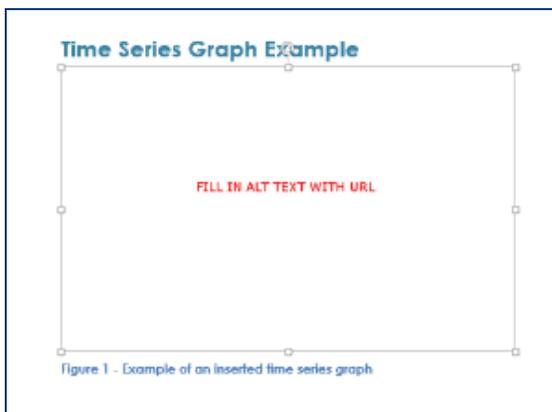
1. After creating a query in the [Query Portal](#), name it and select **Save Report Query** in the **Query Options** window.

2. Add a grouping and edit your query in the **Edit Saved Query** popup.
3. If you would like to add a map to your report, select **Map View** below your time series.
4. Choose the layers and scale for your map in the **Map Options** popup window.
5. In the [Map Portal](#), edit the layers and results to be shown for your map. When it is complete, save your map by selecting the highlighted icon in the top left menu bar.

6. Your map will open in a popup window. Select **Save for Report**.
7. In the **Query Sharing Options**, name your map and select a grouping (category) for it. Select **Save**.
8. Navigate to **Report Manager** in the ribbon bar and select **View Sample Template**.



9. The sample template will download as a .docx file. Open it and right click on the **Time Series Graph Example**.



10. In the **Format Picture** window, select **Alt Text** and enter the name of your query between the @@symbols as it appears in the **Available Queries** tab. Repeat for your map in the **Map Example** box.
 - Once you have made any desired modifications to the report template (e.g., text, insert placeholders for time series or maps), save the template report.

Once you have saved your report. Return to **Report Manager** and select the **Add Report** button under the **Available Reports Tab**.

11. In the **Report Upload Form**, name your report and select the appropriate file to upload from your computer. **Save** your report.
12. Find your report from the list of **Available Reports** and select the associated **Run Report** link. The **View Original** link will run the report with the original timeframes specified for time series or maps.
13. A **Report Options** window will open. Select your desired date range for your report.
14. The report will download as a .docx file. Edit whatever details you choose within it and export it as a .pdf.

More Expert User Tips

Growing Your ESSENCE Skills

Anyone can be an expert ESSENCE user! This section includes some user-suggested tips to help you navigate ESSENCE and create more informative graphics. If you feel like your team or organization would benefit from a virtual or site visit for ESSENCE training, please contact RHINO@doh.wa.gov to discuss scheduling.

Viewing Time of Day Information

There are times when it may be helpful to view the time of day when patients have presented for care. Some examples of this may be identifying times of day when facilities see higher volumes of visits for firework injuries or potentially avoidable emergency department visits.

You can view time series graphs showing the time of day when patients initiated care by opening the [data details output](#) for your visits of interest. Just above the data details table, click the **Popup Time of Day Graphs** button.

The screenshot shows a web interface for selecting charts. It features two columns of dropdown menus for selecting pie and bar charts, each with an 'Add' button below it. Below these is a 'Time Interval' input field set to '30' and a 'Popup Time of Day Graphs' button highlighted with a red box. At the bottom, there are several links for downloading data and navigating between days and views.

Select Pie Chart(s):	Select Bar Chart(s):
Hospital Site Patient Location Age Group CDC ILI Reporting Age Group	Hospital Site Patient Location Syndrome MedicalSubGrouping
Add Pie Chart	Add Bar Chart

Time Interval (Integer between 1 and 360 minutes): **Popup Time of Day Graphs**

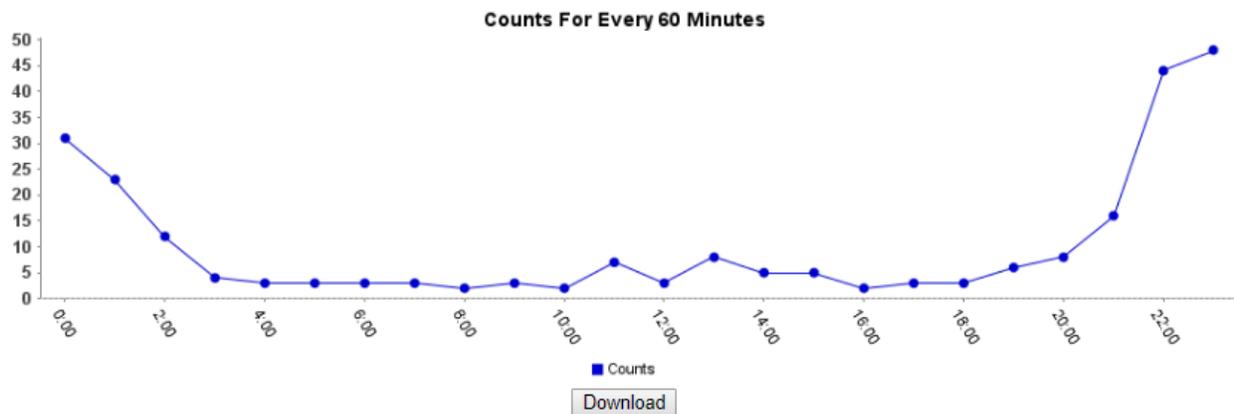
[\[Download .zip file containing all graphs on this page\]](#) | [\[Download all selected graph data tables as a MS Excel file\]](#)

[\[Previous Day\]](#) | [\[Next Day\]](#)

[\[Time Series\]](#) | [\[Map View\]](#)

[\[Plain Text with Raw Values\]](#) | [\[Plain Text with Reference Values\]](#) | [\[MS Excel with Raw Values\]](#) | [\[MS Excel with Reference Values\]](#)

Clicking the button will open a popup window of visit volumes in 30, 60, 90, and 120 minute intervals. Below each graph will be a **download** button, which you can use to download the graph.



Identifying Visits by Patients Seen Outside their Jurisdiction

Finding visits by residents from your jurisdiction seen at facilities in other jurisdictions

- Use the **Facility Location (Full Details)** data source.
- Set the **Hospital Region** field as all counties in Washington State except those which make up your jurisdiction.
- Set the **Patient Location** field as the county or counties which make up your jurisdiction.

Finding visits by residents of other jurisdictions at facilities in your jurisdiction

- Use the **Patient Location (Full Details)** data source.
- Set the **Patient Region** field as all counties in the state except those which make up your jurisdiction.
- Set the **Facility** field as the healthcare facilities (hospitals, clinics, or both) in your jurisdiction which you would like to include in the query.

Miscellaneous Tips and Tricks

- Choose a consistent naming convention to keep your saved queries tidy in your dashboards and Query Manager.
- Some queries will take a long time to complete. Do not refresh your browser or resubmit your query as this will not stop your previous query and will just further bog down ESSENCE. Instead, wait for your query to run to completion (which may take several minutes).
- Don't use the back button on your browser. Navigate using the buttons on the ribbon in ESSENCE. If you want to further investigate a specific data point or view data from a query a different way, right-click on it and select "open in a new tab".
 - [OneTab](#) is an excellent, free browser plugin available for Edge, Chrome, and Firefox which can help de-clutter and organize your browser window if you have many tabs opened at the same time.
- Use the **myFilters** option to save query parameters you frequently use (lower right corner of the Query Wizard).

Monitoring Visits of Interest

A variety of tools are available to help you monitor visits of interest, regardless of topic area. Tools to aid your surveillance generally fall into two broad categories: queries and dashboards. Queries are often “indexed” in the NSSP ESSENCE platform as CC and DD Categories. The queries use a combination of the chief complaint and discharge diagnosis (thus, CC and DD) fields.

Indexing improves the performance (e.g., the speed) of the query so that your work puts less stress on the system. This stress reduction is particularly important for large, complex queries run many, many times. To see the syntax of each query, click on the link for it provided here or visit the [CC and DD Categories section](#) of the [Syndrome Definitions](#) page under the **More** tab in ESSENCE. If you would like more in-depth information about using each of the queries, please RHINO@doh.wa.gov for assistance.

If you are interested in a specific topic, check the NSSP library to see if it already exists. If not, email Rhino@doh.wa.gov to see if the RHINO team has existing dashboards. These can be a great place to start your surveillance and can be edited as you wish.

This section contains guidance on queries, dashboards, and surveillance tips for:

- [Influenza-like Illness](#)
- [Substance Use](#)
- [Suicide-Related Outcomes](#)
- [Wildfires](#)
- [Other Communicable Disease](#)
- [Other Environmental Conditions](#)
- [Other Injury and Violence](#)

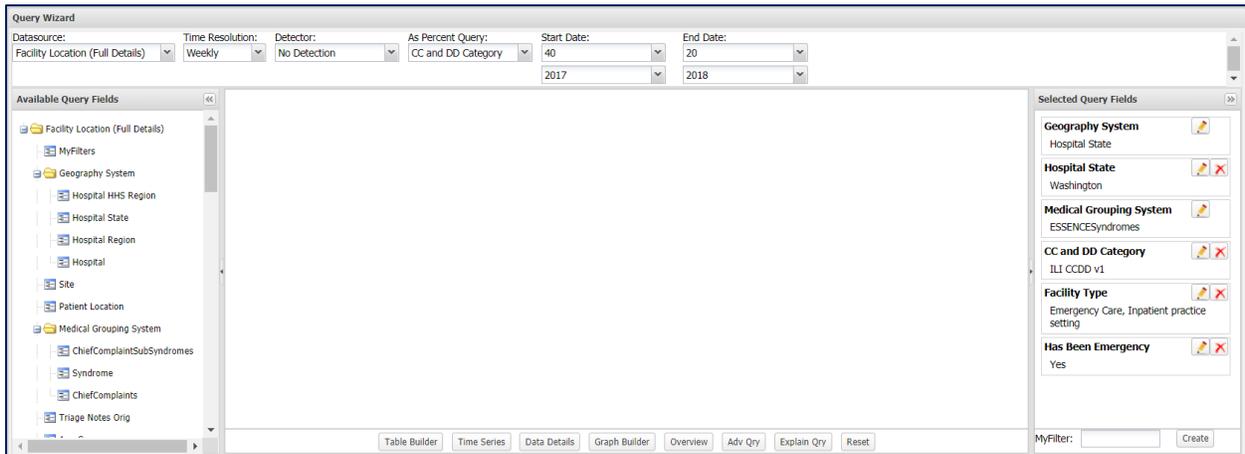
Influenza-like Illness

One of the most common conditions users monitor using syndromic surveillance data around the world is influenza-like illness (ILI). This section provides some standard guidelines we recommend for using RHINO data to monitor influenza-like illness in the ESSENCE platform.

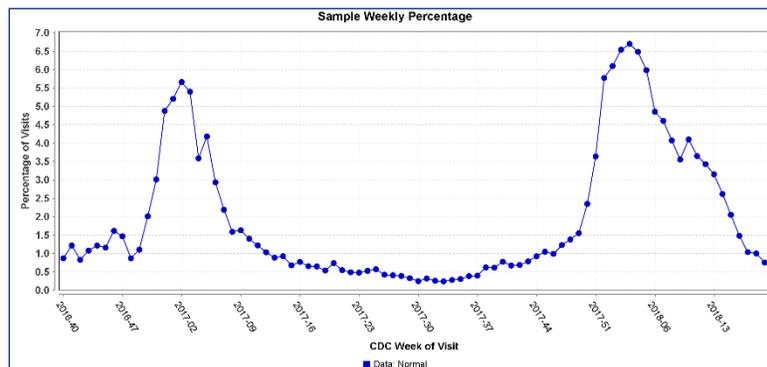
If you would like to quickly view ILI data using a variety of stratifications and time resolutions, RHINO has created a myESSENCE dashboard for ILI, which is available in the myESSENCE Dashboard Library.

Getting Started

1. From the **Query Wizard** toolbar, select the **Data Source** of interest.



2. Choose weekly as your **Time Resolution**.
3. Choose CC and DD Category in **As Percent Query**.
4. Choose the **Start** and **End Dates** of interest for your query.
 - Influenza season generally begins at CDC Week 40 and ends at CDC Week 20.
 - It may be helpful to go back one or more years to compare influenza seasons.
5. Select the parameters you would like to include in your query in the **Available Query Fields** window.
 - To select your facilities, either select your desired facility types in the **Facility Types** field or directly select the facilities you would like to include in the **Hospital** field.
 - Select ILI CCDD v1 in the **CC and DD Category** field.
 - Select the desired patient class categories from the **Has Been Emergency**, **Has Been Inpatient**, and **Has Been Outpatient** fields. More information about [patient class](#) is available in that section of this guidebook.
6. Check that your query parameters all appear in the **Selected Query Fields** window.
7. Click **Time Series** to run your query.

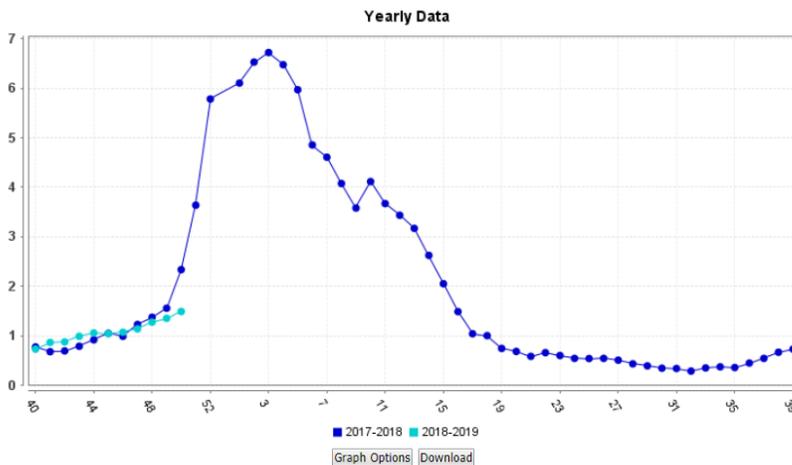


8. Open the **Data Series Option** dropdown above your time series graph.
9. Set Year as your **Within Graph Stratification**.

10. Set 40 as your **Graph Start Week**.

Data Series Options	
Within Graph Stratification:	Year
Across Graphs Stratification:	
Graph Options:	<input checked="" type="radio"/> Single Graph <input type="radio"/> Multiple Graphs (Small) <input type="radio"/> Multiple Graphs (Large) <input type="radio"/> Micro Graphs
Remove Zero Series: Help	<input checked="" type="checkbox"/>
Graph Start Week:	40
Update	

11. Click **Update** and your query will update below.



12. If desired, save your query to the **Query Manager** or to a **myESSENCE** dashboard.

13. To modify your graph title and axes, click **Graph Options** and make your changes.

14. **Download** a copy of your graph.

Stratifying by Patient Class

A key piece of understanding the severity of influenza in a given season (and its consequential burden on communities) is to monitor hospitalizations for influenza-like illness. You can do this easily in ESSENCE by stratifying visits using patient class.

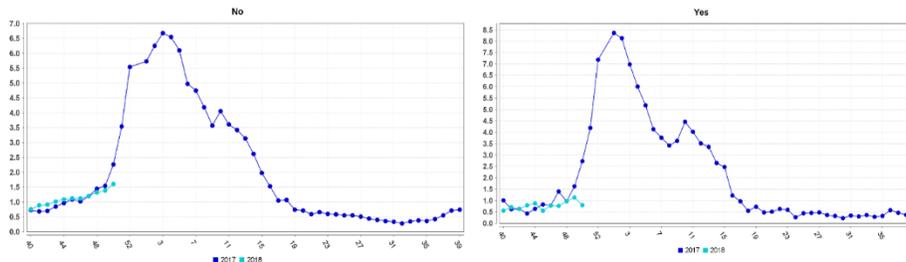
1. Beginning with the year-over-year time series we created above, open the **Data Series Options** dropdown window again.

Data Series Options	
Within Graph Stratification:	Year
Across Graphs Stratification:	Has Been Inpatient
Graph Options:	<input type="radio"/> Single Graph <input type="radio"/> Multiple Graphs (Small) <input checked="" type="radio"/> Multiple Graphs (Large) <input type="radio"/> Micro Graphs
Remove Zero Series: Help	<input checked="" type="checkbox"/>
Graph Start Week:	40
Update	

2. If you would like to have a year-over-year graph for each of the time series graphs, keep Year as your **Within Graph Stratification**.
3. Select Has Been Inpatient as your **Across Graph Stratification**.
4. Keep 40 as your **Graph Start Week**.
5. Click **Update**.
6. If desired, save your query to the **Query Manager** or to a **myESSENCE** dashboard.
7. To modify your graph titles and axes, click **Graph Options** and make your changes.
8. **Download** copies of your graphs.

Interpreting Your ILI Data

The second time series graph above shows a year-over-year display of the weekly percentage of emergency department visits for a chief complaint indicating influenza-like illness or a diagnosis of influenza at Washington State emergency departments between CDC week 40 of 2017 and CDC week 50 of 2018. The graph does not show all cases of influenza in Washington State and does not include visits to outpatient clinics.



The two graphs above show year-over-year displays for the weekly percentage of emergency department visits for a chief complaint of influenza-like illness or a diagnosis of influenza between CDC week 40 of 2017 and CDC week 50 of 2018. The first graph (labelled “no”) shows patients who *were not admitted* (**Has Been Inpatient = No**). The second graph (labelled “yes”) shows patients who *were admitted* (**Has Been Inpatient = Yes**). Viewing visit records in this way allows you to compare flu seasons for both hospitalizations and visits, which resulted in the patient being discharged directly.

Although the number of facilities changed substantially over the period displayed, the choice to use a percentage rather than counts of visits allows us to reasonably assume the graphs show true trend changes over time (i.e., the rise is not due to an increased number of facilities reporting to RHINO). A second benefit of using percentages for monitoring ILI is that we can see not just the overall rise in visits for ILI, but how it relates to the total number of emergency department visits.

Expert User Tip

While monitoring ILI, RHINO often looks at:

- All emergency visits
- Primary and urgent care visits
- Hospitalizations
- Deaths

To aid your surveillance, RHINO maintains a [comprehensive ILI myESSENCE dashboard](#).

Substance Use

CC and DD Categories

Monitoring visits for drug use continues to be an important topic for many jurisdictions and users. To

facilitate easy and consistent surveillance for visits for substance use (particularly opioids and stimulants), NSSP, and users across the country have developed a range of syndrome definitions and indexed them as CC and DD Categories in the ESSENCE platform to improve their performance. You can review these in the **More** tab in [ESSENCE](#) or on the [NSSP Knowledge Repository Syndrome page](#); email RHINO@doh.wa.gov with questions.

- CDC All Drug v2

This query identifies encounters related to suspected drug overdose events involving all drug types.

- CDC Opioid Overdose v2 (v1 and v3 also available)

This query identifies encounters for suspected opioid overdoses broadly (including those involving fentanyl and heroin). It will exclude other opioid-related visits, which do not involve an overdose.

- CDC Fentanyl Overdose v1

This query identified encounters specifically for fentanyl overdoses of unintentional or undetermined intent. It will exclude visits where medical providers administer fentanyl as well as visits related to withdrawal without acute intoxication.

Dashboards

- Behavioral Health Dashboard

Weekly counts and percentages for various behavioral health conditions. Includes stratifications by age group, race, and facility county. Queries are divided into three primary categories: Mental Health (disaster mental health, psychological distress), [Substance Use](#) (suspected opioid overdoses, all drug, alcohol), and Suicide-Related Outcomes (suicide attempts, suicidal ideation, self-harm).

Developing Your Own Queries

Substance use patterns can change quickly and new synthetic drugs (e.g., changes to fentanyl composition) can cause overdose fatalities before public health recognizes them in the community.

If you would like to develop your own syndrome definition, there are tips available [here in this guidebook](#) or the [NSSP has also produced a guide](#) to help you get started. You can also reach out to RHINO@doh.wa.gov.

If you develop a syndrome definition, which seems to work well, please consider sharing it with the broader syndromic community. Other users here in Washington, as well as nationally could benefit from your work. You can share your queries via the [NSSP Slack Workspace](#), in the [Syndrome Library](#), and by [requesting that it be indexed as a new CC and DD Category](#).

Suicide-Related Outcomes

Many communities are interested in monitoring healthcare encounters for both fatal and non-fatal suicide-related outcomes.

CC and DD Categories

NSSP ESSENCE has several indexed queries available for users to leverage to monitor these types of encounters in their communities. To see the syntax of each query, click on the link for it provided here or visit the [CC and DD Categories section](#) of the [Syndrome Definitions](#) page under the **More** tab in ESSENCE. If you would like more in-depth information about using each of the queries, please [contact us](#) for assistance.

- CDC Suicide Attempt v1

This query identifies encounters related to a suicide attempt or self-directed violence with the intent to die as a result of the behavior. It uses both chief complaint terms and discharge diagnoses to identify these encounters.

- CDC Suicidal Ideation v1

This query identifies encounters related to suicidal ideation, as well as thoughts or plans to engage in suicide-related behavior. It uses both chief complaint terms and discharge diagnoses to identify these encounters.

- SDC Suicide Related v1

This query identifies encounters for stress, anxiety, phobic anxiety, acute PTSD, and panic. The Syndrome Definition Committee of the NSSP Community of Practice developed it.

Dashboards

To facilitate easy monitoring of these indicators, as well as other behavioral health conditions, RHINO has created a Behavioral Health Indicators dashboard, which is available in the [myESSENCE Dashboard Library](#) for easy access.

The dashboard includes weekly counts and percentages for various behavioral health conditions. Includes stratifications by age group, race, and facility county. Queries are divided into three primary categories: Mental Health (disaster mental health, psychological distress), [Substance Use](#) (suspected opioid overdoses, all drug, alcohol), and Suicide-Related Outcomes (suicide attempts, suicidal ideation, self-harm).

Firearm Injury

Many communities are interested in monitoring healthcare encounters for firearm injuries.

CC and DD Categories

- CDC Firearm Injury v2

This query identifies initial healthcare encounters for firearm injuries of all intent types including unintentional, intentional self-directed, assault, legal intervention, terrorism, and undetermined intent.

Dashboards

- Firearm Injury

This dashboard provides an overview of emergency department visits for firearm injury (regardless of

intent). The dashboard includes weekly counts and percentages for firearm injury ED visits stratified by age group, sex, ICD-10 category, discharge disposition, and visit severity.

- FASTER Firearm Indicators

This dashboard provides an overview of trends in emergency department visits for firearm injury classified by intent (intentional self-directed, unintentional, assault-related). This dashboard also provides total non-fatal firearm injury ED visits for weekly monitoring. Intent-based firearm injury syndrome definitions are available and utilized in this dashboard. However, due to poor performance of these definitions, we recommend relying on the CDC Firearm Injury v2 CCDD category and using intent-based firearm injury definitions with caution.

Wildfires

RHINO works closely with DOH environmental epidemiologists to develop queries, dashboards, and messaging related to wildfires and smoke exposure. Topics include PM2.5 concentrations, wildfire smoke exposure, and respiratory and cardiovascular conditions.

Dashboards

- WA_Wildfire_3

Provides a concise, quick-look version of the WA_Wildfire dashboard for daily monitoring. Includes queries for PM2.5 concentrations, respiratory conditions (and respiratory conditions specifically excluding COVID-19 visits), and smoke complaints.

- WA_Wildfire

This dashboard facilitates monitoring of health effects from wildfire smoke, including: respiratory conditions (broad, asthma, pneumonia, bronchitis, COPD), cardiovascular conditions (broad, ACS, Angina, MI), stroke, PM2.5 concentrations, smoke complaints, smoke-related symptoms, and daily ED Visits (emergency department/outpatient/inpatient, East/West Washington, age groups)

Digging into the Visits

An ongoing challenge to monitoring visits that may be associated with wildfires is that the symptoms could also correspond to respiratory diseases like COVID. Your jurisdiction may also have only a small number of visits, making it difficult to determine if an increase is meaningful, even if it is statistically significant.

RHINO encourages you to use the free-text fields (like the triage notes and clinical impression) to thoroughly investigate these visits to determine if they may be related to wildfire activity.

Other Communicable Diseases

NSSP ESSENCE has a variety of queries for communicable diseases available in the platform and users have added several helpful dashboards to the myESSENCE Dashboard Library. Add how to look at dashboards and look for syndromes.

CC and DD Categories

- CDC AFM Narrow v1 – Limit to Pediatric

This query looks for encounters related to Acute Flaccid Myelitis (AFM) using a narrow definition. It identifies visits using both chief complaint and diagnosis codes.

- CDC Chronic Hepatitis C v1

Identifies encounters for chronic Hepatitis C using chief complaint terms and diagnostic codes.

- CDC Food Poisoning v1

Identifies encounters for food poisoning using chief complaint terms and diagnosis codes.

- CDC Legionella v1

Identifies encounters for legionella using chief complaint terms and diagnosis codes.

- CDC Lyme Disease v1

Identifies encounters for Lyme disease using chief complaint terms and diagnosis codes.

- CDC Measles CCDD v1

Identifies encounters for measles using chief complaint terms and diagnosis codes. Excludes encounters for vaccination

- CDC Smallpox v1

Identifies encounters for smallpox using chief complaint terms and diagnosis codes.

- Mumps v1

Identifies encounters for mumps using chief complaint terms and diagnosis codes. Excludes encounters for vaccination.

- Norovirus v1

Identifies encounters for norovirus using chief complaint terms and diagnosis codes.

- Visits of Interest

Identifies encounters for a variety of conditions which may be of interest or reportable to public health. Encounters are identified using chief complaint terms and diagnostic codes.

Dashboards

A number of dashboards are available in the myESSENCE Dashboard Library and can be easily downloaded into your account. Please reference the [Dashboard Library](#) section of this document.

Other Environmental Conditions

CC and DD Categories

- Cold Related Illness v1

Identifies encounters for cold-related conditions, including hypothermia and frostbite. The query excludes follow up visits for conditions like frostbite. RHINO often uses this query in combination with the Homelessness v1 query.

- Heat Related Illness v2 (v1 is also available)

Identifies encounters for heat-related conditions, including heatstroke. RHINO often uses this query with the Homelessness v1 query.

Other Injury and Violence

CC and DD Categories

- All Traffic v2

This query looks for encounters related to injuries associated with motor vehicles, inclusive of pedestrian and non-car motorized vehicles. The RHINO Program developed this query.

- CDC Suspected Child Abuse and Neglect v1

Identifies encounters related to suspected child maltreatment, including abuse and neglect.

Dashboards

The RHINO program uploads many of their dashboards to the [myESSENCE Dashboard Library](#). However, if you have a need or think something may already be made and don't see it there, please email RHINO at rhino@doh.wa.gov with the subject "My Essence Dashboard help" for assistance.

- All Traffic – Pedestrian
- All Traffic – Pediatric
- E-Scooter or Bike Share
- Firearm Injury
- Injury and Violence

Data Source Details

NSSP Data Sources

Patient Location (Full Details)	Clinical data (ED, inpatient, outpatient, urgent care). If your data access is limited to certain counties based on patient residence , queries will only return records for patients who reside in these counties or states you select (regardless of the
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<p style="text-align: center;">RHINO Recommended</p>	<p>location of the Washington State facility they presented to).</p> <p>Data details will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, you will get a record for each visit that matches your query criteria. If a single visit is assigned to multiple syndromes or subsyndromes, a record will be returned for each syndrome/subsyndrome for which a visit meets the criteria. <i>This may result in duplicate records being returned.</i></p>
<p style="text-align: center;">Patient Location (Limited Details by HHS Region) “National Picture”</p>	<p>Clinical data (ED, inpatient, outpatient, urgent care). Includes data contributed by all civilian sites across the country. All users affiliated with a public health authority, regardless of location, have access to the full dataset.</p> <p>Clinical information is limited to visit date, syndrome/subsyndrome categories, patient class and disposition category. Patient demographics are limited to age group, gender, and DHHS region. Potentially identifiable information (e.g., age, ZIP Code, county, chief complaint, diagnoses, triage notes, facility name) is suppressed.</p> <p>Records can only be searched using a subset of all fields.</p>
<p style="text-align: center;">Patient Location and Visit (Full Details)</p>	<p>Clinical data (ED, inpatient, outpatient, urgent care). If your data access is limited to certain counties based on patient residence, queries will only return records for patients who reside in these counties or states you select (regardless of the location of the WA facility they presented to).</p> <p>Data details will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your results will include a single, de-duplicated list of visit records that match your query criteria.</p>
<p style="text-align: center;">Facility Location (Full Details)</p> <p style="text-align: center;">RHINO Recommended</p>	<p>Clinical data (ED, inpatient, outpatient, urgent care). If your data access is limited to certain counties based on facility location, queries will only return records for patients who were seen at facilities in these counties (regardless of patient residence).</p> <p>Data details will return full records with all visit-level information included.</p>
<p style="text-align: center;">Facility Location (Limited Details by HHS Region) “National Picture”</p>	<p>Clinical data (ED, inpatient, outpatient, urgent care). Includes data contributed by all civilian sites across the country. All users affiliated with a public health authority, regardless of location, have access to the full dataset.</p> <p>Clinical information is limited to visit date, syndrome/subsyndrome categories, patient class and disposition category. Patient demographics are limited to age group, gender, and DHHS region. Potentially identifiable information (e.g., age, ZIP Code, county, chief complaint, diagnoses, triage notes, facility name) is suppressed.</p> <p>Records can only be searched using a subset of all fields.</p>
<p style="text-align: center;">Facility Location and Visit</p>	<p>Clinical data (ED, inpatient, outpatient, urgent care). If your data access is limited to certain counties based on facility location, queries will only return records for patients who were seen at facilities in these counties (regardless of patient</p>

(Full Details)	residence). Data details will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your results will include a single, de-duplicated list of visit records that match your query criteria.
Chief Complaint Query Validation	This is a collection of all chief complaints and discharge diagnoses contributed to NSSP ESSENCE. The only other piece of information that can be viewed along with these fields is the week and year of visit. This tool is intended to facilitate development and validation of syndrome definitions that use chief complaint and discharge diagnosis. Once developed, these syndrome definitions can then be applied to one of the “National Picture” datasets, which have chief complaint and diagnosis suppressed.
Department of Defense Data	Clinical data from US Department of Defense domestic healthcare facilities. It is very similar to the other “Full Details” datasets. <i>At this time, this data is not available for us.</i>
Veterans Affairs Data	Clinical data from US Veterans Affairs healthcare facilities. It is very similar to the other “Full Details” datasets. <i>At this time, this data is not available for use.</i>
Weather Data	Weather data (e.g., temperature, precipitation, wind, sun) from National Weather Service stations through the USA. Temperature is in degrees Fahrenheit and precipitation is in inches.
Air Quality Data	Air quality data from more than 120 reporting agencies and 2,700 stations, including stations in Washington State. Air quality parameters include Carbon Monoxide (8 hour), Ozone (1 hour, 8 hour), PM _{2.5} (24 hours), PM ₁₀ (24 hours), and Sulfur Dioxide (24 hours).

Appendix

Frequently Asked Questions

Q: What is the difference between NSSP ESSENCE and Washington ESSENCE?

A: In short, the two platforms have different data in them. Our healthcare encounter data, air quality, and weather data go into NSSP ESSENCE. Washington ESSENCE is currently outdated and not used (it holds school absenteeism data).

Q: What is the difference between RHINO data and CHARS?

A: The [Comprehensive Hospital Abstract Reporting System \(CHARS\)](#) collects record level info on hospitalizations in Washington State. CHARS has hospital discharge and observation stay data derived from billing systems with data fields that include age, sex, zip code, diagnosis and procedure codes, and billed charges. RHINO is not based on billing data and is a direct snippet of the EHR (electronic health record) that includes free-text clinical fields such as chief complaint. While CHARS just collects hospitalization data, RHINO collects hospitalization, emergency department, and outpatient clinic data. Lastly, RHINO is near real-time whereas CHARS can take months to be updated.

Q: How do I get access to RHINO data?

A: If you are a Department of Health employee, you need to fill in RHINO's data request form and confidentiality agreement. If you work for one of our partners (e.g., a Tribal government, a local health jurisdiction, another state agency), check if you have a data sharing agreement in place with RHINO. If you do not have an agreement in place, you will need to establish one. Once you have a data sharing agreement in place for the organization, each user will fill in the data request form and confidentiality agreement.

Q: When can I publish RHINO data?

A: You can publish RHINO data in accordance with the guidelines for publication of small numbers available on [here](#) and [here](#). You must attribute data to RHINO: This dataset contains data matching the RHINO-approved data request and should be used for the purposes specified in the data request form and follow the guidelines specified in the data sharing agreement. The RHINO team must approve publications for peer-review and presentations before submission and you should attribute the data to RHINO. Please reach out to RHINO@doh.wa.gov with any questions regarding this dataset.

- Data attribution statement: RHINO Data, Rapid Health Information NetwOrk (RHINO) Program, Division of Disease Control & Health Statistics, Washington State Department of Health.

Q: Can I calculate prevalence using RHINO data?

A: It is important to remember RHINO data are *visit-based* and not *patient-based* as many other datasets are. RHINO gathers data for all visits to reporting facilities, but some patients may be seen more than once for the same condition or may be transferred to a higher-level facility and appear as multiple visits.

Additionally, the socioeconomic factors (e.g., insurance coverage) which may make someone *more likely* to be ill or injured may make them *less likely* to be able to access healthcare. For these reasons, we recommend you do not estimate prevalence using RHINO data.

Q: What is the best way to use rates with RHINO data?

A: Like the difficulties with estimating prevalence using RHINO data, using population-based rates can be challenging. The same factors, which may make someone more likely to be ill or injured, could prevent them from seeking care for it. The distance between their home and healthcare facilities could also make it more challenging to seek care (or influence where they go), but likely would not make them less in need of it. Instead of using population-based rates, ***we recommend using visit-based rates***. RHINO prefers the rate of visits for a given condition per 10,000 visits. If you need assistance calculating these rates, please contact RHINO@doh.wa.gov and we will be happy to help.

Q: Can I identify a patient visiting multiple facilities or making multiple visits? Can I link records in RHINO data?

A: Without a universal patient identifier it can be difficult to identify a patient visiting multiple facilities. Even medical record numbers can change within a facility, let alone between facilities. RHINO does collect patient name that can be used for linking, though this is stored in our local database and requires additional data sharing agreements and sometimes IRB approval to access.

Q: Which conditions can I monitor using RHINO data?

A: You can monitor many conditions with RHINO data. Communicable diseases, chronic diseases, injuries and violence, and environmental issues are all common issues monitored using syndromic surveillance data around the country. [The National Syndromic Surveillance Program’s Community of Practice](#) is a wonderful space to learn from what others around the country are doing. For more information about the strengths and limitations of RHINO data, see [that section of this guidebook](#).

Q: What cleaning or redaction is done to the data before it goes into ESSENCE?

A: Before a facility is considered to have “production-quality data” and their messages are sent to NSSP ESSENCE, we do have a process of checking the structure and content of the messages for completeness and correctness. The data is not cleaned at DOH before it is passed on to ESSENCE. We also have ongoing data quality processes to monitor drop-offs and overall degradations in data quality. If you notice a data quality issues (e.g., non-informative chief complaint text), please let us know and we can work with the facility to try to correct the issue. You can learn more about the data specs starting on page 6 of our [messaging guide](#).

Q: How are the weeks in ESSENCE calculated?

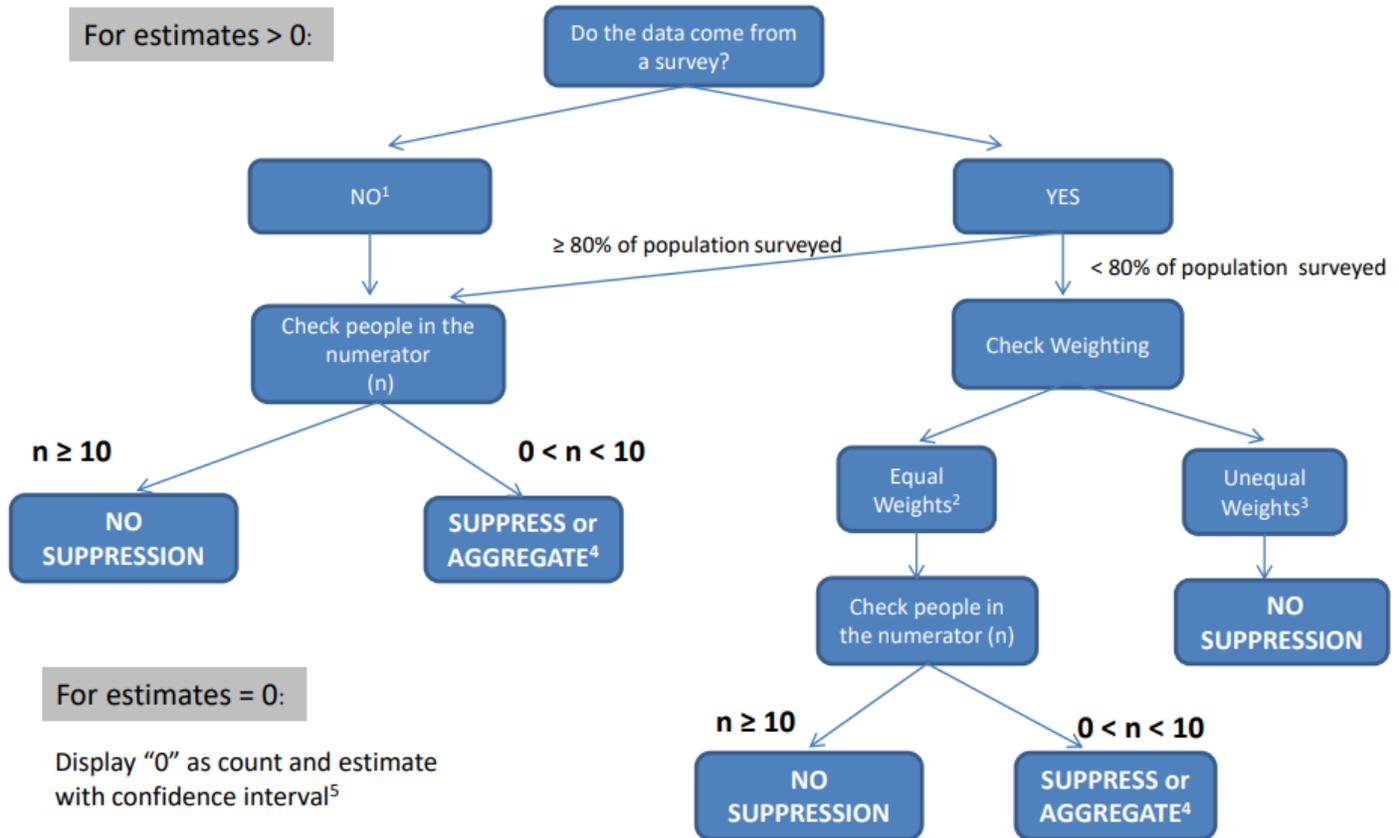
A: The weeks in ESSENCE are MMWR (Morbidity and Mortality Weekly Report) weeks and calculated from Sunday-Saturday of each week. This means that the last week of a year could overlap with the following year. A log of the dates associated with MMWR weeks is available <https://ndc.services.cdc.gov/wp-content/uploads/MMWR-Week-Log-2022-2023.pdf>.

Q: How do I credit RHINO data?

A: This dataset contains data matching the RHINO-approved data request and should be used for the purposes specified in the data request form and follow the guidelines specified in the data sharing agreement. The RHINO team must approve publications for peer-review and presentations before submission and you should attribute the data to RHINO. Please reach out to RHINO@doh.wa.gov with any questions regarding this dataset.

Small Numbers Publication Decision Tree

DOH Data Presentation for the Public – Small Numbers Standard



¹ Examples include birth data, CHARS data, linked death data, notifiable conditions reports

² Examples include Healthy Youth Survey

³ Examples include Behavioral Risk Factor Surveillance System, Pregnancy Risk Assessment System

⁴ Exceptions include annual state- or county-specific counts or rates with no stratification.

⁵ 95% Poisson confidence interval for 0 is 0 to 3/n.

Additional Resources

RHINO

- [Community of Practice SharePoint](#)
 1. Conference presentation slide decks
 2. Updated facility onboarding status sheets
 - Meeting slides (table of topics below)
- [Description of RHINO data](#)
- [Requesting access to RHINO data](#)
- [Submitting data to RHINO](#)

Topic	Month	Presenter
Heat-Related Illness	July 2022	Kali Turner, MPH
Injury Surveillance	May 2022	Madeleine Bentley, MPHc Tyler Bonnell, MPHc
Wildfire Season Wrap-Up	October 2020	Kali Turner, MPH
Surveillance Support and Resources	July 2020	Kacey Potis, MPH CPH Cody Carmichael, MPH CPH Amanda Dylina Morse, MPH
COVID-19 and Suicide-Related Outcomes	February 2020	Natasha Close, PhD MPH Kacey Potis, MPH CPH
Measles, Mumps, and Exposures! Oh My! Finding Visits for Possible Notifiable Conditions Using RHINO Data	January 2020	Amanda Dylina Morse, MPH
Boo! It's the Flu! Monitoring ILI with RHINO	October 2019	Amanda Dylina Morse, MPH
Lewis County's Experiencing Integrating RHINO Data into their Daily Workflow	August 2019	Ed Mund Lewis County Public Health
Wildfires	June 2019	Kacey Potis, MPH CPH
Drowning and Submersion Visits	April 2019	Amanda Dylina Morse, MPH
Suicide and Self-Harm	February 2019	Alex Wu, ScD MPH Portland Area Indian Health Board
Monitoring Sexual Violence	January 2019	Amanda Dylina Morse, MPH

ESSENCE Guidance

- APIs to pull data from ESSENCE into R
 1. [API Training Slides, January 2021](#)
 2. [Using RStudio with ESSENCE APIs](#) (NSSP)
 3. [API Training Script](#)
- [Data Sharing Through Dashboards: The Who, What, Where, When, and Why](#) (NSSP)
- [ESSENCE Online Training](#) (JHU)
- ESSENCE Training Webinars (NSSP)

1. [Building queries](#) (JHU, Wayne Loschen)
 2. [Using queries](#) (JHU, Wayne Loschen)
 3. [Sharing queries](#) (JHU, Wayne Loschen)
 4. [Using APIs](#) (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
- ESSENCE Q&A Webinars (NSSP)
 1. [One, November 2017](#) (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
 2. [Two, March 2018](#) (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
 3. [Three, September 2018](#) (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
 4. [Four, March 2019](#) (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
 5. [Five, June 2019](#) (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
 6. [Six, July 2020](#) (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
 - [NSSP ESSENCE user guide](#) (NSSP)
 - [Query writing tool](#) (Kansas Department of Health and Environment, Zach Stein)

Syndrome Definition Overviews

- [Case definition list](#) (North Carolina Detect)
- [Syndrome definition library](#) (ISDS)
- [Syndrome definitions](#) (RHINO)

General Information on Syndromic Surveillance

- CSTE's 3 Part Syndromic Surveillance Training Series: [Introduction to Syndromic Surveillance Methodology \(cste.org\)](#)
- [ESSENCE, the Electronic Surveillance System for the Early Notification of Community-Based Epidemics](#) (JHU), system overview, 2020)
- [National Syndromic Surveillance Program \(NSSP\) Homepage](#)

Success Stories (Data in Action)

NSSP maintains a list of success stories exemplifying syndromic data “in action” from Sites around the country. Below are a sample of them, which may be relevant for your practice.

Topic Area	Success Story	Group Responsible
<i>Collaboration</i>	Experts Collaborate to Develop a Standardized Syndrome Definition for Cold-related Illness	SDC CSTE
<i>Disaster Response</i>	Monitoring Population Changes for Emergency Management Support in Tennessee	Tennessee
	North Carolina Integrates Data from Disaster Medical Assistance Teams for Improved Situational Awareness	North Carolina
	Syndromic Surveillance Shows Medical Surge in Dallas–Fort Worth during Hurricane Harvey, 2017	Texas
<i>Environmental Health</i>	Chemical Spill in Kansas: Importance of Sharing Information Across Sites	Kansas

	Wildfires in California: A Critical Use Case for Expanding State Capacity and Sharing Information Across Public Health Jurisdictions	California
<i>Healthcare Utilization</i>	Alabama Department of Public Health–Syndromic Surveillance: Monitoring and Improving Data Quality	Alabama
	Syndromic Surveillance of Non-traumatic Dental Conditions in Idaho Core Areas	Idaho
<i>Infectious Disease</i>	Florida Department of Health Syndromic Surveillance Identifies Unreported Cases of Zika Virus Disease, 2016–2017	Florida
	Syndromic Surveillance Shows Rise in Emergency Department Visits after Case of Ebola	Texas
	Tennessee Uses Syndromic Surveillance to Identify Potential Cases of Mumps	Tennessee
	Syndromic Surveillance for Arboviral Diseases in Arizona	Arizona
<i>Injury</i>	DeKalb County, Georgia, Uses Syndromic Data to Identify Chlorine Gas Exposure at a Swimming Pool	Georgia
	Kansas Uses Syndromic Data to Improve Case Reporting for EVALI	Kansas
	Syndromic Surveillance Provides Critical Clues on E-cigarette, or Vaping, Product Use-Associated Lung Injury	Multiple
<i>Mass Gatherings</i>	How Oregon Tested its Mass Gathering Protocol and Mobilized Communities	Oregon
	Syndromic Surveillance for Mass Gatherings	West Virginia
<i>Opioid Use</i>	Louisiana Takes Action Against Drug Abuse by Sharing Syndromic Data	Louisiana
<i>Suicide-Related Outcomes</i>	Idaho Uses Syndromic Data to Help Understand Who Is at Risk for Suicide	Idaho