Working with RHINO
A Handbook for Using Syndromic Surveillance Data in Washington State

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For more information, contact the RHINO Program (DOH)
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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 platforms 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 building a report template.

What other resources are available?

RHINO has a Community of Practice SharePoint site with a variety of additional resources in its library. Additionally, there is a section of the Appendix with more resources from RHINO and other organizations like the International Society for Disease Surveillance.

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 may have additional questions or need assistance from RHINO staff. If that is the case for you, we offer in-person trainings and maintain a GoToMeeting account for impromptu screen-sharing to walk through issues as they arise. Please don’t 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, population-based, 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 issues 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, the Rapid Health Information NetwOrk (RHINO) program gathers, maintains, and disseminates Washington’s syndromic surveillance data and is the only source of our emergency department data. Syndromic surveillance’s characteristics and data sources make it unique among Department of Health databases. For more information, please see the data elements and data sources sections of this guidebook.

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 and RHINO staff send regular updates as more facilities become available. To the right is a map of the locations of Washington’s emergency departments.

RHINO’s onboarding page for facilities is located here. If you have questions about a specific facility in your jurisdiction, please contact the Syndromic Surveillance Mailbox.
Potential Use Cases for RHINO Data

As an all-hazards surveillance system, syndromic data are a versatile tool for monitoring population 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. 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. 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. Contact RHINO for access to a purpose-built wildfire surveillance dashboard.
- **Sexual assault**: monitor emergency department visits for sexual violence. Use triage notes to contextualize visits.
- **Suicide and self-harm**: Identify visits for suicidal ideation, suicide attempts, and self-harm behaviors. Use triage notes to contextualize visits.
- **Valley fever (coccidioidomycosis)**: Identify symptoms and diagnoses for Valley Fever. Link with environmental data to identify areas of particular risk.

RHINO Community of Practice

To facilitate cooperation between local health jurisdictions (LHJs) and other public health and interested organizations using RHINO data, we maintain a Community of Practice for data users to collaborate. We also host bimonthly webinars on syndromic surveillance topics and offer site-visits for ESSENCE training by request. There is also 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 Community of Practice or any of its workgroups, please contact RHINO.

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 or local health
level. Solicit their expertise regarding local trends and health issues.

- 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.
  
  o Know the formats of diagnoses. Do they provide one diagnosis or multiple? Do they include the decimal point in their ICD-10 codes?
  
  o Know the formats of chief complaints. Do your facilities report a single term, standardized terms, or free text?
  
  o 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 calibrated 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 were promoted to NSSP ESSENCE from the staging environment. Watch for new facilities validating their data which will become available soon, potentially changing visit counts if you are querying based on counts.

- Know which kinds of facilities you have (e.g., emergency department, inpatient, outpatient, ambulatory, 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 week 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.
  
  o 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.
  
  o Syndromic surveillance data is not cleaned or curated. It reflects data which is entered into the electronic medical record for purposes of patient care (rather than surveillance or research). It is made available as it is sent from facilities and, consequently, can be noisy or occasionally lead to inaccurate conclusions.

- RHINO data is appropriate for:
  
  o Generating hypotheses,
  
  o Strengthening information gathered from other sources,
  
  o Investigating rumors or interventions, and
  
  o Conducting preliminary assessments of the health effects of an emergency.

**Clinical Data Limitations**

- Data drop-outs are common. Data are frequently missing for brief periods (1-2 days) and occasionally for longer (weeks to months).

- Data are highly 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 it 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 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.

School Absenteeism Data Best Practices

- School absenteeism data do not contain health or identifiable information. Because of this, they are publicly releasable and do not require aggregation.
- To better understand the data, speak with RHINO staff and your local school districts. The school districts, in particular, may be able to provide information to better understand patterns in the data (e.g., school camps and holidays).

School Absenteeism Data Limitations

- Not all school districts are included in the data, only those which report to the Washington School Information Processing Center. Some of the larger school districts (e.g., Seattle) are not included.
- RHINO receives all-cause absence counts, which includes both excused and unexcused absences. Although there may be an association between absences and illness, it is not possible to determine causation from this dataset.
- Some school districts routinely have high baseline absenteeism (15-20%). Each school district’s baseline is different; consulting with the school district may help alleviate some of this uncertainty.
- Weekends, holiday breaks, and other scheduling changes will appear in the data. You will need to account for their associated absenteeism levels in your analysis.
Accessing RHINO Data

Data Release Framework

Requesting Access to RHINO Data

- The guidelines contained here reflect typical practice, but RHINO staff are available to discuss exceptions to them, 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).
- If you would like access to RHINO data for your public health work, please review the framework below and submit the RHINO data request form and confidentiality agreement to the Syndromic Surveillance mailbox. Your organization will also need to enter into a data sharing agreement with RHINO.
  o RHINO also maintains a more detailed flow chart for our data release policies.
  o Users may only use the MRN field to identify a patient when investigating a notifiable condition or public health threat.

<table>
<thead>
<tr>
<th>Requestor</th>
<th>Intended Purpose (Surveillance, Research)</th>
<th>Process for Access</th>
<th>Data Provided</th>
<th>Method of Access</th>
<th>IRB Approval Needed</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington State Department of Health</td>
<td>Surveillance, community health assessment, program evaluation</td>
<td>Data sharing agreement, RHINO data request form; confidentiality agreement</td>
<td>Aggregate or line-level data from Washington State</td>
<td>Periodic data pulls, NSSP ESSENCE account, or custom report</td>
<td>No</td>
<td>No charge for access</td>
</tr>
<tr>
<td>Local and Tribal health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other public health partner organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data providers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public health agency outside of Washington</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researcher</td>
<td>Research as defined in RCW 42.48</td>
<td></td>
<td>Case-by-case</td>
<td></td>
<td>Yes</td>
<td>Hourly charge</td>
</tr>
<tr>
<td>Public Records Request</td>
<td>Public information</td>
<td>Identifiable data is exempt from public records requests</td>
<td>Aggregate data as appropriate</td>
<td>Data pulled by RHINO staff</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

- “Researchers” includes students who are interested in using RHINO data for their work.
  o 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.
- “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.

- 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, please publish using visit percentages or rates per 10,000 visits instead of counts to protect patient confidentiality.
- 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 those suppressed counts.
- Assure that suppressed cells cannot be recalculated through subtraction, by using secondary suppression as necessary.
- If presenting information regarding an outbreak, you may publish numbers <10 provided the publication is a response to:
  - A cluster investigation with intense public interest (e.g., AFM), OR
  - An outbreak of a communicable disease or other all-hazards incident in which the public must be aware of specific risks which may be in their community
  - In these cases, DOH recommends reporting only the person’s gender and decade of age or that they are a minor.

The graph below shows daily counts of visits over a period of time 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 the Department’s small numbers publication guidelines.
Thankfully, it is easy to correct this issue and create visualizations which are acceptable for public disclosure! The first option is to change the time resolution from daily to weekly counts. You can do this easily in the Query Portal. 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

In order 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 RHINO 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 which 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. Direct identifiers (e.g., patient name) are only provided by some facilities and this information is not available in ESSENCE. Access to this information requires a custom data pull by RHINO staff, which can be requested through submission of a RHINO data release form. If you have questions about the feasibility or acceptability of linking RHINO data, please contact the RHINO program.

Below are some situations in which it would potentially be acceptable to link RHINO data with outside datasets for public health. The list is not exhaustive and is intended to give a variety of examples that may be relevant for RHINO data users. If you do not see an example relevant to your work below, please contact RHINO to discuss the possibility of your request.

- **Access to care**: linking with clinical data from comparable communities to monitor the equitable distribution of care across counties.
- **Drug overdose**: linking with prescription management data to identify providers who have prescribed medications to patients with multiple overdose incidents.
- **Emergency preparedness**: linking with paramedic data to provide situational surveillance.
- **Healthcare costs**: linking with insurance payment information to monitor healthcare costs for quality improvement.
- **Injury surveillance**: linking RHINO data with other clinical records to monitor injuries like adult falls or pediatric near-drowning events.
- **Motor vehicle collision injuries**: linking with law enforcement vehicle crash and toxicology information to obtain a better understanding of the collisions and identify targets for improvement (e.g., dangerous intersections).
- **Occupation injuries**: linking with worker’s compensation claims to identify pesticide exposures.
- **Program outcomes**: linking with school-based health clinic data to evaluate the outcomes of school-based health clinic services.
Interacting with RHINO Data

Data Sources and ESSENCE Platform Comparison

About RHINO Data

Syndromic surveillance in Washington State has grown since its launch in 2003. Under RCW 43.70.057, all Washington State emergency departments must report syndromic 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.

### Syndromic Surveillance Data Sources

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Washington ESSENCE</th>
<th>NSSP ESSENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Absenteeism from the Washington School Information Processing Center (WSIPC)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Emergency Departments and urgent care data (“Old”)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Emergency departments, acute care hospitals, urgent care, and clinic data (“New”)</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Syndromic Surveillance System Comparison

<table>
<thead>
<tr>
<th>Care Setting</th>
<th>Old Syndromic Surveillance</th>
<th>New Syndromic Surveillance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>Approximately 25% of emergency departments</td>
<td>100% of emergency departments/hospitals, more than 2,500 outpatient clinics*</td>
</tr>
<tr>
<td>Number of Required Fields</td>
<td>9</td>
<td>39</td>
</tr>
<tr>
<td>Number of Optional Fields</td>
<td>2</td>
<td>34</td>
</tr>
<tr>
<td>Content</td>
<td>Basic visit, clinical, and patient information</td>
<td>Expanded content provides richer data on clinical care, health outcomes, and better data tracking</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Optional, free-text, or coded</td>
<td>Required, coded</td>
</tr>
<tr>
<td>System</td>
<td>Washington ESSENCE</td>
<td>NSSP ESSENCE</td>
</tr>
</tbody>
</table>

*RHINO is continuously onboarding facilities. As a result, only a portion of facilities "participating" have data available for analysis.

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 to it and the additional messages are batched to the RHINO program.
Data Elements and Timeline

The tables below give a sample of data elements RHINO gathers for clinical visits.

### Required Data Elements

<table>
<thead>
<tr>
<th>Facility Information</th>
<th>Visit Information</th>
<th>Patient Demographics</th>
<th>Clinical Information</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Visit Date/Time</td>
<td>Age*</td>
<td>Chief Complaint/Reason for Visit*</td>
<td>Unique Patient ID (e.g., MRN)</td>
</tr>
<tr>
<td>Address</td>
<td>Patient Class</td>
<td>Gender*</td>
<td>Admit Reason (inpatient)*</td>
<td>Unique Visit ID</td>
</tr>
<tr>
<td>Type:</td>
<td>o Emergency</td>
<td>Race*</td>
<td>Diagnosis*</td>
<td></td>
</tr>
<tr>
<td>o Primary Care</td>
<td>o Inpatient</td>
<td>Ethnicity*</td>
<td>Diagnosis Type*</td>
<td></td>
</tr>
<tr>
<td>o Specialty</td>
<td>o Outpatient</td>
<td>ZIP Code*</td>
<td>o Admitting</td>
<td></td>
</tr>
<tr>
<td>o Urgent Care</td>
<td>o Obstetric</td>
<td>County*</td>
<td>o Working</td>
<td></td>
</tr>
<tr>
<td>o Emergency</td>
<td>o Observation</td>
<td>State*</td>
<td>o Final</td>
<td></td>
</tr>
<tr>
<td>o Inpatient</td>
<td>o Recurring</td>
<td>Country*</td>
<td>Death (Y/N)*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Pre-Admit</td>
<td></td>
<td>Death Date/Time*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Direct Admit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discharge Date/Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discharge Disposition</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Required to be reported if collected in the patient’s Electronic Medical Record

### Optional Data Elements

<table>
<thead>
<tr>
<th>Facility Information</th>
<th>Risk Factors</th>
<th>Clinical Information</th>
<th>Vital Signs</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Unit/Service Location</td>
<td>Smoking Status</td>
<td>Triage Notes</td>
<td>Temperature</td>
<td>Patient Name</td>
</tr>
<tr>
<td>Assigned Patient Location</td>
<td>Height</td>
<td>Clinical Impression</td>
<td>Pulse Oximetry</td>
<td>Insurance Information</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>Acuity</td>
<td>Blood Pressure</td>
<td>Unique Physician ID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diagnosis Date/Time</td>
<td></td>
<td>Date of Birth</td>
</tr>
</tbody>
</table>
### Key Data Elements to Support Surveillance

<table>
<thead>
<tr>
<th>Data Elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region</strong></td>
<td>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 where the patient sought care is located.</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>ZIP Code</strong></td>
<td>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).</td>
</tr>
<tr>
<td><strong>ZIP Code (Other Fields)</strong></td>
<td>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. For example, you could limit your query to ZIP Codes in which at least 50% of the population is Asian or where the median income is below $32,000. Note that the thresholds built into ESSENCE for these parameters are based on US Census Data, but not necessarily the most recent data releases.</td>
</tr>
<tr>
<td><strong>Miles from Home</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Facility Information</strong></td>
<td>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. For more information about facilities and naming conventions, see that section of this guidebook.</td>
</tr>
<tr>
<td>Patient Age</td>
<td>Facility Type</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Age Group</td>
<td>You may also limit your query to specific facility types (e.g., only primary care or emergency department visits). You may limit your query directly 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.</td>
</tr>
<tr>
<td>ILI Reporting Age Group</td>
<td>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.</td>
</tr>
<tr>
<td>Ten Year Age Group</td>
<td>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+.</td>
</tr>
<tr>
<td>Age Range</td>
<td>Limit your query to either include or exclude 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.</td>
</tr>
<tr>
<td>Patient Demographics</td>
<td>Patient Sex</td>
</tr>
<tr>
<td></td>
<td>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 can now send male, female, and X as patient sex designations, but ESSENCE does not yet limit by X and we do not yet know how providers are implementing the change.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Chief Complaint (Original)</td>
<td>Create custom queries using key words from the original 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 identify all desired visits.</td>
</tr>
<tr>
<td>Chief Complaint History</td>
<td>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.</td>
</tr>
<tr>
<td>Discharge Diagnosis</td>
<td>Create custom queries using ICD-10 diagnostic codes present in the patient record. Note that some facilities do not include the decimal point in their coding (e.g., T40.1 vs T401), so you must include the codes written both ways in your query syntax.</td>
</tr>
<tr>
<td>Diagnosis Combo</td>
<td>View each diagnostic code present in the discharge diagnosis field parsed with its meaning. This may be particularly useful for identifying other codes with which you are less familiar 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.”</td>
</tr>
<tr>
<td>CC and DD</td>
<td>Create custom queries using key words in a field which combines the original chief complaint and the discharge diagnosis. Note that, as described above, using the original chief complaint text may not return all desired visits. In lieu of using this field, RHINO staff general apply the query syntax to both the Chief Complaint History and Discharge Diagnosis fields (in addition to others when appropriate).</td>
</tr>
<tr>
<td>CC and DD Category</td>
<td>CC and DD Category allows the user to query using pre-made queries built by other users and indexed in ESSENCE. More information about CC and DD Categories is available on the CC and DD Categories page of NSSP ESSENCE.</td>
</tr>
<tr>
<td>Other Clinical Information</td>
<td>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 is generally used by a clinician for notes regarding the patient’s condition and relevant historical information, making it similar to the chief complaint and triage notes fields. For example, “pt states mid/L upper abd pain started yesterday with vomiting. States hx of pancreatitis.”</td>
</tr>
<tr>
<td>Triage Notes Original</td>
<td>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.</td>
</tr>
</tbody>
</table>
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. One 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 other times when you are using percent queries and therefore need to be mindful of your query’s denominator.

While there are several data fields which allow you to select specific patient class limiters for your query, the Has Been fields are easiest and will include patients who have ever been that patient class. The similar Patient Class data field is not recommended because it will only match patients whose most recent patient class matches your selection. This means that, if you selected emergency, your query will not show emergency department visits during which the patient was admitted.

The table below details the three Has Been fields.

<table>
<thead>
<tr>
<th>Has Been Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has Been Emergency</td>
<td>Will display records for patients who have ever had “emergency” for their patient class during the course of the visit</td>
</tr>
<tr>
<td>Has Been Inpatient</td>
<td>Will display patients who have ever had “inpatient” as their patient class during the course of their visit.</td>
</tr>
<tr>
<td>Has Been Outpatient</td>
<td>Will display records for patients who have ever had “outpatient” as their patient class during the course of the visit</td>
</tr>
</tbody>
</table>

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 important to also remember that facilities may have several practice types (e.g., providing both
primary and urgent care services). Lists of currently available hospitals and clinic networks are available in the appendices of this guide.

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Care Setting</th>
<th>Patient Classes</th>
<th>Facility Prefixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency department</td>
<td>Hospital</td>
<td>E, I, R, B, V</td>
<td>WA-H</td>
</tr>
<tr>
<td>Inpatient Practice Setting</td>
<td>Hospital</td>
<td>I, B, V</td>
<td>WA-H</td>
</tr>
<tr>
<td>Primary Care</td>
<td>Outpatient</td>
<td>O</td>
<td>WA-P, WA-PS, WA-UPS</td>
</tr>
<tr>
<td>Urgent Care</td>
<td>Outpatient</td>
<td>O</td>
<td>WA-U, WA-UP, WA-UPS, WA-US</td>
</tr>
<tr>
<td>Specialty Care</td>
<td>Outpatient</td>
<td>O</td>
<td>WA-S</td>
</tr>
</tbody>
</table>

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 generally begin **WA-S** (e.g., WA-S_Harborview Clinics Dermatology Clinic)
- **Urgent care** clinics begin **WA-U** (e.g., WA-U_Olympic Walk-In Clinic)
- Facilities with a combination of practice areas will begin **WA-PS**, **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 below and Natasha Close, our lead surveillance epidemiologist, showcased it on the March 2017 Community of Practice call.

- After deciding what you would like to monitor, consider the free-text terms and ICD-10 codes that might appear in the clinical record.
  - There will be tradeoffs between sensitivity and specificity. Consider how much of each you are willing to sacrifice.
- Review the literature and ICD-10 codes for more information. Query codes in the data to see which are common.

- Once you have established your terms and codes, choose the best place to query for those records.
  - Using a pre-programmed syndrome: pre-programmed syndromes are weighted, validated, and tend to run more quickly. They are also based entirely on chief complaint, which may contain only one term.
  - Chief complaint text can include contextual information, but may have limited specificity. Any custom free-text query is likely to run a bit more slowly and will depend on how many inclusion/exclusion terms and the timeframe evaluated.
  - If using diagnosis codes, consider how detailed you would like your query to be and whether you can wait for your data to be backfilled. Diagnosis codes can be very specific, but are subject to coding practices and a percentage of visits are missing codes.
  - Querying chief complaint (CC) and discharge diagnosis (DD) allows you to capture more information, but can run slowly and be quite complex.
  - Other data elements, like triage notes, are another option and may include contextual information (e.g., whether a patient was wearing a seatbelt in a motor vehicle collision). These queries may also be slow and complex. Additionally, these fields may be incomplete.

- Consider what other data elements may be relevant for your query (e.g., gender, age, race, patient class). Remember to limit by the correct geography and/or facility.

- Run your query and repeat the steps until you are satisfied.
1. Define what you want to monitor

2. How can these visits be identified?
   - Pre-programmed syndrome?
   - Chief complaint?
   - Diagnosis codes?
   - Chief complaint & Diagnosis codes?
   - Other: Triage notes, clinical impression, admit reason

3. Identify inclusion/exclusion terms

4. Determine whether to limit by specific patient demographics

5. Run query and view data details

6. Save syndrome definition and/or add to dashboard

Repeat steps 3-5 until satisfied with definition
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.
   - These credentials were sent to you in an auto-generated email from NSSP when your account was created.
   - Please note, your NSSP ESSENCE and Washington ESSENCE credentials are not the same.

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 (1.20) link.

6. Enter your NSSP ESSENCE credentials.
   - 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.
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

### 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.
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.

<table>
<thead>
<tr>
<th>Chief Complaint SubSyndromes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abuse</td>
</tr>
<tr>
<td>AlcoholUse</td>
</tr>
<tr>
<td>COPoisoning</td>
</tr>
<tr>
<td>LeadPoisoning</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Injury Syndrome Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BiteOrSting</td>
</tr>
<tr>
<td>Electrocution</td>
</tr>
<tr>
<td>FireBurnExplosives</td>
</tr>
<tr>
<td>Overexertion</td>
</tr>
<tr>
<td>ToolsOrMachinery</td>
</tr>
<tr>
<td>Suffocation</td>
</tr>
<tr>
<td>SuicideOrSelfInflicted</td>
</tr>
</tbody>
</table>

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 query, 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.

<table>
<thead>
<tr>
<th>Chest (2)</th>
<th>Congested (4)</th>
<th>Congestion (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head (-2)</td>
<td>Infection (4)</td>
<td>Nasal (-2)</td>
</tr>
<tr>
<td>Nose (-2)</td>
<td>Urinary Tract Infection (-4)</td>
<td></td>
</tr>
</tbody>
</table>
For DifficultySpeaking, dysarthria (10) will always be counted as a match, as would speech (4) +
disturbance (2). However, just trouble (2) or talking (4) appearing in the record (e.g., if the patient was
“talking about his fall” or had “trouble walking”) would not appear in your query output.

<table>
<thead>
<tr>
<th>Cannot (2)</th>
<th>Cant (2)</th>
<th>Difficult (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty (2)</td>
<td>Disturbance (2)</td>
<td>Disturbed (2)</td>
</tr>
<tr>
<td>Dysarthria (10)</td>
<td>Hard (2)</td>
<td>Speak (4)</td>
</tr>
<tr>
<td>Speaking (4)</td>
<td>Speech (4)</td>
<td>Talk (4)</td>
</tr>
<tr>
<td>Talking (4)</td>
<td>Trouble (2)</td>
<td>Unable (2)</td>
</tr>
</tbody>
</table>

### 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. These include chief complaint, triage notes, clinical impression, diagnoses, and CC and DD (a combination of the chief complaint and discharge diagnosis fields).

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.

### Topic

- **Carbon Monoxide**
  - Query Syntax: (.^carb^,AND.^monox^,),OR.^T58^,OR.^T59.7^,OR.^T597^
  - Apply to Fields: Chief Complaint History, Discharge Diagnosis

- **Chlamydia**
  - Query Syntax: ^A74.9^,OR.^A749^,OR.^A55^,OR.^A56.11^,OR.^A5611^,OR.^chlam^
  - Apply to Fields: Chief Complaint History, Discharge Diagnosis

- **Homelessness or Insufficient Housing**
  - Query Syntax: (^Z590^,OR.^Z59.0^,OR.^homeless^,OR.^no housing^,OR.^lack of housing^,OR.^without housing^,OR.^shelter^),ANDNOT,(.^animal shelter^,OR.^domestic violence shelter^,OR.^DV shelter^,OR.^dog^,OR.^cat^)
  - Apply to Fields: Chief Complaint History, Discharge Diagnosis, Triage Notes Orig

- **Traumatic Amputation**
  - Apply to Fields: Chief Complaint History, Discharge Diagnosis

---

**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.
“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. Enter the syntax for your query in the box and then select the fields you would like to include. This will use an “or” operator to apply your inclusion and exclusion criteria (as opposed to the “and” operator which is used between parameters in the “Selected Query Fields” window). You can find more information about data elements here.

Please note that applying negations to multiple fields may result in some relevant records inadvertently being excluded. For help with negation terms, please see this tutorial from Wayne Loschen, MSc (JHU-APL).

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, or you could do both. The syndromic community always benefits from user contributions and all contributions (even questions!) have value for advancing the field.
Frequently Used Analysis Tools

Query Portal

Create a query to view information about specific visits:

1. Select **Datasource** (see the section on data sources for more information).
2. From the **Query Wizard** toolbar, select the **Time Resolution** for your query.
3. If desired, choose the denominator value for a **Percent Query** to view output as percentages. (More on creating percent queries)
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. To see a visualization of the numerator and denominator of your query, click **Explain Qry**.
9. If you would like to reset the Query Wizard, click the **Reset** button.
10. Once you are finished, select an output option.

- Create a **table** of your query (see right) to view tabulations of visit data by various parameters.
- Create a **time series** of your query (see above) to view counts or percentages over time.
- View the visit-level **details** of the data in your query, including chief complaint and demographic variables associated with each visit.
- Build graphs of your query results, including wordles and calendar heat maps using **Graph Builder**.
- Build more complex queries using the **Adv Qry** tool.
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 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.

2. Confirm your query title and the correct tab, then click submit.

3. View and organize saved queries using customizable tabs.

4. Add a New Tab to create a new dashboard.

5. Add a New Widget to your dashboard choosing from a drop down list of items like Time Series, Data Details, and Maps.

6. Share your myESSENCE dashboard tab with another ESSENCE user.

7. Modify the geographic (regional) parameter for your queries.

8. Click the binocular button above widgets to view the parameters of the query.

9. Click the gear to modify the parameters of a widget’s query.

Sample Time Series Output

Weekly Percentage

Expert User Tip

Consider establishing a consistent naming convention to use across all your ESSENCE tools.
10. Once you have created a dashboard, you can continue adding queries to it from your Query Portal output, from running queries saved in your Query Manager, or directly in the dashboard.

- Select the **Add New Widget** button below the slider of your dashboard tabs.
- If you would like to add a time series graph of a saved query to your myESSENCE dashboard, select **Time Series Graph**.
- If you would like to add a data details table of a saved query to your dashboard, select **Data Details Data Table**. Instructions for customizing your table are below.
- 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 page 17 of this handbook.
- 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.
- If you would like to add a map from a saved query, select **Map**. Choose the appropriate scale and geographical breakdown for your map.
- If you would like to add a free text box to record observations, query text, or other details, select **Rich Text Label**.
- If you have added a data details data table to your dashboard, you can edit the data elements it contains using the edit button along the title bar.

11. Once you have opened the configuration options box, select the data elements you would like and click **submit**.

### myESSENCE Dashboard Manager

When you open myESSENCE from the taskbar ribbon, ESSENCE will open an overview page with all of the dashboard 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.
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. Once you click Create myAlert, a window will appear and you can set your alert parameters.
   - Confirm your query title (consider establishing naming conventions) 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.
5. 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.

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.
3. Open the Configurations Options window in the upper left corner and select query limiters as you would in Query Portal (more here).
4. 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.

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**:

- Create a **Multi Series Time Series** (e.g., overlaid) of two or more saved queries.
- Create an **Intersecting Time Series** of two or more saved queries.
- Create a **myAlert** to monitor your saved query ([more here](#)).
- **Edit** the category of your saved query or add notes to it.
- Use **View URL** to view the parameters of your query without running 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** special 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.
- 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

Creating a Percent Query

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

1. From the Query Wizard toolbar, select the data source of interest.
2. Select the Time Resolution for your query.
3. Identify the parameter that forms your denominator:
   a. Syndrome
   b. A demographic variable (e.g. age)
   c. “CC and DD” (if you are creating a free text query).
4. Choose the Start and End Dates of interest for your query.
5. Choose the parameters for your query in the Available Query Fields menu.
6. Verify that all of your selections are listed in the Selected Query Fields Menu.
   a. 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 % query parameter should be sex.
7. 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.
8. To see a visual depiction of your percentage query, click the Explain Qry button.
9. 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.
Monitoring 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.

Getting Started

1. From the Query Wizard toolbar, select the Datasource 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.
   - Facility start points can be found in the Appendix.
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. For more information on which facilities are available in your jurisdiction, refer to the appendix on page 42.
   - 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.
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.

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

To modify your graph titles and axes, click Graph Options and make your changes.

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 next two graphs 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 third graph (labelled “no”) shows patients who were not admitted (Has Been Inpatient = No). The fourth 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 are able to 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.
Monitoring Visits for Drug 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, ISDS, 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. The queries use a combination of the chief complaint and discharge diagnosis (thus, CC and DD) fields. Some CC and DD Categories also use the triage notes fields, which can present additional challenges, but often include valuable contextual information.

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 see this presentation from Natasha on using them or contact us for assistance.

- **CDC All Drug v1**
  This query identifies all visits related to drug use. This will include visits for overdose, detox, and prescription medication issues.

- **CDC Heroin Overdose v4** (v1 through v3 also available)
  This query identified visits specifically for heroin overdoses. It will exclude other opioid-related visits and those for heroin use disorder which do not involve an overdose event.

- **CDC Opioid Overdose v2** (v1 also available)
  This query identifies opioid overdoses broadly (including those involving heroin). It will exclude other opioid-related visits which do not involve an overdose.

- **CDC Stimulants v2** (v1 also available)
  This query identifies visits for stimulant use, regardless of whether there was an overdose event. Stimulants include methamphetamines, MDMA/ecstasy, and prescription stimulants like Adderall.

- **Marijuana v1**
  This query identifies visits related to marijuana use, including poisonings among children who have consumed edibles.

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. In Natasha’s presentation, she discusses looking for visits associated with Kratom use during a salmonella outbreak associated with it.

If you would like to develop your own syndrome definition, there are tips available here in this guidebook to help you get started. You can also reach out for help to RHINO staff and the ISDS Community of Practice through the ISDS forums.

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 ISDS forums, in the Syndrome Library, and by requesting that it be indexed as a new CC and DD Category.

Viewing the Record-Level Details for Visits

Part of conducting surveillance for your work situation may mean viewing the record-level (also called visit-level) details for relevant visits. There are several ways to pull down these details. While some are detailed briefly in other areas of the guidebook, this section will detail them more fully.

If you are unsure what level of detail you are able to view in RHINO data, please refer to the data release framework or contact RHINO to ask what you are able to view.

Opening Data Details Output Directly

From the Query Portal, you can choose data details as your output. Rather than opening a time series graph or building a table, ESSENCE will display the record-level details for visits which meet your query parameters.

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 the time series graph.
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).

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 conformance 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 above methods for smaller (≤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 Stata.
Begin by opening up 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.

**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**
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. You may share in accordance with RHINO data publication guidelines ([here](#)) and ([here](#)).

**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 site visit for a complimentary in-person ESSENCE training, please contact RHINO to discuss scheduling.

**Modifying a Query**

If you would like to change the limiters for your query after you have run it, 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**.
Stratifying Your Time Series

- If you would like to stratify your time series, you may do so in the Data Series Options dropdown.
- 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.

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).
- 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.

**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**.
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.

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".
- Use the myFilters option to save query parameters you frequently use (lower right corner of the Query Wizard).

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 (regardless of the location of the WA facility they presented to). 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 matching syndrome/subsyndrome a visit is assigned to. This may result in duplicate records being returned. |
| Patient Location (Limited Details by) | Clinical data (ED, inpatient, outpatient, urgent care). Includes data contributed by all civilian sites across the country. All users affiliated with a public health |
HHS Region)  
“National Picture”  
authority, regardless of location, have access to the full dataset. 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.

Records can only be searched using a subset of all fields.

Patient Location and Visit (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 (regardless of the location of the WA facility they presented to).

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.

Facility Location (Full Details)  
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).

Data details will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, you will 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 matching syndrome/subsyndrome a visit is assigned to. This may result in duplicate records being returned.

Facility Location (Limited Details by HHS Region)  
“National Picture”  
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.

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.

Records can only be searched using a subset of all fields.

Facility Location and Visit (Full Details)  
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).

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.

<table>
<thead>
<tr>
<th>Department of Defense Data</th>
<th>Clinical data from US Department of Defense domestic healthcare facilities. It is very similar to the other “Full Details” datasets. <strong>At this time, this data is not available for us.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterans Affairs Data</td>
<td>Clinical data from US Veterans Affairs healthcare facilities. It is very similar to the other “Full Details” datasets. <strong>At this time, this data is not available for use.</strong></td>
</tr>
<tr>
<td>Weather Data</td>
<td>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.</td>
</tr>
<tr>
<td>Air Quality Data</td>
<td>Air quality data from more than 120 reporting agencies and 2,700 stations, including 101 stations in Washington State. Air quality parameters include Carbon Monoxide (8 hour), Ozone (1 hour, 8 hour), PM$<em>{2.5}$ (24 hours), PM$</em>{2.5}$ (24 hours), and Sulfur Dioxide (24 hours).</td>
</tr>
</tbody>
</table>
Washington ESSENCE Fundamentals

Accessing Washington ESSENCE

To access the Washington ESSENCE system from outside the Department of Health network you will need to:

1. Create an account with Secure Access Washington. A detailed video of this process can be found online here.

2. Add Washington ESSENCE to the list of your services using the service code you received from RHINO with your Washington ESSENCE credentials. A detailed video of the process can be found online here.

3. Verify that you have added Washington ESSENCE to your service list. For instructions on logging into Washington ESSENCE, please see the next page. Once you have added Washington ESSENCE to your SAW account (see previous page), you will be able to log into Washington ESSENCE.
4. Navigate to the SAW login page and enter your SAW credentials (Please note, these are not your NSSP or Washington ESSENCE credentials).
5. Select ESSENCE web application from your list of services.
6. SAW will prompt you to confirm your identity with challenge questions or via your out-of-band phone or email address. Select the method of your choice and follow the prompts.
7. After you have verified your identity, SAW will take you to the Washington ESSENCE landing page. Click the ESSENCE—Washington (1.19) link.
8. Enter your credentials in the boxes on the login page.
   - Please note, your Washington ESSENCE credentials are not the same as your NSSP ESSENCE credentials.
9. Once you have entered the Washington ESSENCE site, you can view and interact with RHINO data. If you have trouble accessing Washington ESSENCE, please email the Syndromic Mailbox.
Common Tasks in Washington ESSENCE

Querying School Absenteeism Data

WA School absenteeism data represents data collected by the Washington State Information Processing Center (WSIPC). It contains data for many, but not all, schools in the state.

Create queries of School Absenteeism data in the Query Portal.

1. **Select** Datasource *School % Absent*.
2. **Determine** Time Resolution for your query.
3. **Choose the** Start and End Dates of interest for your query.
4. **Determine how you want to limit the data in the** Available Query Fields Menu:
   - Region (i.e., county) of school
   - School Grade
   - School Type (i.e., education level)
   - School
   - School System (i.e., school district)
5. **Verify that all or your query selections are in the** Selected Query Fields Menu.
6. **To view a graph of the percent of student absent, click** Time Series.
# Data Source Details

## Washington ESSENCE Data Sources

<table>
<thead>
<tr>
<th>Data Source Details</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER Data by Patient Location</td>
<td>Clinical data (ER and urgent care). If your data access is limited to certain counties based on <strong>patient residence</strong>, queries will only return records for patients who reside in these counties, regardless of the location of the facility. <strong>Data details</strong> will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, you will receive a record for each visit that matches your query criteria. If a single visit was assigned multiple syndromes or subsyndromes, a record will be returned for each it was assigned. <em>This may result in duplicate records being returned.</em></td>
</tr>
<tr>
<td>ER Limited View Data by Patient Location</td>
<td>Clinical data (ER and urgent care). If your data access is limited to certain counties based on <strong>patient residence</strong>, results will only results will only return records for patients who reside in these counties, regardless of the location of the facility. <strong>Data details</strong> will return records with <strong>limited visit-level information</strong>. Clinical information is limited to syndrome category. Potentially identifiable information (e.g., age, ZIP Code, chief complaint, diagnoses, triage notes) are suppressed. Records can only be searched using visit date, county, syndrome, subsyndrome, and age group. If your query includes multiple syndromes or subsyndromes, your query results will include 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 matching syndrome/subsyndrome it is assigned to. <em>This may result in duplicate records being returned.</em></td>
</tr>
<tr>
<td>ER Data by Hospital Location</td>
<td>Clinical data (ER and Urgent care). If your data access is limited to certain counties based on <strong>facility location</strong>, queries will only return records for patients who were seen at facilities in these counties (regardless of patient residence). <strong>Data details</strong> will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your query results will include 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 matching syndrome/subsyndrome it is assigned to. <em>This may result in duplicate records being returned.</em></td>
</tr>
<tr>
<td>ER Data by Patient Location and Visit</td>
<td>Clinical data (ER and Urgent care). If your data access is limited to certain counties based on patient residence, queries will only return records for <strong>patients who reside</strong> in these counties (regardless of the location of the WA facility they presented to). <strong>Data details</strong> will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your query will return de-duplicated list of records that match your search criteria.</td>
</tr>
<tr>
<td>Data Type</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>ER Data by Hospital and Visit</strong></td>
<td>Clinical data (ER and 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 (<em>regardless of patient residence</em>). Data details will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your query will return de-duplicated list of records that match your search criteria.</td>
</tr>
<tr>
<td><strong>Schools % Absent</strong></td>
<td>School absenteeism data collected by the Washington School Information Processing Center (WSIPC). Includes daily absenteeism data by grade, school, school type, and school district.</td>
</tr>
<tr>
<td><strong>Weather Data</strong></td>
<td>Weather data (e.g., temperature, precipitation, wind, sun) from National Weather Service stations. Temperature is in degrees Fahrenheit and precipitation is in inches.</td>
</tr>
</tbody>
</table>
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 clinical, air quality, and weather data go into NSSP ESSENCE. Washington ESSENCE currently houses our school absenteeism data and will eventually hold animal health and WEMSIS data as well. More information is available on [here](#) and [here](#).

Q: How do I 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](#). Data sharing agreements must be sent to the Department of Health in hard copy. The data request form and confidentiality agreement should be sent to the Syndromic Mailbox. More information is available [here](#) and [here](#).

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](#).

Q: Can I calculate prevalence using RHINO data?
A: It’s 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: Similar to 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 us 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: Probably! We receive several identifiers for patients which may help you link records. Patient medical record number (MRN) will help link patients seen at the same facility or facility network multiple times. Patient name, date of birth, and residential ZIP Code are also included in ESSENCE and could be helpful for linking records. More information on linking is available here.

Q: Which conditions can I monitor using RHINO data?

A: You can monitor lots of 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 International Society for Disease Surveillance 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: We do not perform any cleaning or redaction of the data in ESSENCE. 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. 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 and correct the issue. For more information, please see this presentation on our data validation practices.
Small Numbers Publication Decision Tree

1. **Query RHINO data**

2. **Own jurisdictional data?**
   - Yes
   - No

3. **Number of facilities?**
   - > 1
   - ≤ 1

4. **Number of records (i.e., cell size)?**
   - ≥ 10
   - > 0 < 10

5. **Use visit percentage or rate per 10,000 visits in lieu of counts**

6. **You may publish in accordance with RHINO publication guidelines**

7. **Is the information related to either:**
   1. an outbreak or cluster of intense public interest (e.g., AFM), OR
   2. a public health emergency (e.g., a communicable disease outbreak or other all-hazards threat)?

8. **Yes**
   - You may publish using patient gender and
     1. If ≥ 18 years, decade of age or
     2. If <18 years, disclose they are a minor

9. **No**
   - Suppress non zero counts and/or change time resolution to further aggregate data or present data as being < 10
<table>
<thead>
<tr>
<th>Facility Name</th>
<th>County</th>
<th>ESSENCE Facility ID</th>
<th>Date Available in NSSP</th>
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**Additional Resources**

**Syndromic Surveillance Information**
- Redefining syndromic surveillance
- Best practices in implementation of Public Health Information Network Systems Nebraska
- Syndromic surveillance for influenza in Washington State 2007
- The utility of syndromic surveillance
- National Syndromic Surveillance Program (NSSP) Homepage

**Syndrome Definitions**
- Case definition list (North Carolina Detect)
- Syndrome definition library (ISDS)
- Syndrome definition workgroup (ISDS)
- Syndrome definitions (RHINO)

**Using ESSENCE**
- Florida ESSENCE user guide (Florida Department of Health)
- NSSP ESSENCE user guide (NSSP)
- ESSENCE Online Training (JHU)
- ESSENCE user group (ISDS)
- BioSense platform code of conduct (NSSP)
- Query writing tool (Kansas Department of Health and Environment, Zach Stein)
- ESSENCE Training Webinars (ISDS)
  - Building queries (JHU, Wayne Loschen)
  - Using queries (JHU, Wayne Loschen)
  - Sharing queries (JHU, Wayne Loschen)
- Using Weather and Environmental Data in ESSENCE (OPHD)
RHINO

- Community of Practice SharePoint
  - Community of Practice call meeting materials
  - Conference presentation slide decks
  - Updated facility onboarding status sheets
- Requesting access to RHINO data
- Description of RHINO data
- Submitting data to RHINO