ARIZONA DEPARTMENT OF HEALTH SERVICES
PREPAREDNESS

ADVERSE EVENTS – SYNDROMIC SURVEILLANCE

The Arizona Department of Health Services uses the National Syndromic Surveillance Program BioSense Platform to receive data and conduct syndromic surveillance activities. Public health users across the state access the data through the tool called ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics). Syndromic surveillance in Arizona consists of receiving inpatient and emergency department data in a timely manner, which public health can use to understand what is happening in the community. Users can query fields such as Chief Complaint, Discharge Diagnosis, and other clinical and demographic fields for key terms related to the syndrome of interest. Syndromic surveillance data is used to support event detection, increase situational awareness, and focus public health actions. Specifically, Arizona has used the data to monitor health during large public events, understand the severity of influenza, and look for patients with emerging diseases such as dengue, chikungunya and Zika.

During a public health emergency, Points of Dispensing (POD) are designated locations for distribution of medication or vaccination to members of the community. With any medication or vaccination, there is a small risk of the occurrence of adverse events. The U.S. Food & Drug Administration defines an adverse event as "any undesirable experience associated with the use of a medical product in a patient.[1]"

ESSENCE can be used for syndromic surveillance to detect adverse events from medication or vaccination provided during public health emergencies. In order to detect adverse events from a certain type of medication or vaccination, specific search queries in ESSENCE can be developed and run at the time of a specific event.

Suggested query fields include chief complaint and discharge diagnosis (CC and DD), Triage Notes Orig, or Admit Reason combo. The search terms included to make the dashboard for detection of adverse events may include some or all of the following, depending on the scenario that has occurred:

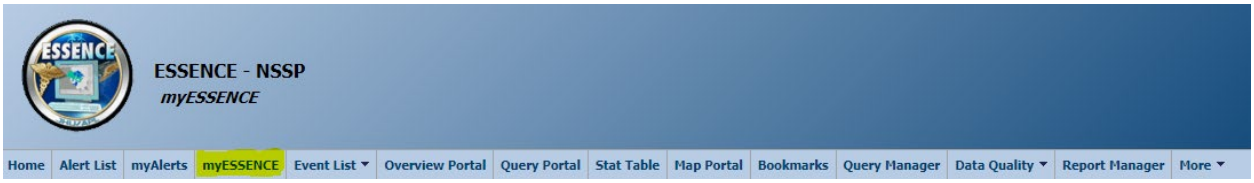
- Name/location where the exposure occurred
    - County name where exposure occurred
- Name of medication being dispensed
- Reference to the county health department
- Name of the disease-causing agent
- ICD 10 code for the disease or any of the symptoms it causes
- "Point of Dispensing"
- "POD" (excluding podiatry, podiatrist)
- "Drive-through" (excluding fast food drive-through)

[1] https://www.fda.gov/safety/medwatch/howtoreport/ucm053087.htm

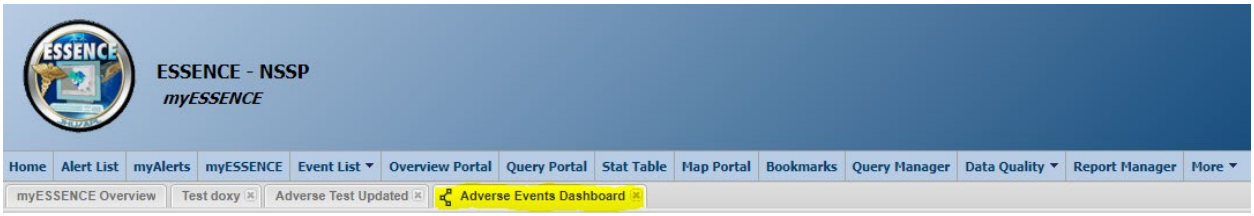
Conducting a Search in ESSENCE:

1. Log-in to ESSENCE. Go to: https://essence.syndromicsurveillance.org/ Firefox or Chrome work best. Enter your username and password.

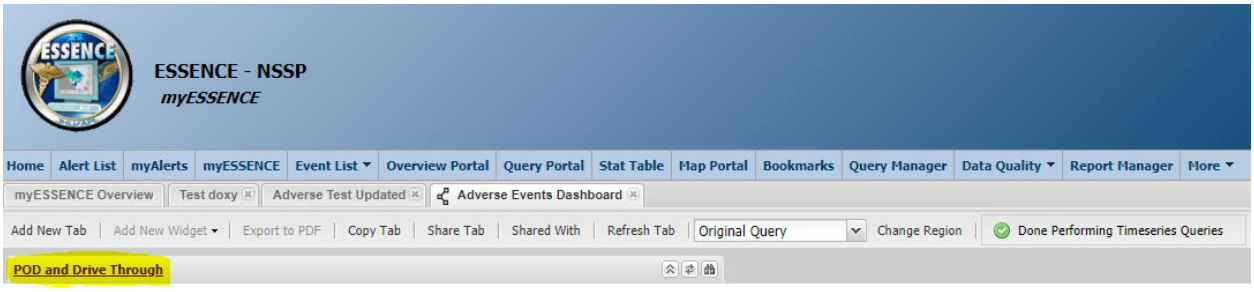
2. The ESSENCE home page has multiple tabs. Click on the "myESSENCE" tab on the homepage.



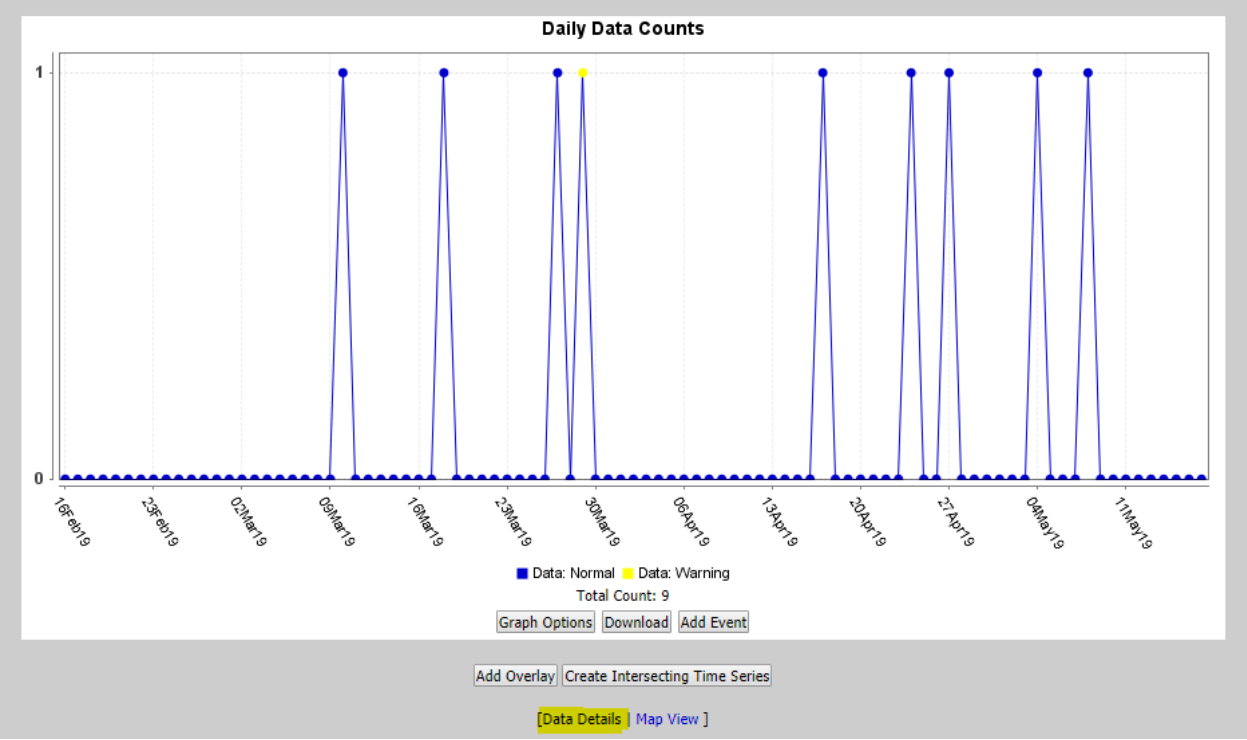
3. The "Adverse Events" dashboard tab will appear. Click on this tab to open the dashboard. If you need access to the dashboard, please email the Arizona Syndromic Surveillance Program at syndromicsurveillance@azdhs.gov to request access.



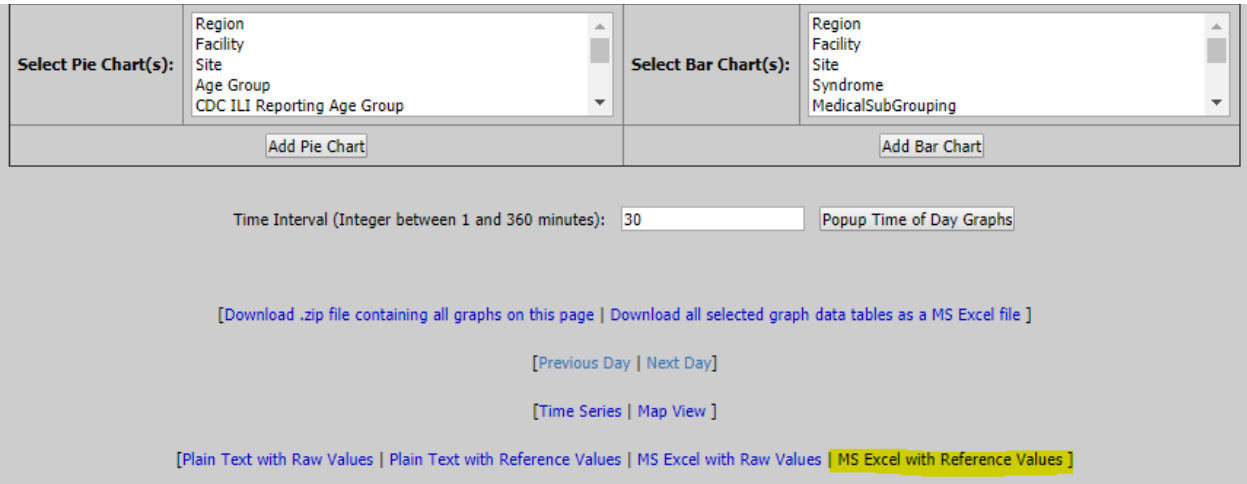
4. The time-series graph for the adverse events queries will be displayed. Click on the title of the graph to see the full view and additional details.



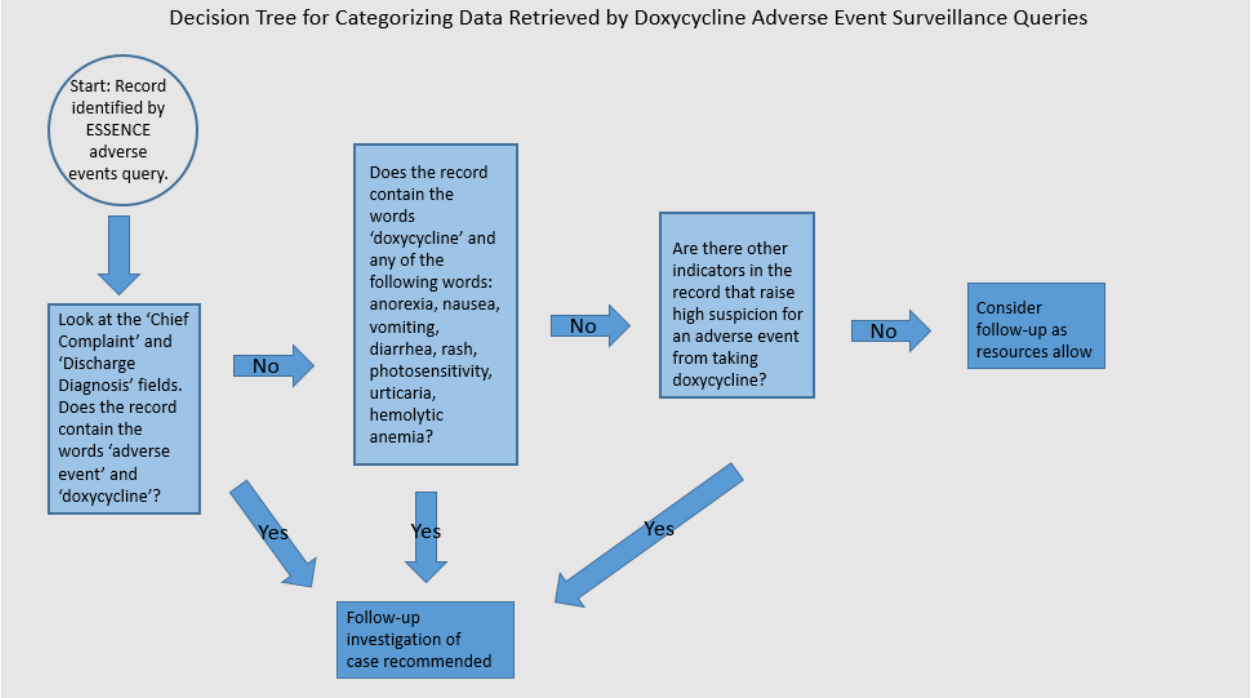
5. Click on the “Data Details” link to open additional details about the query.



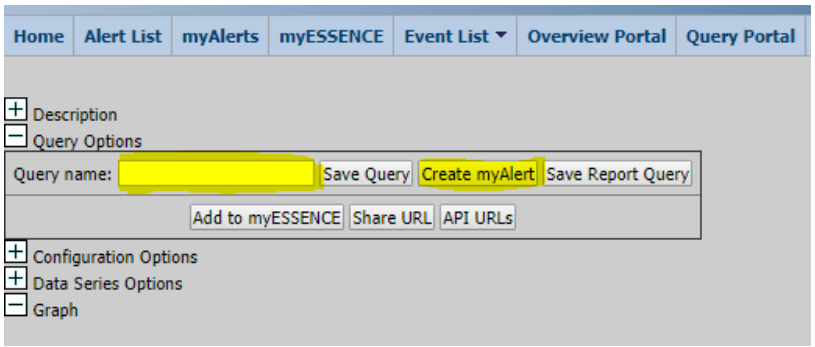
6. Download the query line-list data by clicking “MS Excel with Reference Values.” This is the line list of visits identified by the search query. It will show you information about patients who have been selected by one or more of the query search terms. You can review the line list to verify whether your search has selected patients that indeed have your condition or exposure of interest. Based on who has been selected into the line list, the search query may need to be refined. This can be done by using different key words or query fields. If you think the search query needs to be refined (such as if you notice a high number of false positives), note why they are false positives and alert the dashboard administrators so they can adjust the query.



7. Use the “chief complaint” and “discharge diagnosis” fields to examine if each line list result is possibly a case or not a case. The criteria to determine what constitutes a case will be determined by the exposure of interest on a scenario-by-scenario basis.
    a. A result may not be a case if it was pulled in error by the search query.
    b. An example decision tree for doxycycline adverse events is below. Analogous reasoning could be used for other adverse events.

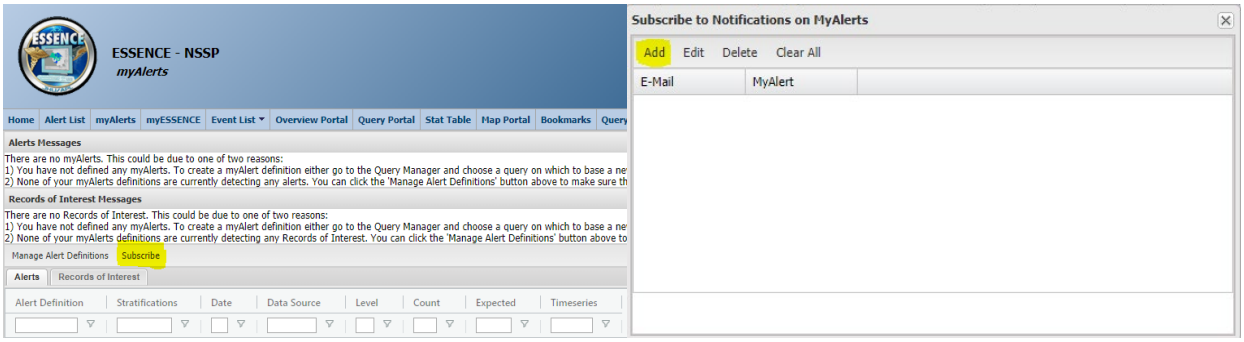


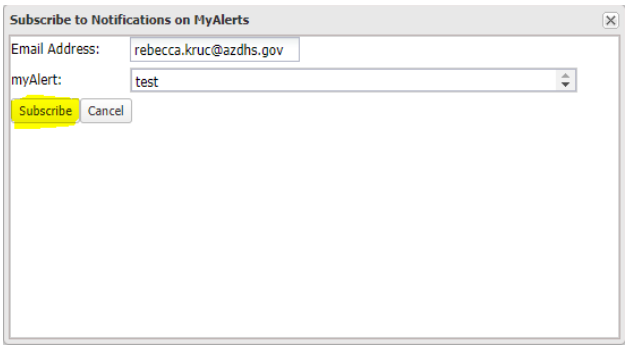
8. To create a customized alert for surveillance, on the “Time Series” page, give the query a name and click the “Create myAlert” button. Select “Records of Interest” to trigger an alert every time a visit matches the search. Select detection to trigger an alert every time the detector algorithms issue a Warning or Alert level on the data. When you have selected which type of alert you want, click “Save myAlert”.



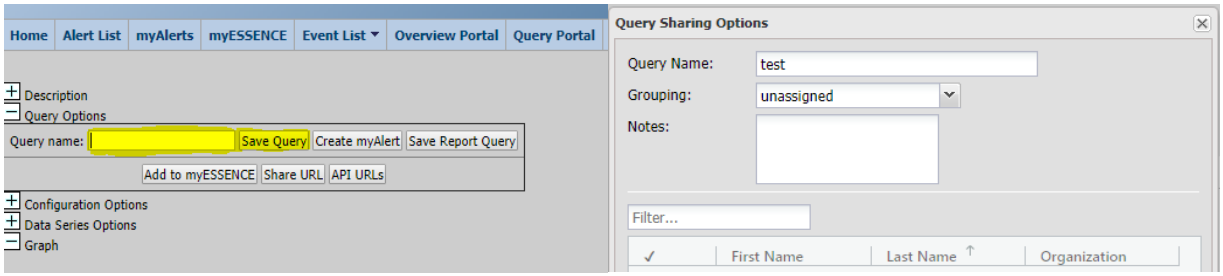
9. Under the myAlerts page, click the “Subscribe” button and click “Add” in the box that pops up. Select the query that you would like to receive emails for and click “Subscribe”. You will receive an email once there is a visit that matches that alert definition. Be sure to check your Spam folder in your email. Email alerts come from ESSENCE@jhuapl.edu with the subject line “New ESSENCE

myAlerts". Click on the link in the email to go to the myAlerts page in ESSENCE. Look under both the "Alerts" and "Records of Interest" tabs to see your alerts. Click on the "Timeseries" link under the "Alerts" tab to see the time series. Click on the "Data Details" link under the "Records of Interest" tab (which also shows a few fields from the data details page).





10. To save a query, or to share a query with other ESSENCE users, on the "Time Series" page, give the query a name and click the "Save Query" button. You can then select other ESSENCE users with whom to share the query.



11. For query results that appear to have the condition or exposure of interest, alert the designated jurisdictional contact of these results (for example, public health emergency preparedness coordinator or appropriate counterpart who has responsibility for POD management). Show them the information on the dashboard regarding the query results. Depending on the type of adverse events occurring, refer to the appropriate preparedness plan and/or subject matter expert to determine next steps, and conduct follow-up investigation of cases as deemed appropriate.

12. County users can follow the steps above to access the data specific to their jurisdiction.