



Indiana State Department of Health

Epidemiology Resource Center ESSENCE User Guide



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A. Definition of Terms and Acronyms

ESSENCE: Electronic Surveillance System for the Early Notification of Community-Based Epidemics.

ER: Emergency Room.

ILI: influenza-like-illness.

MRN: Medical Record Number.

PHESS: The Public Health Electronic Surveillance System. The database containing emergency department visit data submitted by hospitals in Indiana.

Alert: A red point on a time series that indicates more cases of a condition or syndrome/subsyndrome than expected for the day. An alert is determined by statistical analysis using p-values of less than 0.01.

Region: Counties in the state of Indiana.

Warning: a yellow point on a time series that indicates more cases of a condition or syndrome/subsyndrome than expected for the day. A warning is determined by statistical analysis using p-values between 0.01 – 0.05

B. Introduction

This user guide was created to help individuals navigate through the different sections of the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE). The creation of ESSENCE in the early 2000's began as a collective effort between The Johns Hopkins University Applied Physics Lab (JHU/APL) and the Walter Reed Army Institute for Research. The original purpose of ESSENCE was detecting bioterrorism attacks but has expanded to monitor hospital emergency room and urgent care visit data for early detection of possible outbreaks or health concerns. ESSENCE was implemented in 2004 in Indiana as part of a collaboration between Indiana State Department of Health and The Regenstreif Institute. By 2006, 13 hospitals submitted emergency room visits through the Public Health Electronic Surveillance System (PHESS). The PHESS data is then analyzed using ESSENCE. In 2008, Indiana law (410 IAC 1-2.4) required hospitals in Indiana to report all emergency room visit data by 2011. As of 2017, Indiana ESSENCE has data from 119 hospitals and 2 urgent care facilities.

ESSENCE processes the PHESS data and generates syndromic alerts when patient visit counts are higher than expected. The ESSENCE system is a tool for situational awareness for tracking the distribution of syndromes/subsyndromes geographically, detecting peaks, and identifying areas with high-risk groups. ESSENCE helps verify suspected outbreaks by monitoring the emergency room (ER) visits. ESSENCE can serve as the start of outbreak detection by analyzing alerts from regions and hospitals. ESSENCE can also be used to monitor reportable disease cases from Indiana's National Electronic Disease Surveillance System (I-NEDSS).

Some features described in the ESSENCE User Guide may not be available to all individuals. For example, hospital personnel can only view data for their hospital, and do not have access to the Reportable Disease data from I-NEDSS. For additional information, please contact the Epidemiology Resource Center at 317-233-7125 to speak with the Syndromic Surveillance Epidemiologist.

C. Limitations

It is helpful for the user to be familiar with the limitations of the data sources in ESSENCE. This is important with syndromic surveillance data because the purpose of this type of surveillance data is on the timeliness of the reported data, rather than completeness. A description of the limitations in ESSENCE are below.

Emergency Room Data: The syndromic classification of the ER data in ESSENCE is reflected by the patient's chief complaint. There are some limitations to consider on chief complaints.

1. The chief complaint may be in a summary free text field that resembles the patient's actual statement.
2. The chief complaint may be a shortened free text statement which only includes the main reason for the ER visit.
3. The chief complaint may be chosen from a list of potential chief complaints in the hospital data system that best matches the patient's statement.
4. A chief complaint may be misspelled.
5. The chief complaint data vary in analytical accuracy and this issue depends on the type of free text chief complaint the hospitals provide.
 - a. The free text chief complaints are preferred due to more information to categorize syndromes and help with free text queries, but they are not always available.
 - b. ESSENCE also does a good job at using language parsing algorithms for regular misspellings to make sure the chief complaint is correct.

I-NEDSS Reportable Disease Data: Reportable disease data is only available for investigations that are completed and closed in I-NEDSS. In order for a case to be available in ESSENCE, the subject matter expert has to review and classify the investigation. Information may be limited to what is completed in the case investigation.

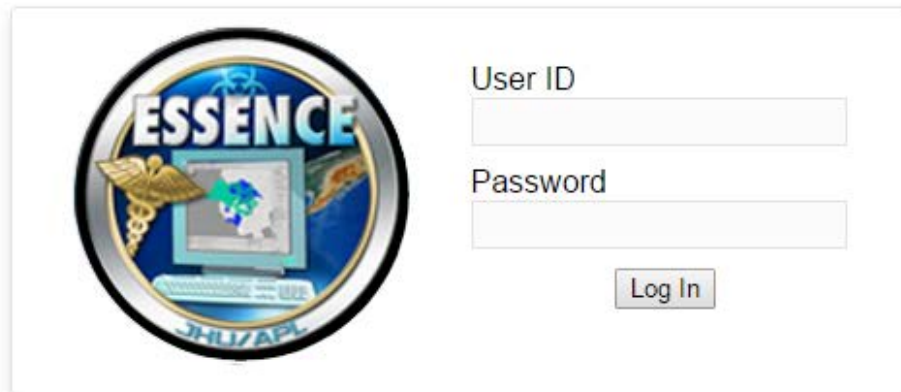
Statistical Analysis: It is important to note that ESSENCE users should not equate statistical significance with public health significance. Users should analyze the data by looking at the line lists to make a decision on investigating further is necessary.

D. Accessing the System

The preferred web browser to access ESSENCE is Google Chrome or Mozilla Firefox. It is possible to use Internet Explorer, however there are some compatibility and performance issues, and its use is not recommended.

To access ESSENCE, go to <https://essence.isdh.in.gov/>. You will need to log in with your user name and password each time you are trying to access the system. Below is what the log in page will look like for ESSENCE. User names and passwords will be provided to you upon signing and returning the ESSENCE User agreement ([Appendix F4](#))

Figure 1

The image shows the login interface for the ESSENCE system. On the left is a circular logo with the word "ESSENCE" in blue, a globe, and a caduceus. To the right of the logo are two text input fields: "User ID" and "Password". Below these fields is a "Log In" button.

E. System Tabs

Once logged in, the ESSENCE homepage will appear. While there are many functions available on this page, most users will spend time using one of the following:

- Query Portal: conduct a variety of searches from ESSENCE data and I-NEDSS data
- MyESSENCE: save created queries to monitor daily in a personalized dashboard.
- Alert List: tabular view of alerts from twelve syndromes by preparedness district, region (county), hospital, patient zip code or hospital and time of arrival.
- MyAlerts: create user tailored daily surveillance to specific ESSENCE data.
- Overview Portal: allow for monitoring multiple time series graphs at the same time.
- Event List: creation of unique syndrome/sub-syndrome events.
- Bookmarks: a list of previously saved queries or pages for daily surveillance rather than re-creating the queries each day.

The bolded words throughout this user guide are referencing pages in ESSENCE.

E1. Query Portal

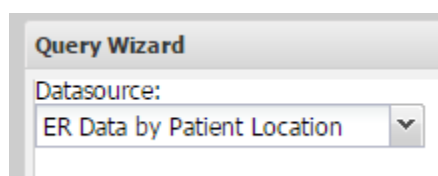
Figure 2



The query portal lets the user conduct a variety of searches from ESSENCE data. Depending on the user's access rights, they may be able to observe ER data as well as reportable disease data from I-NEDSS. **How to Use the Query Portal for ER Data**

1. Click the **Query Portal** tab at the top of the ESSENCE screen.
2. Choose your preferred data source for the query (Figure 3). The first four choices on the drop down box pertain to ER data. The **Emergency Room by Patient Location** data source sorts the ER visits by the patient's zip code and county of residence. This data source will not provide ER data on a patient if they did not indicate a county or zip code of residence upon visit. The **Emergency Data by Hospital Location** is more complete than the previous data source since this data source gives all ER visit data regardless of if patient's zip code/county is specified. The **Reportable Disease Data** source allows the user to access reportable disease data from I-NEDSS. See the [Appendix F2](#) for further a further description of the data sources.

Figure 3



3. Choose a time resolution. The time resolution section of the query wizard allows the user to choose a specific time frame when analyzing ESSENCE data.
4. After choosing a desired data source and time resolution for the query, the user will select a geography system, and a medical grouping system.
 - a. The geography system categories are different for **ER Data by Hospital Location** for **ER Data by Patient Location** (Figure 4). The major difference between the two is the first, **ER Data by Hospital Location**, will query those who visited in that county regardless of the patient's residency. The second option, **ER Data by Patient Location**, will look only at those patients that are residents of the county regardless of what hospital they are visiting.

Figure 4

Geography System	
ER Data by Patient Location	ER Data by Hospital Location
<ul style="list-style-type: none"> ▪ Region (county): County of patient residence within Indiana ▪ Zipcode: zip code of patient residence Facility 	<ul style="list-style-type: none"> ▪ Region of the Hospital: Indiana county where the hospital is located ▪ Hospital

- b. The medical grouping system lets the user choose between chief complaint subsyndromes, ESSENCE syndromes, or chief complaints. The chief

complaint sub syndromes gives the user a list of over 80 sub-syndromes to choose from for their query. A list of sub-syndromes can be located in the Syndrome Definition section of the **More** tab. As for the **Syndrome**, ESSENCE has a list of 12 syndromes ([Appendix F1](#)) the user can choose from. The **Chief Complaint** medical grouping system lets the user type in key words to query ESSENCE data on. There are also multiple other filter options, for example sex or age range, which allow the user to make their query more specific.

- Once the user has selected all the pertinent information from the sections above, click the **Time Series** button at the bottom of the screen. Clicking the **Time Series** button will create a time series graph on the next screen of the data. Once the time series graph is up, you can click on one of the points to see ER data from a specific day. First, click on the graph, then right click a point on the graph to view the ER data from the particular day to open the data details in a new tab. See the [E3. Alert List](#) tab for a description of the different colored points.

A. Creating Free Text Chief Complaint Queries

Free text chief complaint queries allow the users to search for chief complaints that do not fit into a syndrome or subsyndrome. For instance, monitoring *Clostridium difficile* would require a free text query. These key word features allow the user to make their query more specific and remove data they do not need.

- Carrots (^) are wildcards. However the carrots allow for any character to be in front of the phrase being searched. This helps with spelling errors and if the chief complaint is missing spaces.
 - If looking for *Clostridium difficile*, it may be easier to look for the “diff” to capture when the full organism is being entered or when someone utilizes C. diff
 - ^diff^ =
 - Difficile
 - Difficulty (ex: difficulty breathing)
 - Diffuse
- To query on multiple words, use “and”, “andnot”, “or”
 - Ex: ^diarrhea^,and,^bloody^

Commas also need to be on both sides of the Boolean words (i.e. and, andnot, or)

E2. MyESSENCE

Figure 5



The myESSENCE tab is the section of ESSENCE where the user can save created queries to monitor daily in a personalized dashboard. For example, to analyze all meningitis chief complaints each day, create the query in the **Query Portal** using a free text query and then save the created time series graph to myESSENCE. This process saves the time series and updates each time new data comes in without having to re-create the graph. Creating multiple time series graphs in myESSENCE is a faster and more efficient way to analyze diseases/conditions or syndromes/sub-syndromes. The myESSENCE dashboard will have all

previously saved time series graphs. Below is an example of what the time series graph will look like in myESSENCE.

MyESSENCE allows for the creation of multiple dashboards (Figure 7). The user can monitor multiple self-created dashboards for particular syndromes/sub-syndromes and conditions of interest. There is an **Add New Tab** button in MyESSENCE that lets the user create a new page for multiple dashboards (Figure 6). For example, there can be a tab in MYESSENCE pertaining to enteric diseases and syndromes/sub-syndromes and another tab for influenza data. The **Add New Widget** button allows the user to add a previously saved time series graph or map to the dashboard.

Figure 6

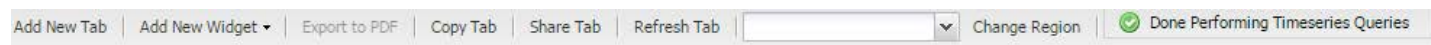
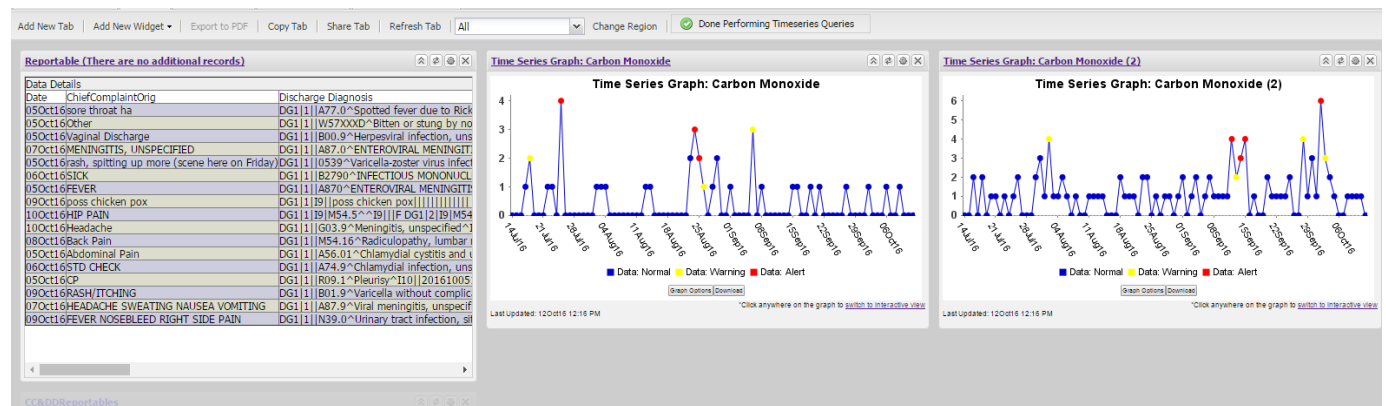


Figure 7



E3. Alert List

Figure 8



The alert list provides a tabular view of alerts from twelve syndromes and provides the ability to view the data by preparedness district, region (county), hospital, patient zip code or hospital and time of arrival.

An alert is created when the baseline is exceeded. ESSENCE uses the last 30-days as a baseline, minus the 2 most recent days. A comparison of the current data's counts to the baseline is performed to assess whether there is a statistically significant increase (Figure 9). The p-values highlighted in yellow represent a statistical significant p-value between 0.01 and

0.05 and indicate a warning. The red p-values represent statistical significant p-values less than 0.01 and indicate an alert.

Figure 9

P-Value	ESSENCE Color
> 0.05	Blue
0.01 – 0.05	Yellow
<0.01	Red

Users should understand that statistical alerts are an increase in the expected number of ER visits for a particular day and syndrome. **Alerts** and **warnings** should be further evaluated for public health action by the user. This can be done by selecting the alert to view more details. The user should look at the expected and observed count columns to decide whether to check the **data details** for the alert. Additionally, the user should review the time of visits, zip codes, ages, chief complaint, discharge diagnosis, etc., for common trends and determine if further action is needed.

A. Summary Alerts

The Alert List tab presents a table view of the twelve syndromes in ESSENCE (see Appendix E.1 for syndrome list). The **Summary Alerts** tab displays a graphical overview of syndrome alerts for the entire state of Indiana and the 10 preparedness districts (see Figure 9). Each group of asterisks (*) indicates the last 9 days for each syndrome listed in alphabetical order with the most recent day on the far right. The individual asterisks can either be grey, yellow, or red. The yellow and red asterisks indicate a warning and an alert, respectively. The row of asterisks on the top for each syndrome indicate syndromic alert activity over time. The user can click on individual asterisks to investigate the alert further. The bottom row of asterisks for each syndrome indicate whether an **event list** entry has been displayed for a certain district. The **event list** has to be created by the user in the **event list** tab ([E6 Event List](#)).

Figure 10

Temporal Alerts Summary

Last Updated: October 21, 2016 8:26 AM

[Summary Alerts | Region/Syndrome | Hospital/Syndrome | Spatial | Hospital/SubSyndrome Time of Arrival]

[-] Description
[-] Configuration Options

[View Detection-Based Alerts] [View User-Based Events]

Region Group	ER							
	Bot_Like	Exposure	Fever	GI	Hemr_III	ILT	Injury	Neuro
IN	*****	*****	* * * * *	*****	*****	*****	*****	* * * * *
District 01	*****	*****	* * * * *	*****	*****	*****	*****	* * * * *
District 02	*****	*****	*****	*****	*****	*****	*****	*****
District 03	*****	*****	*****	*****	*****	*****	*****	*****
District 04	*****	*****	* * * * *	*****	*****	*****	*****	*****
District 05	*****	*****	*****	*****	*****	*****	*****	*****
District 06	*****	*****	* * * * *	*****	*****	*****	*****	*****
District 07	*****	*****	*****	*****	*****	*****	*****	*****
District 08	*****	*****	* * * * *	*****	*****	*****	*****	*****
District 09	*****	*****	* * * * *	*****	*****	*****	*****	*****
District 10	*****	*****	*****	*****	*****	*****	*****	*****

For District 01, Neuro showed two alert days, followed by two warning days and the last day is in normal range.

B. Region/Syndrome Based Temporal Alerts

Figure 11 displays all the columns that show up for the Region/Syndrome alerts. The **District** column contains the county. The **Region/Syndrome** tab will display **Region/Syndrome Based Temporal Alerts** as the header. Alerts by region will only appear for regions that are active to the user.

Figure 11

Region/Syndrome Based Temporal Alerts

Last Updated: September 23, 2016 8:11 AM

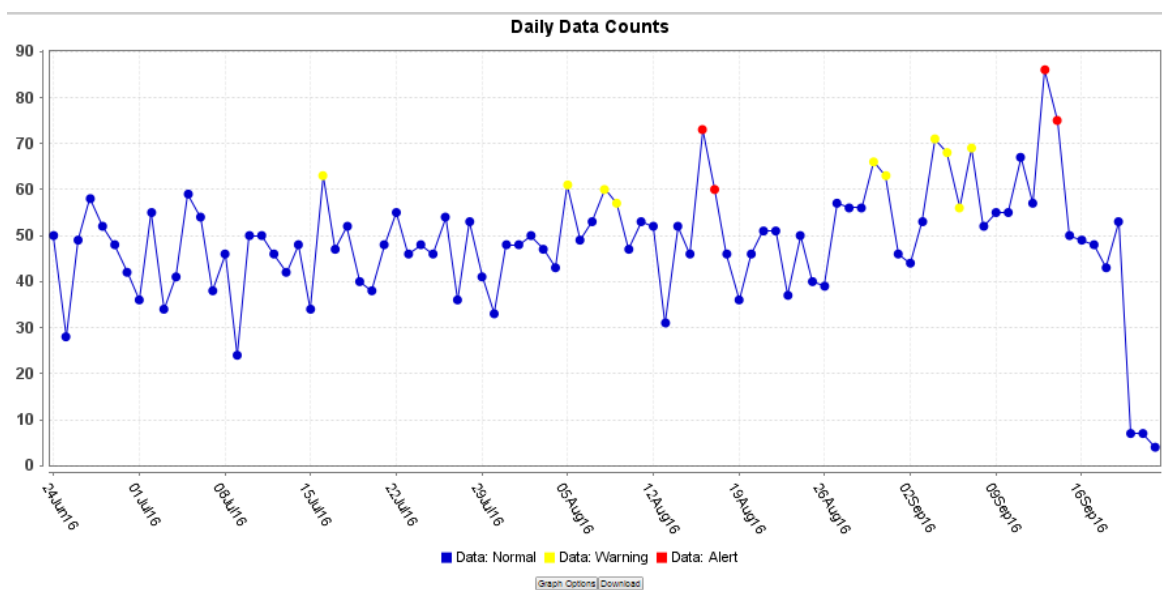
[Summary Alerts | Region/Syndrome | Hospital/Syndrome | Spatial | Hospital/SubSyndrome Time of Arrival]

Figure 12

Region/Syndrome Based Temporal Alerts										
Links	▼ date	Data Source	District	Age	Sex	Syndrome	Detector	▲ Level	Count	Expected
Time Series	23Sep16	ER by Patient	Decatur	18-44	All	Neuro	Regression/EWMA 1.2	0.04	1	0.607
Time Series	23Sep16	ER by Patient	Huntington	65+	All	Bot_Like	Regression/EWMA 1.2	0.04	1	0.214
Time Series	22Sep16	ER by Patient	Sullivan	45-64	All	Neuro	Regression/EWMA 1.2	0	4	0.321
Time Series	22Sep16	ER by Patient	Rush	45-64	All	Neuro	Regression/EWMA 1.2	0	3	0.25
Time Series	22Sep16	ER by Patient	Owen	45-64	All	GI	Regression/EWMA 1.2	0	4	0.643
Time Series	22Sep16	ER by Patient	Parke	18-44	All	GI	Regression/EWMA 1.2	0.001	5	1.143
Time Series	22Sep16	ER by Patient	Cass	18-44	All	Fever	Regression/EWMA 1.2	0.001	2	0.179
Time Series	22Sep16	ER by Patient	Hamilton	45-64	All	Bot_Like	Regression/EWMA 1.2	0.001	3	0.679
Time Series	22Sep16	ER by Patient	Jasper	18-44	All	GI	Regression/EWMA 1.2	0.001	7	2.429
Time Series	22Sep16	ER by Patient	Spencer	18-44	All	GI	Regression/EWMA 1.2	0.001	5	1.179

1. To view the syndrome alerts by region (county), go to the **Alert List** tab and click on **Region/Syndrome**. A tabular view of the ESSENCE syndrome alerts will pop up with multiple columns (Figure 12). Columns can be sorted to find the most relevant information. To see the highest alerts by day, first click on the **date** column which will sort the data with the most recent date at the top. Next, click on the **level** column which will sort the p-values with the most significant p-value at the top. To identify the columns have been sorted, small numbered triangles will appear in the column headers. These numbers indicate the order that the columns are being sorted. For example, in the above image the data is sorted by date and then sorted by level.
2. Once the data have been sorted by date and level, a range of p-value alerts that are significant enough for further analysis should be determined. For example, the state considers alerts with counts that have 5 more visits than expected with p-values up to and including 0.002 as significant enough for further analysis. Once you have decided what alerts are significant, open the alert by using **Time Series** column. Sometimes, it is helpful to open the graph in a new tab by right clicking of the **Time Series** and choosing "Open link in new tab" or holding down the control button on the keyboard and left clicking, if using a Windows computer.

Figure 13



- Figure 13 displays the time series for a particular alert you have chosen. The time series graph displays cases of the ESSENCE syndrome alert over the last 90 days. To view the line list of chief complaints for the entire time series of a syndrome, click on **data details** below the time series graph. To view the line list for a single day from the time series, click on the point that corresponds with the correct day.

C. Zipcode/Syndrome Based Spatial Alerts

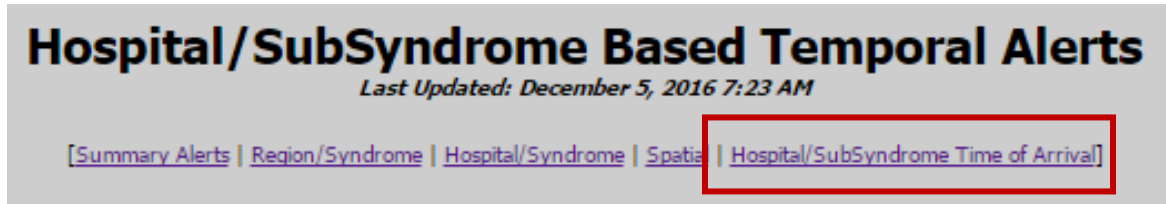
Figure 14

Links	Links	Date	Syndrome	Pvalue	Count	Number of ZipCodes	Cluster Size	Center ZipCode	District
MapView	Time Series	23Sep16	GI	0.042	5	3	11.9	47336	Jay
MapView	Time Series	23Sep16	Neuro	0.046	2	1	0	46543	Elkhart
MapView	Time Series	23Sep16	Rash	0.032	2	3	6.8	47614	Spencer, Warrick
MapView	Time Series	21Sep16	Fever	0.005	7	2	7.2	46571	LaGrange, Noble
MapView	Time Series	21Sep16	Fever	0.028	5	5	13.1	46381	Newton, Jasper
MapView	Time Series	20Sep16	Bot_Like	0.014	2	2	5.7	47866	Sullivan, Vigo
MapView	Time Series	20Sep16	GI	0.028	2	1	0	47866	Vigo
MapView	Time Series	20Sep16	Neuro	0.029	2	1	0	47946	Pulaski
MapView	Time Series	19Sep16	Neuro	0.035	2	1	0	47840	Clay
MapView	Time Series	18Sep16	Bot_Like	0.029	2	3	9.4	47846	Clay, Vigo
MapView	Time Series	18Sep16	Rash	0	4	2	4.3	46710	Noble

Figure 14 will appear after clicking on the **Spatial** tab in Alert List, **Zipcode/Syndrome Based Spatial Alerts**. The spatial alert tool is useful because it looks for clusters of syndromes by space, or more specifically, zip code. A zip code will show up with a red alert or yellow warning (Figure 9) if there are more ER visits for a certain syndrome than other zip codes nearby. Region/Syndrome Temporal Alerts can also be sorted by the columns on the screen. The time series feature in the spatial alerts can be used to further analyze a line list of the alert or warning.

D. Hospital/Sub-Syndrome Based Temporal Alerts

Figure 15



The Hospital/Sub-Syndrome Based Temporal Alerts tab in the Alert List allows for the user to find clusters of patients with similar chief complaints based on the time they arrived at a hospital. The alert uses the hospital, sub-syndrome, and the time the patient arrived at the hospital in order to analyze the data. There needs to be a minimum of 4 ER visits to generate an alert. This helps the user find clusters of patients with similar symptoms during a certain window of time within a facility.

1. To create a time of arrival alert, fill out the fields in the **configuration view** (Figure 16). The available fields are hospital, time arrival, and subsyndrome. There are also start and end date options for the alert. The dates will default to the past two days if not chosen.

Figure 16

2. Once the fields in the **configuration view** are filled out, click **Change Configuration**.
3. On the next screen a table will show up with Region (county), hospital, and alert count on the left side. There are 30 minute time intervals along the top of the table (Figure 17). The red boxes on the table indicate time intervals for a statistical alert. To view the alert, click on the red box to see the description.
4. To view the data details for an alert, click on **data details** after clicking on the red box.

Figure 17

Region	Hospital	Alert Count
Marion		1
St. Joseph		1
Madison		2

5. If the user wants to change any options, click on the plus sign next to **Table Configuration** to change the table fields (Figure 18).

Figure 18

Hospital/SubSyndrome Based Temporal Alerts
Last Updated: October 21, 2016 12:25 PM

[\[Summary Alerts | Region/Syndrome | Hospital/Syndrome | Spatial | Hospital/SubSyndrome Time of Arrival\]](#)

Description
 Table Configuration Options
 Configuration Options

E4. MyAlerts

Figure 19



The myAlerts tab allows the user to tailor their daily surveillance to specific sections of ESSENCE data. The myAlerts tab also has features such as statistical thresholds, minimum counts and consecutive days of alerting which can be used to create specific measures for monitoring and alerting. Alerts can be produced for pre-determined syndromes, sub-syndromes, and free text queries from emergency department data and other data sources accessed in ESSENCE.

A. How to Create MyAlerts

MyAlerts for Sub-Syndromes

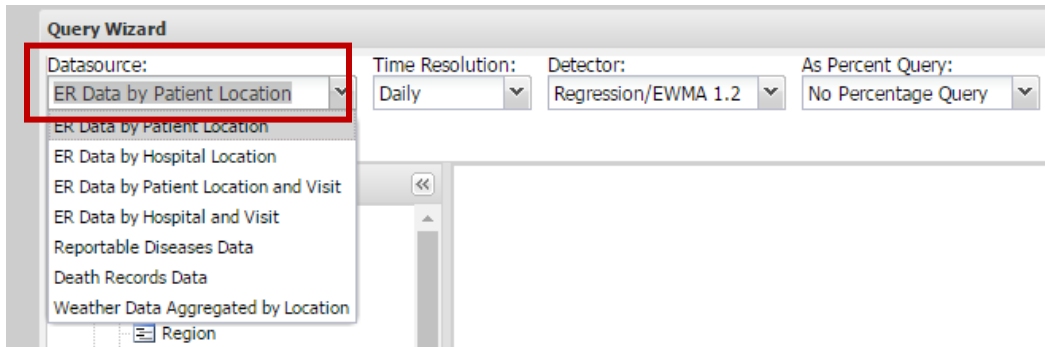
1. First select the tab Query Portal at the top of the ESSENCE website. Once the Query Portal tab has been clicked, select a data source in the Query Wizard.

Examples of data sources included are ER data and reportable disease data. The ER data source can be broken down by patient location, hospital location, by patient location and visit or by hospital and visit. Description of the data sources can be located in the [Appendix F2](#).

Figure 20

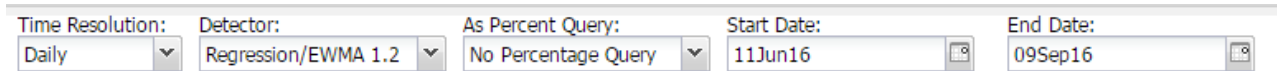


Figure 21



- At the top of the Query Wizard, select a specific Time Resolution, Detector, and Start and End Dates to make the MyAlert (Figure 21). The Time Resolution tab allows you to choose how often the query will monitor (i.e. daily, weekly, monthly, quarterly, or yearly). Implementing statistical alerting algorithms will only work when the Time Resolution is set to daily or weekly time frames. The Detector allows you to choose an alerting algorithm for the query. Lastly, the Start and End dates allows you to create a specific window of time for the selected query fields (Figure 22).

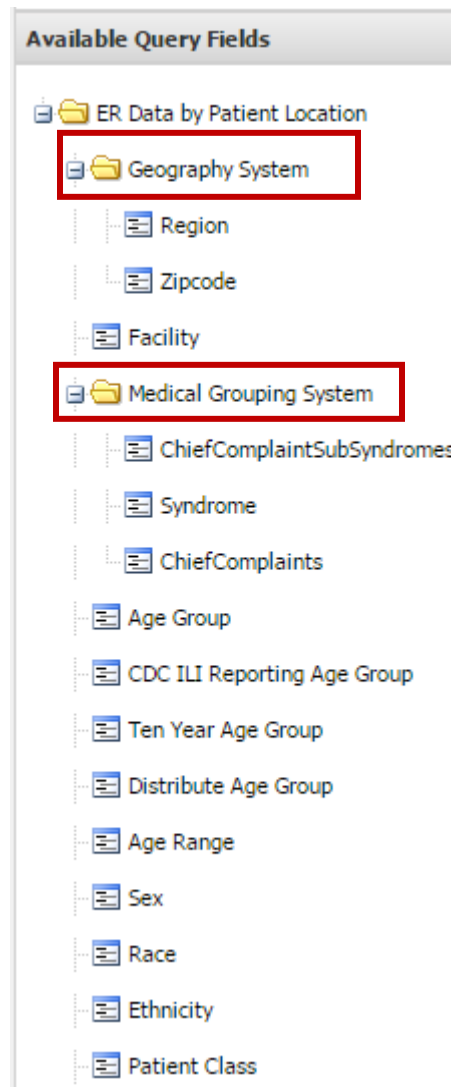
Figure 22



- Select the geography and syndrome under **Geography System and Medical Grouping System**, respectively on the left hand side (Figure 23). You can select a specific region, zip code or facility under the **Geography System** tab when creating a MyAlert. There are a multitude of sections to choose in the Query Wizard under the **Medical Grouping System** tab. Select a pre-defined sub-syndrome or create a list of words with chief complaint. However, only one **Medical Grouping System** can be chosen per query.

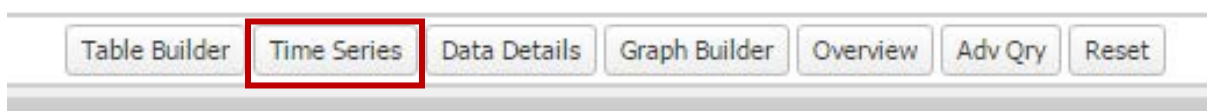
4. Make sure that after each selection, to click **select** to add the filters to the query. To select multiple items, hold down the control button on the keyboard and select all the variables wanted.

Figure 23



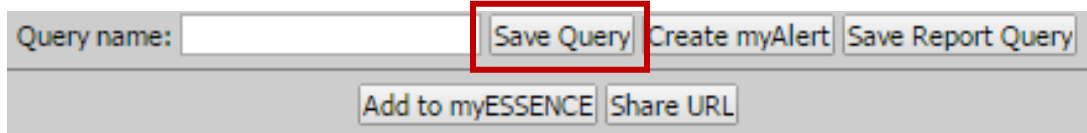
5. When all filters have been added, click the **time series** button at the bottom of the Query Wizard page (Figure 24).

Figure 24



6. Once the query has loaded, there will be a free text tab **Query Name** on the left side of the next screen. Type in the name for your created query and click the **Save Query** button (Figure 25).

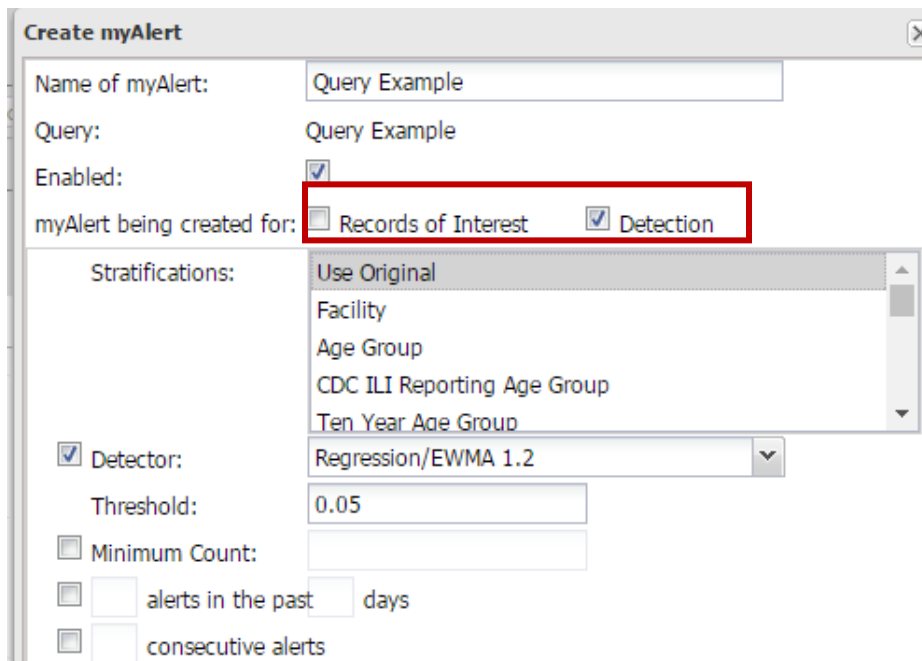
Figure 25



The screenshot shows a user interface with a text input field labeled 'Query name:' followed by three buttons: 'Save Query', 'Create myAlert', and 'Save Report Query'. The 'Save Query' button is highlighted with a red rectangular box. Below these buttons are two more buttons: 'Add to myESSENCE' and 'Share URL'.

7. After clicking the **Save Query** button, a query sharing option pops up first asking if you want to share the query with another user. Whether or not you share the query with another user, a confirmation tab will pop up saying “Your query was saved successfully”, indicating your query was saved to your MyAlerts.
8. To save the query as a **MyAlert**, click the **Create MyAlert** tab on the same page in order to create your sub-syndrome alert. A new window will appear entitled, **Create MyAlert** (Figure 26), which allows the user to pick a variable to stratify the detection algorithm.

Figure 26



The screenshot shows a dialog box titled 'Create myAlert'. It contains several fields and options: 'Name of myAlert:' with the value 'Query Example'; 'Query:' with the value 'Query Example'; 'Enabled:' with a checked checkbox; 'myAlert being created for:' with two radio buttons, 'Records of Interest' (unchecked) and 'Detection' (checked), which are highlighted with a red box; 'Stratifications:' with a list box containing 'Use Original', 'Facility', 'Age Group', 'CDC ILI Reporting Age Group', and 'Ten Year Age Group'; 'Detector:' with a checked checkbox and a dropdown menu showing 'Regression/EWMA 1.2'; 'Threshold:' with a text box containing '0.05'; 'Minimum Count:' with an unchecked checkbox and an empty text box; and two more unchecked checkboxes for 'alerts in the past' days and 'consecutive alerts'.

9. There is a threshold tab in this section to indicate a specific p-value, however this only appears if you select the **detection box** and not the **records of interest** box. If you do not indicate a specific p-value then the threshold p-value will be set to 0.05. There will be a text box next to **Threshold** which allows the user to define a

threshold p-value. P-values are used in ESSENCE as a measure of statistical significance. Any p-value less than or equal to .05 indicates there is a statistical significant association. ESSENCE uses the p-values to determine if an alert is observed for a syndrome/sub-syndrome.

10. There is also a minimum counts section to indicate a certain number of ER visits for the query. It will only trigger an alert if it contains the specified minimum number of visits.
11. Once you are done adding specifics in the **Create MyAlert** tab click **Save MyAlert** to save the sub-syndrome alert. Once an alert has been reached, it will show up in the MyAlert tab (Figure 27).

Figure 27

Manage Alert Definitions		Subscribe					
Alerts		Records of Interest					
Alert Definition	Stratifications	Date	Data Source	Level	Count	Expected	Timeseries
D3 ILI	Region: Steube...	18Sep16	ER by Patient	0.015	3	0.00	Timeseries
D3 ILI	Region: Adams,...	09Oct16	ER by Patient	0.000	7	0.00	Timeseries
D3 ILI	Region: Adams,...	16Oct16	ER by Patient	0.013	4	0.40	Timeseries
D3 ILI	Region: Adams,...	23Oct16	ER by Patient	0.013	4	0.36	Timeseries

Creating Alerts for Free Text Queries

To create a free text query alert ([E4a. How to Create MyAlerts](#)) select the **Chief Complaints** tab in the medical grouping system mentioned in step 2, then type in your specific chief complaint query (Figure 28). Follow the steps above to create the alert for the free text query.

Figure 28

ChiefComplaints

Enter value(s) for ChiefComplaints...

Creating Records of Interest

The creating a Records of Interest tab in ESSENCE is a useful tool to use when wanting to create a list of ER visits for the query. It is particularly helpful when trying to look at each ER visit for a specific query. The Creating Records of Interest tab lets you analyze ER visits for a reportable disease of interest and to look at rare events, for example botulism. Steps 1-6 above can be used to create a record of interest. The only difference is to select the **Records of**

Interest tab in the **Create MyAlert** section as shown in the snap shot of **Create MyAlert** (Figure 26).

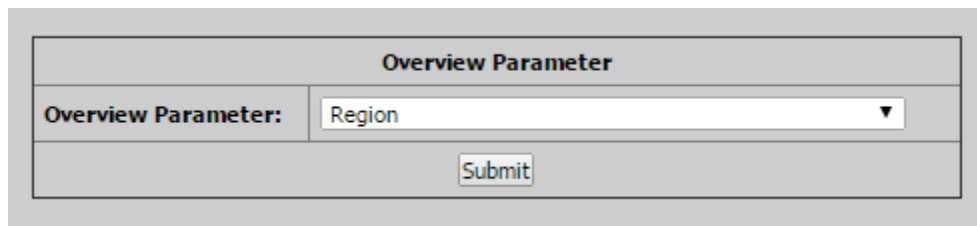
E5. Overview Portal

Figure 29



The overview portal tab in ESSENCE lets the user monitor multiple time series graphs at the same time. For example, at the ISDH, the Epidemiologist uses the Overview Portal tab to monitor time series graphs of ER data from all hospitals throughout the state on one screen to check the quality of submitted data. There are different parameters a user can pick for their time series graphs. Before choosing a parameter, the user must first select a data source for the time series graphs. The data sources in the overview portal are the same sources referenced in the Query Wizard ([E4a. How to Create MyAlerts](#)). After selecting the appropriate data source, the user then chooses from the list of parameters to create the time series graphs. Some common examples of parameters in the overview portal are region (county), facility (hospital), syndrome, and medical sub-grouping (Figure 30). For example, if the parameter is region, a graph for each county will display.

Figure 30

A screenshot of a web form titled 'Overview Parameter'. The form has a light gray background and a white border. It contains a label 'Overview Parameter:' followed by a dropdown menu with 'Region' selected. Below the dropdown is a 'Submit' button.

There are two ways to access the overview portal tab in ESSENCE. The first way to access the overview portal is by clicking the “Query Portal” tab at the top of the website. The other way to access the overview portal is through the “Overview Portal” tab at the top of the website.

A. How to Navigate through the Overview Portal tab

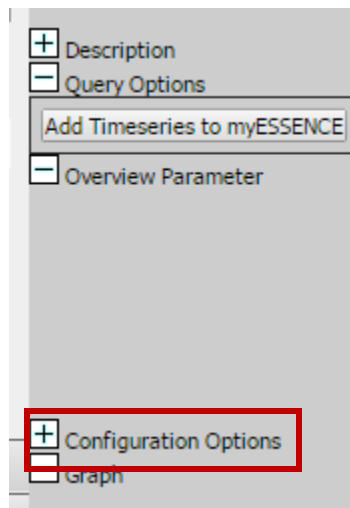
1. Select the Overview Portal tab at the top of the ESSENCE website (see figure at top of Overview Portal section).
2. Choose a data source. Click submit.
3. Choose one of the overview parameter options on the next screen and then click **submit**.

B. How to Navigate to the Query Portal

1. Select the “Query Portal” tab at the top of the ESSENCE website.
2. Choose a data source from the data source drop down box on the next page titled “Query Wizard”.

3. Select a geography region (county), a medical grouping system, and time resolution to sort the time series.
4. Once all the necessary fields have been selected, click on the **Overview** button at the bottom of the “Query Wizard” page.
5. The graph will then pop up on the next screen and the user can modify their previous choices by clicking the plus sign by the Configuration Options (Figure 31).

Figure 31



Once the time series graph(s) are created, the user can select on a specific colored point on the graph to observe the previously chosen chief complaints or syndromes/sub-syndromes on a specific day.

E6. Event List

Figure 32



The event list tab allows the user to create their own syndrome/sub-syndrome events to track. Each event created is sorted by date with the most recently updated event at the top of the page. Only one column at a time can be sorted. The Event List is useful because when someone creates an event, other ESSENCE users can also see and comment on it. This tool allows for others to update the status of the syndrome alert as needed. The legend for the 5 ways to rank in Figure 33.

Figure 33

Rank Legend
Responding
Investigating
Monitoring
Not Concerned
Info

A. How to Create an Event

1. To create a new event, hover over the event list tab at the top of ESSENCE and click on the **Create Event** drop down box. Figure 34 will appear.
2. Select a data source, status (whether the investigation is open or closed), geography region, syndrome category, rank, medical group system, and an age group.
3. Pick a start and end date. There is also tabs available to create a title and a brief message about the event.

Figure 34

The 'Create Event' dialog box contains the following fields and options:

- Datasource:** ER Data by Patient Location, ER Data by Hospital Location, ER Data by Patient Location and Visit, ER Data by Hospital and Visit
- Status:** Open, Closed
- Geography:** Adams, IN, Allen, IN, Bartholomew, IN, Benton, IN
- Category:** General, Multi-Syndrome, Bot_Like, Fever
- Rank:** Info, Investigating, Monitoring, Not Concerned
- Medical Grouping:** Bot_Like, Exposure, Fever, GI
- Age:** 00-04

Buttons: Preview, Cancel

Once an event has been created, it will appear in the Event List Grid (Figure 35). Clicking on an event will allow the user to see more details as well as add comments.

Figure 35

Event List Grid						
R	Rank	Title	Author	Start Date	End Date	Medical Grouping
✉	Monitoring	Meningitis		06Oct16	07Oct16	RecordsOfInterest
✉	Monitoring	event example		04Oct16	07Oct16	Bot_Like

E7. Bookmarks

Figure 36



The bookmark tab in ESSENCE allows the user to save previously created queries for daily surveillance rather than re-creating the queries each day.

1. To bookmark a query, type in the name of your query in the **Bookmark Name** text box on the top right of the web browser and click on bookmark page (Figure 37).

Figure 37

The image shows a form with two input fields. The first field is labeled 'Bookmark Name' and the second is labeled 'Bookmark Page'. Below the first field, there is a dropdown menu showing 'No Comments Available' and an 'Add to Comment' button.

2. To retrieve saved bookmarks, click on the bookmarks tab at the top of the ESSENCE page. All previously saved bookmarks will be on the next page and are able to either click on the title of a query or click **Select (Today)** to access bookmarked queries.
 - a. Clicking on the title option runs the query as it was created and does not have a change in dates.
 - b. Clicking on **Select (Today)** option will show results of the query for the most recent three month time frame, up to and including the most recent day.
3. To arrange created **Bookmarks** in a particular order, click on the check box to the left of a bookmark (Figure 38). Then click the **Edit** button under **Bookmark Manager**, which will pop up a box called **Edit Bookmark** (Figure 39). Type in a number in the **Order** section to indicate the order the bookmark will be displayed.
 - a. Bookmarks can only be arranged one at a time and the default orders the bookmarks with the smallest number at the top.

Figure 38

Bookmark Manager					
Expand All Groupings		Collapse All Groupings		Edit	Delete
<input type="checkbox"/>	Order	Bookmark Name	Page	Date Created	Select Today
Grouping: unassigned (2)					
<input checked="" type="checkbox"/>	100	Daily Check	Alert List	2015-Jun-19 12:52:59 PM	Select (Today)
<input type="checkbox"/>	199	Hospital/Subsyndrome	Alert List	2017-Jan-09 11:12:48 AM	Select (Today)

Figure 39

Edit Bookmark

Name:

Servlet:

Order:

Grouping:
▼

F. Appendix

F1. List of 12 ESSENCE Syndromes

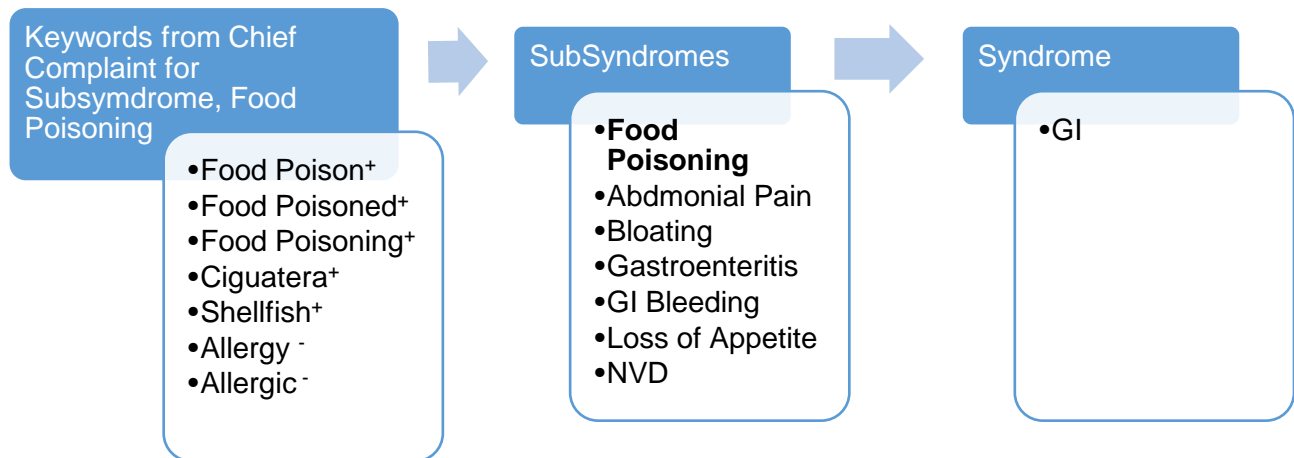
These can also be found in ESSENCE under the More tab by clicking on the Syndrome Definitions link.

ESSENCE Syndrome List		
Bot Like (Botulism like)	Exposure	Fever
GI (gastrointestinal)	Hemr ill (hemorrhagic fever)	ILI (influenza like illness)
Injury	Neuro	Rash
Record of Interest	Resp	Shk coma (Shock/coma)

Syndromes are a group of associated symptoms, such as Fever, GI, and Respiratory, which are made up of subsyndromes. Subsyndromes are smaller, more specific groups of associated symptoms, such as abdominal pain, difficulty breathing, and diarrhea. Subsyndromes are made up of keywords (terms) that are found within a chief complaint.

For example, the syndrome, GI, is made up of seven subsyndromes. The subsyndrome, Food Poisoning, is made up of seven keywords that weigh the chief complaint into or not into a subsyndrome. Terms can have positive and negative values which allow the system to identify if they should be placed into a subsyndrome or syndrome.

Chief Complaints to Syndrome Determination



- Negative points, not added to syndrome

+ Positive points, add to syndrome

F2. Data Sources

Emergency Room by Patient Location: This data source sorts the ER visits by the patient's zip code and county of residence. This data source will not provide ER data on a patient if they did not indicate a county or zip code of residence upon visit.

Emergency Data by Hospital Location: This data source gives all ER visit data regardless if patient zip code/county is specified by the Hospitals location (or county).

Reportable Disease Data: This data source allows the user to access closed investigations for reportable disease data from I-NEDSS.

F3. Data Dictionary

ED Data Element Name	Description of Field
Unique Patient Identifier (PIN)*	Unique identifier for the patient, usually a MRN
Visit Date*	Date of recorded visit from treating facility
Visit Time*	Time of recorded visit from treating facility
Zip Code*	Zip Code of patient home address
District*	Country of patient home address
Age *	Numeric value of patient age at time of visit
Sex*	Sex of patient
Chief ComplaintOrig*	Short description of reason of patient's visit; may contain medical shorthand
Chief ComplaintParsed	Short description of reason of patient's visit; medical shorthand will be spelled out Ex: RT would be "right"
Hospital*	Location of patient
Category flat	Syndrome the chief complaint was added to; can be more than one Ex: ILI; Respiratory
SubCategory flat	The subsyndromes the chief complaint was added to; can be more than one Ex: Chronic;Meningitis
Discharge Diagnosis	The diagnosis given from the facility; could be working or final diagnosis
Visit Number*	Unique identifier for the visit
Region of Hospital	The county the hospital is in
Hospital Zip Code	The zip code of the hospital
Week Year	The week of the year for the visit Ex: 2016 -45 corresponds with the 45 th week of the year
Month Year	The month of the year the visit corresponds with Ex: 2016 -11 corresponds with visits in the month of November
Quarter Year	The quarter of the year for the visit Ex: 2016 – 4 corresponds with visits in the fourth quarter of the year
Year	Year of the visit
Age Group	Group the patient age is put into

*Required field sent from the facility by state law (410 IAC 1-2.4)

F4. ESSENCE User Agreement

ESSENCE Website User Agreement

Your ability to access the Indiana ESSENCE website and the data contained within is granted pursuant to the Indiana State Department of Health's (ISDH) software license agreement with Johns Hopkins University-Applied Physics Laboratory and in compliance with Indiana Code § 16-19-10-8. This website may be accessed only by those users engaged in disease surveillance activities in the State of Indiana and explicitly authorized by the Indiana State Department of Health.

To help ensure compliance, ISDH will assign a unique username and password to each authorized user. Authorized users may not share their passwords and must logoff of the ESSENCE website upon completion of each user session.

REMEMBER- Although data presented through the ESSENCE website are de-identified, the information is sensitive and should be treated accordingly. Access to the ESSENCE website is provided to authorized users as a tool for appropriate disease surveillance and monitoring activities **ONLY**. Most alerts turn out to be of no importance to the public's health. If something unusual is found-do some further investigation, contact local health department and hospital partners, and consult with the ISDH to determine if some intervention is needed. Most alerts do not turn out to be actual outbreaks.

I understand and agree to the foregoing terms and conditions.

User's Printed Name

LHD or Hospital Represented

User's Signature

Date

User E-mail Address

Telephone Number