



Utility of the Exposure Syndrome in ESSENCE

Miami-Dade County Health Department

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Objective

- **To illustrate how the ESSENCE Exposure syndrome has been used to detect outbreaks and improve disease surveillance and reporting**

ESSENCE

- Electronic Surveillance System for the Early Notification of Community-based Epidemics
- Web based medical surveillance system
- Automated data collection and analysis → allows 24/7 monitoring
 - Chief complaint data is transferred from Hospital ER to MDCHD server attached to Hospital's electronic database

Background

- **ESSENCE**
 - County's 17 largest of 23 ED hospital since 2005
 - Detects outbreak events using automated alerts
 - Alerts: Possible bioterrorism, seasonality, variance, outbreak
 - Automated 10 syndromes that include ILI, RESP, NEURO ect.

Background

- What lead to this study
 - Special Query
 - Outbreak detected among 25 persons at the same hospital from toxic exposure

- 11th Syndrome
 - Exposure was requested (2 days after outbreak)
 - Added as new automated alert syndrome

Methodology

- Data Collection, 01/2007-05/2009
 - “exposure” chief complaints was sorted into 7 exposure categories
 - (1) exposure, (2) chemical, (3) biological, (4) STI, (5) communicable diseases, (6) environmental, (7) other.

A	B	C	D	E	F	G	H
6/1/2007	189 AM/Hospital	83136	10-04	P0	M		EXPOSURE TO WELDING TORCH FLAME
1/14/2007	1122 PH/Hospital	82010	10-04	P0	M		UNSPECIFIED HANDBY IN POSS MANGE
3/14/2007	139 PH/Hospital	83012	10-04	P0	F		BODY FLUID EXPOSURE
6/25/2007	336 PH/Hospital	83172	10-04	P0	M		W/IC NEW EXPOSURE
6/27/2007	575 PH/Hospital	83140	10-04	P0	F		CHEMICAL EXPOSURE
8/7/2007	741 PH/Hospital	83366	10-04	P0	F		CHEMICAL EXPOSURE IN EYE
1/27/2007	396 PH/Hospital	81103	10-04	P0	M		CHEMICAL EXPOSURE IN EYE
1/25/2007	157 PH/Hospital A	83130	10-04	P0	M		EYE IRRITATION/CHEMICAL EXPOSURE
3/26/2007	206 PH/Hospital A	82403	10-04	P0	M		EYE IRRITATION/CHEMICAL EXPOSURE
1/10/2007	553 AM/Hospital	81719	10-04	P1	M		EYE PAIN SUP EXPOSED TO ELECTRICAL AIR
3/10/2007	534 PH/Hospital	83113	10-04	P0	F		BLOOD EXPOSURE WHILE AT WORK
1/10/2007	733 AM/Hospital	81142	10-04	P0	M		STD EXPOSURE
1/10/2007	244 PH/Hospital	83179	10-04	P0	M		EXPOSURE
3/23/2007	435 PH/Hospital II	81149	10-04	P0	M		POSSIBLE EXPOSURE TO MARIJUANA
4/23/2007	533 PH/Hospital II	81146	10-04	P0	M		POSSIBLE EXPOSURE TO MARIJUANA
1/21/2007	533 PH/Hospital	81130	10-04	P0	F		HEPATITIS A EXPOSURE
1/21/2007	293 PH/Hospital	81133	10-04	P0	F		STD EXPOSURE
1/21/2007	216 PH/Hospital	83105	10-04	P0	M		EXPOSURE
1/21/2007	216 PH/Hospital	83106	10-04	P0	M		EXPOSURE
1/13/2007	647 AM/Hospital	83014	10-04	P0	M		W/IC NEW EXPOSURE
1/13/2007	847 AM/Hospital	83014	10-04	P0	M		W/IC NEW EXPOSURE
1/13/2007	1250 PH/Hospital	81108	10-04	P0	F		STD EXPOSURE
1/13/2007	1250 PH/Hospital	81109	10-04	P0	F		STD EXPOSURE
1/14/2007	1150 AM/Hospital	81103	10-04	P1	F		GELCA GEL EXPOSURE
1/15/2007	408 PH/Hospital	83147	10-04	P0	M		EXPOSURE
1/19/2007	496 PH/Hospital	81164	10-04	P0	M		POSSIBLE GASOLINE EXPOSURE TO EYE
1/21/2007	429 PH/Hospital	81176	10-04	P0	F		HEPATITIS A EXPOSURE
1/21/2007	634 PH/Hospital	83142	10-04	P0	M		STD EXPOSURE
1/21/2007	544 PH/Hospital	81176	10-04	P0	M		HEPATITIS A EXPOSURE
1/28/2007	608 PH/Hospital	81167	10-04	P0	M		W/IC NEW EXPOSURE
1/28/2007	608 PH/Hospital	81167	10-04	P0	M		W/IC NEW EXPOSURE
1/28/2007	1070 AM/Hospital	81170	10-04	P0	M		CHEMICAL EXPOSURE EYE
1/28/2007	436 PH/Hospital	81144	10-04	P0	M		EXPOSURE
1/28/2007	439 PH/Hospital C	81160	10-04	P0	M		EXPOSURE
1/28/2007	343 AM/Hospital	81150	10-04	P0	M		EXPOSURE
1/28/2007	343 AM/Hospital	81150	10-04	P0	M		EXPOSURE

Methodology

- When unusual clustering is suspected staff contacts the ICP of the hospital and investigates to confirmed illness.
- Cluster is determined by date, time, hospital and zip code.

6/12/2007	4:53 PM	Hospital B	33145	18-64	47	M	POSS EXPOSURE TO MENINGITIS
6/12/2007	5:00 PM	Hospital B	33166	18-64	35	M	POSS EXPOSURE TO MENINGIT

- Data was analyzed by age, gender and type of exposure

Results

- Total of 2,111,000 ED visits during the study period of which 871 (.05%) visits were exposure related.
- Top Exposure cases
 - Biological, 19.5%
 - STI, 18.9
 - Communicable Disease, 17.5%

Results

Table 1. Exposure-related emergency department visits by type of exposure and cluster, Miami Dade County, January 2007-May 2009 (N=871)

Type of Exposure	Numer of cases	Percent of total		Number of cases in clusters
		exposure cases	Number of clusters	
Biological	170	19.5	5	16
Sexually Transmitted Infection (STI)	165	18.9	3	6
Communicable Disease (not STI)	152	17.5	14	59
Exposure (non specified)	133	15.3	10	22
Chemical	121	13.9	7	23
Other	94	10.8	4	9
Environmental	36	4.1	1	5
Total	871	100.0	44	140

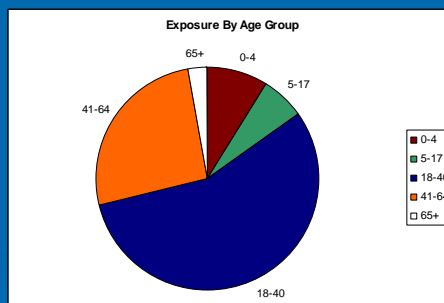
- 44 clusters involving 140 persons.
- Over 30% of clusters were for communicable diseases

Results

- ESSENCE alerts
 - There were 22 red alerts and 41 yellow alerts automated by the exposure syndrome.
 - The range of patients seen in 1 day was between 0 to 29 with a mean of 1 patient per day

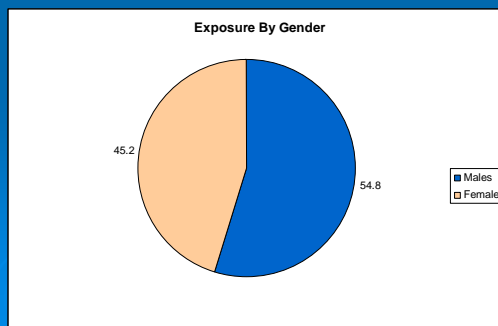
Results

- Exposure by Age group
 - 0-4 age group, 9%
 - 5-17 age group, 6%
 - 18-40 age group, 56%
 - 41-64 age group, 26%
 - 65+ age group, 3%



Results

- Exposure by Gender
 - Males had a higher percentage of exposure related ED visits compared to females by 9.6%



Results

- Since the ESSENCE Implementation
 - 5 clusters have been detected in a 3 month period
 - Clusters include, exposure to:
 - Chemicals: methamphetamine
 - Communicable diseases: Meningitis

Public Health Practice

- Actions Taken
 - March 24, 2009 an alert for toxic exposure
 - 10 individuals visited the same ED within the same time range
- Investigation
 - Discovered the toxic exposure was CO poisoning; new reportable disease in FL

Conclusion

- Verified that ESSENCE is useful to monitor exposure in Miami Dade County
- Exposure accounted for .05%, it was instrumental in finding clusters.
- Implementation of Exposure is encouraged to other syndromic surveillance systems