

## **Evaluating the Validity of Emergency Department Data for Biosurveillance**

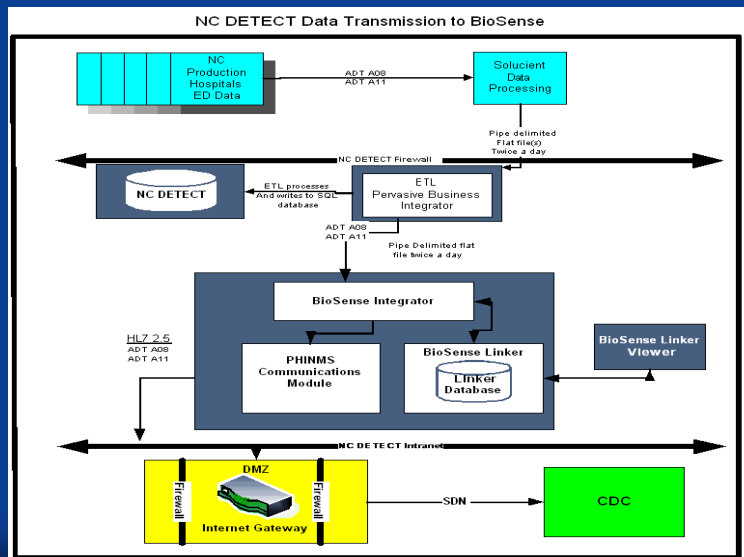
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### **BioSense Data Validity Audit**

#### **Objectives:**

- Evaluate data flow processes to determine accuracy of data provisioning
- Identify any points of failure and investigate data irregularities that occur at these points

## Data Flow from North Carolina to BioSense



## Data Monitoring Processes Limitations

- Valid vs. Accurate
- Within historical statistical parameters
- Timely – loosely defined

## Data Sampling Method

- Collected 7,417 sample records from three hospitals in a single urban system
- Date range: 3/1/08 – 3/14/08
- Collected 1,717 from single rural hospital
- Date range: 2/23/08 – 3/7/08
- All data were collected electronically directly from hospital information systems

## Hospitals to NC DETECT Results

Data element	System A (%) records compared	System A (%) agreement	Hospital B (%) records compared	Hospital B (%) agreement
MRN	100.00	99.88	100.00	99.77
DOB	100.00	99.78	80.55	100.00
Sex	100.00	100.00	100.00	99.94
City	99.51	97.60	80.55	98.48
State	99.51	99.89	80.55	100.00
Zip	99.51	97.49	80.49	97.68
Arrival date/time	100.00	99.89	100.00	90.80
Chief Complaint	100.00	99.66	99.83	79.35
Acuity	99.89	98.81	--	--
DBP	34.83	100.00	NA	NA
SBP	34.83	99.50	NA	NA
Disposition	96.92	99.60	85.50	98.98
Insurance	--	--	80.49	92.19
Temp	63.09	59.29	NA	NA
Temp Route	63.08	99.83	NA	NA
Transport	98.83	99.14	100.00	100.00

## NC DETECT to BioSense Results

Variable name	No (%) agreement (all 9167 records)
Arrival Datetime	9014 (98.33)
Chief Complaint	9155 (99.87)
Sex	9156 (99.88)
Zip	9143 (99.74)

**Table 1: Agreement of records, by data element**

Variable name	Records missing in NC DETECT	Records missing in Biosense	Records missing in NC DETECT or Biosense but not both
Arrival date and time	9 (0.10)	0 (0.00)	9 (0.10)
Chief complaint	12 (0.13)	0 (0.00)	12 (0.13)
Sex	9 (0.10)	0 (0.00)	9 (0.10)
Zip	13 (0.14)	4 (0.04)	9 (0.10)

**Table 2: Records missing in NC DETECT and BioSense datasets**

## Observations Hospital to NC DETECT

- Low match rate on temperature (System A) possibly attributable to conversion errors
- Chief complaint from Hospital B match rate increases to 94.69% if extraneous “&” symbols and unexplained truncation are ignored
- Nine records in the direct dataset from Hospital B were not in NC DETECT
- Twenty-three records in NC DETECT were not in the direct feed from System A

## Observations NC DETECT to BioSense

- All records in NC DETECT were in BioSense
- Differences in Arrival Datetime attributable to time differential in pulling NC DETECT and BioSense data sets
- Unable to compare several data elements due to differences in data storage and management

## Conclusions

- Secondary data most practical to use in biosurveillance
- Unique limitations to secondary data
- Important to understand the limitations