Communicable Disease Surveillance
~ Part of CD Law Seminar ~

Jean-Marie Maillard
GCDC Branch
Epidemiology Section

Communicable Disease Laws

- Most, but not all, communicable disease statutes are in Article 6 of Chapter 130A of the NC General Statutes (citation: e.g., GS 130A-135)

- Communicable disease control rules are in Title 10A, chapter 41A of the North Carolina Administrative Code (citation: e.g., 10A NCAC 41A .0101)

Reporting of Communicable Diseases

- Expect changes
  - From paper (cards and forms) between MDs, LHDs, and state
  - To electronic system between LHDs and state ("NC-EDSS")
  - Alerting and communication (NC-EDSS, HAN)
- 10A NCAC 41A .0101 - contains list of reportable diseases, conditions, and positive lab. tests
  - Note foodborne diseases
  - 24-hour vs. 7-day reporting requirements
  - CD report card

Reportable Diseases and Conditions

- List is modified as needed
- Perceived public health importance
  - High potential for spread
  - Serious and/or severe illnesses
- Effective control measures available
- Special interest/study

Who Reports?

- Physicians (GS 130A-135)
- School principals & Day Care Center operators (GS 130A-136)
- Medical facilities *may* report (GS 130A-137)

Who Reports? (continued)

- Operators of restaurants & other food or drink establishments must report foodborne disease (GS 130A-138):
  - Outbreak or suspected outbreak in customers or employees
  - Infected food handler
  - Must call LHD within 24 hours
  - Not required to send CD report card

Who Reports? (continued)

- Laboratories:
  - List of reportable positive tests expanded considerably in 1998
  - Report direct to DPH rather than LHD (results other than STD)
  - May report electronically (and not using CD report card)

How to report (for physicians)

- Telephone report –followed by card report within 7 days– for diseases reportable immediately (Bioterrorism potential) or within 24 hours
- Report card (NC DHHS 2124), along with disease specific surveillance form when required
- Method of reporting described in 10A NCAC 41A

FOR STD ONLY: ☐ VOL. ☐ EPI. ☐ SCREEN

N.C. Department of Health and Human Services – Division of Public Health

NORTH CAROLINA COMMUNICABLE DISEASE REPORT CARD

USE FOR ALL REPORTABLE DISEASES EXCEPT CANCER—REPORT ONLY ONE DISEASE PER CARD

Patient's Name Last First Middle/Maiden | Sex ☐ M ☐ F | SSN ___ ___ ___/___ ___/___ ___ ___ ___

Date of Report ___/___/___ | Date of Onset ___/___/___ | Was this Disease Fatal? ☐ Yes ☐ No | Hospitalized For this Disease? ☐ Yes ☐ No

▲ ENTER CODE FOR DISEASE REPORTED (see other side)

Race ☐ White ☐ American Indian or Alaska Native ☐ Black ☐ Asian or Pacific Islander

Ethnic Origin ☐ Hispanic ☐ Non-Hispanic

Patient's Address: Street or RFD No. | Phone ___/___-___

City | Zip | County

Birthdate ___/___/___ | Age ___ Years *OR* ___ Months | Site of Care: ☐ Active Military ☐ Public ☐ Private

Location Where Acquired *(if other than county of residence)* ☐ SAME

***Required Information for Codes 6, 9, 13, 23, 25, 27, 38, 54, 55, 61, 68, 74, 200, TB:**

Causative Organism: ___
[Encephalitis, arboviral (**9**), Other Foodborne Disease (**13**), Viral Hemorrhagic Fever (**68**)]

Serotype: ___
[Vibrio cholera (**6**), Hemophilus influenzae (**23**), Meningitis, Pneumococcal (**25**), Meningococcus (**27**), Salmonella (**38**), Vibrio, other (**55**)]

Site of Infection: ___
[Hemophilus influenzae (**23**), Meningococcus (**27**), Vibrio vulnificus (**54**), Group A Strep. (**61**), Staph. aureus reduced suscept. to Vancomycin (**74**), Chlamydia (**200**), Tuberculosis (**TB**)]

COMMENTS:

Patient is: ☐ Child or Worker in Day Care ☐ Parent of Child in Day Care ☐ Foodhandler ☐ Health Care Worker ☐ None of Above

State/LHD Use Only: outbreak related: ☐ no ☐ yes; specify: ___

Parent or Guardian *(of minors)*

Reported By *(Full Name **and** Title)*

Agency and Address

Attending Physician *(if not individual reporting case)*

Address | Phone ___/___-___

Surveillance Form ☐ Completed ☐ Not Required | Case Investigation No.

Local Health Director's Signature or Stamp | Clinic No.

DHHS 2124 (Revised 12/04) EPIDEMIOLOGY

Surveillance Form Required

PLEASE ENTER CODE NUMBER IN BLOCK ON FRONT OF CARD

*Add'l Information Required on Other Side of Card

CDC BIOTERRORISM - CATEGORY A

REPORT IMMEDIATELY TO LOCAL HEALTH DEPARTMENT

ANTHRAX	***3***
BOTULISM	***10***
PLAGUE	***29***
SMALLPOX	***69***
TULAREMIA	***43***
VIRAL HEMORRHAGIC FEVER	****68***

OTHER REPORTABLE COMMUNICABLE DISEASES

ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)	950
BRUCELLOSIS	5
CAMPYLOBACTER INFECTION	***50***
CHOLERA	****6***
TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHIES (CJD/vCJD)	66
CRYPTOSPORIDIOSIS	***56***
CYCLOSPORIASIS	***63***
DENGUE	7
DIPHTHERIA	***8***

OTHER REPORTABLE COMMUNICABLE DISEASES (continued)

E. COLI, SHIGA TOXIN-PRODUCING INFECTION (including E.coli O157:H7)	***53***
EHRLICHIOSIS, GRANULOCYTIC	571
EHRLICHIOSIS, MONOCYTIC (*E.chaffeensis*)	572
EHRLICHIOSIS, UNSPECIFIED	573
ENCEPHALITIS, ARBOVIRAL (CAL, EEE, WNV, OTHER)	*9
FOODBORNE DISEASE:	
C. perfringens	***11***
STAPHYLOCOCCAL	***12***
OTHER or UNKNOWN	****13***
HANTAVIRUS INFECTION	67
HEMOLYTIC UREMIC SYNDROME	***59***
HEMOPHILUS INFLUENZAE, INVASIVE DISEASE	****23***
HEPATITIS A	***14***
HEPATITIS B, ACUTE	***15***
HEPATITIS B CARRIER	115
HEPATITIS B, PERINATAL	***116***
HEPATITIS C, ACUTE	60
HIV INFECTION	900
INFLUENZA DEATH (<18 yrs old)	***73***
LEGIONELLOSIS	18
LEPROSY (HANSEN DISEASE)	19
LEPTOSPIROSIS	20
LISTERIOSIS	***64***
LYME DISEASE	51
MALARIA	21
MEASLES	***22***
MENINGITIS, PNEUMOCOCCAL	*25
MENINGOCOCCAL DISEASE	****27***
MONKEYPOX	***72***
MUMPS	28
POLIO, PARALYTIC	***30***
PSITTACOSIS	31
Q FEVER	32
RABIES, HUMAN	***33***
ROCKY MOUNTAIN SPOTTED FEVER	35
RUBELLA	***36***
RUBELLA CONGENITAL SYNDROME	37
SALMONELLOSIS	****38***
S.A.R.S. (Coronavirus infection)	***71***
SHIGELLOSIS	***39***
STAPH. AUREUS, REDUCED SUSCEPT. TO VANCOMYCIN	****74***
STREPTOCOCCAL INFECTION, GROUP A, INVASIVE DISEASE	*61
TETANUS	40
TOXIC SHOCK SYNDROME	41
TOXIC SHOCK SYN., STREPTOCOCCAL	65
TOXOPLASMOSIS, CONGENITAL	62
TRICHINOSIS	42
TUBERCULOSIS	****TB***
TYPHOID, ACUTE	***44***
TYPHOID CARRIER	144
TYPHUS, EPIDEMIC (louse-borne)	46
VACCINIA	***70***
VIBRIO INFECTION, OTHER	****55***
VIBRIO VULNIFICUS	****54***
WHOOPING COUGH (PERTUSSIS)	***47***
YELLOW FEVER	48

SEXUALLY TRANSMITTED DISEASES

REPORT WITHIN 24 HOURS

SYPHILIS	
PRIMARY (lesion present)	710
SECONDARY (skin or mucosal lesions)	720
EARLY LATENT (< 1 yr)	730
LATENT, UNKNOWN DURATION	740
LATE LATENT (> 1 yr)	745
LATE WITH SYMPTOMS	750
NEUROSYPHILIS	760
CONGENITAL	790
GONORRHEA	
GENITO-URINARY (non-PID)	300
OPHTHALMIA NEONATORUM	345
CHANCROID	100
GRANULOMA INGUINALE	500

OTHER STDs — REPORT WITHIN 7 DAYS

CHLAMYDIA – Lab confirmed	*200
LYMPHOGRANULOMA VENEREUM	600
Other than lab-confirmed CHLAMYDIA: NONGONOCOCCAL URETHRITIS (NGU)	400
PELVIC INFLAMMATORY DISEASE	490

Report within 24 hours for diseases in ***Bold Italics***, and 7 days for all other diseases.

Disease Specific Surveillance Form

This questionnaire is authorized by law (Public Health Service Act, 42 USC 241). Although response to the questions is voluntary, cooperation of the patient is necessary for the study and control of the disease. Public burden for this collection of information is estimated to average 25 minutes per response. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to PHS Reports Clearance Officer; ATTN: PRA; Hubert H. Humphrey Bg, Rm 721-H; 200 Independence Ave. SW; Washington, DC 20201, and to the Office of Management and Budget; Paperwork Reduction Project (0920-0009); Washington, DC 20503.

090357

VIRAL HEPATITIS CASE REPORT
FOR REPORTING OF PATIENTS WITH SYMPTOMATIC ACUTE VIRAL HEPATITIS
(SEE CASE DEFINITION ON REVERSE)

STATE GEOGRAPHIC CODE (1) (2) (3) (4) (5)
STATE CASE NO. (8) (9) (10) (11)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Centers for Disease Control
Hepatitis Branch, (A33)
Atlanta, Georgia 30333

CDC CENTERS FOR DISEASE CONTROL

CDC CASE NO. (8) (9) (10) (11)

PATIENT'S LAST NAME (please print clearly) (12-26) | FIRST AND MIDDLE NAME (or initials) | OCCUPATION

STREET ADDRESS | TOWN OR CITY | STATE (Zip Code) | COUNTY (27-36) | COUNTY FIPS CODE (37-40)

AGE (yrs) (41-42) 00 = < 1yr 99 = Unk

DATE OF BIRTH (43-48) __ __ / __ __ / __ __ Mo Day Yr

SEX (49) 1 ☐ Male 2 ☐ Female 9 ☐ Unk

RACE (50) 1 ☐ American Indian or Alaskan Native 2 ☐ Asian or Pacific Islander 3 ☐ Black 5 ☐ White 9 ☐ Unk

ETHNICITY (51) 1 ☐ Hispanic 2 ☐ Non-Hispanic 9 ☐ Unk

Reporting physician's diagnosis (52-53) 1 ☐ Hepatitis A 2 ☐ Hepatitis B 3 ☐ Non-A, Non-B Hepatitis 4 ☐ Hepatitis D (Delta) 5 ☐ Hepatitis Unspecified

DO NOT REPORT CASES OF CHRONIC HEPATITIS OR CHRONIC CARRIERS!!

CLINICAL DATA

	Mo Day Yr
Date of first symptom (54-59)	__ __ / __ __ / __ __
Date of diagnosis (60-65)	__ __ / __ __ / __ __
Was the patient jaundiced? (66)	1 ☐ Yes 2 ☐ No
Was the patient hospitalized for hepatitis? (67)	1 ☐ Yes 2 ☐ No
Did the patient die from hepatitis? (68)	1 ☐ Yes 2 ☐ No

LABORATORY RESULTS

	Pos	Neg	Not Tested/Unk
IgM Hepatitis A antibody (IgM anti-HAV) (69)	1 ☐	2 ☐	9 ☐
Hepatitis B surface antigen (HBsAg) (70)	1 ☐	2 ☐	9 ☐
IgM Hepatitis B core antibody (IgM anti-HBc) (71)	1 ☐	2 ☐	9 ☐
Antibody to Delta (anti-HDV) (72)	1 ☐	2 ☐	9 ☐

For purposes of National Surveillance, ASK ALL OF THE FOLLOWING QUESTIONS FOR EVERY CASE OF HEPATITIS. These questions may help determine where the patient acquired his/her infection. Please refer to the work sheet on the back of the last page for additional questions.

	Yes	No	Unk
During the 2-6 weeks prior to illness			
1. was the patient a child or employee in a nursery, day care center, or preschool? (73)	1 ☐	2 ☐	9 ☐
2. was the patient a household contact of a child or employee in a nursery, day care center, or preschool? (74)	1 ☐	2 ☐	9 ☐
3. was the patient a contact of a confirmed or suspected hepatitis A case? (75)	1 ☐	2 ☐	9 ☐
If yes, type of contact: (76) 1 ☐ Sexual 2 ☐ Household (non-sexual) 3 ☐ Other			
4. was the patient employed as a food handler? (77)	1 ☐	2 ☐	9 ☐
5. did the patient eat raw shellfish? (78)	1 ☐	2 ☐	9 ☐
6. was the patient suspected as being part of a common-source foodborne or waterborne outbreak? (79)	1 ☐	2 ☐	9 ☐
7. did the patient travel outside of the U.S. or Canada? (80)	1 ☐	2 ☐	9 ☐
If yes, where: (81) 1 ☐ So./Central America (including Mexico) 2 ☐ Africa 3 ☐ Caribbean 4 ☐ Middle East 5 ☐ Asia/So. Pacific 6 ☐ Australia/New Zealand 7 ☐ Other_____			
Duration of stay: (82) 1 ☐ 1-3 Days 2 ☐ 4-7 Days 3 ☐ More than 7 Days			
During the 6 weeks-6 months prior to illness			
8. was the patient a contact of a confirmed or suspected acute or chronic hepatitis B or non-A, non-B case? (83)	1 ☐	2 ☐	9 ☐
If yes, type of contact: (84) 1 ☐ Sexual 2 ☐ Household (non-sexual) 3 ☐ Other			
9. was the patient employed in a medical, dental or other field involving contact with human blood? (85)	1 ☐	2 ☐	9 ☐
If yes, degree of blood contact: (86) 1 ☐ Frequent (several times weekly) 2 ☐ Infrequent			
10. did the patient receive blood or blood products (transfusion)? (87)	1 ☐	2 ☐	9 ☐
If yes, specify date(s) received: (88-93) From __ __/__ __/__ __ to __ __/__ __/__ __ (94-99)			
11. was the patient associated with a dialysis or kidney transplant unit? (100)	1 ☐	2 ☐	9 ☐
If yes, (101) 1 ☐ Patient 2 ☐ Employee 3 ☐ Contact of patient or employee			
12. did the patient use needles for injection of street drugs? (102)	1 ☐	2 ☐	9 ☐
13. what was the patient's sexual preference? (103) 1 ☐ Heterosexual 2 ☐ Homosexual 3 ☐ Bisexual 9 ☐ Unk			
14. how many different sexual partners did the patient have? (104) 1 ☐ None 2 ☐ One 3 ☐ 2-5 4 ☐ More than 5 9 ☐ Unk			
15. did the patient have			
dental work or oral surgery? (105) 1 ☐ Yes 2 ☐ No 9 ☐ Unk			
other surgery? (106) 1 ☐ Yes 2 ☐ No 9 ☐ Unk			
acupuncture? (107) 1 ☐ Yes 2 ☐ No 9 ☐ Unk			
tattooing? (108) 1 ☐	2 ☐	9 ☐
an accidental stick or puncture with a needle or other object contaminated with blood? (109) 1 ☐	2 ☐	9 ☐
Has this patient ever received the three dose series of Hepatitis B vaccine? (110) 1 ☐	2 ☐	9 ☐
If yes, what year? (111-112) __ __ AND was the patient tested for antibody within 1-6 months after the last dose? (113) 1 ☐	2 ☐	9 ☐
If yes, was the antibody test: (114) 1 ☐ Pos 2 ☐ Neg 3 ☐ Unknown			

Comments:

Investigator's Name

Date

CDC 53.1 Rev. 8-89 | 1st Copy – Local Health Department | Form Approved OMB No. 0920-0009

Duties of LH Director, CD report

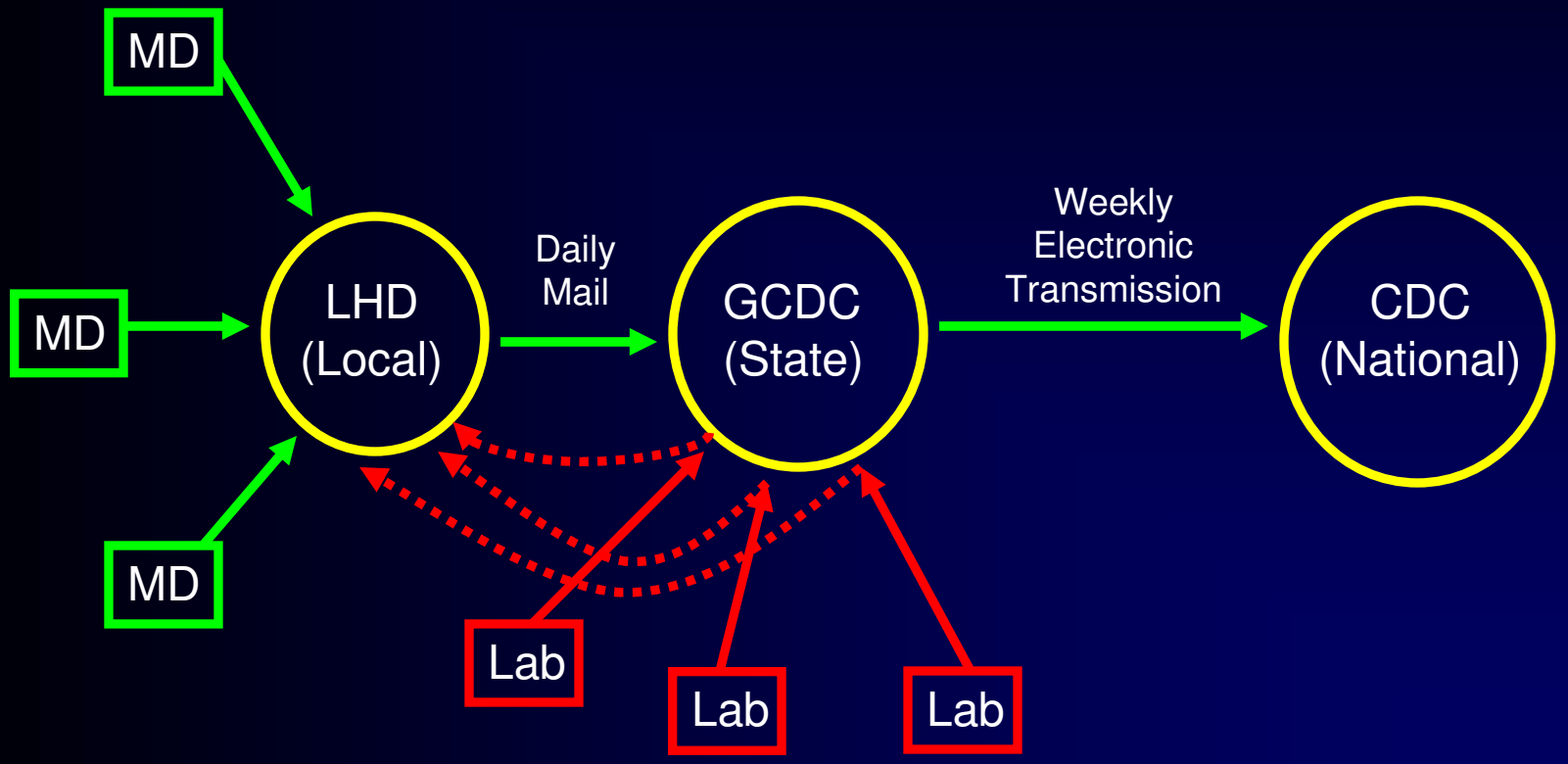
- 10A NCAC 41A .0103 (a) Upon receipt…
- (1) immediately investigate
- (2) determine control measures: needed, given, compliance
- (3) forward report:
  - (C) …to the Division of Public Health within 7 days
  - (D) Forward to other LHD within 24 hours for person residing in another jurisdiction (and send copy to DPH)
  - (E) Forward to DPH within 24 hours for persons residing outside of NC

Flow of Surveillance Information

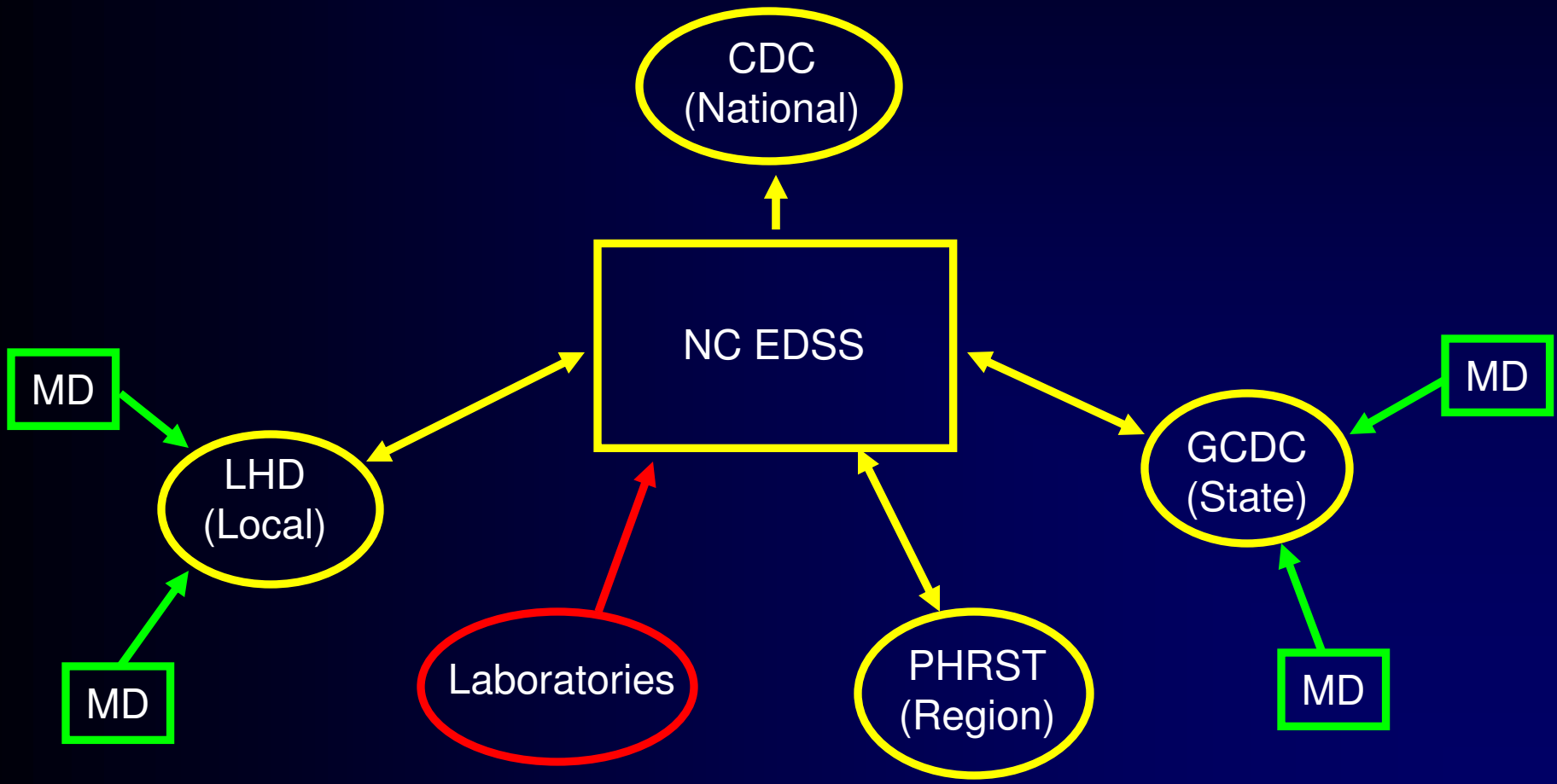
- **Physician**
  - (Phone; mail)
- Local Health Department
  - (Phone; mail)
- State Health Department
  - (Electronic)
- National Surveillance (CDC)

- **Laboratory result**
  - (Mail, fax or electronic)
- State Health Department
  - (Mail, phone, electronic)
- Local Health Department (have physician generate report if case definition criteria are met)

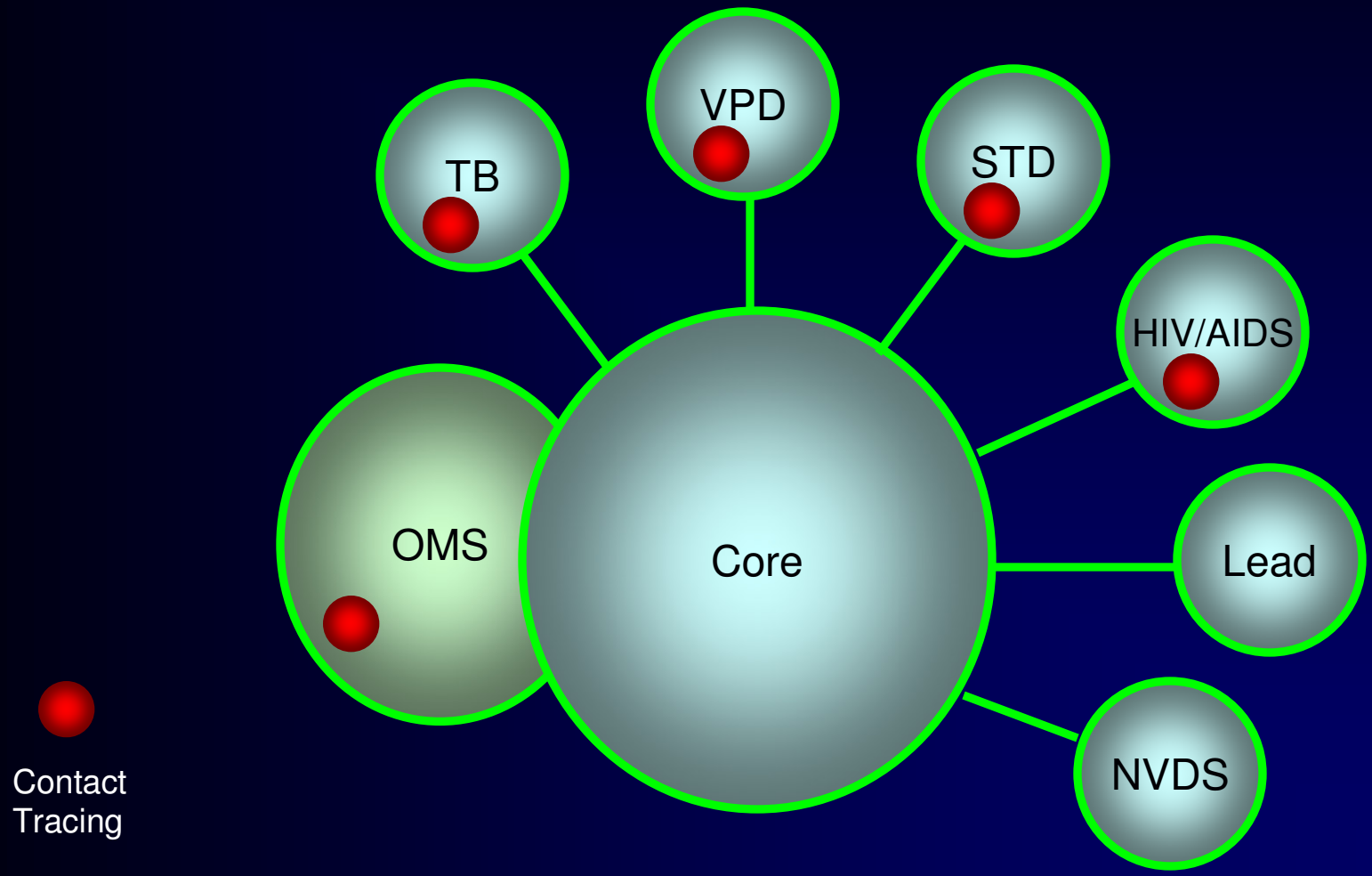
NC Communicable Disease Surveillance
- Current System -



NC Electronic Disease Surveillance
- New System -



Functional Requirements of NC-EDSS



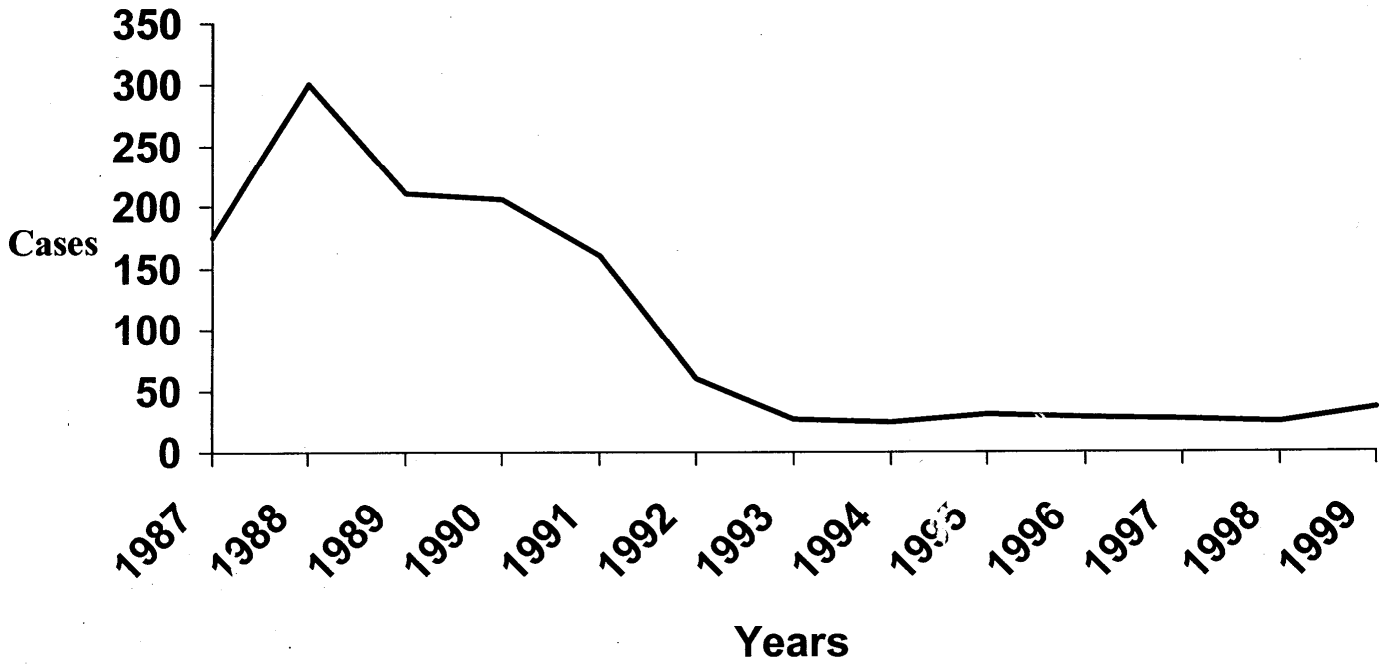
Epidemiologic Surveillance - Analysis

- **Time**:
  - Trend (e.g., are we making progress, where are the needs); Seasonality
  - Background, expected vs. observed: excess?
- **Place**: clustering?
  - Listeriosis in W-S, 1999
  - Hepatitis A: Chapel Hill Winter 98, Meklenburg 2001
- **Person**: Risk factors?
  - Rubella in NC Hispanic population in late 90's
  - Hepatitis A in MSM, NC 2001-2002

Interpretation

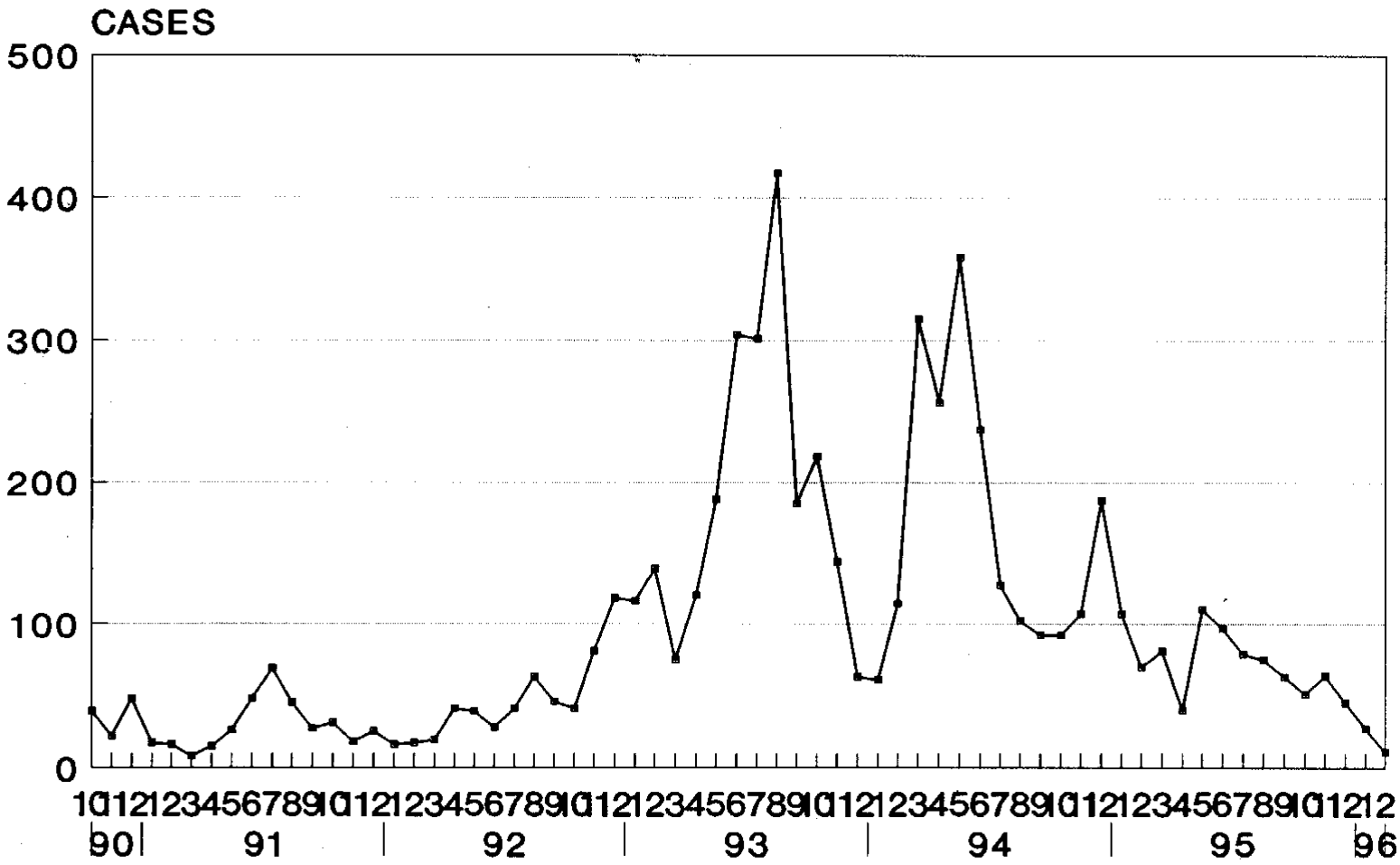
- Taking into account:
  - Population changes
  - Changes in reporting procedure
  - Changes in personnel
  - Scientific progress: diagnostic techniques, control measures
  - … or real change in disease pattern?

Cases of *H. influenza invasive disease reported in NC, 1987 - 1999*



SHIGELLOSIS, NC

Cases per month, by date of ONSET



Cases reported up to 16 MAR 96.

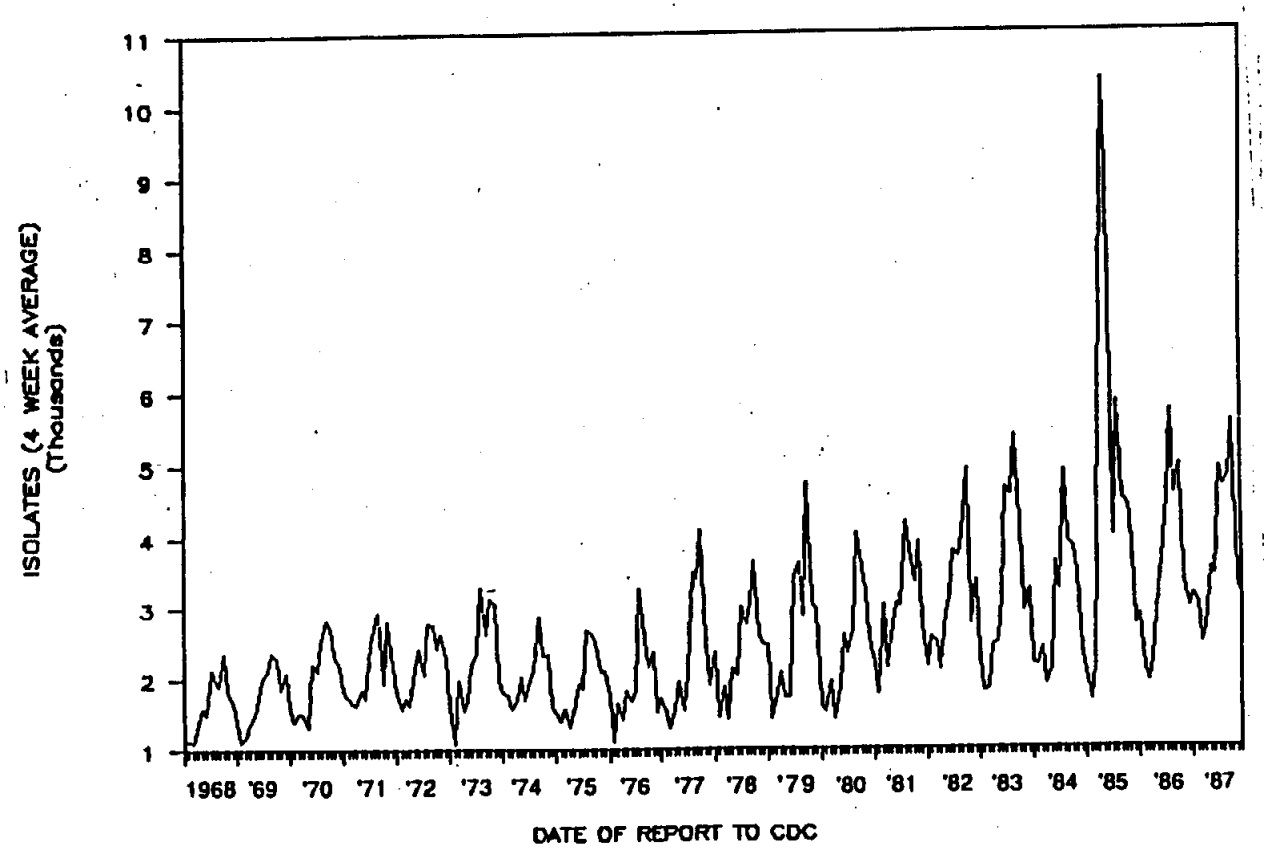
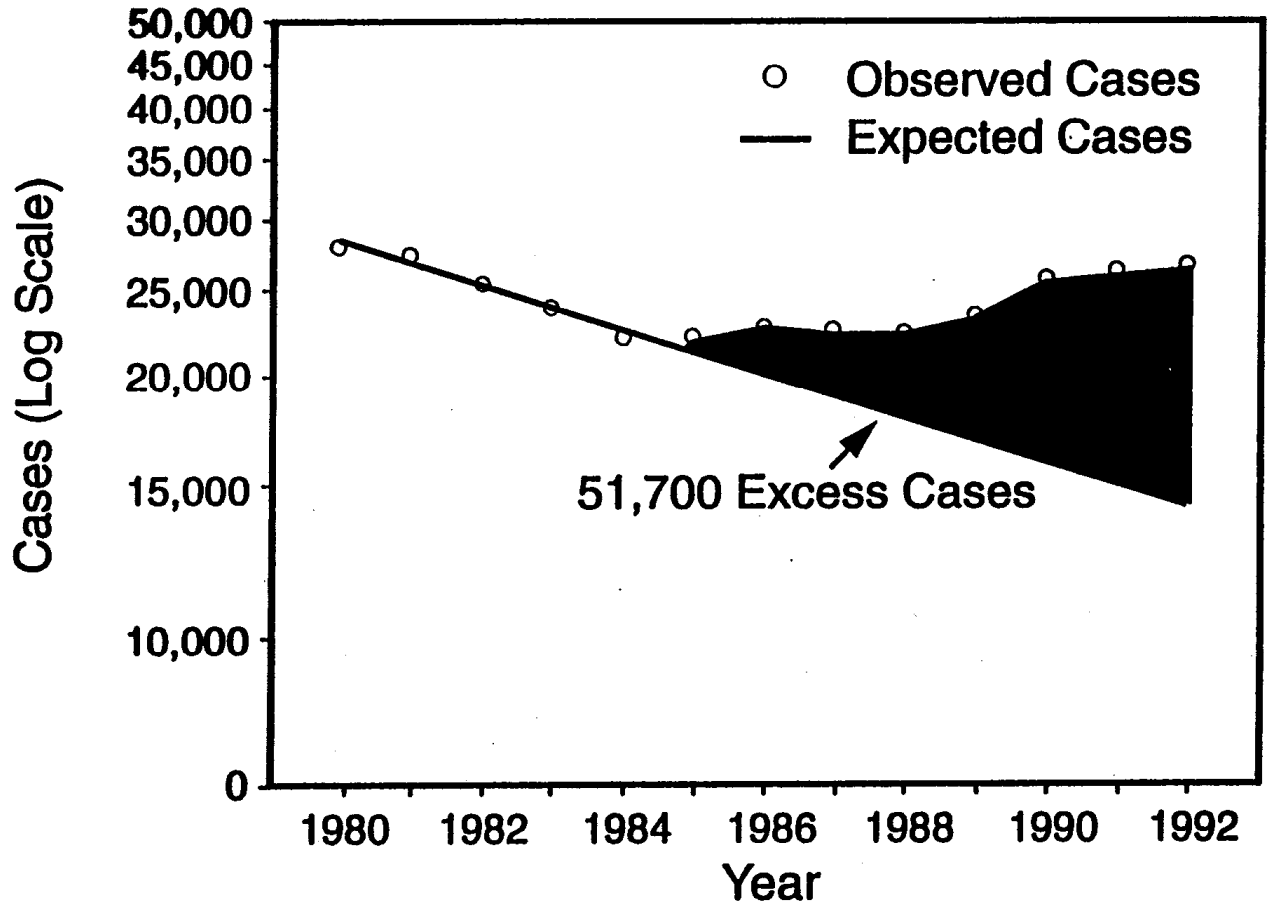


FIG. 3. Reported isolations of salmonellae from humans in the United States, 1968–1987. (Courtesy of Centers for Disease Control, Enteric Diseases Branch, Division of Bacterial Diseases, Atlanta, GA).

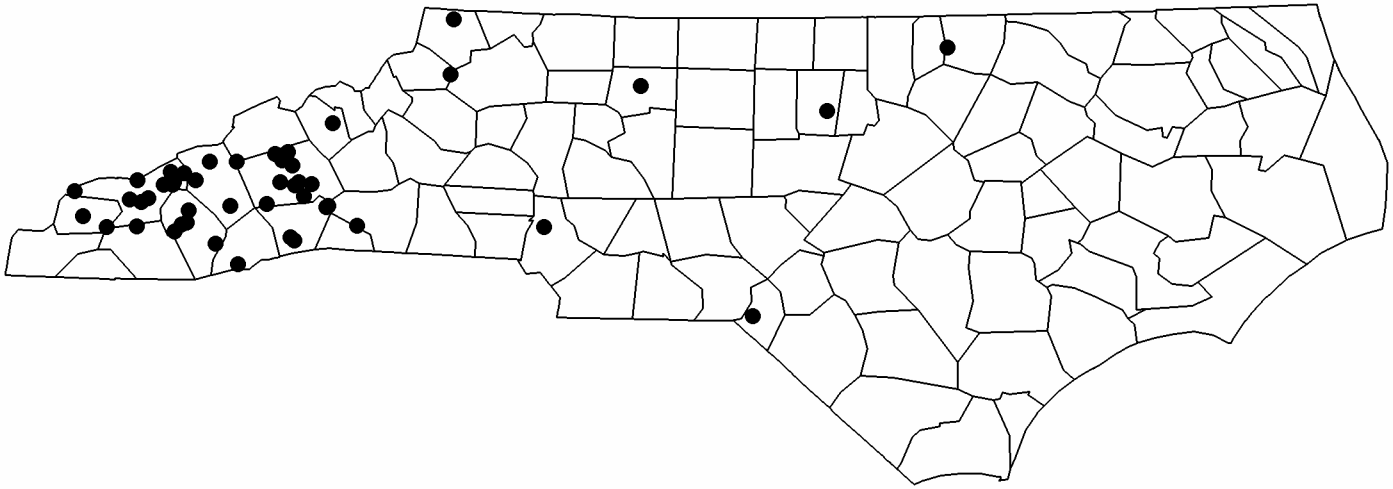
FIGURE 1. Expected and observed number of tuberculosis cases — United States, 1980–1992

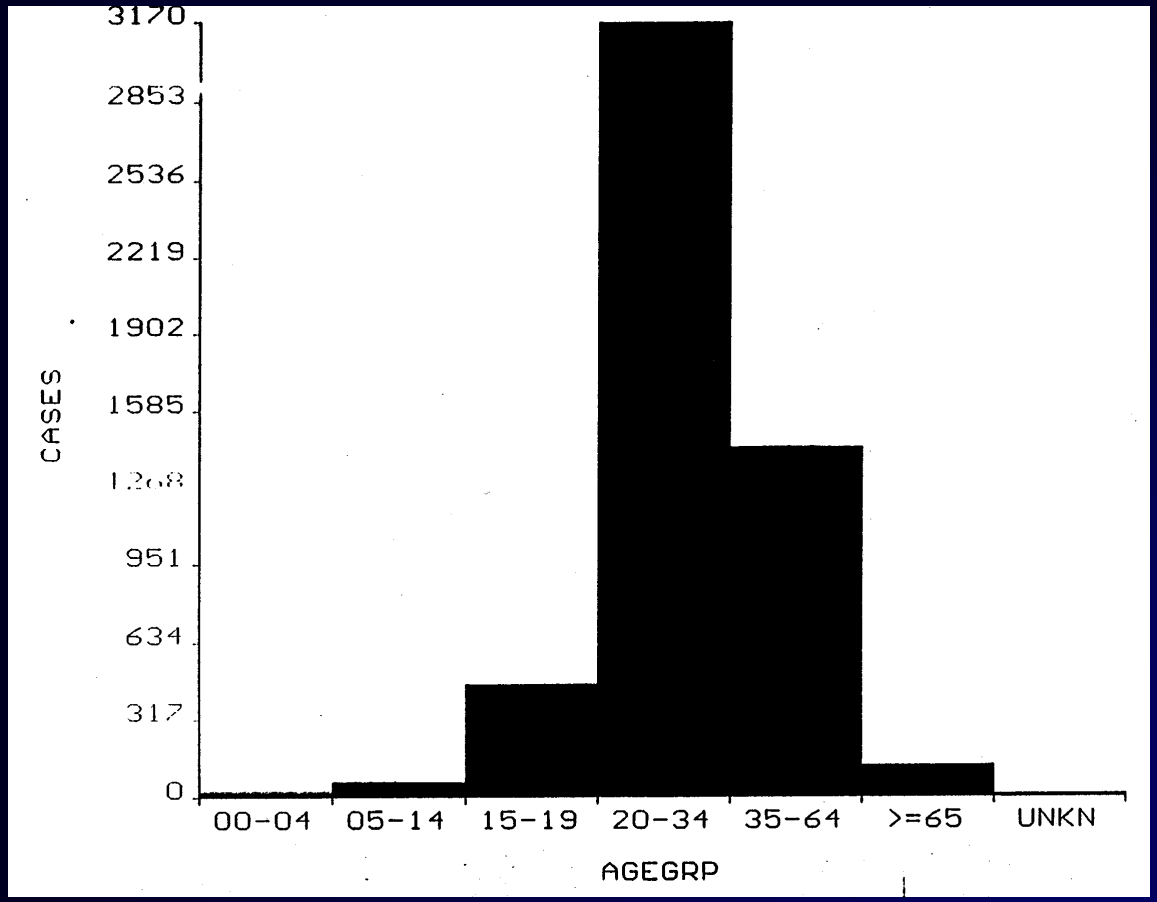


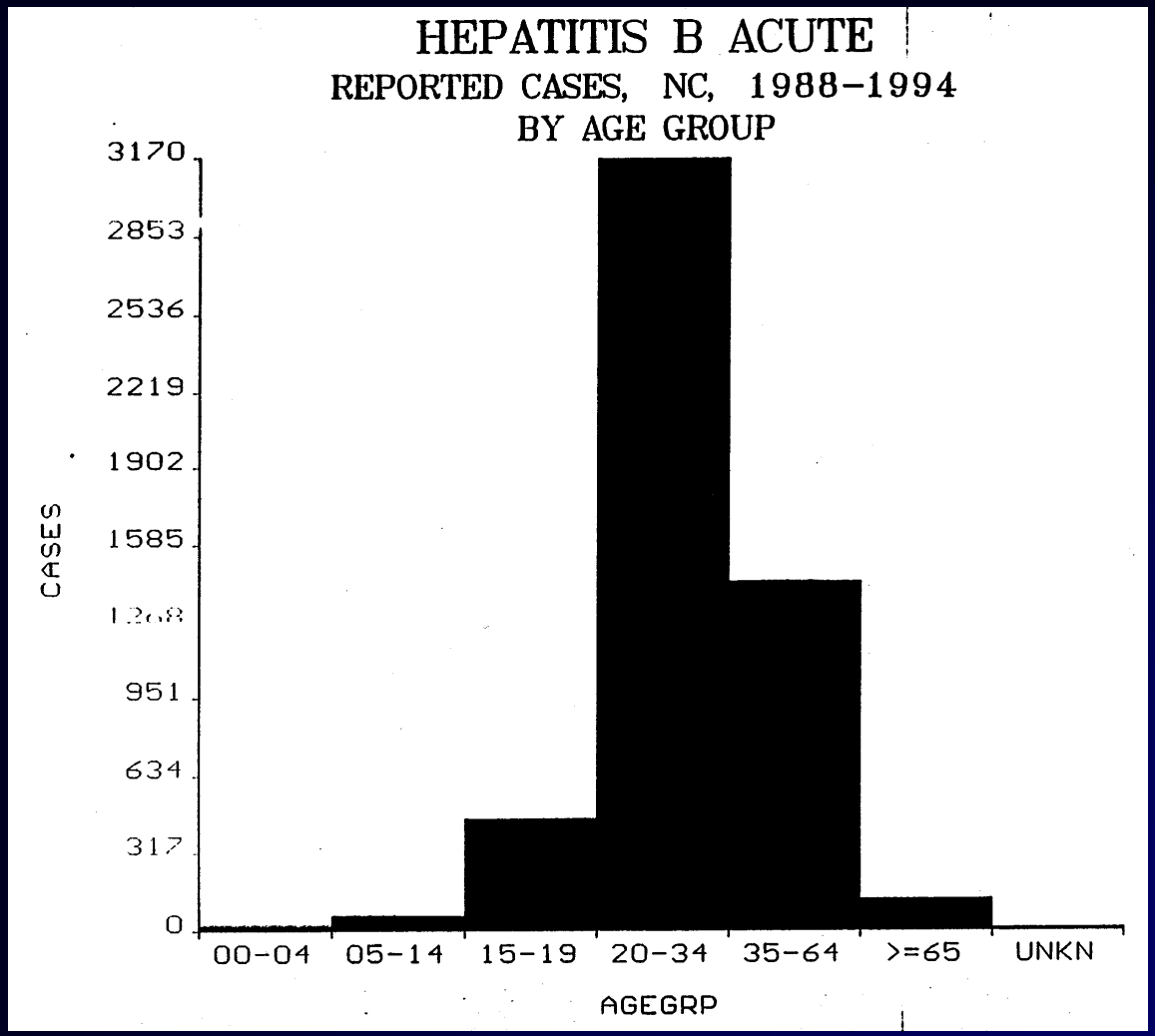
LaCrosse Encephalitis, NC Reported Cases

By Patient County of Residence

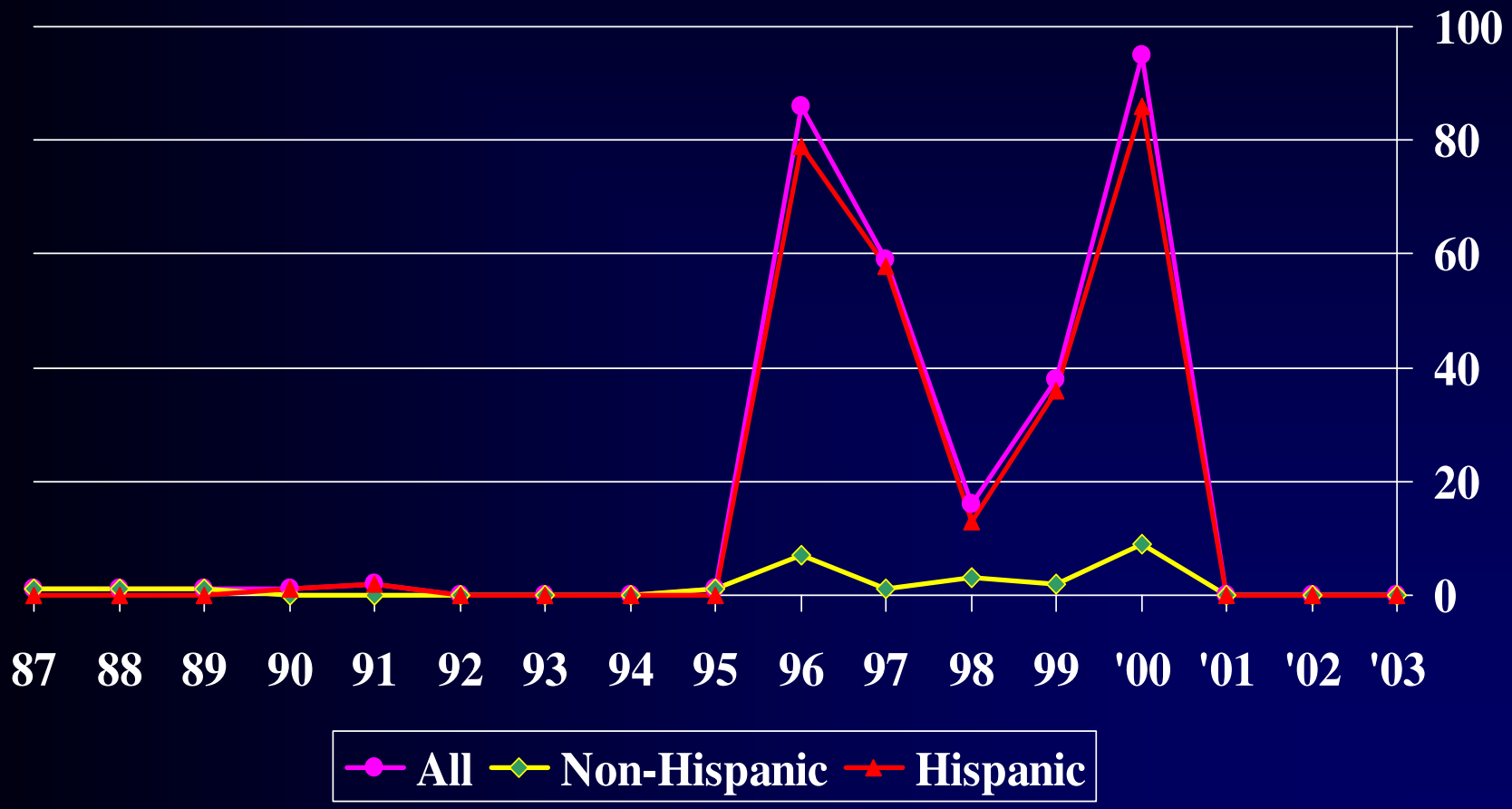
1997–2002 (N=47)




3170
2853
2536
2219
1902
1585
951
634
317
0
CASES
00-04
05-14
15-19
20-34
35-64
>=65
UNKN
AGEGRP

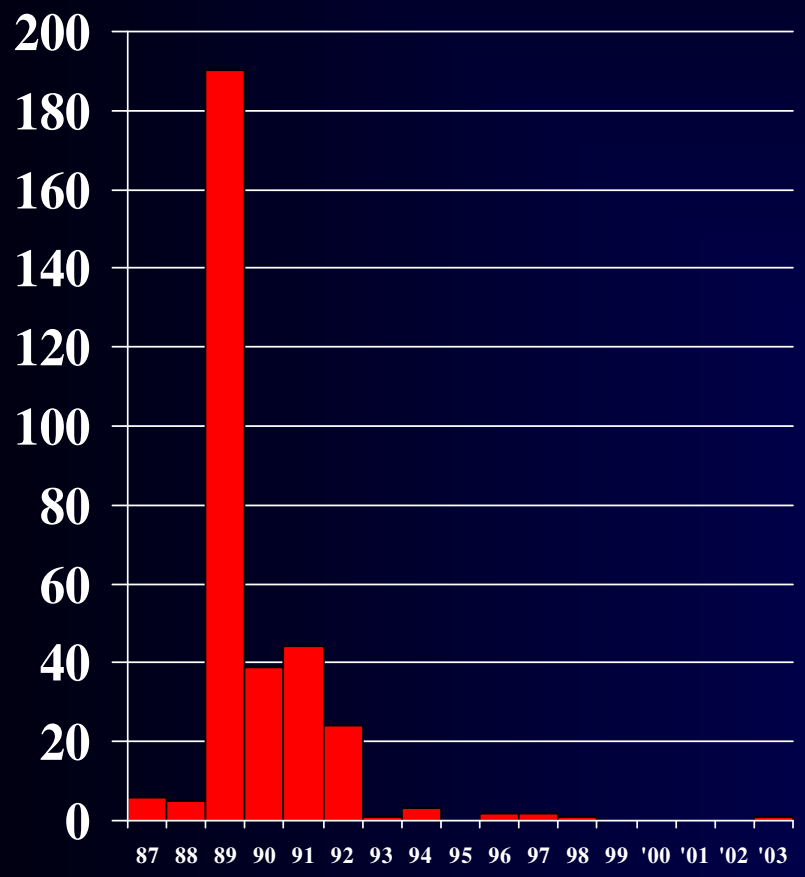

HEPATITIS B ACUTE
REPORTED CASES, NC, 1988-1994
BY AGE GROUP
CASES
3170
2853
2536
2219
1902
1585
951
634
317
0
00-04
05-14
15-19
20-34
35-64
>=65
UNKN
AGEGRP

Rubella - NC 1987-2003



N=301. Hispanic cases: 80% aged 17-29 years old

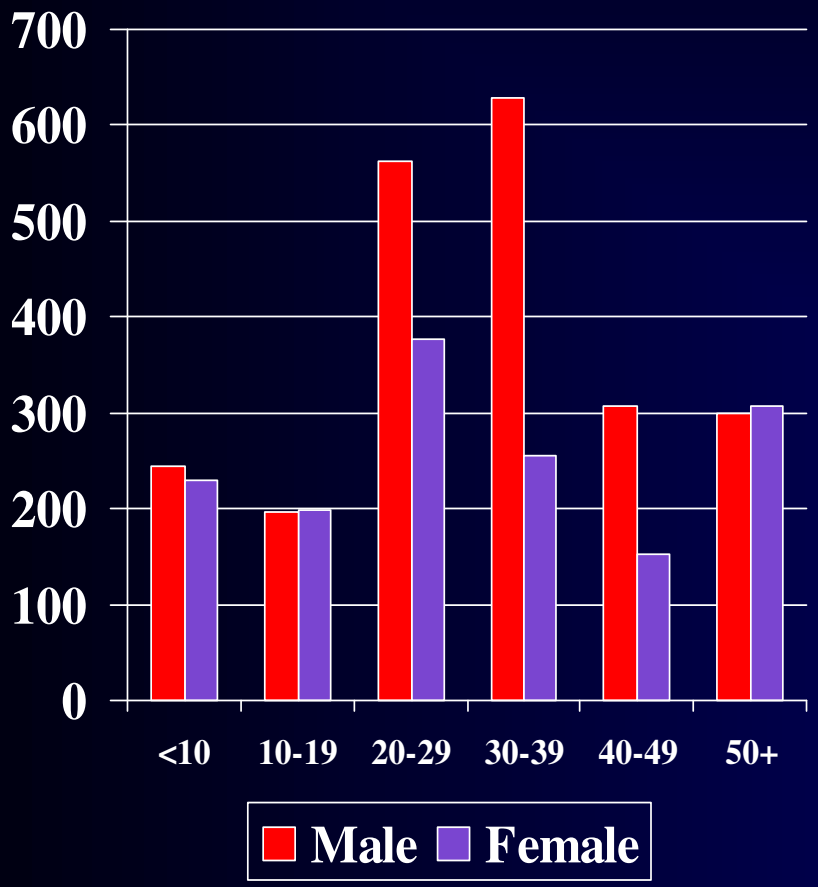
Measles – NC 1987-2003



N=318 Reported Cases - NC 1987-2003

- A vaccine Preventable Disease
- A childhood disease
- Background rate: ~ 0
- 1989 outbreak:
  - Atypical age:
    - 19% aged < 10 y.o.
    - 76% aged 10-24 y.o.
- Use: Policy changes

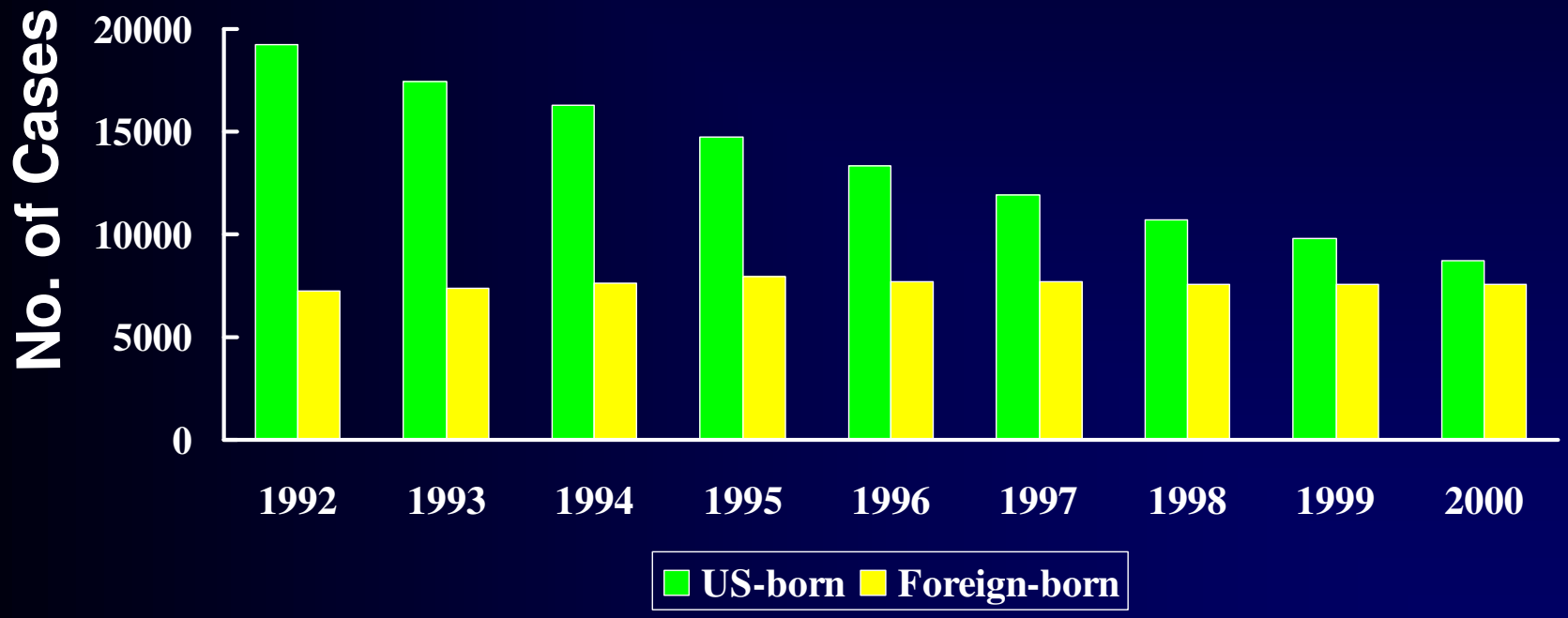
Hepatitis A



- Person-to-person
- Foodborne
- Gender distribution: Male>Female (60%-40%)
- Age/Gender distribution: Young Males, 20-39 y.o.
- Raises the question: STD in MSM

Example of population change

Tuberculosis Cases in US-born vs. Foreign-born Persons United States, 1992-2000



Remember….

- A disease does NOT have to be reportable to be investigable!

  10A NCAC 41A(c)
  Whenever an outbreak of a disease... which is not required to be reported… but which represents a significant threat to the public health, the local health director shall give the appropriate control measures…

Confidentiality

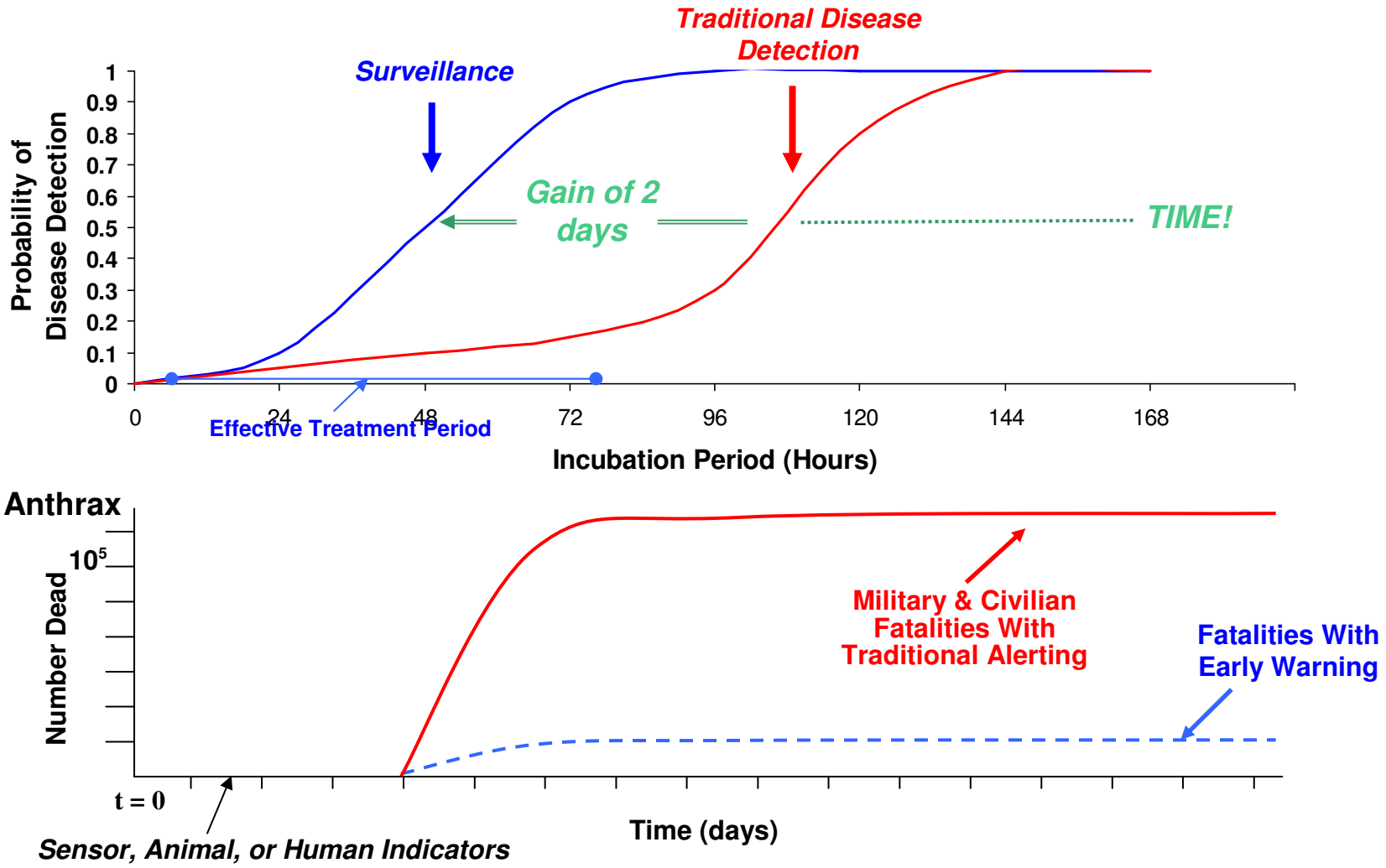
- In general, records that identify a patient specifically are not public records and are to be treated confidentially
- Surveillance data: at what level may a specific case become identifiable?

Confidentiality (continued)

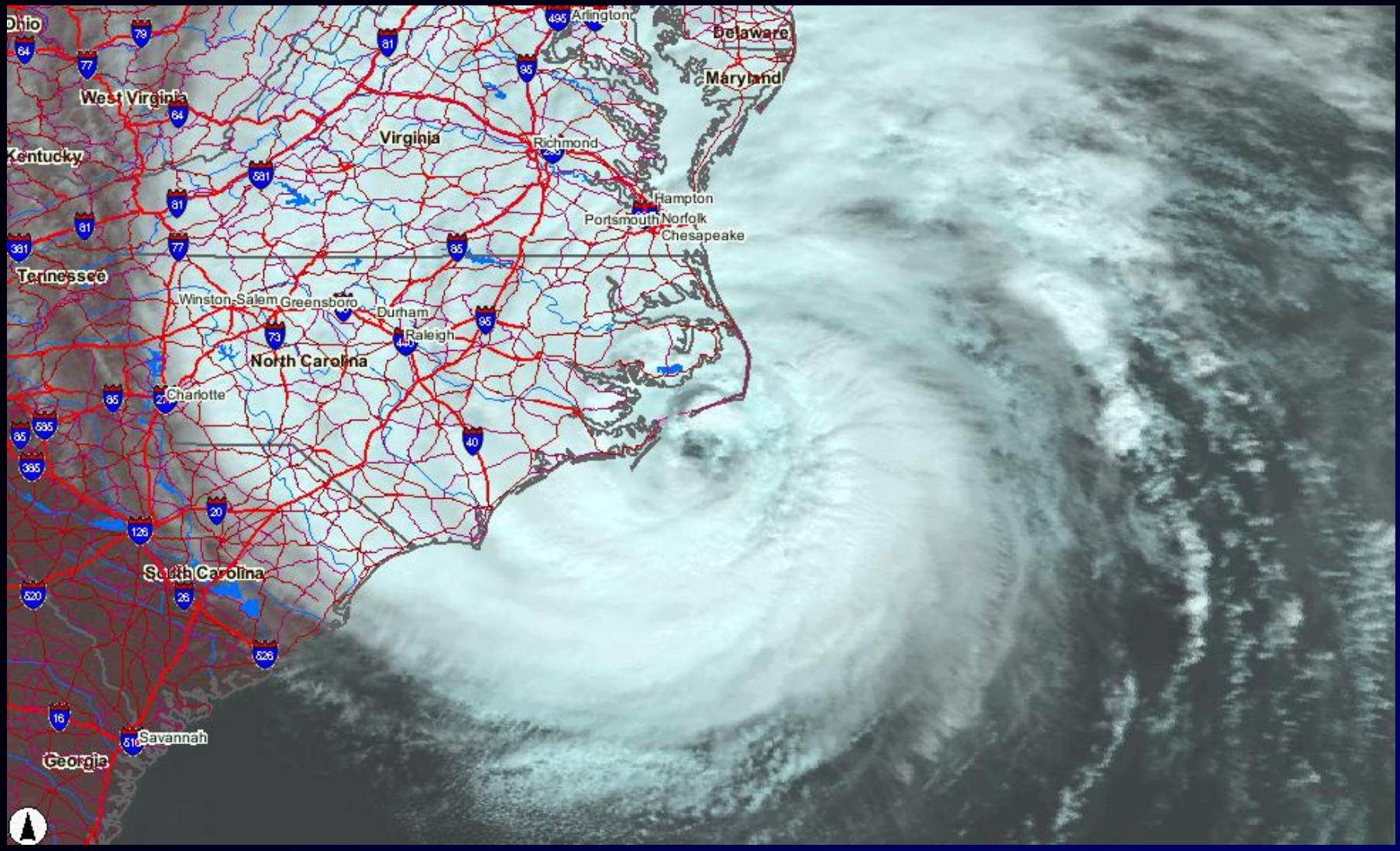
- Exceptions:
  - When necessary for control of a disease representing a significant public health hazard [GS 130A-143(4) and rule .0211]
  - When information is collected by a person other than a physician or nurse, it may not be protectable
  - Others as specified in GS 130A-143

Syndromic/Electronic Surveillance

Traditional vs. Indicator Surveillance in Outbreak Detection

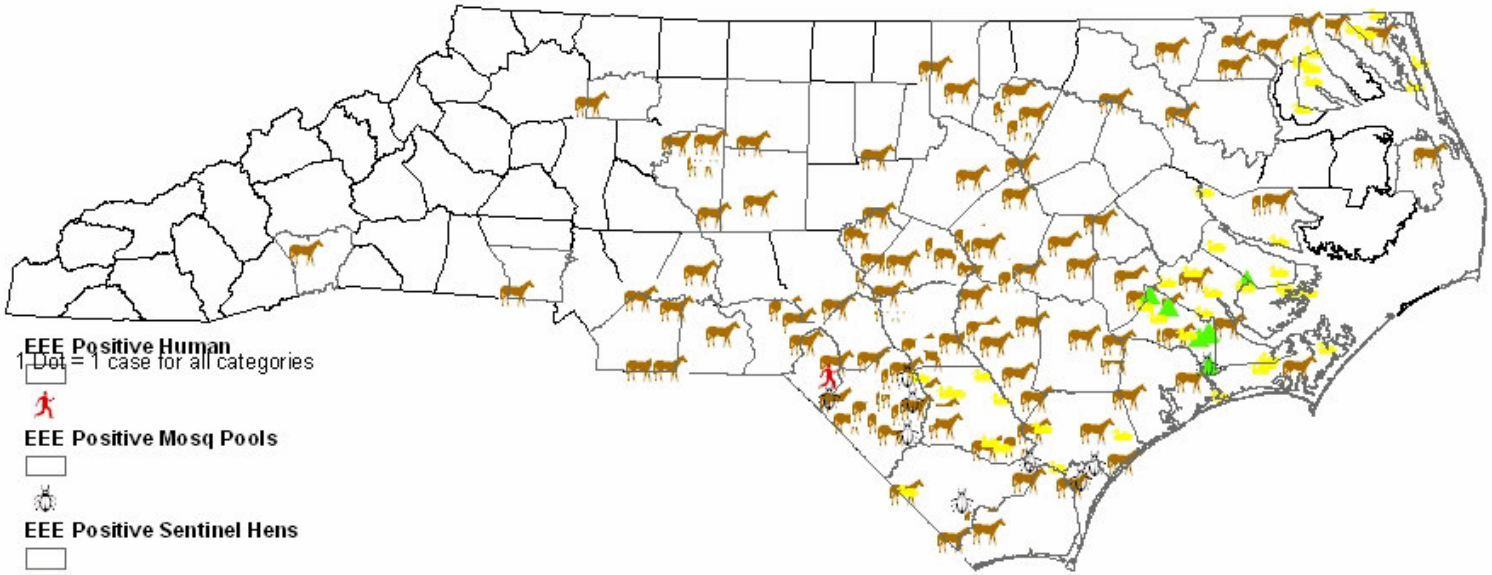


Source: Johns Hopkins University / DoD Global Emerging Infections System


Ohio
West Virginia
Kentucky
Tennessee
Virginia
North Carolina
South Carolina
Georgia
Delaware
Maryland
Arlington
Richmond
Hampton
Portsmouth
Norfolk
Chesapeake
Winston-Salem
Greensboro
Durham
Raleigh
Charlotte
Savannah

2003 NC Arboviral Surveillance

EEE Activity by County



EEE Positive Human
1 Dot = 1 case for all categories

EEE Positive Mosq Pools

EEE Positive Sentinel Hens

EEE Positive Vet (non-equine)

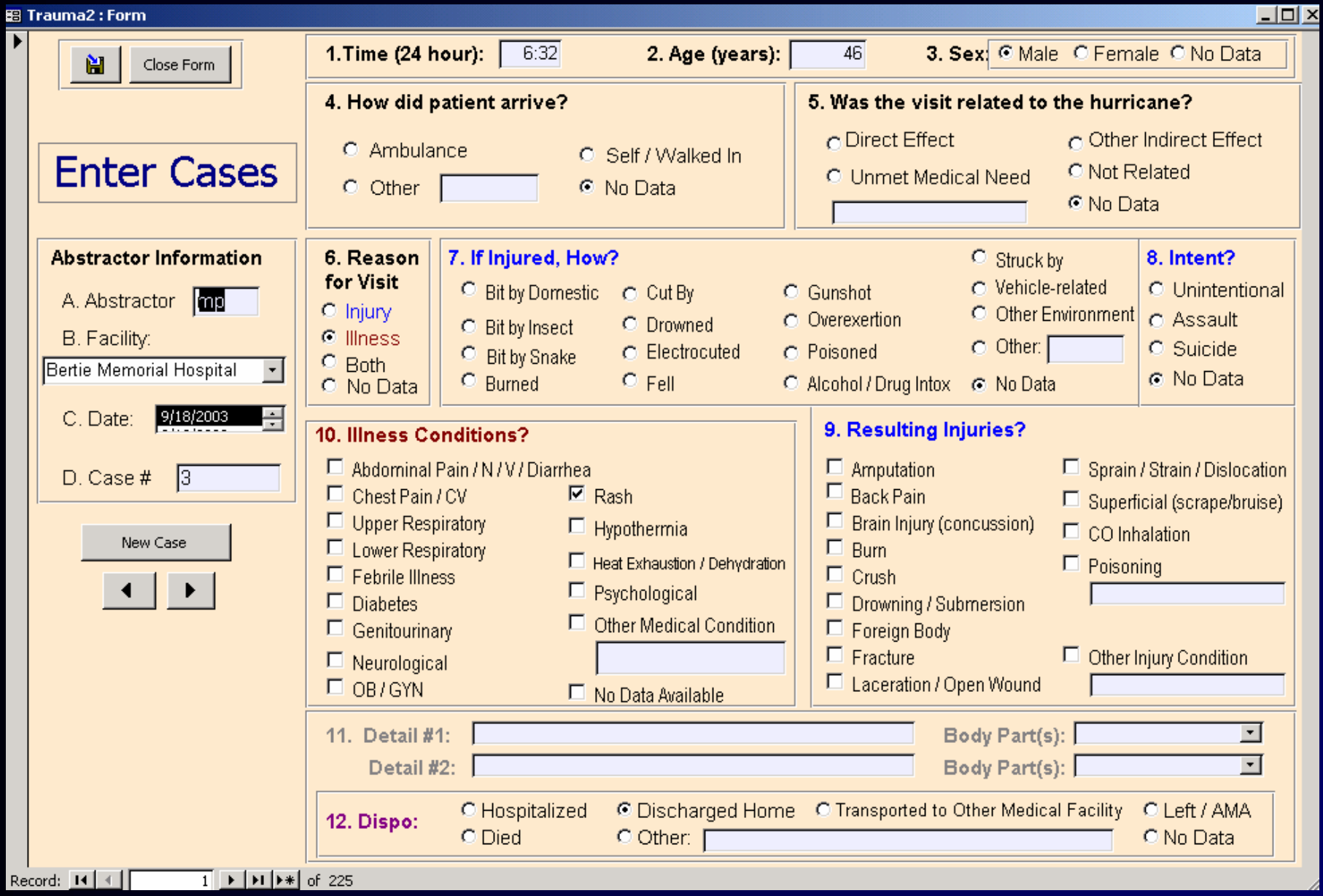
EEE Positive Equine

Total Cases:
Vet - Equine: 113 in 45 counties
Vet - Non-equine: 7 in 2 counties
Mosquito Pools: 9 in 5 counties
Sentinel Chickens: 42 in 11 counties
Humans: 1 in 1 county

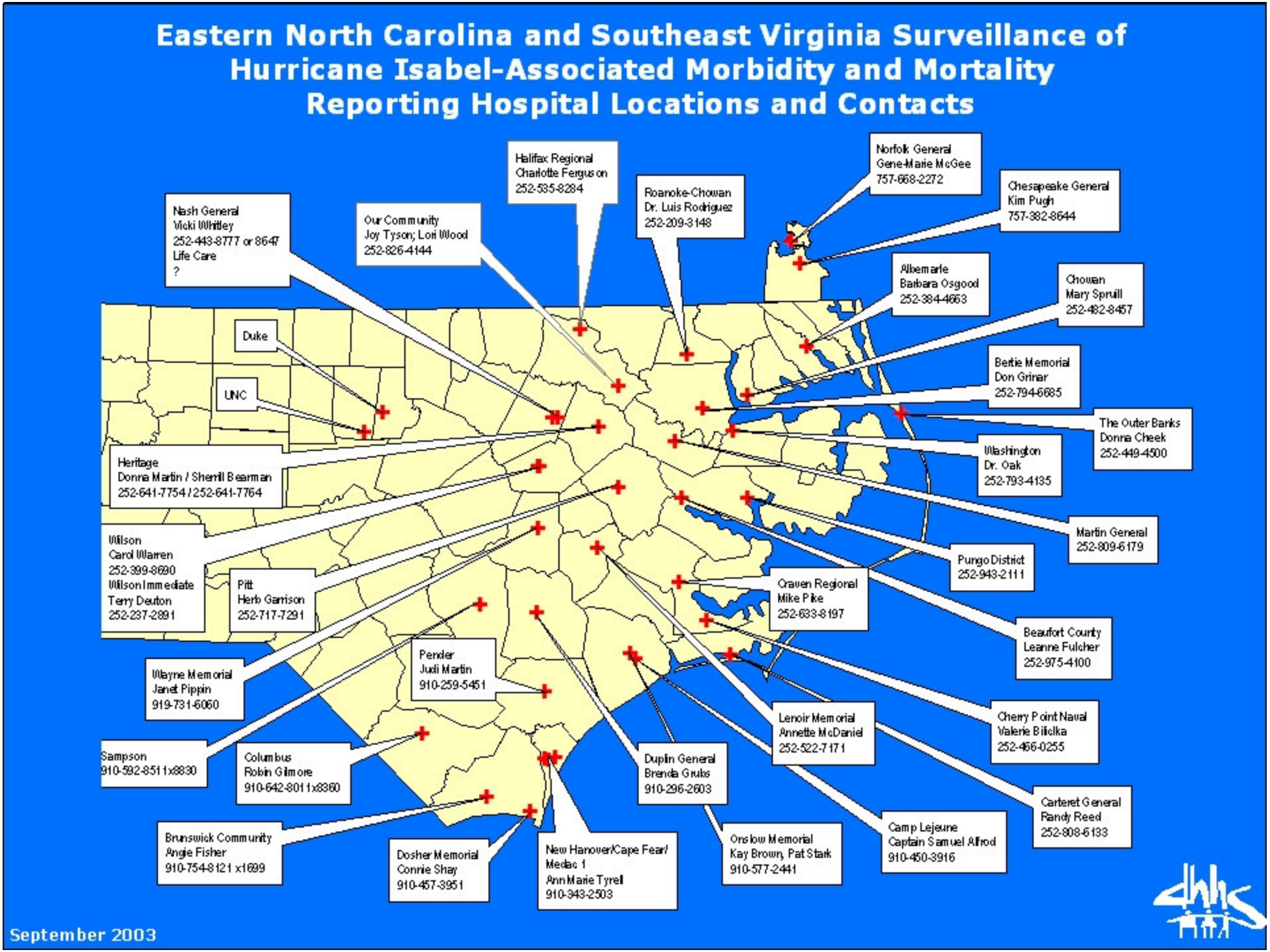
Placement within each county is not geographically accurate within that county.

Data: NC DENR - PHPM, SLPH, Dept. of Ag.
Maps: Marcee Toliver, PHPM
As of 11-10-03

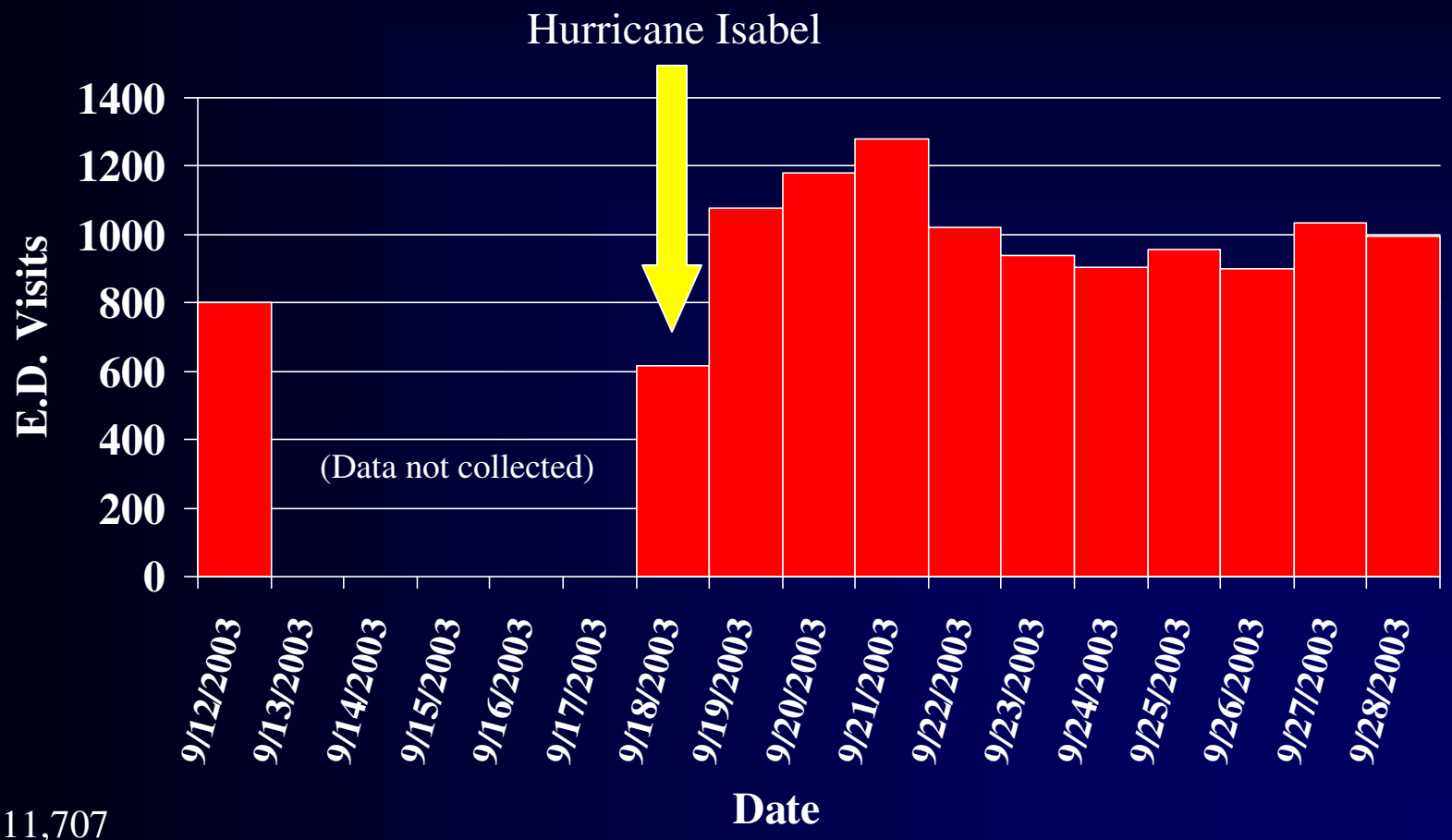
Electronic Data Entry Screen



Eastern North Carolina and Southeast Virginia Surveillance of Hurricane Isabel-Associated Morbidity and Mortality Reporting Hospital Locations and Contacts



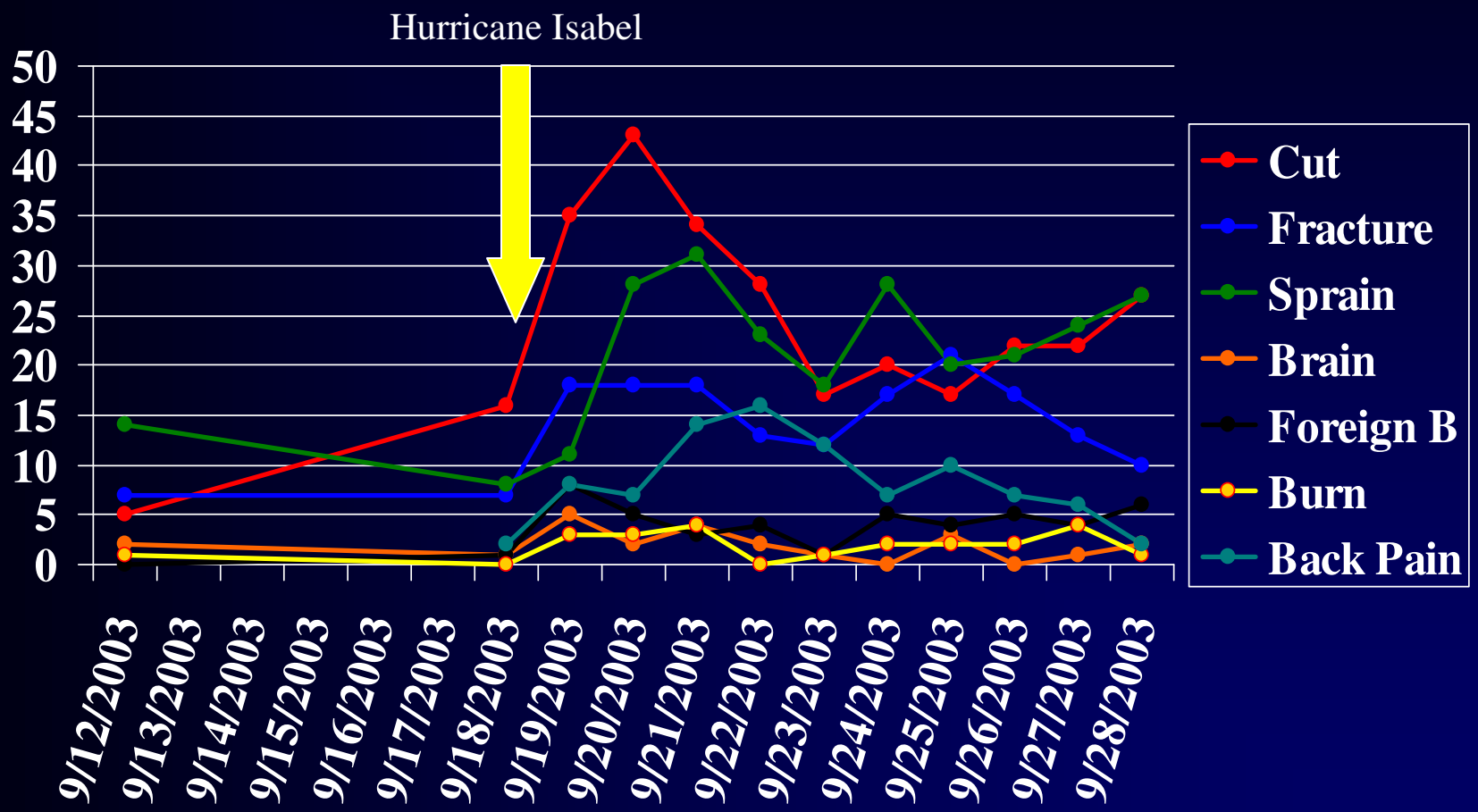
Emergency Department Visits after Hurricane Isabel, NC 9/18/2003



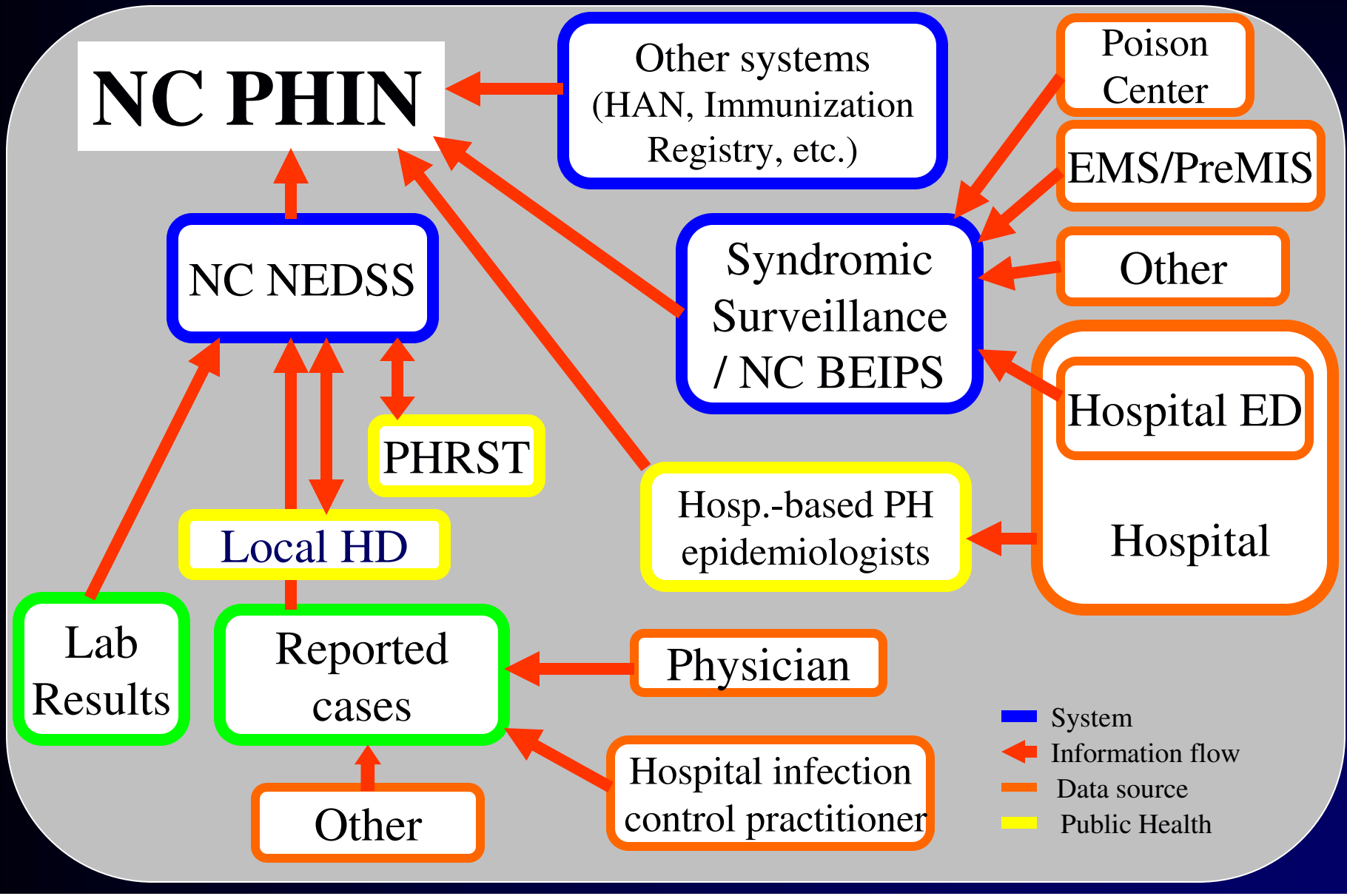
N=11,707

12-day series available from 13 hospitals

Injuries


Hurricane Isabel
50
45
40
35
30
25
20
15
10
5
0
9/12/2003
9/13/2003
9/14/2003
9/15/2003
9/16/2003
9/17/2003
9/18/2003
9/19/2003
9/20/2003
9/21/2003
9/22/2003
9/23/2003
9/24/2003
9/25/2003
9/26/2003
9/27/2003
9/28/2003
Cut
Fracture
Sprain
Brain
Foreign B
Burn
Back Pain

The new web of disease surveillance



Attributes of a Surveillance System

- Timely
- Useful
- Representative
- Acceptable
- Affordable
- “Simple”

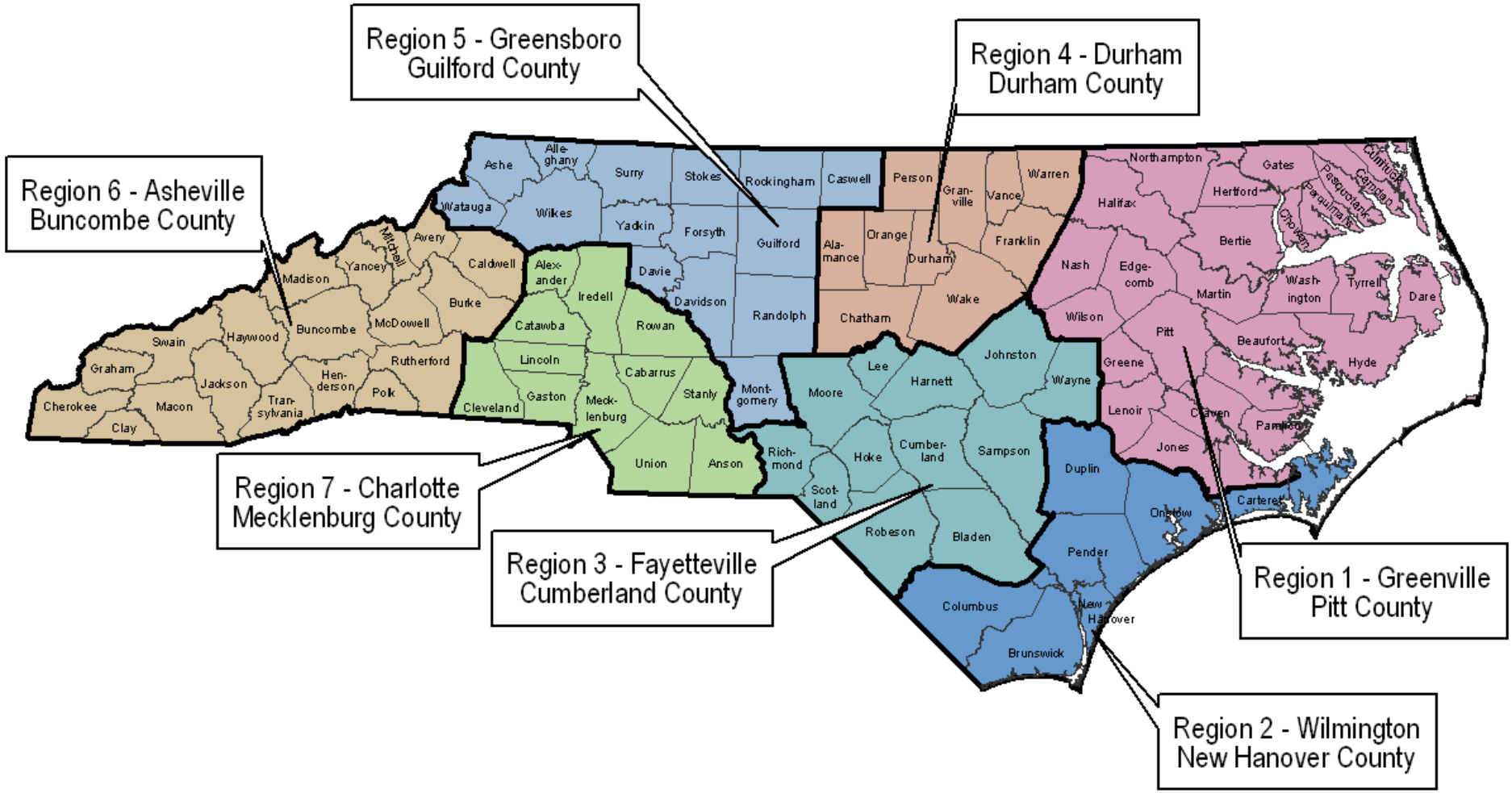
Traditional vs. Enhanced Surveillance

Attribute	**Traditional Passive**	**Enhanced Surveillance**
Timely	Somehow	Yes, automation
Useful	Yes – but limitations (sensitivity, timeliness)	Better sensitivity; Thresholds; Timeliness
Representative	Yes	Yes
Acceptable	Essential for cases to be reported	Agreements with reporting sources, unless mandatory
Affordable	Low cost	Set up expensive
"Simple"	Yes	No, but can be "user friendly"

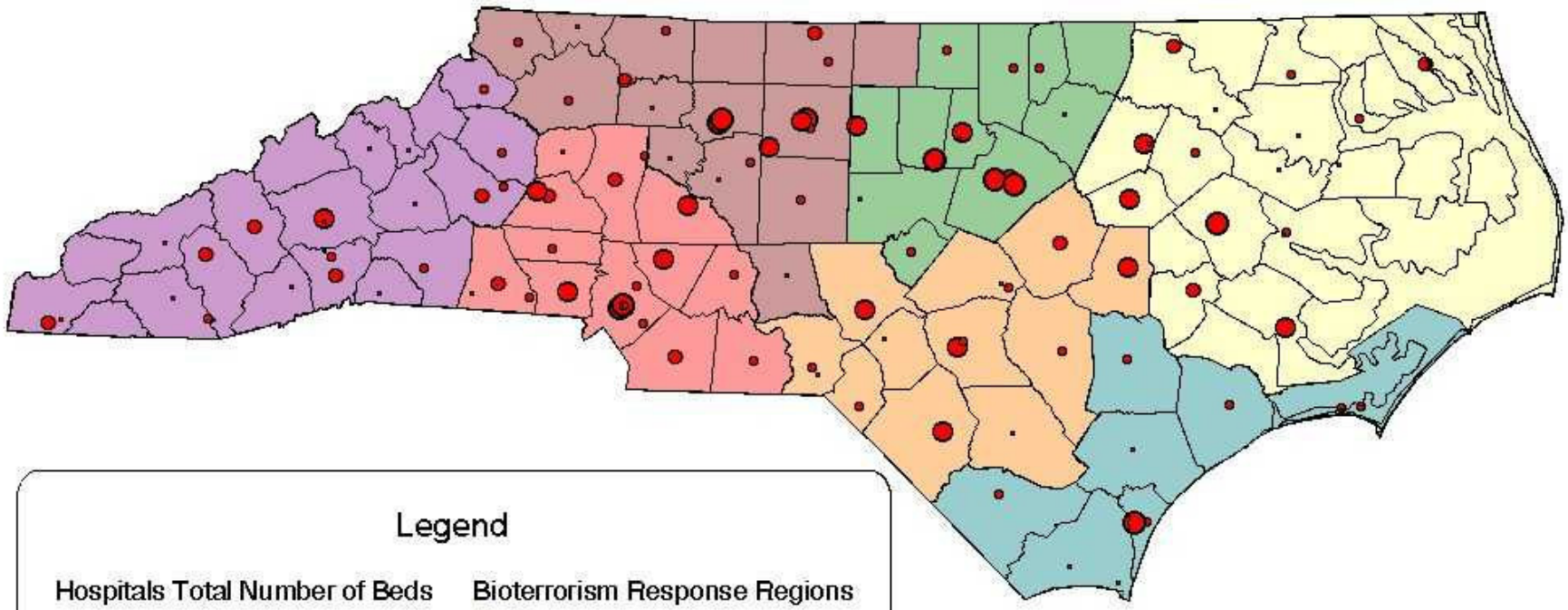
Hospital E.D. Surveillance

- GS 130A-480 and rule .0105
- NCHA contracted for hospitals to provide ED surveillance data, to allow syndromic surveillance
  - Also supported passage of legislation for mandatory reporting of de-identified data
  - Help small hospitals with grants to implement EMRs
- DPH contracting with UNC-NCEDD project to build and deploy this complex system

Public Health Regional Surveillance Teams



North Carolina
Hospitals and Bioterrorism Response Regions



Legend

Hospitals Total Number of Beds

- 1 - 100
- 101 - 175
- 176 - 300
- 301 - 525
- 525 - 920
- County Boundary

Bioterrorism Response Regions

- Region 1 Pitt
- Region 2 New Hanover
- Region 3 Cumberland
- Region 4 Durham
- Region 5 Guilford
- Region 6 Buncombe
- Region 7 Mecklenburg

State Center for Health Statistics

Annual ED Patient Volume

Pitt County Memorial	56,000
New Hanover Regional	71,000
Cape Fear Valley	91,000
Wake Med	119,000
Duke	56,000
UNC	57,000
Moses Cone	102,000
WFU-Baptist	57,000
Mission Hospitals	80,000
Carolina's Medical Center	110,000
VAMC	NA

*Source: NC DHHS, Div. Facilities Services

Hospital Selection for PH Epis

- Geopolitical Considerations
- Region
- ED Volume and Bed Size
- Hospital System or Network
- 11 Hospitals ≈ 60% of NC Acute Care
- 12th position: coordinator at NC SPICE

PHE's Role

- Vital link between Public Health and clinical medicine
  - Active surveillance
  - Investigation
  - Education and outreach

Active Surveillance

- Category A Agents
  - laboratory-based
  - weekly negative reporting
- Syndromes
  - Influenza-like Illness
  - GI syndrome
  - Neurological syndrome
  - Rash + Fever

Hospital-based Public Health Epidemiologists

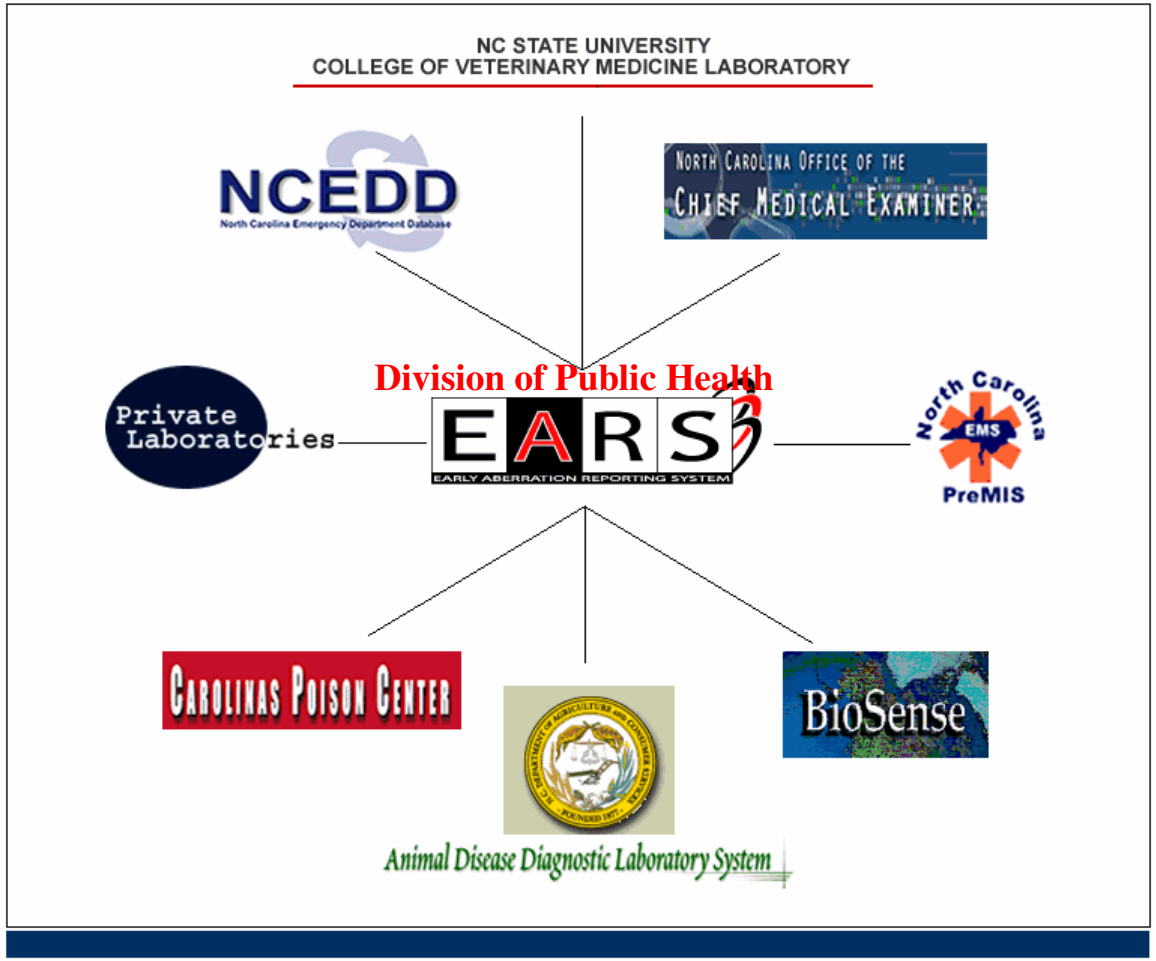
- **Community-Acquired Infection**
  - Outbreaks
  - Cases of special public health interest
  - Biological and chemical terrorism

Investigation

- Coordinate with Public Health
  - Local Health Department
  - PHRSTs
  - NC DPH GCDC Branch
- Outbreaks
  - Norovirus in a hospital ward
- Special interest cases
  - Influenza-associated pediatric encephalopathy

BEIPS North Carolina

North Carolina Bioterrorism and Emerging Infection Prevention System



EARS - NC BEIPS - Microsoft Internet Explorer

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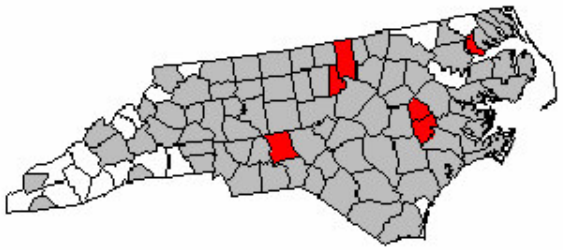
EARS
EARLY ABERRATION REPORTING SYSTEM

NC BEIPS

NC Division of Public Health

GI

Tables Graphs Maps



County	Total Cases	C1 Flag	C2 Flag	C3 Flag
DURHAM	9	X	X	X

COLUMBUS	1	1	0	2	2	4	1
CRAVEN	0	0	0	0	1	3	1
CUMBERLAND	2	2	1	0	1	0	1
CURRITUCK	0	0	0	0	0	0	1
DARE	0	0	0	0	0	0	0
DAVIDSON	0	0	0	2	0	2	0
DAVIE	0	0	0	0	0	3 *C1C2C3*	0
DUPLIN	0	0	0	0	1	2	3 *C1C2C3*
DURHAM	6 *C1C2C3*	1	2	2	2	3	2
ANSON	0	0	0	0	0	0	0
EDGECOMBE	0	0	0	2	0	1	2
FORSYTH	1	1	1	11	15	11	16
FRANKLIN	0	0	0	0	0	2 *C1C2C3*	0
GASTON	0	0	0	0	0	0	0
GRAHAM	0	0	0	0	0	0	0
GRANVILLE	0	0	1 *C1*	0	0	0	0
GREENE	0	0	2 *C3*	4 *C3*	3	2	2
GUILFORD	23	33	31	30	23	32	26
HALIFAX	0	0	0	2	1	1	1
HARNETT	0	0	0	0	0	1	0

My Computer

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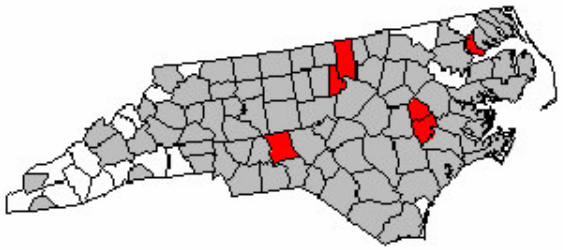
EARS
EARLY ABERRATION REPORTING SYSTEM

NC BEIPS
NC Division of Public Health

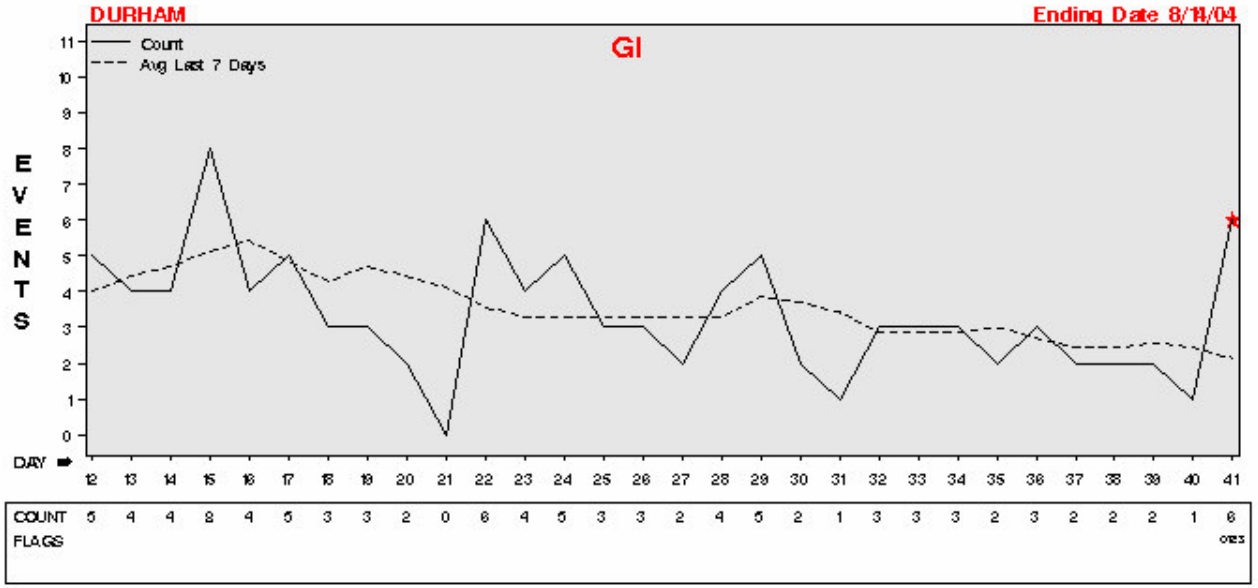
Tables Graphs Maps



County	Total Cases	C1 Flag	C2 Flag	C3 Flag
DURHAM	9	X	X	X

Early Aberration Reporting System (EARS—NH)

NC BEIPS



C1=Mild Sensitivity C2=Moderate Sensitivity C3=Ultra Sensitivity

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Transition slide – to Investigation

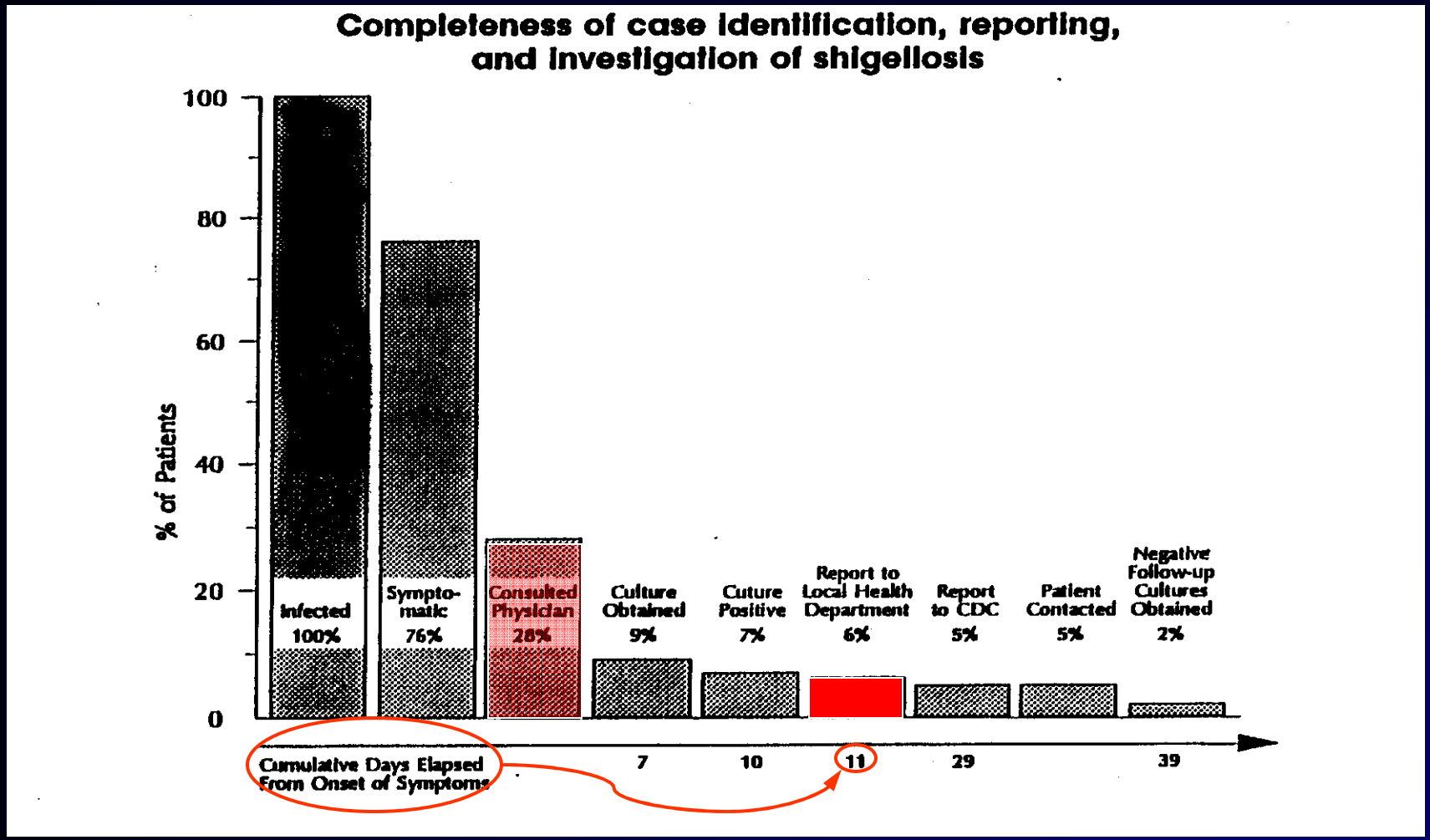
Communicable Disease Investigation

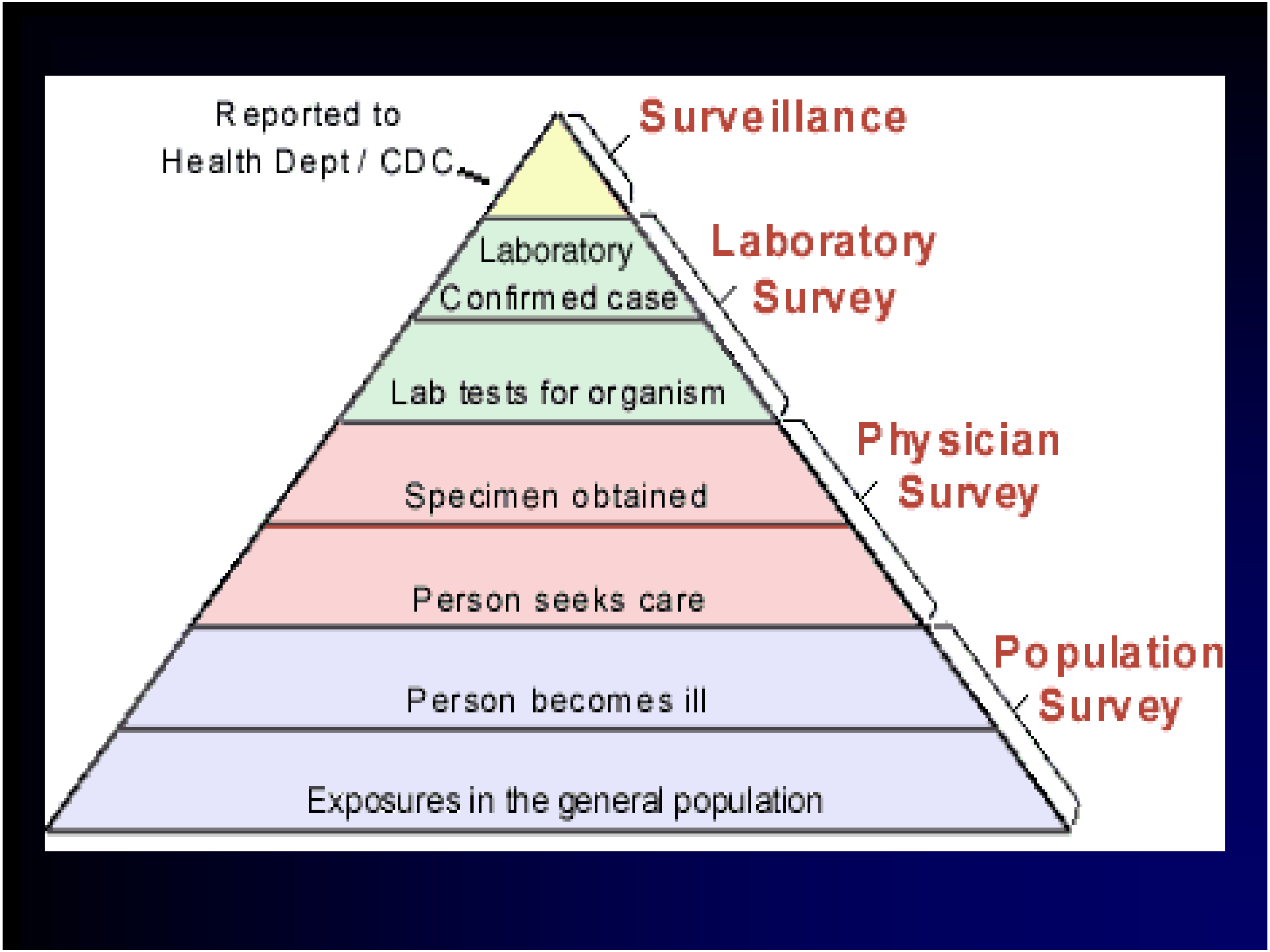
Jean-Marie Maillard
General Communicable Disease Control Branch
Epidemiology Section

Investigation as required by Laws and Rules

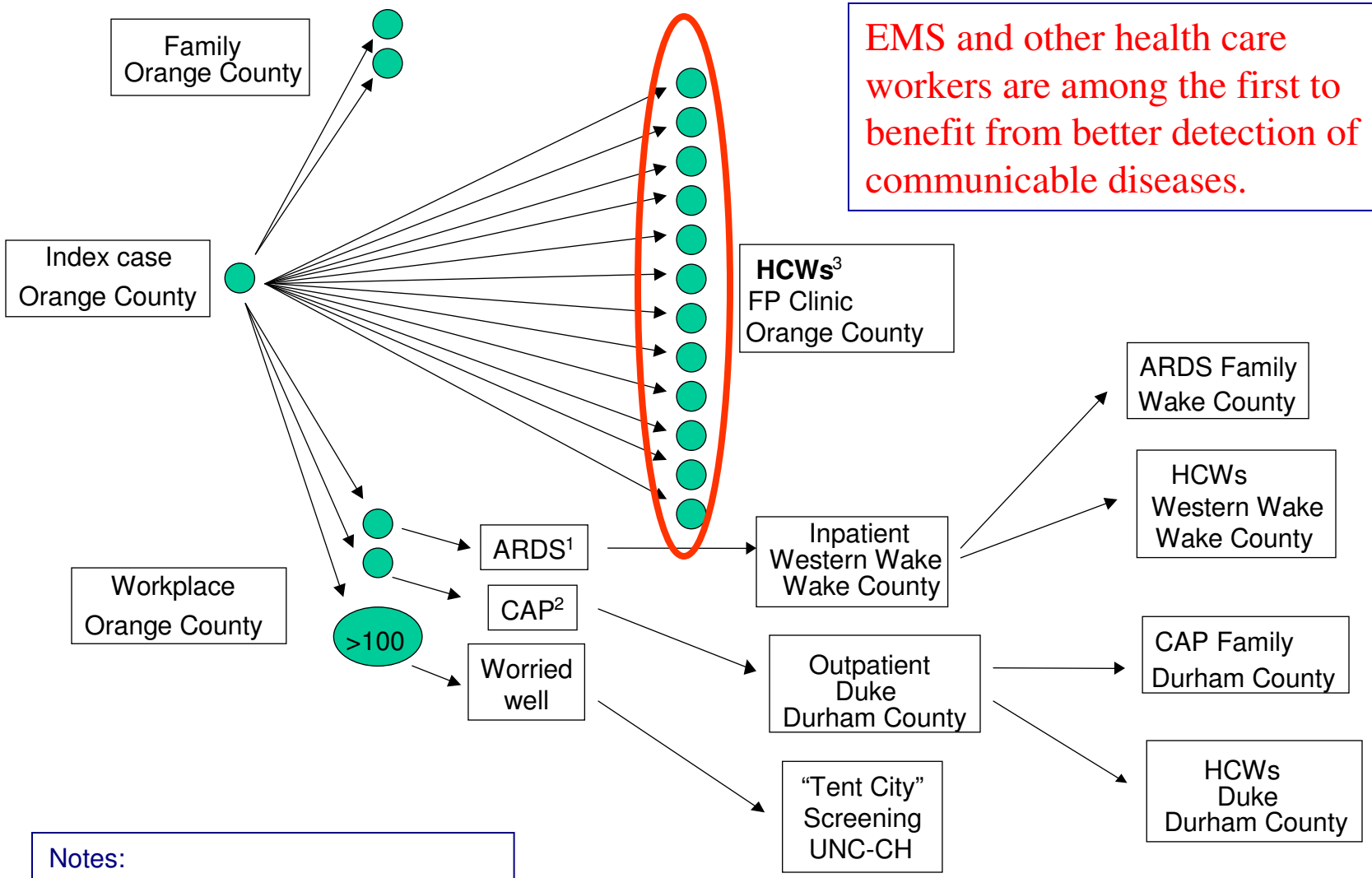
- GS 130A-144(a) The local Health director shall investigate, as required by the Commission, cases of communicable diseases and communicable conditions reported to the local health director…
- 10A NCAC 41A .103 Duties of Local Health Director: (a) Upon receipt of a report… (1) immediately investigate…

"Traditional" surveillance: lacks sensitivity and provides delayed information




Reported to
Health Dept / CDC
Surveillance
Laboratory
Confirmed case
Laboratory
Survey
Lab tests for organism
Physician
Survey
Specimen obtained
Person seeks care
Population
Survey
Person becomes ill
Exposures in the general population

Contacts and social network of SARS index and special interest cases, NC 2003



EMS and other health care workers are among the first to benefit from better detection of communicable diseases.

Notes:
1. Acute respiratory distress syndrome
2. Community acquired pneumonia
3. **Healthcare workers**

Remember….

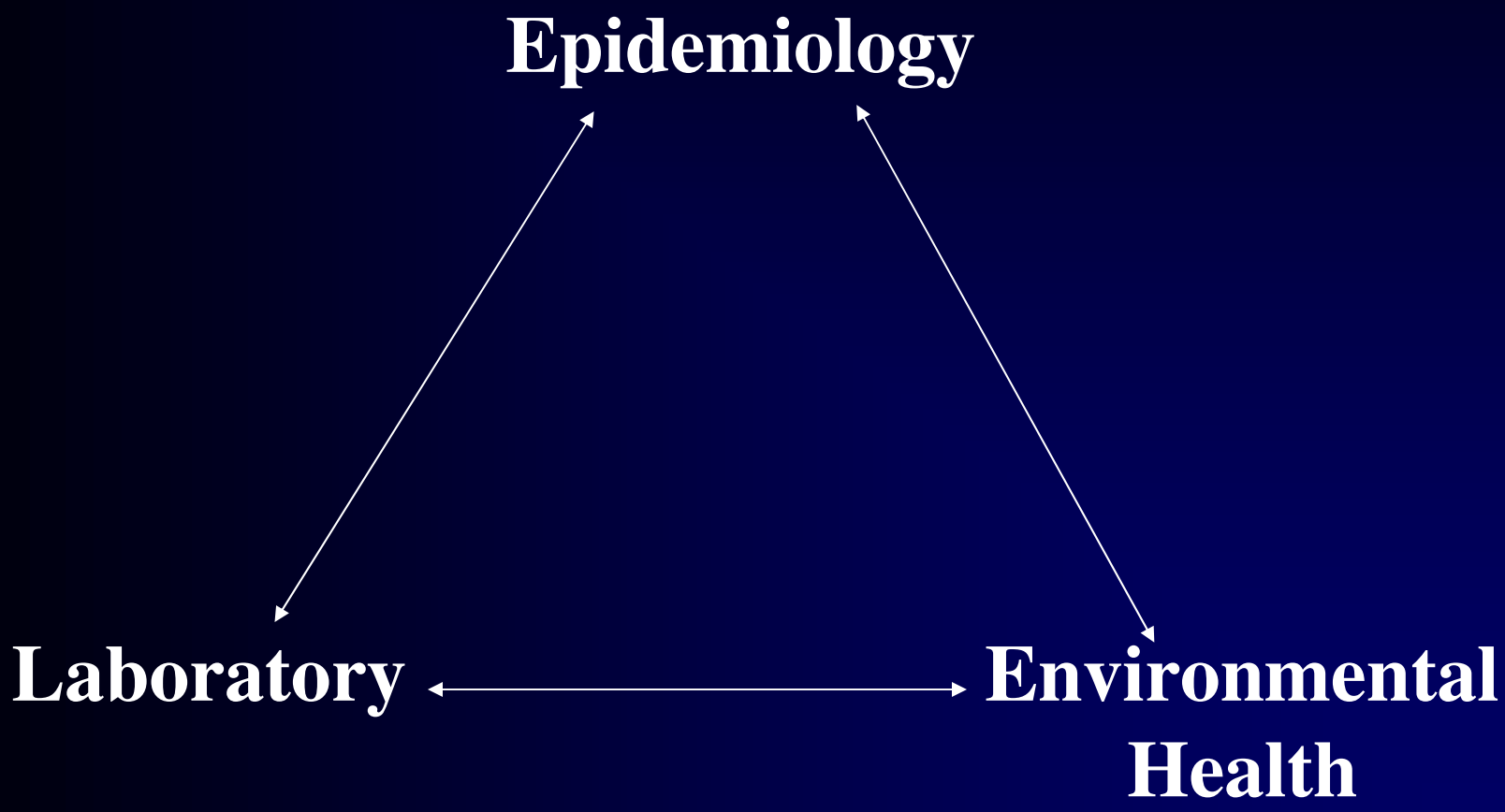
- A disease does NOT have to be reportable to be investigable!

  10A NCAC 41A .0103(c)
  Whenever an outbreak of a disease... which is not required to be reported… but which represents a significant threat to the public health, the local health director shall give the appropriate control measures…

Reasons for Investigating an Outbreak

- Identify and eliminate source of infection
- Define the required control measures
- Develop strategies to prevent future outbreaks
- Describe new diseases and learn more about known diseases
- Evaluate existing prevention strategies
- Address public concern about the outbreak

Outbreak investigation: a collaborative enterprise



Collaborative approach

- Local public health professionals, clinicians
- Epidemiologist(s) and disease experts at the local, regional, state, national level
- Laboratory technicians
- Environmental health specialists; Industrial hygienist
- Industry: restaurant, food supply, recreation others as needed
- Public information officer
- Law enforcement officers

Steps of an investigation

1. Confirm diagnosis
2. Confirm outbreak (linked cases, excess/expected)
3. Convene epidemic team
4. Plan investigation: epidemio, lab, environmental
5. Case definition
6. Collect data, *standardized questionnaire*
7. Analyze data (time, place, person)
8. Control measures (curative, prophylactic, preventive)
9. Increase surveillance and reporting
10. Write report

Outbreaks –Public Health Emergencies

- Public Health Command Center
  Office of PH Preparedness and Response,
  PH Regional Surveillance Teams

- Bioterrorism, e.g., anthrax, 2001
- Natural events
  - Infectious: SARS, Influenza, Monkeypox
  - Weather related: hurricane, flood, ice storm

Phases of the NC Public Health Preparedness and Response Plan

- Phase I — Baseline
- Phase II — Heightened Threat
- Phase III — Post-event, limited outbreak
- Phase IV — Post-event, large outbreak
- Phase V — Recovery

Components of the NC Public Health Public Health Preparedness and Response Plan

- Surveillance
- Disease investigation
- Vaccination/prophylaxis
- Quarantine and isolation
- Mass care
- Mass fatality
- Public information
- Command/Control/Communications

Planning Matrix for NC Public Health Preparedness & Response Plan

	I BASELINE	II HEIGHTENED THREAT	III POST EVENT LIMITED OUTBREAK	IV POST EVENT LARGE OUTBREAK	V RECOVERY
SURVEILLANCE	ONGOING – PASSIVE	ACTIVE – SHD ORDERS INCREASED REPORTING	ACTIVE – TRACKING & REPORTING	ACTIVE – EXTENSIVE TRACKING & REPORTING	CONTINUES UNTIL > 1 INCUBATION PERIOD
DISEASE INVESTIGATION	PLAN, TRAIN AND EDUCATE	ACTIVE CASE FINDING	CASE INTERVIEW/ LAB STUDIES/ SITE INVEST.	CASE TRACKING	CONTINUES UNTIL >1 INCUBATION PERIOD W/O CASE
VACCINATION/ PROPHYLAXIS	PRE-EVENT STAGES 1 & 2	INCREASED PRE-EVENT (STAGE 3?)	VAX/PROPHY OF CONTACTS (SNS?)	MASS VAX/ PROPHY (SNS)	POSSIBLE CHANGE TO VAX POLICY
QUARANTINE/ ISOLATION	PLAN, TRAIN AND EDUCATE	IDENTIFY & NOTIFY C,X,R FACILITIES	QUARANTINE/ ISOLATION OF CASES/SUS-PECT AREAS	LTD. QUAR. MASS ISOLATION OF CASES/ AREAS	QUARANTINE LIMITED TO RESOLVING CASES

Planning Matrix for NC Public Health Preparedness & Response Plan

	I. BASELINE	II. HEIGHTENED THREAT	III. EVENT LIMITED OUTBREAK	IV. EVENT LARGE OUTBREAK	V. RECOVERY
MASS CARE	PLAN, TRAIN AND EDUCATE	HOSPITALS ON ALERT - REVIEW EMER PLAN/STATUS	IMPACTED HOSPITALS EMER. STATUS(SNS?)	HOSPITALS EMER STATUS SERT /EMAC/ FED (SNS)	CONTINUES UNTIL PATIENT LOAD NORMALIZES
MASS FATALITY	PLAN, TRAIN AND EDUCATE	ALERT NCEM, STATE DMORT OFF. MEDICAL EXAMINER	ACTIVATE STATE DMORT MED. EXAMR M.F. PLAN	ACTIVATE STATE & FED DMORT; EMAC ASSISTANCE	STAND DOWN AS FATALITIES RETURN TO NORMAL LVLS
PUBLIC INFORMATION	PLAN, TRAIN AND EDUCATE	ACTIVE RISK COMMUNI-CATION – COORDINATE WITH DHHS, PHP&R SERT	ACTIVATED: SERT JIC; EVENT REPORTING; COORDINATE WITH FBI/SBI	ACTIVATED: SERT JIC; EVENT REPORTING; COORDINATE WITH FBI/SBI	CONTINUES THRU > 1 INCUBATION PERIOD W/O CASE
COMMAND/ CONTROL/ COMMUNICA-TION	PLAN, TRAIN, EDUCATE, EXERCISE	ACTIVATED: RSTS, LHDS & PHCC (SERT?)	ACTIVATED: JOC, SERT/EOC, PHCC & LOCAL EOCS	ACTIVATED: JOC, SERT/EOC, PHCC & LOCAL EOCS	STAND DOWN AS EVENT CLOSES

Web-based Outbreak Questionnaire

- Background
  - Statewide Triple Play exercise, October 2003
  - Pneumonic plague outbreak
  - Following exposure at animal show that attracted statewide attendance
  - Multi-county outbreak; highly contagious disease
  - Lack of method to capture case data in adequate manner, when faced with large outbreak or rapid increase of cases, scattered over wide area

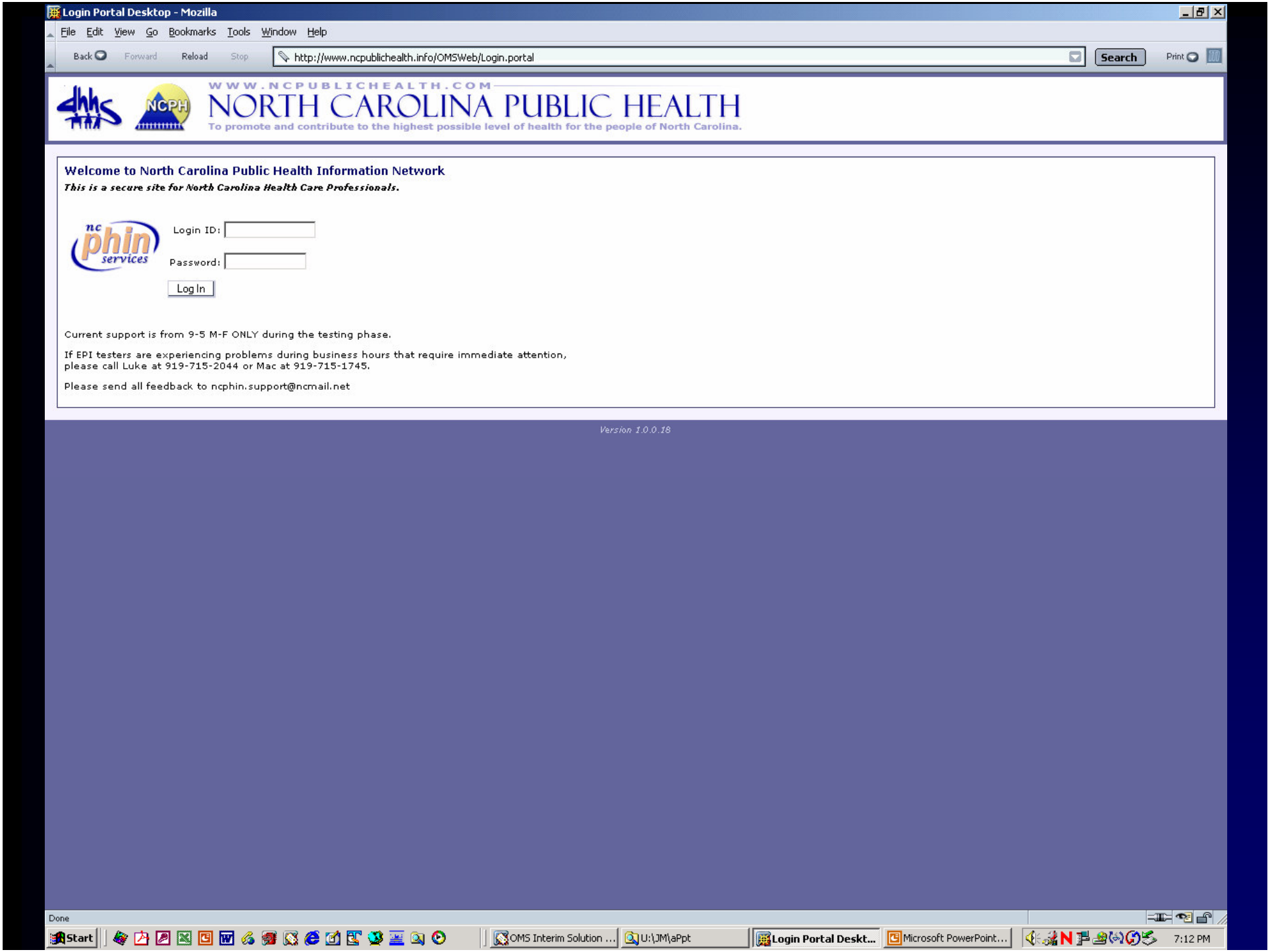
Solution (1)

- Utilize Internet to collect information
  - To provide standardized questionnaire
  - To make it rapidly available where needed
  - To securely collect information on reported cases
  - To pull case data in single database
  - To allow rapid analysis of all available data

Solution (2)

- Need: Survey builder
- Users with Administrator rights can build outbreak questionnaire and analyze data
- Users with Reporter rights may report cases
- Secure access based on assigned user name and password to access Web site

- PHCC briefing use: canned report for “snapshot” of main characteristics of cases:
  e.g., number of cases, County of residence, age, sex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NORTH CAROLINA PUBLIC HEALTH
To promote and contribute to the highest possible level of health for the people of North Carolina.
Welcome to North Carolina Public Health Information Network
This is a secure site for North Carolina Health Care Professionals.
nc phin services
Login ID:
Password:
Log In
Current support is from 9-5 M-F ONLY during the testing phase.
If EPI testers are experiencing problems during business hours that require immediate attention, please call Luke at 919-715-2044 or Mac at 919-715-1745.
Please send all feedback to ncphin.support@ncmail.net
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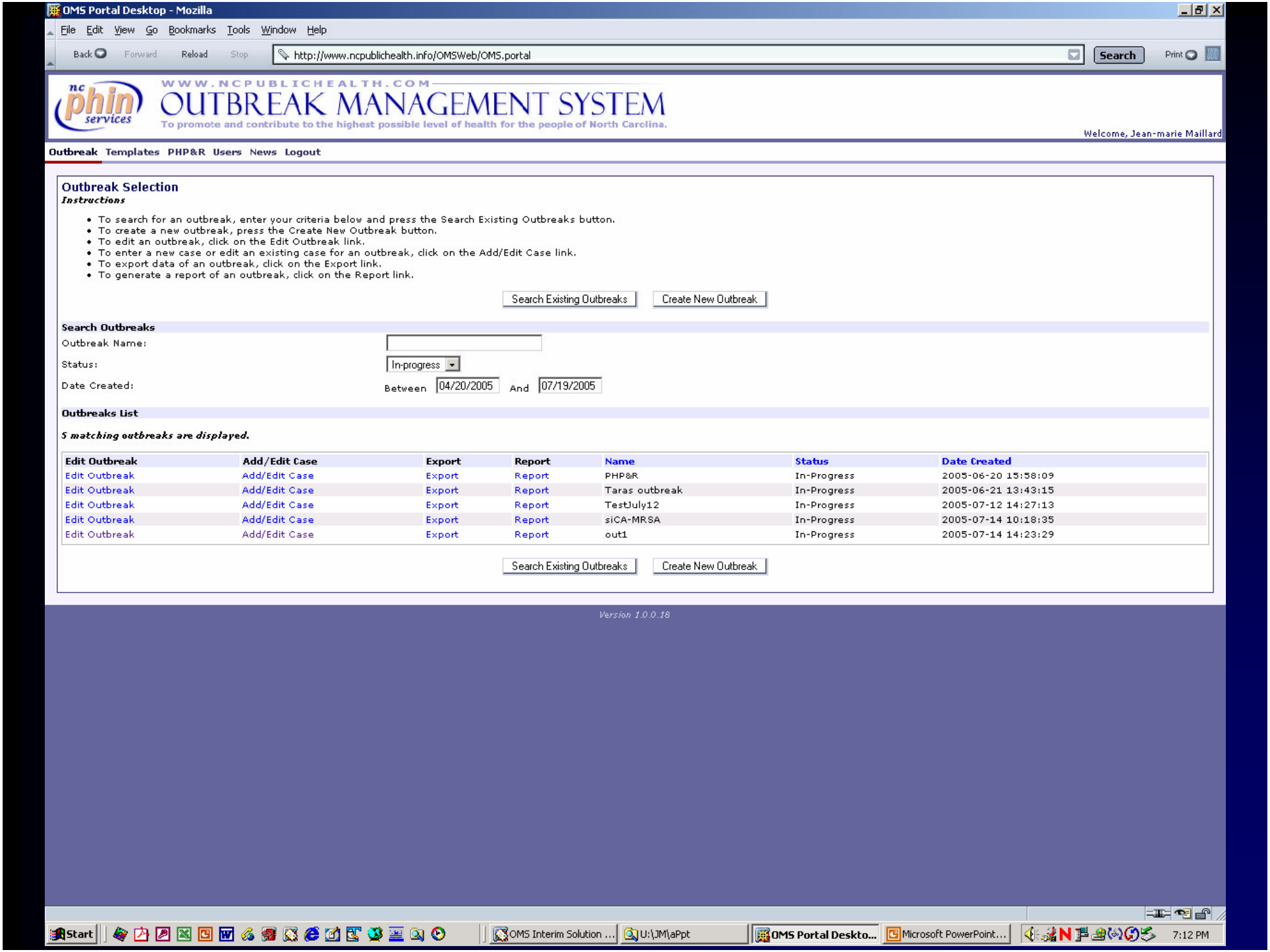
Prepare standardized questionnaire

- Done by administrative users: epidemiologists at local, regional or state level (incl. PHRST, PHE, others)
- Make new outbreak investigation
- Choose questionnaire from existing templates with needed adaptation, or build new one
- Pre-existing “blocks” of questions allow rapid design; these can be customized as needed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OUTBREAK MANAGEMENT SYSTEM
To promote and contribute to the highest possible level of health for the people of North Carolina.
Welcome, Jean-marie Maillard
Outbreak Templates PHP&R Users News Logout
Outbreak Selection
Instructions
To search for an outbreak, enter your criteria below and press the Search Existing Outbreaks button.
To create a new outbreak, press the Create New Outbreak button.
To edit an outbreak, click on the Edit Outbreak link.
To enter a new case or edit an existing case for an outbreak, click on the Add/Edit Case link.
To export data of an outbreak, click on the Export link.
To generate a report of an outbreak, click on the Report link.
Search Existing Outbreaks
Create New Outbreak
Search Outbreaks
Outbreak Name:
Status:
In-progress
Date Created:
Between 04/20/2005 And 07/19/2005
Outbreaks List
5 matching outbreaks are displayed.
Edit Outbreak | Add/Edit Case | Export | Report | Name | Status | Date Created
Edit Outbreak | Add/Edit Case | Export | Report | PHP&R | In-Progress | 2005-06-20 15:58:09
Edit Outbreak | Add/Edit Case | Export | Report | Taras outbreak | In-Progress | 2005-06-21 13:43:15
Edit Outbreak | Add/Edit Case | Export | Report | TestJuly12 | In-Progress | 2005-07-12 14:27:13
Edit Outbreak | Add/Edit Case | Export | Report | siCA-MRSA | In-Progress | 2005-07-14 10:18:35
Edit Outbreak | Add/Edit Case | Export | Report | out1 | In-Progress | 2005-07-14 14:23:29
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Create New Outbreak
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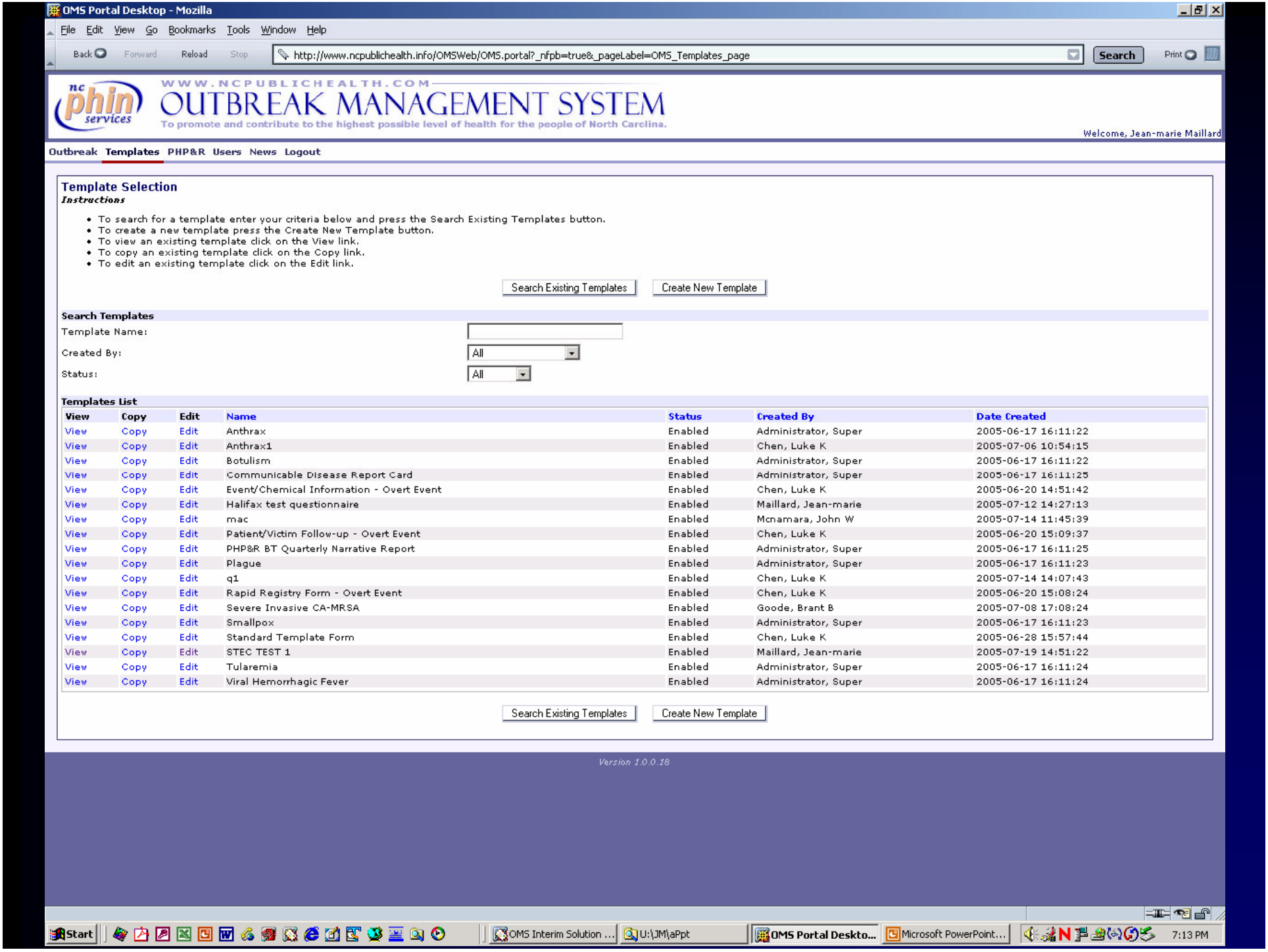
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To copy an existing template click on the Copy link.
To edit an existing template click on the Edit link.
Search Existing Templates
Create New Template
Search Templates
Template Name:
Created By: All
Status: All
Templates List
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View Copy Edit Botulism Enabled Administrator, Super 2005-06-17 16:11:22
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View Copy Edit q1 Enabled Chen, Luke K 2005-07-14 14:07:43
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View Copy Edit Tularemia Enabled Administrator, Super 2005-06-17 16:11:24
View Copy Edit Viral Hemorrhagic Fever Enabled Administrator, Super 2005-06-17 16:11:24
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Microsoft PowerPoint...
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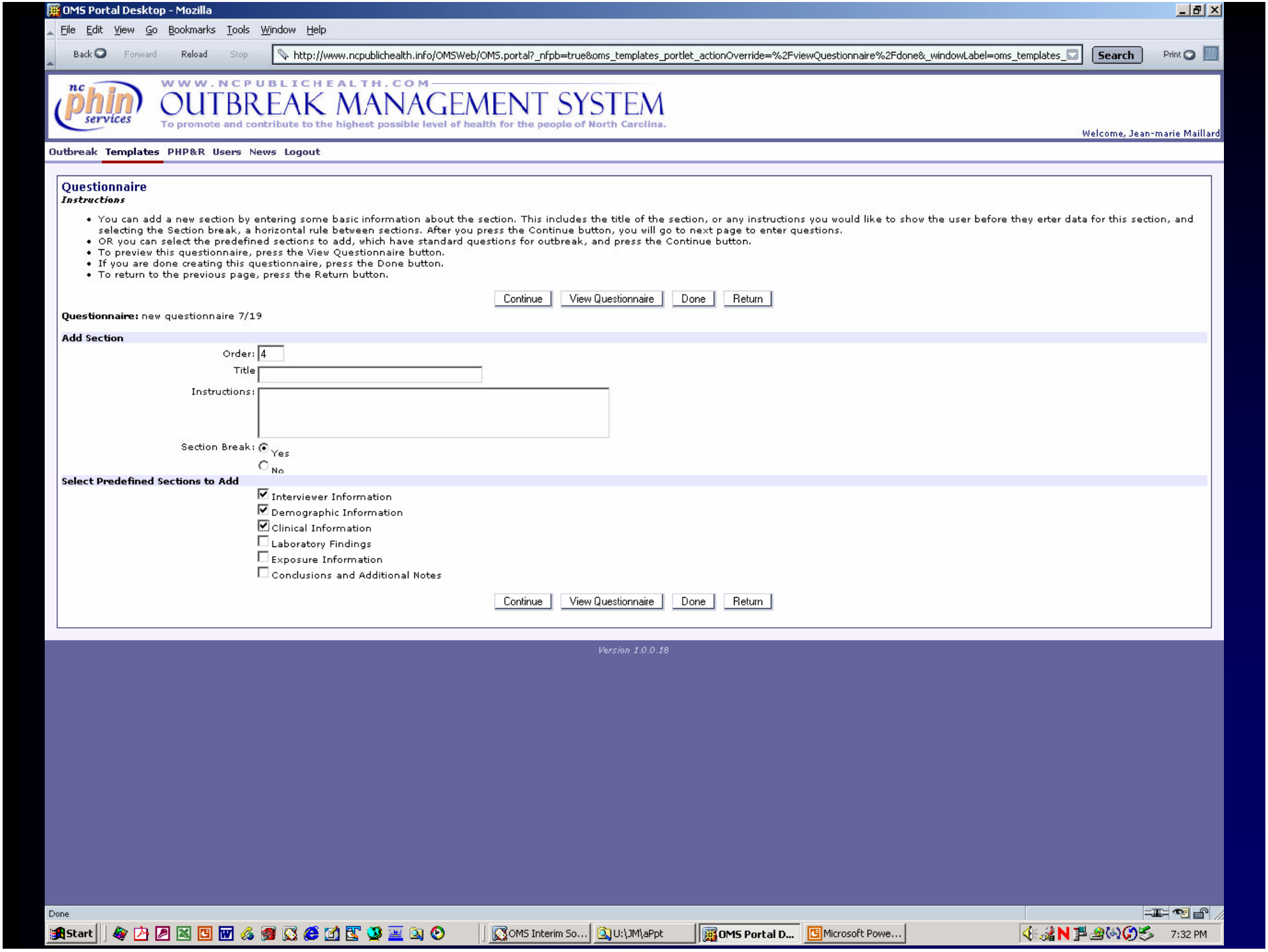
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Back Forward Reload Stop
http://www.ncpublichealth.info/OMSWeb/OMS.portal?_nfpb=true&oms_templates_portlet_actionOverride=%2FviewQuestionnaire%2Fdone&_windowLabel=oms_templates_
Search
Print
nc phin services
WWW.NCPUBLICHEALTH.COM
OUTBREAK MANAGEMENT SYSTEM
To promote and contribute to the highest possible level of health for the people of North Carolina.
Welcome, Jean-marie Maillard
Outbreak Templates PHP&R Users News Logout
Questionnaire
Instructions
You can add a new section by entering some basic information about the section. This includes the title of the section, or any instructions you would like to show the user before they erter data for this section, and selecting the Section break, a horizontal rule between sections. After you press the Continue button, you will go to next page to enter questions.
OR you can select the predefined sections to add, which have standard questions for outbreak, and press the Continue button.
To preview this questionnaire, press the View Questionnaire button.
If you are done creating this questionnaire, press the Done button.
To return to the previous page, press the Return button.
Continue View Questionnaire Done Return
Questionnaire: new questionnaire 7/19
Add Section
Order: 4
Title
Instructions:
Section Break: Yes No
Select Predefined Sections to Add
Interviewer Information
Demographic Information
Clinical Information
Laboratory Findings
Exposure Information
Conclusions and Additional Notes
Continue View Questionnaire Done Return
Version 1.0.0.18
Done
Start
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U:\JM\aPpt
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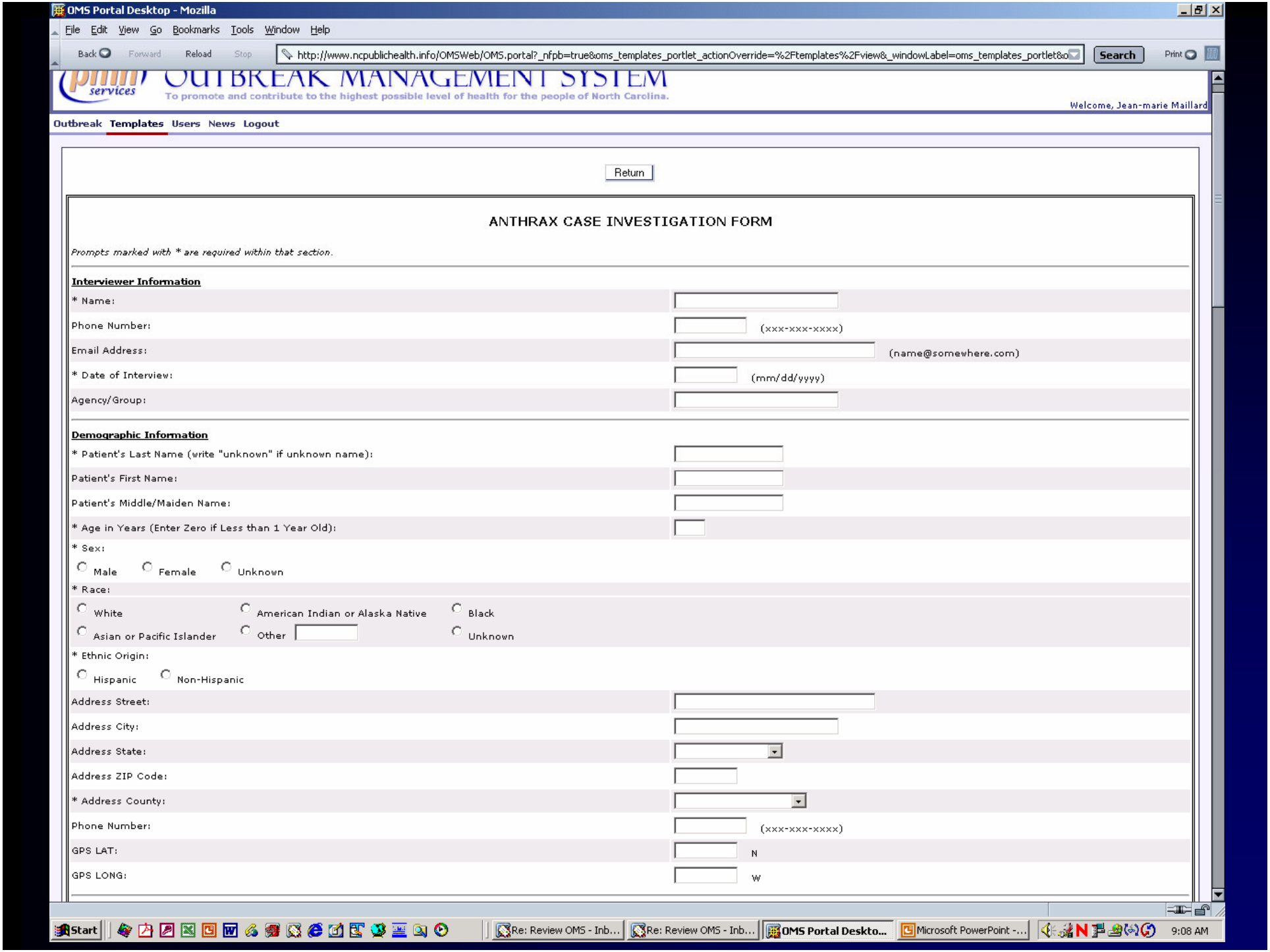
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http://www.ncpublichealth.info/OMSWeb/OMS.portal?_nfpb=true&oms_templates_portlet_actionOverride=%2Ftemplates%2Fview&_windowLabel=oms_templates_portlet&o
Search
Print
OUTBREAK MANAGEMENT SYSTEM
To promote and contribute to the highest possible level of health for the people of North Carolina.
Welcome, Jean-marie Maillard
Outbreak Templates Users News Logout
Return
ANTHRAX CASE INVESTIGATION FORM
Prompts marked with * are required within that section.
Interviewer Information
* Name:
Phone Number: (xxx-xxx-xxxx)
Email Address: (name@somewhere.com)
* Date of Interview: (mm/dd/yyyy)
Agency/Group:
Demographic Information
* Patient's Last Name (write "unknown" if unknown name):
Patient's First Name:
Patient's Middle/Maiden Name:
* Age in Years (Enter Zero if Less than 1 Year Old):
* Sex:
Male Female Unknown
* Race:
White American Indian or Alaska Native Black
Asian or Pacific Islander Other Unknown
* Ethnic Origin:
Hispanic Non-Hispanic
Address Street:
Address City:
Address State:
Address ZIP Code:
* Address County:
Phone Number: (xxx-xxx-xxxx)
GPS LAT: N
GPS LONG: W
Start
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Re: Review OMS - Inb...
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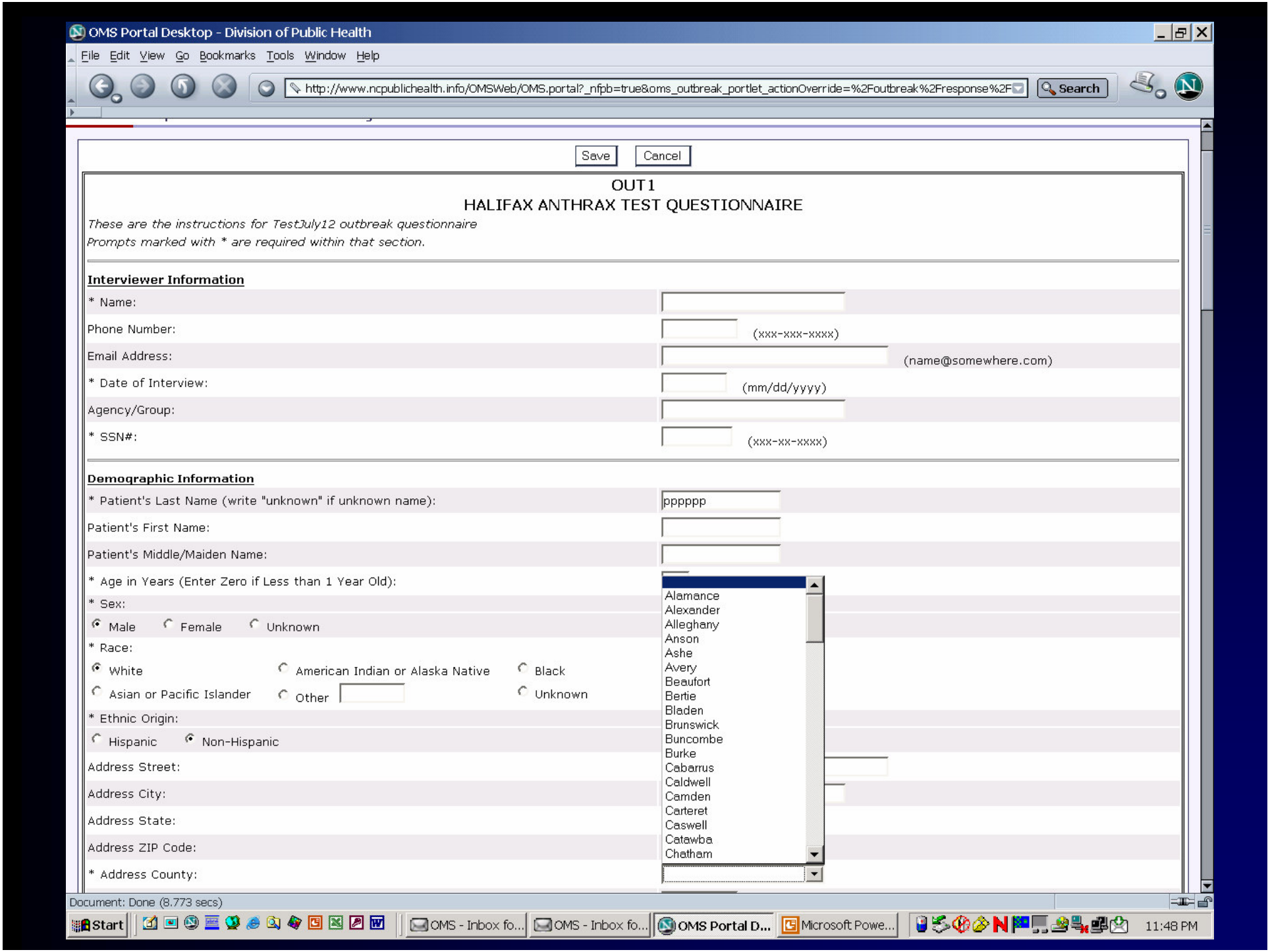
9:08 AM


OMS Portal Desktop - Division of Public Health
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http://www.ncpublichealth.info/OMSWeb/OMS.portal?_nfpb=true&oms_outbreak_portlet_actionOverride=%2Foutbreak%2Fresponse%2F
Search
Save
Cancel
OUT1
HALIFAX ANTHRAX TEST QUESTIONNAIRE
These are the instructions for TestJuly12 outbreak questionnaire
Prompts marked with * are required within that section.
Interviewer Information
* Name:
Phone Number:
(xxx-xxx-xxxx)
Email Address:
(name@somewhere.com)
* Date of Interview:
(mm/dd/yyyy)
Agency/Group:
* SSN#:
(xxx-xx-xxxx)
Demographic Information
* Patient's Last Name (write "unknown" if unknown name):
pppppp
Patient's First Name:
Patient's Middle/Maiden Name:
* Age in Years (Enter Zero if Less than 1 Year Old):
* Sex:
Male
Female
Unknown
* Race:
White
American Indian or Alaska Native
Black
Asian or Pacific Islander
Other
Unknown
* Ethnic Origin:
Hispanic
Non-Hispanic
Address Street:
Address City:
Address State:
Address ZIP Code:
* Address County:
Alamance
Alexander
Alleghany
Anson
Ashe
Avery
Beaufort
Bertie
Bladen
Brunswick
Buncombe
Burke
Cabarrus
Caldwell
Camden
Carteret
Caswell
Catawba
Chatham
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RAPID REGISTRY FORM - OVERT EVENT

*Prompts marked with * are required within that section.*

* CASE ID#:
* Date: (mm/dd/yy)
* Time: (hh:mm)
* Event #:
PHRST MEMBER:
NON-PHRST:

Verbal consent to be read to the respondent: "Hello, my name is _____ and I am from _____. We are collecting information from people potentially exposed to this event so we can send them information about their exposure and any public health services available to them. This brief survey will take approximately 10 minutes but may be followed up in the future with a more thorough interview/assessment to help ensure your health and safety. You may choose not to answer any question you wish and you are free to refuse participation in this study at any time. All the information you provide will be kept strictly confidential within the limits of the law."

Name:
Age:
* Sex:
○ Male ○ Female ○ Unknown
* Interview Site:
GPS LAT: N
GPS LONG: W
Contact Information: Address:
Phone Number: (xxx-xxx-xxxx)
Contact Phone Number: (xxx-xxx-xxxx)

Questionnaires

* 1. Since the event [e] have you become sick/ill or experienced any strange/new symptoms? (If no, skip to #11):
○ Yes ○ No ○ D/K

If Yes, specifically when did you become sick/ill?

2. On your skin, have you noticed any:
☐ Irritation or Itching ☐ Burning ☐ Blistering ☐ Redness ☐ Swelling ☐ None

3. Have you noticed any eye problems such as:
☐ Blurred Vision ☐ Decreased Vision ☐ Tearing ☐ Irritation ☐ Pain ☐ None

4. Since [e], have you had:
☐ Cough ☐ Throat Irritation ☐ Difficulty Breathing/Shortness of Breath
☐ Pain w/Deep Breath ☐ Wheezing ☐ Fluid in Your Lungs
☐ Fast Breathing/Hyperventilation ☐ None

5. Since [e], have you felt or experienced:
☐ Stomach Pain/Cramping ☐ Constipation ☐ Diarrhea ☐ Vomiting
☐ Nausea ☐ Blood in Stool or Vomit ☐ None

Transition slide –To Control Measures

Control Measures
~ Part of CD Law Seminar ~

Jean-Marie Maillard

GCDC Branch

Epidemiology Section

Rule 10A NCAC 41A .0103

- Upon receipt of a report of communicable disease… the local health director shall (1) investigate… determine identity of persons for whom control measures are required

- (2) determine what control measures have been given and ensure that proper control measures… have been given and complied with

Control Measures in 10A NCAC 41A

.0200 of 10A NCAC 41A

- General
- HIV
- Hepatitis B
- STD
- TB
- Health Care Settings
- HIV and HBV infected health care workers
- Smallpox and vaccinia
- Laboratory Testing
- Handling and transportation of bodies
- SARS

.0300 Special Control Measures (sale of turtles, sales of birds)

.0400 and .0500: Immunization and vaccines

Control Measures –General

- 10A NCAC 41A .0201(a)
  - Except for a few diseases & conditions specifically covered in the rules, control measures are those specified in APHA publication, *Control of Communicable Diseases Manual*
  - Guidelines and recommendations from the CDC supercede those contained in the *Control of CD Manual*

Guiding Principles

- Rule 10A NCAC 41A .0201(b)
  - … reasonably be expected to decrease the risk of transmission … consistent with recent scientific and public health information
  - for diseases transmitted by the airborne route … physical isolation for the duration of infectivity
  - …fecal oral route … exclusion from food handling, attendance or work in a day care center
  - …sexual or blood-borne route… prohibit blood, organ or semen donation, needle-sharing, sexual contact

Define control measures as guided by available information

- Unknown etiology or source
  - Adapt to circumstances, e.g., close a restaurant
  - Carefully thinking of potential consequences, e.g., exclusion of sick children or closure of DCC may increase risk of spread in the community
- Diagnosed illness
  - Provide required prophylaxis with written order to close contacts or otherwise exposed persons, e.g., rifampin for meningococcal disease, IG for hepatitis A

SARS Isolation and Quarantine Orders (for Local Health Departments) - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://www.ncpublichealth.com/sars/sarsIandQintro.htm

Go Links

DPH Site Navigation

Division Contacts
Public Health Task Force

Other Important NC Public Health Links

Links open in new windows
DHHS News Releases
Local Boards of Health
Local Health Departments

Centers for Disease Control and Prevention (CDC) Links

Links open in new windows
CDC Home Page
CDC Health Topics
CDC Image Library

North Carolina Public Health

SARS Isolation and Quarantine Orders

- SARS in NC, General Info
- North Carolina SARS Response Plan (01/21/04)
- SARS Info for NC Health Care Providers
- SARS News and Numbers

Note: This page is intended to provide guidance and a point of reference for Local Health Departments in using SARS Isolation and Quarantine Orders.

A person known to have or suspected of having Severe Acute Respiratory Syndrome (SARS) is required to follow communicable disease control measures as recommended by the U.S. Centers for Disease Control and Prevention .

An ISOLATION ORDER should be issued pursuant to the local health director's authority in G.S. 130A-145 when a person diagnosed with SARS or suspected of having SARS is unable or unwilling to follow control measures.

A SARS ISOLATION ORDER template has been developed by the N.C. Division of Public Health for use by local health directors in the case of persons who meet the CDC case definition for SARS and who are unable or unwilling to follow control measures. A 72-hour SARS ISOLATION ORDER is to be used in situations where a person who may have had exposure to SARS is symptomatic with either fever or respiratory symptoms, but does not meet the strict case definition established by CDC. CDC currently recommends that these individuals be monitored for a period of 72 hours to determine if the illness progresses. Use this order if the person is unable or unwilling to follow control measures.

A person who has had significant exposure to a person known or suspected of having Severe Acute Respiratory Syndrome (SARS) is also required to follow communicable disease control measures as recommended by the U.S. Centers for Disease Control and Prevention. A SARS QUARANTINE ORDER should be issued pursuant to the local health director's authority in G.S. 130A-145 when a person who has been exposed to a patient under investigation for SARS or to a person who has been diagnosed with SARS is unable or unwilling to follow control measures.

If an individual subject to a SARS ISOLATION ORDER or SARS QUARANTINE ORDER is non-compliant, local law enforcement officers should be called on for assistance. G.S. 15A-401 (b)(4), which was added by NC bioterrorism legislation, authorizes a law enforcement officer to detain an individual arrested for violation of an ISOLATION or QUARANTINE ORDER. The person will be detained in the area designated in the ORDER. The person can be detained until the initial appearance before a judicial official.

Highlights

Internet

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