

Epi Notes



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Hurricane Ophelia - PH Preparedness and Response - A Success Story

*Prepared by Dr. Lou Turner, Interim PH Preparedness Coordinator, Office of Public Health Preparedness and Response
Contributors: Dr. Martha Salyers, Physician Epidemiologist and Team Leader, PHRST-7; Dr. Thomas Morris, Physician Epidemiologist and Team Leader, PHRST-2*

In September 15, 2005, Hurricane Ophelia made landfall in the eastern coastal region of North Carolina. Two days prior to landfall, the broad path of winds and rain from Ophelia created significant flooding, storm surges, and wind damage in the most southeastern counties of Brunswick, New Hanover and Pender. N.C. Governor Michael Easley, in anticipation of Ophelia, declared a state of emergency, which allowed the N.C. Division of Emergency Management (NCEM) to call for Federal Emergency Management Agency (FEMA) resources to be present in our state before Ophelia actually came ashore.

In the wake of 2003 and 2004 hurricanes Isabel and Ivan, the N.C. Office of Public Health Preparedness and Response (PHP&R) worked with other PH partners to conduct rapid community health assessments using field data collection surveys. For Ophelia, the NCEM proposed two assessment projects for the PH Preparedness and Response group. One was a request for a team to conduct rapid community health assessments post-Ophelia. The second was for PHP&R to assign staff to accompany the FEMA Rapid Needs Assessment teams (RNA) to fly over and observe areas affected by the hurricane and to assess physical damage to the healthcare infrastructure in certain communities.

On Monday, September 12, in response to NCEM requests, Dr. Lou Turner, Interim PH Preparedness Coordinator, asked Dr. Martha Salyers, Physician Epidemiologist and Team Leader from the PH Regional Surveillance Team based in Buncombe County (PHRST-7), to temporarily relocate to Raleigh to monitor and assess the situation from the State Emergency Operations Center (EOC) and to construct the PH team that would be deployed to conduct the community health assessments. Dr. Salyers worked with members of PHP&R and the other regional surveillance teams to institute an incident command structure, plan for opening and operating the Public Health Command Center, monitor the FEMA RNA team, and plan for the deployment of the community health assessment team. Within 24 hours of arriving in Raleigh, Dr. Salyers and her team had a deployment incident command structure (ICS) in place and an incident action plan (IAP) developed. On Thursday, September 15, after the 19:00 hour EOC

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(Hurricane Ophelia, continued from page 1)

briefing, NCEM made the decision not to deploy a field community health assessment team. At that time, Dr. Salyers gave the “stand down” directive to the PHRST staff planning for this activity and the PHP&R staff who would open and man the Public Health Command Center.

For the second NCEM assignment, Thomas Morris, MD, MPH (PHRST-2), and Mark Smith, PhD (PHRST-5), were assigned by Dr. Turner to a FEMA Rapid Needs Assessment (RNA) team deployed to Wilmington, N.C. in anticipation of Hurricane Ophelia. Other agencies included in the RNA were N.C. Office of Emergency Medical Services and the U.S. Army Corps of Engineers. Two field teams were created, the first for medical assessment and the second for topical/structural assessment. The approach was aerial, with helicopters, when weather conditions permitted for the mission to spot critical problems, then land or assign ground support for rapid needs assessment (“groundtruthing”). FEMA possessed an impressive array of Geographic Information Technology software on laptop computers and communications equipment, including satellite phones. Aerial surveillance in a U.S. Customs Border Patrol Blackhawk helicopter was carried out on September 15 and 16 over Carteret, Pamlico, Beaufort, Hyde and Dare counties, touching down and assessing three community-based hospitals.

Some of the lessons learned during these activities included:

- Ability of N.C. DPH to successfully mount multiple ICS compliant field deployment teams. One team of seven PH staff was already deployed to Waveland, Miss. for post-Katrina field hospital operation support.
- State cooperation with FEMA is highly successful. In this potential situation, the state liaisons ensured that state and county officials were notified and involved, serving as a direct conduit for federal assistance to people through county agencies.
- State people bring knowledge of topography, politics, particulars, and priorities to the localities that the FEMA team may not be aware of as they arrive.
- While FEMA has impressive and state-of-the-art technology at its disposal, newer and innovative approaches to using it can be learned in either direction (to wit: Mark Smith’s hand-held Axim data collection with GIS).
- The state gains greater access to federal resources in a more timely fashion in faster reporting, such as through aerial reconnaissance, surveillance, and ‘groundtruthing’ if a significant finding is seen from the air.
- The value of alternative communications plans cannot be overstated – FEMA used satellite phones when 2-way radio contact could not be established.
- Use of ICS with IAPs and communications plans by both federal and state agencies is impressive.
- Use a state PH liaison for FEMA — a PHRST member familiar with the Region assigned or at least adjacent to it, who has the contact numbers for PHRSTs in each region – as a federal assessment team moves about, an important function as liaison notifies the health director in any county where an assessment may take place. ♦

Pregnant Women in North Carolina with HIV Disease or Early Syphilis, 1994-2002

Prepared by Martha Buie, Social Research Associate, HIV/STD Prevention and Care Branch



Background/Objectives

Describing the demographic characteristics and identifying risk factors among women of childbearing age (15-44 years) infected with syphilis or HIV is critical to the planning and implementation of HIV/STD prevention programs that target this particular population. Pregnant women are of particular importance due to the added health risk to the fetus. Despite the fact that all syphilis stages are on the decline—with primary, secondary and early latent (early syphilis) decreasing by 65 percent in the past five years—North Carolina continues to record cases of congenital syphilis. From 1994 to 2002, there were 232 reported cases of congenital syphilis. Of those 232 cases, 77 percent of the mothers were black, 14 percent were white, 8 percent were Hispanic and 1 percent was American Indian. In addition, 60 infants were reported with HIV disease, representing likely perinatal transmissions during this same time period. Of those 60 HIV-positive infants, 82 percent of the mothers were black, 10 percent were white, and 8 percent were Hispanic.

Methods

Information was used from patient interviews and medical chart reviews conducted by North Carolina Disease Intervention Specialists (DIS) from 1994-2002. Data were initially extracted from seven regional STD MIS databases and were cleaned and deduplicated using SAS algorithms written by Epidemiology and Special Studies staff. Pregnant women with either HIV disease or early syphilis were compared to women with the same diagnosis who were not pregnant, using the chi square test for independence.

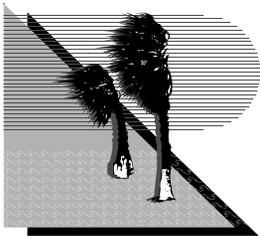
Results

Of the 5,625 women interviewed with early syphilis from 1994 to 2002, 393 (7%) were known to be pregnant at the time of diagnosis and interview. Of the 393 pregnant women with early syphilis, 68 percent were black, 15 percent were white, 11 percent were Hispanic and 2 percent were American Indian. Similarly, of the 3,388 women interviewed with HIV disease from 1994 to 2002, 292 (9%) were known to be pregnant at the time of diagnosis and interview. Of the 292 pregnant women with HIV disease, 73 percent were black, 13 percent were white, 8 percent were Hispanic, 1 percent were American Indian, and 1 percent were Asian/Pacific Islander. Factors significantly associated ($p < 0.05$) with being pregnant included being younger (15-24 years versus 25-44 years), multiple sex partners in the past year, and a history of sexually transmitted diseases (STDs).

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Public Health Support of a North Carolina SMAT Field Hospital, Waveland, Mississippi - September 9 to October 22, 2005

Prepared by Will Service, Industrial Hygienist, Office of Public Health Preparedness and Response



Background

On September 2, 2005 the eye of Hurricane Katrina made landfall on the Gulf coast of the United States near Waveland, Mississippi. A 25-foot storm surge in Waveland and a 20-foot surge up to 10 miles inland destroyed homes, businesses and

infrastructure throughout the town and surrounding areas. The population of approximately 7,000 people in Waveland and the surrounding rural area had been served by Hancock Memorial Hospital (HMH). Hancock Memorial was rendered inoperable as a result of flooding during the storm.

On September 5, 2005, at the request of the State of Mississippi, the North Carolina Office of Emergency Medical Services (OEMS) coordinated a deployment with Carolina's Medical Center (CMC) of a mobile field hospital to Waveland to temporarily provide medical services normally delivered by HMH. During more than six weeks of operation, this newly configured "N.C. Field Hospital" was staffed by two rotations of 65 to 70 nurses, physicians, paramedics, pharmacists, logisticians, and command staff.

Need for Public Health Support of the Hospital

The first week of operation on the site of a major disaster in the absence of infrastructure support (i.e., electricity, water supply, food, wastewater disposal, etc.) contributed to injury and illness among staff. Specifically, eleven cases of gastrointestinal illness (vomiting and diarrhea), a fall-related head injury, several cases of heat-related illness (heat exhaustion), and numerous skin rashes ("Katrina Rash") were reported during the first staff rotation.

Concerns about environmental and epidemiological issues prompted hospital command staff to request support of public health staff at the hospital. The N.C. Division of Public Health sent a strike team to the hospital. Arriving in Waveland on September 9, 2005, the team was staffed by the N.C. Office of Public Health Preparedness and Response (PHPR) and the Public Health Regional Surveillance Teams (PHRSTs). The seven public health team (PHT) members included a physician/epidemiologist, a nurse/epidemiologist, two industrial hygienists, two administrative/data management staff and a team leader. Subsequent week-long public health rotations included a medical epidemiologist and two industrial hygiene/environmental health specialists from public health agencies including Occupational and Environmental Epidemiology Branch, local health departments, and the PHRSTs.

The team's primary objectives for deployment were to establish an electronic surveillance system and injury and illness reporting systems at the hospital and to investigate and mitigate environmental hazards and risk on the hospital grounds. It was also clear that there were needs at the hospital for logistical and administrative support. The PHT arrived with a willingness to complete any task that was necessary to improve the hospital environment and operations.

Hospital Epidemiological Support

During the first two deployments, the PHT established an electronic system for hospital record keeping, began submitting daily surveillance reports to the Mississippi Department of Health (MSDH) and the U.S. Department of Health and Human Services, and generally took responsibility for medical records maintenance and reporting for the hospital. The electronic reporting/surveillance system was a database developed by the team that was populated with admissions data including patient information, chief complaint, and diagnoses. The database allowed for analyses of admissions data for rapid detection of injury and illness trends. Hospital staff used the data to assess hospital operations, including admissions time patterns for making clinical staffing decisions. Midway through the first PHT deployment, MSDH delivered a daily surveillance report that asked for diagnoses frequencies and age distribution for patients seen at the hospital. In addition to submittal of the surveillance reports, the PHT took responsibility for notifying MSDH of any reportable communicable diseases that were seen at the hospital.

Environmental Health

The public health team was staffed with three industrial hygiene/environmental health staff who were appointed as hospital Health and Safety (H/S) officers. The H/S officers took responsibility for identifying environmental hazards and implementing controls to mitigate risk. Issues that were addressed included hand-washing facilities, contact with surfaces that had been in contact with flood water, food handling, water supply safety, waste water and solid waste disposal issues, and vector control (flies, mosquitoes). Any of these environmental issues, if left unattended, could have resulted in illness outbreaks for hospital staff and patients.

Mitigating the hazards was challenging in a disaster environment where resources were limited. For example, improving hand-washing facilities at the hospital was a priority for the PHT. During the first week of operation, hospital staff had fashioned dip-bucket hand-wash stations which were used in combination with hand sanitizer. The PHT created and maintained running water stations from portable tanks. After repeated efforts and close calls, commercial portable hand-wash stations arrived five days after the PHT deployed.

Health and Safety

The industrial hygiene/environmental health (IH/EH) staff on the PHT were appointed health and safety (H/S) officers

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(PH Support of N.C. SMAT, continued from page 3)

for the hospital. Two staff were appointed to serve on two 12-hour shifts. Some of the recurrent safety issues included heat-related illness, ionizing and non-ionizing radiation exposure, carbon monoxide exposure, electrical hazards and hazardous materials. The IH/EH staff crafted daily safety messages to focus hospital staff's attention on critical safety issues.

Administrative and Logistical Hospital Support

The PHT provided a wide range of logistical and administrative support functions for the hospital. A PHT member was appointed the finance and administrative section chief in the command structure. Another team member was given responsibility for staff rotation and redeployment including flight assignment, baggage weigh-in and briefing schedules. A few of the administrative tasks completed included serving as liaison to any public health visitors to the hospital including Centers for Disease Control and Prevention, U.S. Public Health Service, Miss. Department of Health and others; and assisting with receipt of the Strategic National Stockpile/Vendor Managed Inventory pharmaceutical supplies. Logistical support included a wide variety of tasks such as hand-wash station maintenance; ice, water and garbage hauling; and assembling wheelchair ramps and shower stalls.

Future Public Health Support of the Field Hospital

At the close of the one-week rotation at the hospital, the PHT and the hospital command staff developed a plan for upcoming PHT rotations at the hospital. The decision was made to provide one medical epidemiologist and two industrial hygiene/environmental health staff to the hospital for each one-week rotation for the entire deployment. Hospital command staff has requested similar public health support for future deployments of the N.C. SMAT and MED 1 hospitals. ♦

(Pregnant Women with HIV or Syphilis, cont'd from pg 2)

Pregnant women with either diagnosis were less likely to: engage in sex for drugs or money, report crack use, abuse alcohol, and be black than their non-pregnant counterparts. Pregnant women with early syphilis were significantly more likely to have engaged in sex for drugs or money than pregnant women with HIV disease.

Conclusions

The finding that pregnant women were less likely to engage in sex for drugs or money, use crack cocaine, or abuse alcohol may indicate that the period of pregnancy provides an opportunity for the improvement of risk behaviors of these women. This may also indicate, however, that the pregnant women are from a very different population than their non-pregnant counterparts.

The majority of the congenital syphilis cases and perinatally-transmitted HIV cases in North Carolina are among blacks. Thus, the finding that pregnant women diagnosed with either disease were significantly less likely to be black than their non-pregnant counterparts seems counterintuitive. However, this may indicate that mothers of babies with congenital syphilis and perinatally-transmitted HIV in North Carolina lack access to treatments that can prevent the transmission of syphilis or HIV to their infants, or that these women are not seeking health or prenatal care at all and are thus outside the realm of the public health care system entirely.

From 1994 to 2002, among mothers giving birth to infants with congenital syphilis, 35 percent received no prenatal care, and 24 percent received five or fewer prenatal care visits. Among the most recent (2004) congenital syphilis cases evaluated in North Carolina, 9 of the 11 mothers delivering a baby received either inadequate or no prenatal care (see *N.C. Epidemiologic Profile for HIV/STD Prevention and Care Planning*, July 2005, p. 116). These women pose a special challenge to public health and continue to need our attention if we are to eliminate congenital syphilis and perinatally-transmitted HIV in North Carolina. These findings also serve to highlight the need to ensure that all pregnant women receive appropriate prenatal care, including testing for sexually transmitted disease, during pregnancy. Testing for syphilis, gonorrhea and chlamydia is required by the North Carolina Administrative Code, and testing for HIV is expected to be incorporated as a part of routine prenatal care unless the woman specifically declines HIV testing. It seems likely that these expectations for testing are not being met at this time. ♦

The 2005 Perinatal Hepatitis B Prevention Program (Birth Cohort 2003)

Prepared by Patricia Poole, RN, Hepatitis B Coordinator, N.C. Immunization Branch

The objective of the North Carolina Perinatal Hepatitis B Prevention Program is to prevent transmission of hepatitis B virus (HBV) during the perinatal period. The program's primary strategy includes:

- Testing all pregnant women for hepatitis B surface antigen (HBsAg), and
- Providing HBV immune globulin and vaccine to infants born to HBsAg-positive women.

North Carolina law mandates testing all pregnant women, reporting HBsAg-positive women to the local health department (LHD), and providing immunoprophylaxis and

(continued on page 5)

(Perinatal Hep B Prevention continued from page 4)

post-vaccination serologic testing for infants born to HBsAg-positive women.

In North Carolina, of the 221 identified births to HBsAg-positive women in 2003:

- Two infants (one percent) died from causes unrelated to HBV within one day of birth and prior to vaccination.
- Ninety-five percent (209 of the 221 infants) received the hepatitis B immune globulin (HBIG) and the first dose of hepatitis B vaccine within 24 hours of birth.
- Eight infants (four percent) received the birth dose of hepatitis B vaccine, but did not receive HBIG.
- Sixty-four percent (142 of the 221 infants) completed the three-dose series by eight months of age. Of those infants completing the vaccination series, 75 percent received post-vaccination serologic testing. Three infants (three percent of those tested) were identified as HBsAg positive, even though they had received the recommended preventative treatment.

Each year increasing numbers of HBsAg-positive women and infants are tracked in the North Carolina Perinatal Hepatitis B Prevention Program. Based on seroprevalence

and population data for North Carolina, CDC estimates we are tracking approximately 77 percent of the *expected* births to HBsAg-positive women in our state.

To improve tracking rates and to prevent disease transmission in infants not identified as being at risk, program recommendations include:

- **Administering** HBV vaccine to all newborns prior to discharge;
- **Referring** all infants born to HBsAg-positive women to local health departments for tracking; and
- Including **original** HBsAg laboratory results in all maternal/infant hospital records.

Hospitals, providers and LHDs must implement collaborative strategies to ensure reporting and tracking of at-risk infants born to HBsAg-positive women, and to maintain contact with the mothers and infants through the duration of the tracking process. Adding these collaborative strategies will enhance North Carolina's perinatal hepatitis B prevention efforts and improve the health and lives of our youngest citizens. For more information about the North Carolina Perinatal Hepatitis B Prevention Program, please visit www.immunizenc.com.

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Table 1. Summary of the North Carolina Perinatal Hepatitis B Prevention Program

	1997	1998	1999	2000	2001	2002	2003
N.C. Birth Cohort	106,949	111,631	113,755	120,247	118,112	117,307	118,292
No. Live Births to HBsAg Positive Women	115	144	178	183	173	210	221
No. Infants Tracked by LHDs	108 (94%)	144 (100%)	178 (100%)	183 (100%)	173 (100%)	*207 (99%)	219** (99%)
No. Infants Who Received HBIG & Hep B Vaccination within 24 Hours of Birth	108 (94%)	138 (96%)	157 (88%)	172 (94%)	163 (94%)	202 (96%)	209 (95%)
No. Infants Who Received Third Hep B Vaccination by 8 Months	59 (51%)	109 (76%)	104 (58%)	117 (64%)	102 (59%)	133 (63%)	142 (64%)
No. Infants Who Received Post-Vaccination Testing (after completion of vaccination series)	20 (17%)	58 (48%)	65 (48%)	67 (45%)	64 (53%)	91 (68%)	107 (75%)
No. Infants Who Tested HBsAg Positive	1 (5%)	5 (9%)	3 (5%)	2 (3%)	1 (2%)	2 (2%)	3 (3%)

* Three infants born in 2002 to HBsAg-positive women were identified to the tracking program after prophylaxis was provided.

**Two infants born in 2003 to HBsAg-positive women were identified to the tracking program after prophylaxis was provided.

N.C. Division of Public Health - Epidemiology Response to Persons Displaced by Hurricane Katrina

*Prepared by the General Communicable Disease Control
Branch*

On September 5, 2005, over 400 evacuees flown directly from Louis Armstrong Airport in New Orleans to North Carolina arrived in Raleigh and over 1,000 arrived in Charlotte. Additionally, several hundred Gulf Coast residents affected by Hurricane Katrina self-evacuated to North Carolina. In response, N.C. DPH and local health departments instituted enhanced surveillance for illness and injuries in the population displaced to North Carolina by Hurricane Katrina.

At local levels, one shelter in Mecklenburg County and one in Wake County provided housing for almost 1,500 persons altogether. Surveillance of displaced persons' health status took place in both settings by Mecklenburg and Wake county health departments and human services agencies.

At the state level, hospital-based public health epidemiologists (PHE) in North Carolina's eleven largest hospital systems collected information about persons presenting for services who were noted to have been displaced by the hurricane. Hospitals did not have one consistent way of noting this across or within hospital systems, so not all such patient visits could be captured.

Other statewide surveillance used a near-real-time emergency department (ED) database that currently receives data from 52 of the 114 hospital-based EDs in North Carolina. Records from the North Carolina Hospital Emergency Surveillance System (NCHCESS) database underwent a text string search for key words (e.g., "Katrina," "hurricane," or "FEMA") in the chief complaint and triage note fields. GCDC epidemiologists analyzed these reports to describe reasons for visits and ED utilization.

Local Responses

Epidemiological surveillance at the two shelters did not find evidence of significant outbreaks of infectious diseases, injuries, or high levels of acute medical problems. Basic human services needs and chronic medical conditions were the most prevalent issues among persons displaced to these shelters. Sanitation and hygiene were identified as crucial to preventing and controlling potential outbreaks. Overall coordination of the many efforts provided by all agencies was key to helping centers to most effectively serve the displaced population.

Mecklenburg County Evacuation Center, Charlotte

At least 1,005 persons spent at least one night sheltered in the Coliseum after departing New Orleans, with a maximum noted of 370 persons in one night. The Mecklenburg County Health Department (MCHD) conducted a rapid needs assessment (RNA) among 128 persons on September 7, the

third day of shelter operation there. Most persons reported significant human services needs related to housing and subsistence. Many, but not most, reported medical conditions that required prescription medication treatment. Persons frequently reported needing eyeglasses after losing theirs during evacuation. Few persons reported acute medical problems requiring immediate action.

Robert J. ("Bobby") Kennedy, Environmental Epidemiologist and Preparedness Coordinator at MCHD, also reported on the local health department's work. Initial response beyond the need for triage was frustrating related to abundant uncertainties. Local Emergency Management brought overall organization to multiple agencies' efforts that were predictably chaotic at first. Sanitarians inspected the Coliseum daily. These inspections identified items to remedy as well as reassured all present that the facility was a safe place to stay and work. Communicable Disease Nurses rapidly identified and worked to limit exposure to a child who vomited and another child with scarlet fever. Medical service providers provided ambulatory care for up to 150 persons per day (one person remarked she had not seen a doctor in 25 years). The Department of Social Services effectively coordinated referrals for medical and other needs. Dr. Kennedy reported that active public health work demands diminished after successful interventions, with referrals to other providers becoming the primary intervention. His group has a log of the work performed to help them in future operations.

Wake County Evacuation Center, Raleigh

At least 405 persons spent at least one night in the shelter in Raleigh. Wake County Human Services Director Gibbie Harris led shelter operations. Evacuees arrived by airplane and were met at RDU by a triage team. Some with acute medical needs were triaged directly to area hospitals, but most went by bus to the shelter. N.C. DPH personnel conducted health status assessments during the shelter's first week of operation. As in Charlotte, most evacuees did not report acute medical illness or medical assistance needs. Of those who did report illness needs, care for chronic medical conditions such as diabetes and cardiovascular disease dominated. Few persons reported signs of acute infectious syndromes.

Assessment did note lack of handwashing in the medical clinic area as a concern. Coordination of efforts from multiple agencies was also identified as a key need.

Statewide Responses

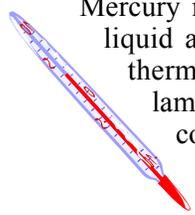
Public Health Epidemiologists in Hospitals (PHE) Active Hospital Surveillance

Hospital-based active surveillance ran from 9/1/2005 through 9/19/2005 coordinated by the PHEs positioned in 11 hospitals across the state. During that time, 138 ED visits or admissions by hurricane evacuees to seven hospitals were identified in North Carolina. Just over half (54%) of these visits were by male evacuees. Seventeen percent of visits were for people aged 14 and under. Seventy percent of visits were for illness

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Cleaning Up Mercury Spills from Broken Thermometers in Schools and Homes

Prepared by Dr. Luanne K. Williams, N.C. Occupational and Environmental Epidemiology Branch and Dr. Michael Beuhler, N.C. Poison Control Center



Mercury is a silvery-white metallic element that is liquid at room temperature. It is used in many thermometers, barometers, thermostats, vapor lamps, and some batteries. Because mercury-containing thermometers are made of glass, they can easily break if dropped or if handled improperly. If a thermometer breaks, proper cleanup is needed to prevent adverse health effects. The North Carolina Poison Control Center is often called regarding broken thermometers and has developed guidance protocols for proper cleanup. The center may be contacted at 1-800-222-1222.

Mercury in its elemental form is not absorbed orally or through unbroken skin. The primary concern from a broken thermometer is “sharps”—injury from the glass fragments—and adverse pulmonary effects from breathing mercury vapor emitted from the spilled mercury droplets. Adverse health effects would not be expected to occur during the short time required for proper clean-up. However, improper clean-up procedures can lead to mercury vapor exposure and adverse health effects. Exposure to mercury vapor can irritate the lungs and airways, causing difficulty in breathing, burning sensation in the lungs, chills, fevers, headache and cough. Other effects from exposure to mercury vapor may include nausea, vomiting, diarrhea, skin rashes, and numbness from absorption of mercury through the lungs and into the bloodstream.

Steps for mercury thermometer cleanup are as follows:

1. Remove everyone from the area where the spill occurred. Isolate spill area by closing doors. Turn off the heating ventilation air conditioning system (HVAC). Be careful not to track mercury from the spill area to other areas. If possible, open windows in the spill area to ventilate the area.
2. The broken glass could result in cuts in the skin or mouth. Examine the mouth and skin for cuts. Wash mercury-exposed hands and skin well with soap and water. Seek medical attention if you suspect swallowing of glass or mercury and look for signs of any blood in vomit or stool.
3. Elemental mercury may be inhaled. **Do not use a vacuum cleaner or a shop vac.** Vacuuming makes the mercury airborne, which can lead to exposure to mercury vapor. Vacuuming mercury also contaminates the vacuum cleaner.

4. Ventilate the room involved by opening windows for at least two to three days, longer if the room is cold. Children should avoid the area for at least one week.
5. Put on rubber or latex gloves as well as old shoes or shoe covers. Place all broken glass on a paper towel. Fold the paper towel and place in a zip lock bag for disposal. Cut and remove carpet including pad, curtains, upholstery or other like surfaces where mercury may have spilled. Locate visible mercury beads. Use cardboard to gather large mercury beads. Do not use a broom or household cleaning products to remove the mercury. Use an eyedropper to collect small beads. Place mercury beads on a damp paper towel. Hold a flashlight at a low angle close to the floor in a darkened room and look for additional glistening beads of mercury. Put shaving cream on the end of a small Q-tip and gently dot the affected area to pick up smaller hard-to-see beads. Alternatively, use duct tape to collect smaller hard-to-see beads. Dispose of all contaminated material including gloves and material used to collect beads, in a sealed trash bag and label the outside “mercury contamination”. Place shoes worn in the contaminated area during clean up in a well-ventilated area for at least a week. Dispose of vacuum cleaner bag within double plastic bags. Discard vacuum cleaner. Contact your local fire department or waste management agency for proper disposal in accordance with local, state and federal laws.
6. If already vacuumed, watch potentially exposed persons for symptoms of mercury inhalation. These include weakness, chills, metallic taste, rash, nausea, vomiting, abdominal pain, diarrhea, headache, shortness of breath, cough, and chest tightness. Symptoms may develop as soon as a few hours to as long as days or weeks. Seek medical attention if symptoms are present or if exposure is strongly suggested. Replace mercury thermometers with digital thermometers or thermometers containing no mercury.

For additional information about the steps or adverse health effects from mercury go to <http://www.epa.gov/epaoswer/hazwaste/mercury/spills.htm> ♦

N.C. State Laboratory of Public Health

Prepared by Gwen Brown, CT-ASCP, Cytology Unit Supervisor,
State Laboratory of Public Health

The Cytology Unit at the State Laboratory of Public Health (SLPH) has undergone many changes over the years, changing technologies to better meet customer needs. One challenge has been to maintain an acceptable turn-around time for PAP smears. Vacancies due to cytotechnologist shortages and salary discrepancies with competing cytology labs have been contributing factors. In March 2004, the Cytec Corporation approached the lab with an offer to take part in a six-month study to evaluate an FDA-approved ThinPrep® Imaging System at no cost to SLPH.

The ThinPrep® Imaging System consists of an imaging unit that scans each slide and locates 22 fields of interest. The Imager uses optical cellular selection algorithms to select these fields based on the fact that abnormal cells have larger, darker nuclei. Additional algorithms look for clusters of cells that may represent endocervical cells. The algorithm analyzes all objects on the slide, discards objects that aren't likely nuclei, and sorts the remaining objects by integrated density. Two automated review scopes are provided that are attached by Ethernet cable to the Imager. The cytotechnologist reviews the 22 fields on each slide and quickly evaluates the negatives based on these fields. The slides with detected abnormalities in the selected field of view are completely screened. Many cytology labs in the country were already using the new system and reporting increased cytotech productivity and disease detection. For these reasons, SLPH decided to move forward with a six-month study to demonstrate performance of the Imaging System with our staff and our clients, many of whom are high-risk clients.

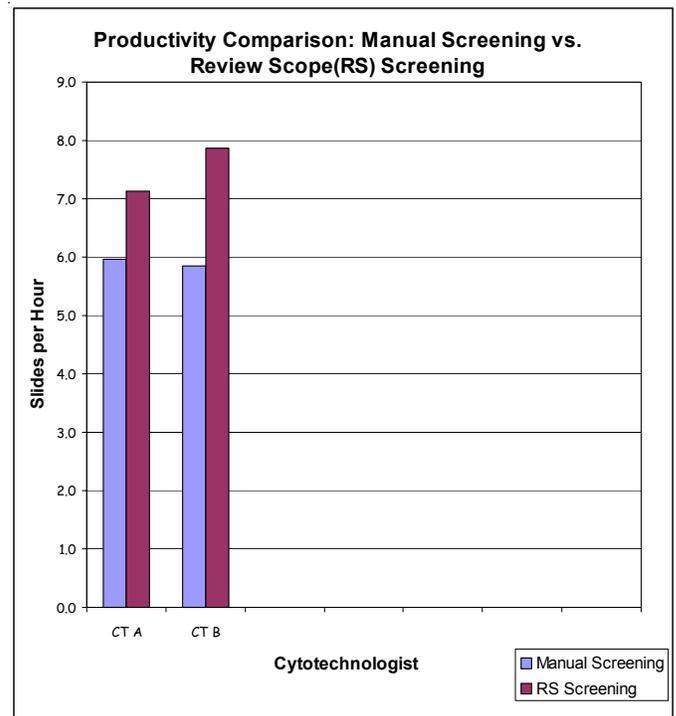
A new stain was developed by Cytec Corporation to enhance the amount of DNA in the nuclei necessary for the algorithms of the imaging system. SLPH previously had incorporated this new stain in July of 2004 to address problems with unsatisfactory specimens. An adjustment period was needed for the cytotechnologists and pathologists to become comfortable with the darker stain and increased nuclear detail. The unsatisfactory rate dropped and the abnormal (dysplasia/SIL) detection rate increased after two months with the new stain using manual screening. This prior conversion to the new stain allowed the training segment of the Imager study to proceed ahead of schedule.

Two screening cytotechs, the Chief Cytotech and a Quality Control Cytotech, were chosen to undergo Imager training. A senior cytotech with 31 years experience and one of the newest cytotechs on staff with only three years experience were selected as the primary screeners. Eight health departments were chosen to participate in the study, based on volume and demographics, to achieve a cross-section of our clients. A validation study was conducted and the pilot project went live on March 1, 2005.

Historical manual screening data was collected on the two screening cytotechs from the same six-month period in 2004 to compare with the statistics gathered during this study. An increase in sensitivity was noticed immediately and was sustained during the entire study. There was a significant increase in HSIL (high grade squamous intraepithelial lesions). An increase in LSIL (low grade squamous intraepithelial lesions) and a decrease in the ASC-US (equivocal atypical cells) were also noted. A considerable decrease in the unsatisfactory rate was also an unexpected, but positive, outcome. The chart below shows the increase in disease detection realized during the study.

Imager vs Historical Manual Screening		
Negatives	-4%	Decrease
Atypical glandular & squamous cells	-4%	Decrease
LSIL	32%	Increase
HSIL	144%	Increase
AIS	0	0
Cancers	0	0
Unsat	-34%	Decrease

The two screening cytotechs in the study began showing increases in productivity within a few days and continued to increase the number of slides screened per day during the course of the project. Cytotech A (senior CT) had a considerable decrease in screening hours and still had an impressive increase in productivity.



The increased sensitivity was dramatic enough to convince SLPH of the Imager System's value to our patient population. The cytotech productivity gains make the ThinPrep® Imaging System very attractive to the SLPH Cytology Unit. As of September 2005, we are in contract negotiations with Cytec Corporation to begin using the Imager as our primary PAP screening system in December 2005. ♦

(Response to Katrina Evacuees, cont'd from page 6)

(96/138). Twenty-three (16%) visits were for medication refills only. Eight visits were for injuries, and eight visits were for both injury and illness. One woman presented in labor at term and delivered a healthy baby.

Seven of the injuries were due to insect bites and stings. One injury was described as a leg laceration that occurred while wading through floodwaters during an evacuation, leading to wound infection with *Vibrio vulnificus*.

Dehydration and gastroenteritis were each diagnosed in eight evacuees. Skin and wound infections were also common diagnoses (eight of the evacuees). URI/bronchitis was diagnosed in four evacuees (five visits), febrile illness in two evacuees, and four evacuees were diagnosed with other infectious diseases (urinary tract infection, chlamydia urethritis, pneumonia and viral syndrome).

Psychiatric conditions and symptoms were noted nine times in the primary clinical impressions (e.g., psychosis, hallucinations, delusions, and adjustment disorder). Two evacuees were hospitalized for strokes.

Sixteen evacuees were hospitalized; one was directly admitted to the intensive care unit. Three of the thirteen admissions were to the psychiatric unit.

North Carolina Hospital Emergency Surveillance System (NCHES)

At the time of this analysis, diagnostic codes had been assigned to 81 of 157 ED visits to 22 hospital EDs. The leading diagnoses for ED visits captured in NCHES were acute infections (n=16, 20%), chronic conditions (n=14, 17%), trauma (n=11, 14%), and psychological or psychiatric disorders (10, 12%).

Lessons Learned

- Effective coordination was essential for the initial response phase. Use of Emergency Management System protocols and Incident Management System structure and functions can enhance delivery of important services.
- The earlier effective coordination occurs, the less chaos and greater likelihood of successful operations in shelters.
- Public health workers should assure safety and sanitation in shelters.
- While the true number of Katrina evacuees seeking shelter is unknown, it is estimated to be low relative to the number sheltering in states closer to where Hurricane Katrina hit. Hospitals serving the areas receiving people directly evacuated from New Orleans were affected by mildly increased ED patient volume which did not overtax medical resources. However, in the event of such a disaster nearer to North Carolina, demands on surge capacity would be greater.
- For a disaster closer to home, a statewide uniform method for shelter surveillance will be needed.

- A system for providing medication refills directly through shelters would reduce unnecessary utilization of hospital EDs.
- NCHES and the PHEs provided complementary surveillance reports; the data gathered demonstrated the near-real time capacity and accuracy of gathering hospital-based activity in response to Katrina. These two programs have demonstrated their value for overall preparedness in North Carolina. ♦

Inaugural Lab Conference Draws Multi-State Audience

Prepared by Lisa O. Ballance, BSMT (ASCP) Regional Laboratory Consultant, N.C. State Laboratory of Public Health

As the training unit of the State Laboratory of Public Health, Laboratory Improvement is charged with the important mission of providing cutting-edge continuing education opportunities relevant to today's healthcare communities. On August 5, 2005, Laboratory Improvement once again rose to the challenge as **North Carolina Clinical Lab Tech Day**, a one-day educational conference, became a reality.

This inaugural event, hosted on the campus of Wake Technical Community College in Raleigh, brought together more than 250 healthcare professionals, educators, students, and exhibitors from five states. Accounting for the broad appeal and multi-state draw of attendees was the event's featured presenter, internationally renowned phlebotomy expert and author, Dennis J. Ernst, MT (ASCP).

As the Director of the Center for Phlebotomy Education, Inc., located in Ramsey, Indiana, Mr. Ernst serves as a leading authority on phlebotomy and frequently works with internationally recognized standards committees and phlebotomy associations around the world. During his two presentations, Mr. Ernst addressed recent critical changes to important standards on blood specimen collection. Also discussed were valuable tips for successfully acquiring specimens from pediatric patients, as well as steps to take when dealing with needle-phobic patients. Having served as an expert witness in numerous phlebotomy-related lawsuits, Mr. Ernst provided invaluable insight regarding risk management strategies. Instituting proactive measures, such as ensuring staff operate within the current standard of care for phlebotomy, helps minimize the risk of employee and/or patient injuries as well as an agency's subsequent vulnerability to litigation.

Also presenting at this year's conference were Mr. William Patrakis, RS, MA, from the North Carolina Division of Waste Management and Mr. Steven Preissler, MS, Occupational Health Specialist from the North Carolina Department of Labor's Division of Occupational Safety and Health. In his talk, Mr. Patrakis discussed the differences between and handling requirements for regulated and non-regulated medical
(continued on page 11)

Reported Communicable Disease Cases, N.C., January-October 2005 (by date of report)*

Disease	Year-to-Date (Third Quarter)			3 rd Quarter 2005	Comments / Notes
	2005	2004	Mean (2000-2004)		
Brucellosis	3	0	0	2	
Campylobacter	524	480	469	212	
Chlamydia, laboratory reports	24468	21776	18590	7569	
Cryptosporidiosis	67	64	34	42	
Cyclosporiasis	1	1	1	1	
Dengue	9	3	2	4	
E. coli, Shiga toxin-producing	43	24	38	24	Note 1
Ehrlichiosis, granulocytic	2	7	2	1	
Ehrlichiosis, monocytic	16	25	13	10	
Ehrlichiosis, unspecified	3	-	-	1	Note 2 & 3
Encephalitis, Eastern equine	1	0	0	0	
Foodborne, clostridium perfringens	1	4	1	1	
Foodborne, other	177	442	104	43	
Foodborne, staphylococcal	9	6	15	7	
Gonorrhea	11681	11462	12301	3804	
Haemophilus influenzae	67	45	34	15	
Hepatitis A	65	74	120	27	
Hepatitis B, acute	128	138	153	42	
Hepatitis B, chronic	697	517	589	210	
Hepatitis B, perinatal	1	6	-	1	Note 2 & 7
Hepatitis C, acute	15	10	14	6	
HIV/AIDS	1299	1272	1275	353	Note 4
HUS / TTP	4	0	1	4	
Legionellosis	23	29	18	9	
Listeriosis	20	16	-	9	Note 5
Lyme disease	42	92	69	18	
Malaria	24	17	19	9	
Meningococcal disease	28	26	35	9	
Meningitis, pneumococcal	29	23	32	4	
Mumps	9	4	3	0	
Psittacosis	1	1	0	0	
Q fever	6	2	1	4	
Rabies, animal	380	485	510	129	
Rocky Mountain Spotted Fever	356	332	182	210	
Salmonellosis	1168	1187	999	588	
Shigellosis	149	242	356	61	
Strepto. A, invasive	103	100	98	24	
Syphilis, total	357	343	550	157	Note 6
Tuberculosis	203	241	247	102	
Toxic Shock Syndrome (TSS)	3	2	3	0	
TSS, streptococcal	8	2	1	2	
Toxoplasmosis, congenital	1	0	0	0	
Typhoid, Acute	3	6	4	1	
Vibrio, other	10	10	7	6	
Vibrio vulnificus	2	2	3	2	
Whooping cough	77	67	67	36	

*Preliminary data, as of 10/24/2005. Quarters are defined as 13-week periods. Only diseases with cases reported in the year 2005 are listed in the table. Notes: 1. Including E. coli O157:H7 ("E. coli O157:H7" was disease name until 2/15/2003); 2. Not reportable, or not reportable as such, in this entire time period; 3. Became reportable effective 1/1/2005; 4. Earliest report with HIV infection or AIDS diagnosis; 5. Reportable since 7/2001; 6. Primary, secondary and early latent syphilis; 7. Coded as such since 2002.

(Inaugural Lab Conference, cont'd from page 9)

waste, as well as acceptable methods of needle disposal. Mr. Preissler provided the audience an enthusiastic overview of the OSHA inspection process.

In addition to timely and informative educational sessions by experts in their fields, this conference also provided participants the unique opportunity for vendor interaction at the display areas in the Exhibitor's Hall. Throughout the day, participants evaluated a wide range of products and services that were showcased by the event's 19 sponsors and exhibitors.

With innovative ideas, creative collaborations, and public and private sector partnerships, Laboratory Improvement is fulfilling its mission in new and exciting ways. By bringing such outstanding educational offerings to reality, Laboratory Improvement continues to set a standard of quality and excellence for other laboratory training organizations across the nation to emulate. This year's event was proudly co-sponsored by the State Laboratory of Public Health and the National Laboratory Training Network. ♦

My Fair Lady

Prepared by Pete Moore, Unit Manager, Field Development, HIVSTD Prevention and Care Branch

Robeson County (pop.132,339) is a mostly rural county located in southeastern and is the largest county in North Carolina in terms of square miles. This county has had extremely high rates of infectious syphilis with rates peaking in 2001 when its primary and secondary syphilis rate of 73.0/100,000 placed it 14th in the nation in the number of infectious syphilis cases reported. Although rates have declined since then, Robeson County still has syphilis rates that are significantly higher than the statewide and national averages.

Commercial sex workers (CSW) are seen as a major factor in the increase in syphilis and other STDs in this county. In an effort to address this situation, the North Carolina HIV/STD Prevention and Care Branch began funding the "My Fair Lady Project" in 2003. The goal of this project is to lower the number of STDs in Robeson county by reducing the number of active commercial sex workers (CSWs). The project attempts to do this by placing women who are engaged in prostitution into immediate care (drug rehabilitation, affordable housing, medical care, etc.). Once these women are stable, the project pays for professional training and aids them in getting employment. In return for these services, the program participants function as STD/HIV peer outreach workers with the CSW population that they just left.

The project attempts to enable the CSWs to function independently as peer outreach workers who receive pay, to acquire affordable housing, to purchase a dependable vehicle, and to manage their lives effectively. As part of their duties, the project graduates visit sites that have high

CSW activity, such as crack houses, trailer parks, bars and hangouts in rural Robeson County. Once at these sites, the graduates deliver HIV/STD education, work with CSWs on reducing their risk, arrange HIV/STD screening, and recruit CSWs who may be eligible to participate in the program. To date, two women have been recruited, rehabilitated and are in the process of being trained as outreach workers. The project has enough money to admit one more CSW into the program and more money is being pursued to expand the project.

The "My Fair Lady Project" has been highlighted in local media and in a CBS News feature story, and *Marie Claire* magazine is interested in doing an article on the project. ♦

**Employee Recognition:
Steve Sherman -
Employee of the Quarter**

*Prepared by Patsy West, Administrative Assistant
Epidemiology Section*



Mr. Sherman began his outstanding career in public health in 1982, and in 1998 he became part of the HIV/STD Prevention and Care Branch. As a Public Health Program Coordinator/Project Manager in the North Carolina AIDS Drug Assistance Program (NCADAP), he single-handedly managed ADAP until a nurse consultant was hired in 2004. Mr. Sherman has devoted countless hours and enormous amounts of energy in trying to make life better for those affected with HIV/AIDS who can't afford the life sustaining drugs they need. Mr. Sherman is routinely consulted by national organizations about ADAP, Ryan White reauthorization, and strategic policy development in the HIV/AIDS arena. He serves on the ADAP Task Force and meets with pharmaceutical representatives across the nation to get the best prices on drugs for ADAP programs. Through his hard work and tireless efforts, the NC ADAP completed the complex and cost saving transition to a centralized purchase and distribution system. Throughout the conversion phase, Mr. Sherman involved clients and providers with information on the progress of the centralized system on July 1, 2005. Mr. Sherman also provides the staff support for the North Carolina AIDS Advisory Council, a select group of HIV leaders appointed by the State Health Director.

Mr. Sherman's perseverance and diligence have paid off for North Carolina in more ways than one. More HIV/AIDS citizens than ever before will now be served and the state will realize million of dollars in savings. Steve Sherman is a true advocate for those affected with HIV/AIDS and works tirelessly to see that their needs are met.

Mr. Sherman received a certificate of recognition for Service Excellence and a gift certificate to a local restaurant from the Epidemiology Section Management Team. ♦

State of North Carolina • Michael F. Easley, Governor
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Dr. J. Steven Cline, Epidemiology Section Chief
Managing Editor, J. Steven Cline
Layout and Typesetting, Angela Green

State Laboratory of Public Health (919) 733-7834

Epidemiology Section Office (919) 733-3421
General Communicable Disease Control Branch (919) 733-3419
HIV/STD Prevention and Care Branch (919) 733-7301
Occupational and Environmental Epidemiology Branch (919) 707-5900

Office of Public Health Preparedness and Response (919) 715-0919
Rabies Emergency Number - Nights, Weekends, Holidays (919) 733-3419
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