MEASLES OUTBREAK! (COURTESY OF STOKES COUNTY HEALTH DEPARTMENT, MAY 2013)

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Measles Outbreak Associated with a Traveler to India—North Carolina, April-May 2013

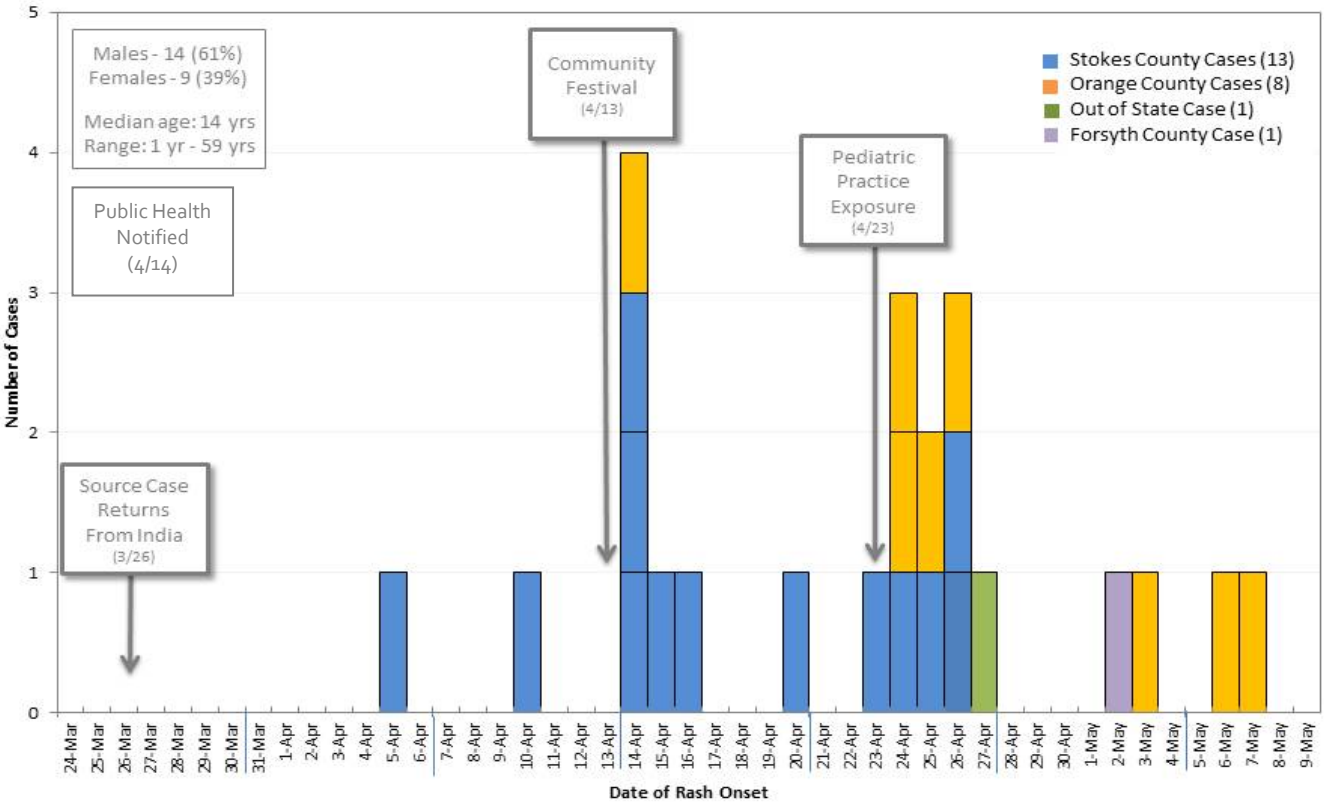
By Kristin Sullivan, MPH

On April 14, 2013, local and state public health officials were notified of suspected measles infections among unvaccinated members of a family residing in Stokes County, North Carolina. The index patient had developed symptoms after returning from a three-month visit to India. Measles was not suspected until two weeks later when two unvaccinated household contacts sought evaluation for similar symptoms. Measles was first confirmed by laboratory testing at the State Laboratory of Public Health on April 16, 2013.

Overall, 23 cases of measles were identified among residents of 3 North Carolina counties and one other state. The last rash onset occurred on May 7, 2013. Patients ranged in age from 1-59 years. Two patients were hospitalized, including the source patient and one other adult patient who experienced respiratory complications. Eighteen cases (78%) occurred among unvaccinated persons, with a majority of these being members of the index patient's community. Community members were largely unvaccinated in keeping with their religious beliefs. Three patients (13%) had documentation of a complete two-dose series of MMR vaccination. Vaccination status could not be determined for two patients (9%).

More than 1,000 persons were identified as having been exposed to confirmed or suspected measles cases throughout the course of the outbreak, including exposures in a variety of healthcare and school settings. Exposures also occurred in several public venues, including a large music festival, requiring broad public notifications. All identified contacts had to be reached and notified of the potential exposure. When indicated, MMR vaccine and immune globulin (IG) were administered as post-exposure prophylaxis (PEP). Approximately 70 susceptible contacts who did not receive MMR within 72 hours of exposure were issued verbal or written quarantine orders instructing them to stay home for 21 days following their last exposure. Although most exposed healthcare workers were able to provide presumptive evidence of immunity to measles, some healthcare workers had documentation of only one dose of MMR. As a result, in some instances it was necessary to exclude healthcare workers from work from five to 21 days after exposure or until they were able to provide serologic confirmation of immunity.

Although measles is no longer endemic in the United States,[1] importation of measles virus continues to occur. The cost associated with limiting transmission can be substantial and diverts resources from public health agencies for prolonged periods, as occurred in this North Carolina outbreak. High vaccination rates, rapid case identification and efficient, timely control measure implementation are essential in minimizing transmission of imported measles. *CDC Measles Guidance is available at:* http://www.cdc.gov/vaccines/pubs/surv-manual/chpt07-measles.pdf



Cadaver Dog Training at the Office of the Chief Medical Examiner

By Lisa Mayhew, MS

An elderly gentleman with dementia walks away from his home, a young woman with suicidal tendencies abandons her car near a state park entry and leaves behind a suicide note, or a victim of homicide is buried in a shallow grave not far from an interstate exit. These are not uncommon scenarios for the staff at the Office of the Chief Medical Examiner (OCME). Yet, we don't officially have a case until that individual is actually located. One particularly valuable tool used across the state is specially trained HRD dogs, or Human Remains Detection dogs, also known as cadaver dogs. The development and use of HRD dogs can be traced back to the 1970s with law enforcement, the military and private research groups exploring training methods and applications in the field. Since then, dogs have successfully been used in recovering victims of natural disasters, terrorist attacks, homicides, drowning, missing persons, historical remains, and locating and recovering soldier remains in war zones.

Much debate exists over precisely what the dogs are detecting that allows them to discriminate human from animal, and tissue from bone, even from underneath water and beneath six feet of dirt. Progress is being made by Dr. Arpad Vass, a forensic anthropologist at the University of Tennessee's Law Enforcement Innovation Center. His ongoing research has identified more than 480 volatile compounds from human decomposition. Handlers and trainers do not necessarily concern themselves with the scientific specifics as long as the dogs can locate the scent sources and communicate the find.

Training a scent detection dog is fairly standard whether its being trained to detect narcotics, human remains, bombs, or fruit. The dog is given positive rewards at every opportunity when it is initially exposed to the target scent. This is typically referred to as imprinting. It is then taught the game of searching for the scent. Once the dog

understands what it is looking for, an alert or indication is trained. That alert is a specific behavior that the dog demonstrates at the scent source. Aggressive alerts such as digging are discouraged so that the integrity of the scene and body are maintained. Handlers use a variety of passive alerts with their dogs to include downs, sits, and barks. It typically takes between one and two years to train and certify a human remains detection dog. More specialized training is required for water recovery and historical remains work.

Solo alerts on a scent source buried in a wood chip pile. Solo is owned and handled by Cat Warren of Durham, NC

One training book all handlers keep in their libraries is the Cadaver Dog Handbook (CRC Press, 2000) written by Andy Rebmann, Dr. Edward David, and Dr. Marcella Sorg. Dr. David is a forensic pathologist and Dr. Sorg is a forensic anthropologist both based in Maine. Andy was a pioneer in the field of cadaver dog training with the Connecticut State Police in the early 1970s. He and his wife, Marcia Koenig, still handle and train dogs and teach seminars across the country. I met the couple at a seminar in the late 1990s. As the Child Death Investigator and Trainer for the OCME, I have also been a cadaver dog handler since 1997. While many dogs are handled by volunteers, there are increasing numbers of law enforcement departments acquiring dogs for cadaver work. When I first saw the grounds surrounding the new state laboratory and OCME, I knew it was perfect for addressing two issues. First, getting the increasing number of law enforcement canines together for training, and second, training on quality aids in a controlled environment. The terrain offers excellent opportunities for setting up real life scenarios and difficult scenting problems. Beginning this past May, on every third Friday of the month, handlers are invited to OCME for training. Currently, participants include 10 agencies and more than 12 dogs within a two hour drive of Raleigh. Several of these handlers are also Master K9 Trainers. Eventually, it is our goal to develop training and certification standards and resource lists of certified handlers that can be shared with agencies statewide.

The HIV Treatment Cascade: Racial and Ethnic Disparities in Accessing HIV Care and Achieving Viral Suppression, North Carolina, 2011.

By Aaron Fleischauer, PhD

There are an estimated 33,000 to 35,500 people living with HIV/AIDS (PLWHA) in North Carolina, 26,168 (approximately 76%) of whom have been diagnosed and reported to the North Carolina Division of Public Health (NC DPH) as of December 31, 2011. Ensuring that PLWHA stay in care from diagnosis to sustained viral suppression, measured by the HIV treatment cascade, is the primary goal of the National HIV/AIDS Strategy (NHAS). Treatment cascades were examined to identify disparities in race and ethnicity in North Carolina.

The Communicable Disease branch used integrated surveillance data to calculate the proportion of PLWHA at each of the following steps in the HIV treatment cascade following diagnosis: 1) ≥ one HIV care visit during 2011 (accessed care), 2) ≥ two care visits at least three months apart during 2011 (retained in care), 3) and virally suppressed (< 200 copies/mL). Persons for whom viral load data was not available were classified as not virally suppressed. Treatment cascades were stratified by race and ethnicity.

Statewide, 11,006 (44%) PLWHA accessed at least one care visit in 2011, 7,686 (31%) were retained in care, and 7,528 (30%) were virally suppressed. Retention in care varied by race and ethnicity; specifically, 33% of white, 30% of black, and 23% of Hispanic PLWHA were retained in care in 2011. Overall, a significantly higher proportion of white PLWHA were virally suppressed (36%, 95% CI: 35-37%) compared to black (28%, 95% CI: 27-29%) and Hispanic (23%, 95% CI: 21-25%) PLWHA.

Differences in HIV treatment cascades were observed for racial/ethnic subpopulations in North Carolina. Despite underestimates of viral suppression due to underreporting of viral load data, overall viral suppression proportions among white and black subpopulations in the state were above national estimates (30% and 21%, respectively, nationally) whereas Hispanics were lower (26%

nationally).[1] Identification of specific points of service loss within these subpopulations will allow targeted interventions to improve service delivery and reduce disease transmission in North Carolina.

Addendum: *On June 18, 2013, the North Carolina General Assembly's Rules Review Commission adopted the rule change to require laboratory reporting for all results of CD4and viral load tests effective July 1, 2013.*

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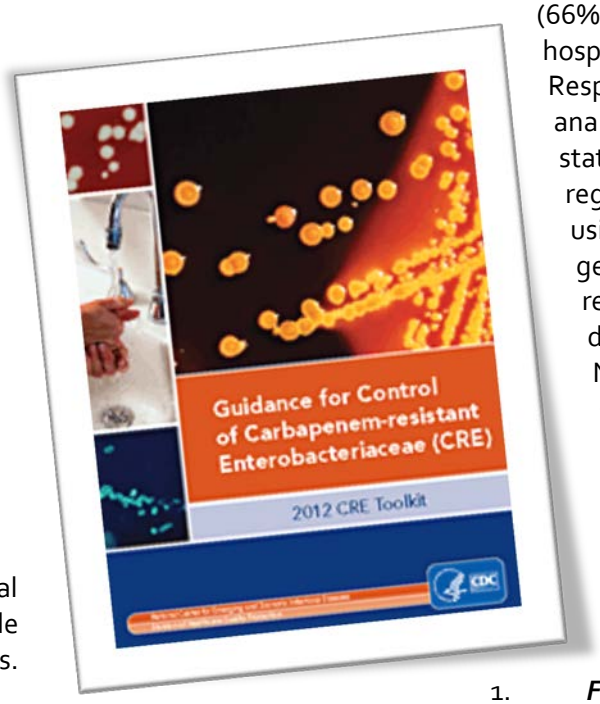
Survey of Carbapenem-resistant *Enterobacteriaceae* (CRE) in North Carolina Hospitals: Key Findings

By Jennifer MacFarquhar, RN, MPH and Kristin Sullivan, MPH

Carbapenem-resistant Enterobacteriaceae (CRE) are a growing public health concern and a recent topic of CDC's Vital Signs campaign (http://www.cdc.gov/vitalsigns/HAI/CRE/index.html). These organisms are associated with high mortality rates and have the potential to spread widely. Although CRE prevalence is on the rise, the opportunity still exists to prevent widespread transmission.

In the United States, the most common mechanism of carbapenem resistance is the *Klebsiella pneumoniae* carbapenemase (KPC), first identified in North Carolina in 2001.[1] Although KPC-producing strains of CRE have been identified in our state, other unusual strains with less common resistance mechanisms such as New Delhi metallo-β-lactamase (NDM), Verona integrin-encoded metallo-β-lactamase (VIM), and the imipenemase (IMP) metallo-β-lactamases have *not* been reported in North Carolina. These unusual strains have been found primarily among patients who received overnight medical treatment outside the United States.



A coordinated regional effort among providers, healthcare facilities and public health is necessary to prevent the spread of KPC, as well as to detect and prevent the emergence of unusual forms of CRE.

Hospital Surveys. To estimate the prevalence of CRE in our state, the North Carolina Division of Public Health (NC DPH) and the North Carolina Statewide Program for Infection Control and Epidemiology (NC SPICE) requested that hospital infection preventionists (IPs) and hospital laboratories provide basic information regarding identification of and response to CRE in their facilities. In July 2012, surveys were sent with questions covering the time period from January 2011-June 2012. The surveys were specifically developed to determine 1) the frequency of CRE identification in NC, 2) current practices for detecting CRE and 3) current practices used to prevent transmission.

Results. Eighty-seven eligible short-stay, acute-care hospitals were included in the survey analysis. Survey responses were received from IPs at 68/87 (78%) hospitals and from microbiology labs serving 57/87 (66%) of these hospitals. Responses were analyzed on the state and regional level using the six geographic regions defined by the North Carolina Hospital Association.

1. ***Frequency of CRE identification***. CRE were identified in all six regions within North Carolina during the survey period. At least one patient with CRE infection or colonization was identified in about half of hospitals completing the IP survey. CRE were identified *less frequently than once per month* in the majority of facilities. Given these findings, all regions in North Carolina can be classified as "regions with few CRE identified" using criteria established by CDC and outlined in the 2012 CRE Toolkit.
2. ***Current practices for detecting CRE***. Laboratories were asked to report current methods used to identify CRE, use of interpretive criteria and future expected capabilities for CRE detection. The majority of responding laboratories indicated the use of automated susceptibility systems, followed by the

Modified Hodge Test. At the time of the survey, fewer than 25% of laboratories reported adopting the new breakpoints for carbapenems or cephalosporins. Approximately 40% of laboratories not using the new breakpoints indicated that they were planning to do so within the next year.

Less than 10% of hospitals reported having ever conducted point prevalence surveys for CRE in high-risk units (e.g., intensive care units or units with high antimicrobial use) or performing active surveillance for patients with known risk factors (e.g., admission or transfer from an area with high prevalence of CRE). Nineteen facilities (28%) reported that they had performed a review of microbiology records to identify previously unrecognized CRE cases.

3. ***Current practices used to prevent transmission***. The most frequently reported prevention strategies used when a CRE colonized or infected patient was identified included: placing the patient on contact precautions (99%), placing the patient in a single-patient room when possible (84%) and enhancing hand hygiene practices (68%). Facilities often reported implementing more than one measure.

   The inter-facility transfer of patients colonized or infected with CRE has the potential to facilitate transmission of CRE. Ninety-seven percent of facilities reported always or sometimes communicating CRE status to the receiving facility when CRE-infected or -colonized patients are transferred out of the hospital. However, only 16% of facilities reported ever inquiring about the CRE status of incoming patients.

Conclusions. Results from the IP and Laboratory Surveys results indicate that CRE are present in all regions of North Carolina but are still identified infrequently in most facilities. To prevent these organisms from becoming more widespread, providers, healthcare facilities and public health entities must all recognize them as epidemiologically important and engage in coordinated control efforts.

Baseline information from this survey will help partners better understand the epidemiology of CRE in North Carolina and better tailor strategies to minimize transmission. The 2012 CRE Toolkit provides detailed guidance for the detection and prevention of CRE at the facility and regional levels. Public health professionals, infection preventionists and other stakeholders should familiarize themselves with this document and ensure that appropriate measures are in place to control the spread of CRE within and among facilities.

CRE infections can be prevented using the guidelines outlined in the toolkit. Strict adherence to recommended procedures will allow us to take advantage of this unique opportunity to control the spread of this multi-drug resistant organism before it becomes widespread in North Carolina.

Next Steps. To assure that the prevalence of CRE in North Carolina remains low, the North Carolina Division of Public Health HAI Prevention Program has created two task forces with representation from across the state to identify best practices for detection, prevention, and control of CRE within the state. The CRE Laboratory Task Force will consider creation of "best practice" guidance for detection of CRE and response to identification by microbiology laboratories. The CRE Surveillance and Prevention Task Force will consider best practices for surveillance and prevention of CRE; communication in and between facilities when a patient is identified to be colonized or infected with CRE; and opportunities for CRE education targeted to healthcare providers across the healthcare continuum.

REFERENCES

For more information about CRE, please visit the NC Healthcare-Associated Infections website at: http://epi.publichealth.nc.gov/cd/hai/providers.html

[1]Yigit H, Queenan AM, Anderson GJ, Domenech-Sanchez A, Biddle JW, et al. (2001) Novel carbapenem-hydrolyzing beta-lactamase, KPC-1, from a carbapenem-resistant strain of Klebsiella pneumoniae. Antimicrobial Agents and Chemotherapy 45: 1151–1161.

Work-related Amputations in North Carolina, 2010.

By Gregory Dang, DrPH

Amputations are one of the most severe, debilitating injuries that can occur in the workplace. Unlike most other injuries suffered on the job, amputations can result in permanent damage and disfigurement, forcing workers to significantly adjust their lives physically and psychologically at work and at home. In most circumstances, work-related amputations (WRA) are preventable. Successful approaches for making workplaces safer begins with reliable data to better understand the health status of workers and the correctable risk factors on the job.

WRAs are a public health issue recognized at the national level by CDC's Occupational Health Indicators (OHI) surveillance program, that utilizes data from the Bureau of Labor's Survey of Occupational Illnesses and Injuries (SOII). SOII is a national survey that uses a probability sample of industries and employers to report WRAs. In 2010, there were a total of 180 WRAs in North Carolina; a rate of seven cases per 100,000 full-time equivalents (FTEs) compared with six cases per 100,000 FTEs nationally. Of 180 WRAs in the state, all involved fingers; and half of these injuries resulted in more than 31 days lost from work.

The North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC-DETECT) was used to further describe emergency department (ED) utilization for WRAs. A case was defined as an individual 16 years of age or older who received medical care at a North Carolina hospital ED in 2010 for whom a primary or contributing ICD-9-CM amputation diagnosis code of 885.0-.1, 886.0-.1, 887.0-.7, 895.0-.1, 896.0-.3 and/or 897.0-.7 was assigned following discharge. Only individuals with workers' compensation payment were selected for analysis. Denominator data was obtained from the Bureau of Labor Statistics (BLS) Current Population Survey to estimate the number of employed persons in North Carolina by age and gender.

A total of 1,253 amputation related ED visits were identified in 2010; 264 (21%) of these patients were insured by workers' compensation.

Among 264 probable WRA cases, 273 assigned ICD-9-CM codes were reviewed. Complete/ partial amputation of fingers other than the thumb (ICD-9-CM 886) was the most common WRA (205 cases (75%)), followed by complete/ partial amputation of the thumb (ICD-9-CM 885) (53 cases (19%)). Mechanism of injury E codes included:

- other specified machinery (E919.8)
- caught accidentally in or between objects (E918)
- unspecified machinery (E919.9)
- other powered hand tools (E920.1)
- knives, swords, daggers (E920.3)
- sports and athletics (E000.8)
- other specified cutting and piercing instruments or objects (E920.8), and
- accidents caused by woodworking and forming machinery (E919.4).

Table 1. Work-Related Amputations among Employed North Carolina Residents by Age, Sex and ED Disposition, 2010

Category	Counts	%	Rate per 100,000 Employed Residents[1]
Age (Years)			
16-19	8	3.0	7.2
20-24	24	9.1	6.5
25-34	63	23.9	7.0
35-44	53	20.1	5.6
45-54	77	29.2	8.1
55-64	31	11.7	4.8
65+	8	3.0	4.8
Sex			
Female	38	14.4	1.9
Male	226	85.6	10.6
Disposition[2]			
Admitted	38	14.6	
Admitted to ICU	2	0.8	
Discharged	197	75.8	
Observation	4	1.5	
Other	1	0.4	
Transferred	18	6.9	
Missing		*4*	

[1] Rates calculated per 100,000 employed residents of North Carolina. Denominators based on US Census and BLS population estimates of 2010.
[2] Patient's anticipated status from the ED. The disposition variable is specific to NC-DETECT and has no BLS equivalent. Therefore, rates were not calculated for Disposition.

The highest rates of WRA occurred among employed persons 45 to 54 years of age (8.1 ED visits per 100,000 employed persons) (Table 1). When comparing ED visits by sex, WRA were more than five times greater for males when compared to females. Geographically, employed residents of Catawba County had the highest proportion (8.0%) of WRA ED visits followed by Forsyth (7.2%) and Mecklenburg (6.8%) counties. Most (75%) persons with WRA were discharged from the hospital ED.

This analysis using NC DETECT data is subject to several limitations. First, the number of WRAs may be underestimated since not all ED visits are reported as workers' compensation claims by workers. Employers may be exempt from workers' compensation coverage or do not provide it, workers may choose not to report their injuries as work-related if they occur on the job, and/ or they are unaware of the benefit. Second, ICD-9-CM codes are collected primarily for billing and administrative purposes, and are used secondarily for public health surveillance. Third, important

variables that help describe patterns of work-related amputations such as race and ethnicity, and type of industry and occupation are not available in NC DETECT.

Despite these limitations, NC DETECT is useful for evaluating the reliability of national survey data such as SOII. In this analysis, ED data identified approximately 32 % more WRA cases than did SOII in 2010. Furthermore, ED data contained county-level detail unavailable in SOII and important for targeting high risk persons and locations.

Results of this analysis will be shared with Occupational and Safety Health Division in the NC Department of Labor and other organizations to help inform inspection, education and outreach practices.

REFERENCES

For more information about Occupational Health, please visit the NC Occupational Health website at: http://epi.publichealth.nc.gov/oee/programs/oii.html

Developing a Statewide Mass Casualty Plan

By Matt Leicester, EMT-P, MBA

A plane crash at RDU, a tornado in a local community, flooding from a hurricane – these are just a few examples of events that can lead to a large number of casualties in North Carolina. But what makes an event a mass fatality event and how do we respond to these events? A mass fatality event is defined as any event that exceeds a jurisdiction's response capabilities, and how we respond will depend largely on what resources the locals have, and what they need from state and federal entities.

To assess local needs, we must prepare to address a wide scope of questions including: How do we assist the families of those who have lost a loved one? Who has jurisdiction? How do we communicate with the media, the families, and the responders?

To prepare for such events and address these and other questions, the Public Health Preparedness and Response branch (PHPR) is in the early stages of developing a state fatality management and response plan. Through a collaborative effort between PHP&R, the Office of Emergency Medical Services, North Carolina Emergency Management, and the Office of the Chief Medical Examiner, we will be working with partner agencies from across local, state, and federal agencies to develop a coordinated, systematic approach to responding to mass fatality events.

One of the first steps in developing a statewide plan is to define triggers for different levels of action, such as setting parameters for the number of deaths and locations required to initiate a multijurisdictional response. Each agency will be providing input on what they need, as well as what they can provide during a mass fatality event. The goal is to identify our capabilities and our weaknesses before we encounter a mass fatality event, develop the plan to address these points, and ultimately create a template that can be used by local public health departments and their partners to tailor to their jurisdiction's specific needs. By collaborating, we are helping to ensure that we are able to support the local response during an event, and that the state is knowledgeable and ready to respond if requested.

Introducing Youth to Public Health Careers May Secure Future Workforce

By Scott J. Zimmerman, PhD

Earlier this month, the North Carolina State Laboratory of Public Health hosted a Student Health Day to expose middle and high school students from across North Carolina to the field of public health laboratory science. More than 50 students were given hands-on opportunities to learn how laboratory professionals contribute to our society by tracking diseases, protecting our environment, detecting health issues in newborns, and responding to natural disasters. But this event was much more than a field trip. It was an opportunity to present these students with exciting career options and to rebuild an aging workforce.

Since the early 1900s, many achievements in public health can be attributed to public health laboratories' accomplishments in disease detection, food safety, and environmental health protection. These achievements have relied heavily upon the talents of microbiologists, chemists, technologists, and other science-minded individuals. The ability for public health laboratories to continue to make improvements to the health of our communities will depend on having educated and experienced laboratory scientists.

Within the next five years, dramatic workforce reductions are expected in the fields of epidemiology, laboratory science, nursing and environmental health. National trends indicate that laboratory vacancy rates alone exceeds 20 percent and are increasing while the Bureau of Health Statistics predicts current vacancy rates will double during the next decade. Left unanswered, this public health workforce shortage will have a significant impact on our ability to protect the communities where we live and work.

Exposing younger students –middle or junior high level – to public health careers provides an opportunity to shape their educational choices and career paths. Top universities across the United States are adding public health undergraduate programs to their curricula. Those who may be driven to serve their communities, are science-minded, or have interest in communications, marketing, education, or business will likely find opportunities in public health.

Today's public health leaders will rely upon the next generation to effectively meet the ever evolving and increasingly complex public health challenges that continue to face us. It is our youth who will provide the solutions for our well-being.

Epidemiology Section Employee of the Quarter

Mercedes Hernandez-Pelletier, MPH
Health Educator, OEEB

Mercedes Hernandez-Pelletier has distinguished herself in public health service excellence by her work with the "Well Water and Health" web project. This work was the culmination of more than two years of planning, coordinating, and implementing information about well testing, well contaminants, and prevention. She worked closely with the Superfund Research Program in the Department of Environmental Science and Engineering at the University of North Carolina Gillings School of Global Public Health on the design and content of the website. She also worked closely with UNC in the development of county-level contaminant maps and tables. In addition, she collaborated with the North Carolina Department of Environment and Natural Resources with their Well Water Testing website. This work was recognized by the North Carolina Governor's Office and the Department of Health and Human Services as an excellent example of interdepartmental communication. All of this work was above and beyond her normal duties and responsibilities. In addition to her work as the Public Health Educator for the Health Assessment, Consultation, and Education Program, Mercedes tirelessly coordinates many community meetings, creates health education materials, and designs fish consumption signs and messaging in support of other staff activities. She is a team-player, hard-working, intelligent, and is respected by her colleagues and management. Mercedes is a dedicated public health educator who exemplifies outstanding public health practice.

The impact of Mercedes work with the "Well Water and Health" web site has resulted in at least three graduate student research projects and papers. This work has been recognized by the local health departments across North Carolina as "exactly what we needed" to help communities. At a health fair conducted in a central North Carolina community, well owners found the factsheets about lead and mercury contaminants in well water and "Well Water and Your Health" very helpful.

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Communicable Disease Emergency	**919.733.3419**

Annual Reportable Diseases Case Counts by Year, North Carolina.

DISEASE	CASES 2012	CASES 2011	AVERAGE CASES/YEAR 2007 to 2011
AIDS	798	830	868
Botulism[1]	1	2	1
Brucellosis	5	0	2
Campylobacter Infection*	1,091	909	725
Chlamydia[2]	50,638	54,883	34,472
Creutzfeldt-Jakob Disease	18	6	8
Cryptosporidiosis	88	115	120
Dengue	8	4	6
Diphtheria	0	0	<1
Eastern Equine Encephalitis	2	0	1
E. coli O157:H7/ STEC Infection*	208	155	132
Ehrlichiosis[3]	133	107	80
Gonorrhea	14,327	17,478	15,368
Group A Strep Infection, Invasive	147	181	148
Haemophilus Influenzae	99	84	92
Hepatitis A	34	31	50
Hepatitis B (acute)	74	124	134
Hepatitis B (perinatal)	0	1	2
Hepatitis B (chronic)[4]	876	1,309	1,164
Hepatitis C (acute)	64	61	36
HIV Infection	1,409	1,563	1,657
Influenza Death, Adult[5]	28	26	32
Influenza Death, Pediatric	2	10	4
LaCrosse Encephalitis	26	27	44
Legionellosis	67	86	62
Leptospirosis	0	1	1
Listeriosis	14	21	25
Lyme Disease	124	91	79
Malaria[6]	34	49	37
Measles	0	2	1

Meningococcal Invasive Disease	6 ↓	15	19
Mumps	2 ↓	9	10
Pelvic Inflammatory Disease	626	679	498
Pertussis	612 ↑	205	385
Q Fever	9 ↑	5	3
Rubella	0	1	<1
Spotted Fever Rickettsiosis (RMSF)	596	332	417
Salmonellosis*	2,208	2,517	2,037
Shigellosis*	137	225	254
Syphilis, Early (1°, 2°, Early Latent)	598	768	703
Toxic Shock Syndrome[7]	7	16	8
Tularemia	1	0	2
Tuberculosis	226	244	294
Typhoid Fever	4	8	8
Vibrio Infections	31 ↑	15	18
West Nile Encephalitis	7	2	7

Notes:

Case counts are based on date cases were closed in the system not disease onset date. Report does not include HIV, Syphilis and TB.
[1]Infant, foodborne and wound botulism cases combined; [2]Chlamydia annual case average calculated for 2008-2010; [3]Includes all types; [4]Represents an artificial increase in 2011 due to review and disposition of 2008-2010 cases; [5]Influenza-associated adult deaths became reportable in 2009. [6]All cases are imported; [7]Includes non-streptococcal and streptococcal infections.

**Per CSTE case definition, includes suspect cases.*

↑ *= significant increase (≥ 3 standard deviations above average);* ↓ *= significant decrease (≥ 3 standard deviations below average) compared with 5 year average.*

Acronyms: ***AIDS*** *(Acquired Immunodeficiency Syndrome);* ***STEC*** *(Shiga Toxin producing E. coli);* ***RMSF*** *(Rocky Mountain Spotted Fever);* ***HIV*** *(Human Immunodeficiency Virus)*

Because cases are routinely updated, case numbers may change (data was extracted on 6/15/12). Case definitions for these diseases are available at: http://epi.publichealth.nc.gov/cd/lhds/manuals/cd/toc.html

NC Department of Health and Human Services