NC Division of Public Health,
Communicable Disease Branch

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SHARPPS Newsletter

Surveillance for Healthcare-Associated and Resistant Pathogens Patient Safety (SHARPPS) Program

HAPPY NEW YEAR!

We hope you enjoy looking back at some highlights from last year and wish you many good things in 2020.

INFECTION PREVENTION VIDEOS

The NC SHARPPS Program partnered with the North Carolina Statewide Program for Infection Control and Epidemiology (NC SPICE) to create four infection prevention educational videos: (1) Basics of Infection Control, (2) Injection Safety, and (3) conducting environmental assessments in Long-Term Care Facilities (LTCFs) and (4) Local Health Departments (LHDs). Funding for these videos was awarded through a grant from CDC. Finalized in March 2019 these videos are now available publicly for ***free*** on the SPICE website (https://spice.unc.edu/video-library/). As of January 1st the videos have been accessed **2,504** times and completed **1,025** times. We are thrilled to partner with SPICE to create these videos with the goals of providing guidance, increasing awareness, and improving infection prevention practices! The SHARPPS team has integrated these videos into presentations and has promoted the videos nationally. Please join us in sharing these videos as excellent tools to improve infection prevention practices across the state!

Legionellosis Associated with a Fair — North Carolina, 2019

Catherine (Katy) Donovan, Jennifer MacFarquhar, et al.

Background: On September 23, 2019, the North Carolina Division of Public Health was notified of 14 cases of Legionnaires' disease (LD) among people who attended the NC Mountain State Fair (MSF), held September 6–15, 2019. We investigated to determine the source of the outbreak and develop prevention measures.

Methods: Cases were defined as laboratory-confirmed legionellosis with symptom onset 2–14 days (LD) or within 3 days (Pontiac fever) after visiting the MSF. We conducted: (1) a case-control study among case-patients and frequency age-matched controls selected from fair attendees; (2) an environmental investigation; and (3) laboratory testing (culture and polymerase chain reaction) of 33 environmental samples from the fair grounds and hot tubs that were displayed, and specimens from 10 case-patients. Odds ratios for risk factors (OR) were estimated with age-adjusted logistic regression models.

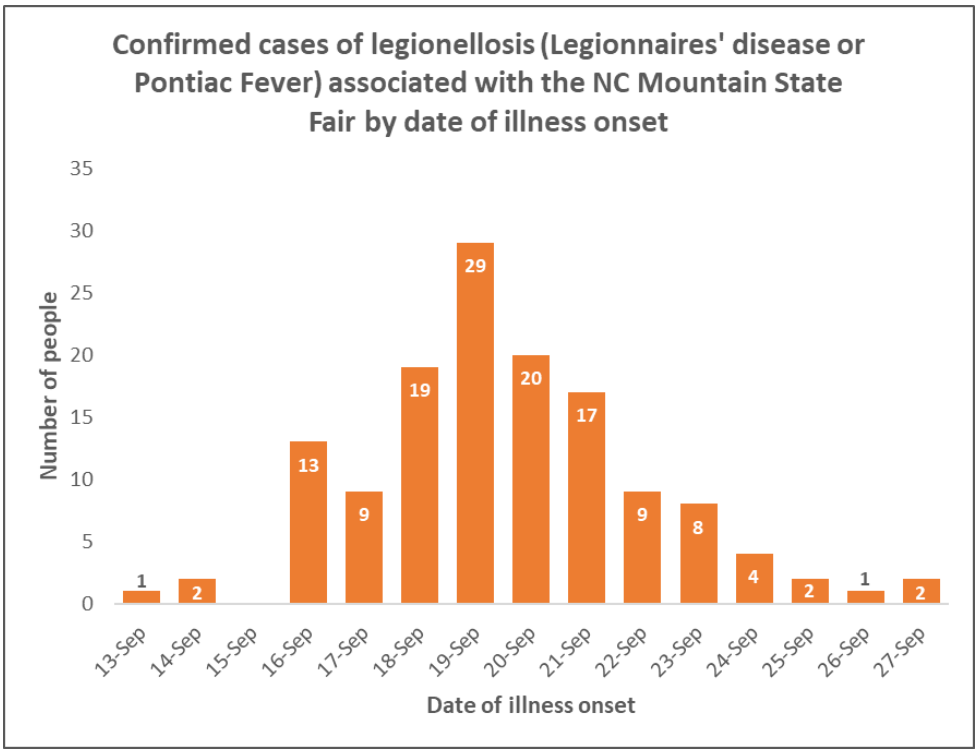
Results: We identified 136 cases of legionellosis (135 LD, 1 Pontiac fever). Ninety-six patients (71%) were hospitalized and four died. Sources of aerosolized water present for the duration of the fair included hot tub displays in the Davis Center. Among 60 cases and 138 controls, case-patients were more likely to report entering the Davis Center (OR: 12.8; 95% CI: 3.5–46.3),

INSIDE THIS ISSUE

- Infection Prevention Videos 1
- Legionellosis 1, 2
- Antibiotics Awareness Week 2,3
- Antimicrobial Stewardship Updates 3,4
- Antibiotic Resistant Threats in the US 4
- Carbapenem Resistant Enterobacteriaceae 5,6
- Resources 6,7

walking by the hot tub display (OR: 9.7; 95% CI: 4.2–22.5) and visiting the fair during September 11–15 (OR: 36.6; 95% CI: 8.4–160.2). Typing results were consistent among clinical specimens (ST224) but distinct from the only positive environmental sample (Davis Center water, ST7 and ST8).

Conclusions: Exposure to *Legionella* likely occurred from the amplification and aerosolization of bacteria in hot tubs inside the Davis Center. Risk of infection was significantly greater during the second half of the fair. These results highlight the importance of properly maintaining equipment that can aerosolize water, including hot tubs on display.



DHHS Celebrates U.S. Antibiotics Awareness Week

The North Carolina Department of Health and Human Services celebrated U.S. Antibiotic Awareness Week by announcing the winners of the "Be Antibiotics Aware: Smart Use, Best Care Campaign" poster contest on November 15. Students from grades K–12 statewide were invited to submit artwork regarding antibiotic awareness and nine winners were selected and recognized.

Governor Roy Cooper proclaimed November 18–24 as Antibiotic Awareness Week in North Carolina to highlight the importance of appropriate antibiotic prescription and use. The Centers for Disease Control and Prevention recently released an Annual Threats Report that states more than 2.8 million antibiotic-resistant infections occur in the U.S. each year and more than 35,000 people die as a result. During Antibiotic Awareness Week, the Division of Public Health partnered with the CDC to improve antibiotic prescribing among health care providers, educate the public about appropriate use of antibiotics, and fight antibiotic resistance.

The "Be Antibiotics Aware: Smart Use, Best Care Campaign" is the CDC's national educational antibiotic awareness effort. In 2014, North Carolina became an active member of the Campaign, further promoting a goal of the NC Department of Health and Human Services "to advance the health and well-being of North Carolinians utilizing the programmatic tools of our Department."

NC SHARPPS celebrated this event – and our 5th anniversary with the Campaign – with activities including a kid's artwork competition and a celebration and awards ceremony on November 15.

Health and Human Services Deputy Secretary Ben Money and Assistant Secretary Mark Benton, along with staff, celebrated this event, recognizing the nine student winners during an awards ceremony. Winning posters are available for the public at https://epi.dph.ncdhhs.gov/cd/antibiotics/artwork_winners_2019.html. *Congratulations to our 2019 Antibiotic Awareness artwork competition winners!*

K-3rd Grade:

1st place: Maximilian Solomon

2ndplace: Peyton Cossey

4th-8th Grade:

1st place: Audrey Fan

2ND place: Leah Hendren

3rd place: Vaishnavi Thangavijayan

4th place: Kara Dittrich

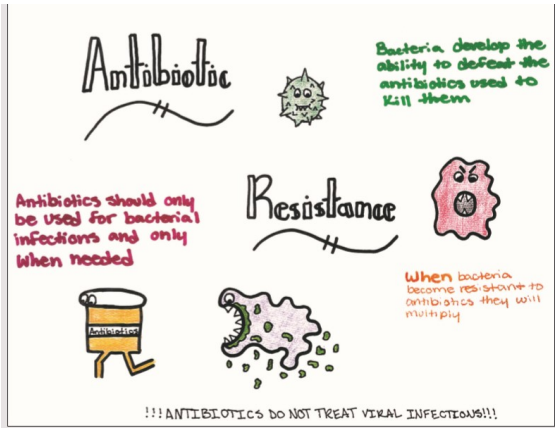
9th-12th Grade:

1st place: Airakaya Banks

2nd place: Damaris Cortez

3rd place: Payton Brown

Poster contest winners were awarded their plaques by DHHS staff and leadership. Back Row: Deputy Secretary Ben Money, Dr. Zack Moore, Assistant Secretary Mark Benton, Dr. James Lewis, Alexandra Sommers, Evelyn Foust. Middle row: Meg Sredl, Savannah Carrico, Deborah Dolan, Jennifer MacFarquhar. Front row: Damaris Cortez, Payton Brown, Peyton Cossey, Leah Hendren, Kara Dittrich, Audrey Fan, Maximilian Solomon.



NC SHARPPS Antimicrobial Stewardship Updates

- *SHARPPS' Statewide Acute Care Hospital Stewardship Professional Listserv*: In 2019 the N.C. SHARPPS Program developed an acute care hospital stewardship professional contact listserv. This listserv contains at least one stewardship professional contact from every acute care hospital in the state and is used to promote the STAR Partners Initiative, disseminate relevant state and national stewardship updates and literature, and highlight STAR Partner facilities' exceptional or innovative stewardship efforts. If you would like to be added to this listserv or have an activity or topic you would like to see highlighted, please email the SHARPPS Program at NCHAI@dhhs.nc.gov.

- *Updated CDC Hospital Stewardship Core Elements Document*: In November of this year the CDC released an update of its 2014 *Core Elements for Hospital Antibiotic Stewardship Programs* document (https://www.cdc.gov/antibiotic-use/core-elements/hospital.html). The update incorporates new evidence and lessons learned from experience with the Core Elements. A summary of the updates can be found here: https://www.cdc.gov/antibiotic-use/core-elements/hospital.html#anchor_1573765130706. The Core Elements are applicable in all hospitals, regardless of size, but there are specific suggestions for small and critical access hospitals in a separate document: *Implementation of Antibiotic Stewardship Core Elements at Small and Critical Access Hospitals (*https://www.cdc.gov/antibiotic-use/core-elements/small-critical.html*).*

- *STAR Partners Update*

  The NC STewardship of Antimicrobial Resources (STAR) Partners program continues to grow thanks to participation from programs across North Carolina. Since our last newsletter we have welcomed seven new partners for a total of 18 participating facilities! Please consider joining if you have not already. We would love to see enrollment from all North Carolina acute care hospitals!

  The first STAR Partners annual survey was distributed in November of 2019 and we have already received all responses providing valuable insight. We intend for this survey to track the development of stewardship programs in North Carolina and identify high impact interventions to highlight statewide. We will plan to share a summary of the survey results with participating facilities and the acute care hospital stewardship listserv early in 2020.

  Finally, we have completed a draft of the Long-Term Care Facility (LTCF) STAR Partners expansion with valuable feedback from LTCF providers who participated in a focus group event put on with assistance from the Statewide Program for Infection Control and Epidemiology (SPICE). We hope to launch the LTCF STAR Partners Expansion by mid-2020. The LTCF expansion of STAR Partners will be structured similarly to the acute care hospital program but will be based on the CDC's *Core Elements of Antibiotic Stewardship for Nursing Homes*. We hope this will provide a helpful resource to LTCFs across North Carolina as they begin to implement stewardship programs in compliance with CMS regulations. We will continue to provide further updates as we get closer to completion of the initiative materials.

CDC's 2019 Antibiotic Resistant Threats in the United States Report

In November, the Centers for Disease Control and Prevention released a 2019 Annual Threats Report that states more than 2.8 million antibiotic-resistant infections occur in the U.S. each year and more than 35,000 people die as a result. The 2019 Report is an update to the previous report published in 2013. This document is intended to serve as a reference for information on antibiotic resistance, provide the latest U.S. antibiotic resistance burden estimates for human health, and highlight emerging areas of concern and additional action as needed. The report lists 18 antibiotic-resistant bacteria and fungi, divided into three categories based on level of concern to human health—urgent, serious and concerning - and highlights the following:

- estimated infections and deaths since the 2013 report,
- aggressive actions taken, and
- gaps slowing progress

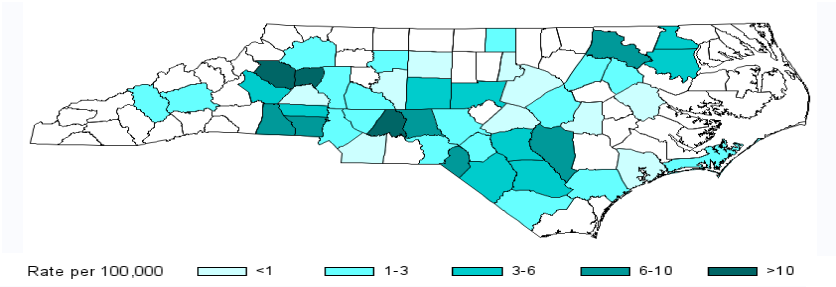
Most notably, the CDC added carbapenem-resistant *Acinetobacter baumanii* (CRAB) and *Candida auris* (*C. auris*) to the Urgent Threats List along with carbapenem-resistant *Enterobacteriaceae* (CRE), *Clostridiodes difficile (C. diff)*, and drug resistant *Neisseria gonorrhoeae*. In addition, the CDC observed that while the burden of antibiotic resistance is increasing, the deaths from these infections are decreasing.

CARBAPENEM-RESISTANT ENTEROBACTERIACEAE (CRE) UPDATE: ONE YEAR LATER

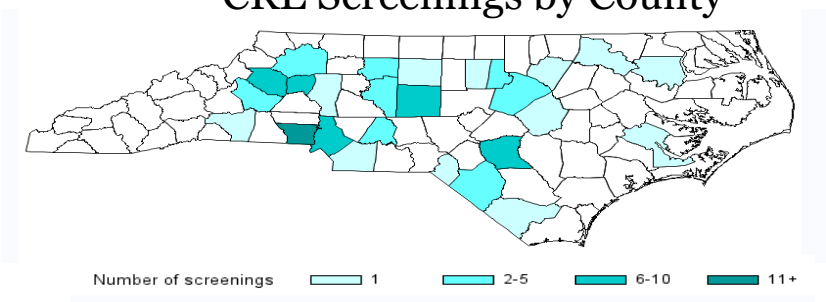
September 30, 2019 marked the end of the first year since carbapenem-resistant *Enterobacteriaceae* (CRE) became a reportable condition in North Carolina. During that time period, the State Laboratory of Public Health (SLPH) tested 586 CRE isolates and identified 309 cases of carbapenemase-producing (CP) CRE. SLPH received an average of 50 isolates of CRE per month during the first year of reporting, and about half of those cases were CP-CRE. CRE has been identified in 67 counties and CP-CRE has been found in 46 counties. The most common carbapenemase was KPC (*Klebsiella pneumoniae* carbapenemase), which accounted for 94% of the carbapenemases identified. *Klebsiella* spp. were also the most common CRE organism, making up over half the samples tested at the SLPH. Most non-KPC CRE cases were associated with international travel, often with international health care exposure.

During the first year of reporting, the SHARPPS Program coordinated 79 screenings at 44 health care facilities in 21 counties. The majority of these screenings (82%) occurred in long-term care facilities (LTCFs) as these facilities have a high risk of CRE transmission due to a susceptible patient population and the occurrence of many patient care activities that can spread CRE. Health care exposure is the primary risk factor for CRE, with 75% of CP-CRE patients reporting health care exposures in the 30 days prior to diagnosis.

CRE Rates in North Carolina



CRE Screenings by County



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Carbapenem-Resistant *Pseudomonas aeruginosa* (CRPA) and Carbapenem-Resistant *Acinetobacter baumanii* (CRAB)

Carbapenem-resistant *Pseudomonas aeruginosa* (CRPA) and carbapenem-resistant *Acinetobacter baumanii* (CRAB) are two other multidrug-resistant organisms (MDROs) that are not classified as CRE because they do not fall into the *Enterobacteriaceae* family but pose a similar level of threat. These organisms are not reportable in North Carolina. The most recent Annual Threats Report from the CDC classified CRAB as an urgent threat alongside CRE and named CRPA as a serious threat.

Carbapenem-Resistant Acinetobacter baumanii (CRAB)

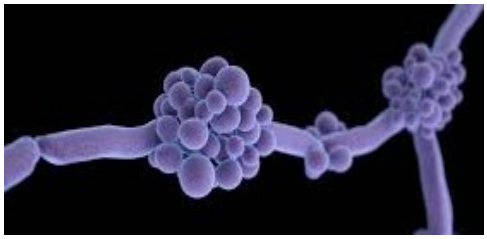
In 2019, North Carolina has recruited two sentinel hospital laboratories to submit CRAB isolates to the State Laboratory of Public Health (SLPH) and to the Antibiotic Resistant Laboratory Network (ARLN) Regional Laboratory in Maryland for carbapenemase testing. CP-CRAB is considered a Tier 3 organism per CDC's interim guidance for MDROs (https://www.cdc.gov/hai/containment/guidelines.html) and therefore commands a Tier 3 response. Of note, CDC added CRAB as an urgent public health threat in the 2019 Annual Threats Report.

Carbapenem-Resistant Pseudomonas aeruginosa (CRPA)

When a CRPA is identified, the local health department should follow up with the facility or clinic to make sure the patient's chart is flagged for appropriate precautions and that the patient is placed in a private room if admitted to a hospital or healthcare facility. If the patient is transferred, be sure to communicate the status of MDRO. No screenings are performed in response to CRPA unless carbapenemase production is identified.

Candida auris

C. auris became a reportable condition effective October 1, 2018 (along with CRE) in North Carolina. The CDC recommends screening patients with a history of overnight healthcare exposure outside of the U.S. for *Candida auris* (*C. auris).* North Carolina identified its first case of *C. auris* in October 2019 in a patient that had history of healthcare exposure in Africa. Extensive screening and retrospective laboratory lookbacks were performed at the facility and no new cases were identified. A second *C. auris* case was identified in a patient with no history of healthcare exposure outside the U.S. but did overlap with a *C. auris* patient at a hospital in Georgia. Screening was performed at the facility in North Carolina and no new cases were identified. North Carolina continues to screen patients with exposure to healthcare outside of the US and recommends that speciation of non-albicans *Candida* isolates should occur.



New CDC resources:

- *Core Elements of Hospital Antibiotic Stewardship Programs*, which incorporates recent literature and best practices to improve antibiotic prescribing in hospitals.
- Be Antibiotics Aware posters that highlight key stewardship interventions for hospital pharmacists.
- Safe Healthcare Blog authored by Laurel Stoimenoff, CEO of the Urgent Care Association (UCA), that highlights UCA's work to improve antibiotic prescribing in urgent care facilities.

- *Antibiotic Resistance Threats in the United States, 2019*, which lists 18 bacteria and fungi based on level of concern to human health.

CDC's Antibiotic Resistance & Patient Safety Portal, which includes new 2017 U.S. outpatient antibiotic prescription data and 2018 U.S. hospital uptake of CDC's Core Elements of Hospital Antibiotic Stewardship Programs data

Common Condition	Common Cause			Are Antibiotics Needed?
	Bacteria	Bacteria or Virus	Virus	
Strep throat	✓			Yes
Whooping cough	✓			Yes
Urinary tract infection	✓			Yes
Sinus infection		✓		Maybe
Middle ear infection		✓		Maybe
Bronchitis/chest cold (in otherwise healthy children and adults)*		✓		No*
Common cold/runny nose			✓	No
Sore throat (except strep)			✓	No
Flu			✓	No

* Studies show that in otherwise healthy children and adults, antibiotics for bronchitis won't help you feel better.

Additional Resources

As Antibiotics Awareness week was celebrated in November it's important for everyone to know:

- Antibiotics save lives and are critical tools for treating bacterial infections, like those that can lead to sepsis.
- Anytime antibiotics are used, they can cause side effects and can lead to antibiotic resistance.
- When antibiotics aren't needed—like for colds and flu—they won't help, and their side effects could cause harm.

Interested in having SHARPPS present or exhibit at your up-coming event? Contact us at nchai@dhhs.nc.gov.