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Antimicrobial stewardship in CT acute care hospitals: Summary of progress towards CDC targets in 2015

Antimicrobial resistance (AMR) poses a major threat to public health because of the potential for prolonged illness, disability and death. The Centers for Disease Control and Prevention (CDC) estimates that more than two million people in the United States become ill with antibiotic-resistant infections each year, with at least 23,000 associated deaths (*1*). Up to 50% of antibiotic prescribing in acute care hospitals may be inappropriate, often related to unnecessary use, incorrect dosing or duration. In 2014, CDC recommended that all acute care hospitals (ACH) in the US adopt specific policies and steps to improve their antimicrobial use, known as antimicrobial stewardship (AMS) (*2*).

Antimicrobial stewardship programs have been shown to improve both patient care and safety through increased infection cure rates and reduced incidence of hospital infections with resistant organisms (*3*). Cost savings for the facilities has also been generated through less intensive care. Based on evidence-based best practices, the CDC outlined seven "core elements" of successful hospital AMS programs: Leadership Commitment, Accountability, Drug Expertise, Action, Tracking, Reporting, and Education. Each of the elements includes concrete steps for hospital administrators and staff, and are supported by a CDC-issued checklist to help facilities put the recommendations into practice.

Progress made by facilities towards implementation of the core elements of AMS can be monitored through the required Annual Hospital Survey. This survey is completed by ACHs participating in the National Healthcare Safety Network (NHSN), a secure online surveillance system used to track healthcare-associated infections (HAI) (*3*). Data from the 2016 survey, which reflects AMS activities for calendar year 2015, were analyzed by Department of Public Health (DPH) HAI Program staff. Connecticut's 30 ACHs were evaluated for their progress in the development of an AMS program.

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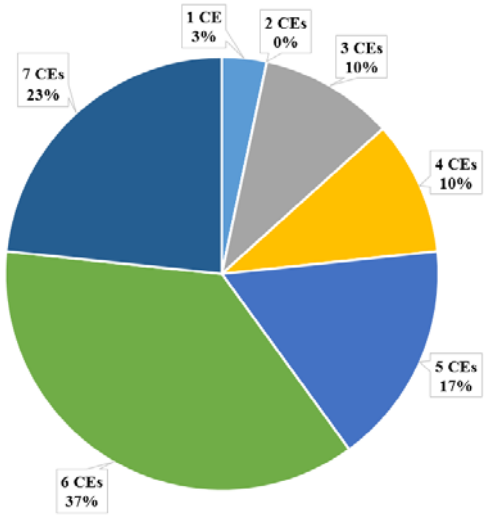
The DPH benchmark for progress is the implementation of at least four of the seven core elements in at least 80% of ACHs (*4*). Using the CDC checklist for AMS programs, questions from the NHSN survey were mapped to core elements. To fulfill the Leadership Commitment element, hospitals needed positive response to both questions pertaining to the element. For the remaining elements, one affirmative answer was sufficient to demonstrate commitment to a given element.

In 2015, Connecticut ACHs exceeded the goal set by the DPH, with 87% of facilities implementing four or more of the seven core elements (Figure 1); an increase from 77% of facilities in 2014. In 2015, ACHs that fulfilled all seven elements also exceeded the previous year (23% vs. 17% respectively).

Figure 1. Number of AMS program Core Elements (CEs) met by Connecticut acute care hospitals in 2015.



In 2015, the core element of Tracking was achieved by 97% of CT ACHs, and both Reporting and Accountability by 87%. In contrast, Leadership Commitment was achieved by 37% (Figure 2). As indicated in the CDC checklist for core elements, these findings show a need for leadership in CTs ACHs to produce a written statement of support for AMS activities. Findings also indicate a need for allocation of financial resources dedicated to AMS.

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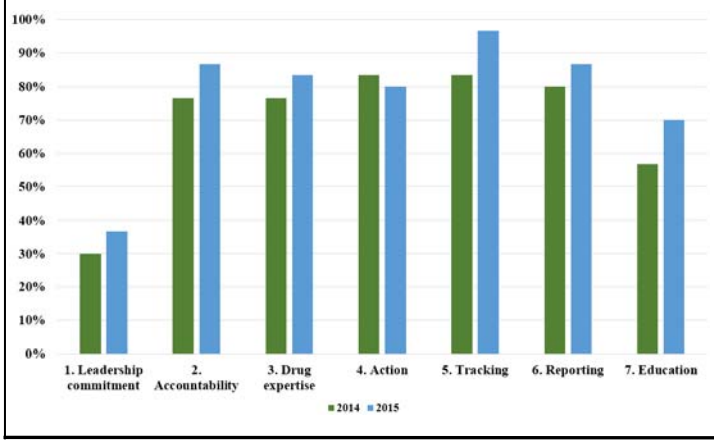
Editorial

Antimicrobial stewardship programs in hospitals are a critical tool in protecting the health of the public against the threat of antimicrobial resistance. The CDC core elements of AMS are evidence-based, attainable goals that can be adopted by facilities to protect their patients and to safeguard antimicrobials' viability for the future. Connecticut ACHs have made progress toward achieving the CDC objectives, although the Leadership Commitment and Education elements show room for improvement.

Data collected through the NHSN survey allow the DPH HAI Program to monitor progress of individual ACHs. Data can be used to identify specific areas for improvement and provide feedback to facilities to assist in fulfillment of additional core elements. To bring about additional progress in AMS programs, the benchmark for 2016 is set for 80% of ACHs to fulfill five or more core elements.

Figure 2. Percentage of Connecticut acute care hospitals that fulfilled given Core Elements.



The data describing CT ACHs' progress toward AMS goals are accessible from the DPH HAI Program Dashboard. Additional resources for AMS are published through CDC's "Get Smart About Antibiotics" initiative, which can be accessed at https://www.cdc.gov/getsmart/index.html.

References

1. Centers for Disease Control and Prevention. Antibiotic/ Antimicrobial Resistance. https://www.cdc.gov/drugresistance/ Accessed 2/2/2017.
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3. Nowak MA, Nelson RE, Breidenbach JL, Thompson PA, Carson PJ. Clinical and economic outcomes of a prospective antimicrobial stewardship program.Am J Health-Syst Pharm.Sep 1 2012;69(17):1500-1508.
4. Connecticut Department of Public Health. Healthy Connecticut 2020 Performance Dashboard: Healthcare Associated Infections. http://www.ct.gov/dph/cwp/view.asp?a=3130&Q=554528&PM=1. Accessed 1/25/2017.

Rabies Testing of Domestic and Wild Animals – Connecticut, 2016

The Connecticut Department of Public Health (DPH) Public Health Laboratory (PHL) serves communities and residents statewide through the analysis of clinical specimens and environmental samples performed by the Biological Sciences, and Environmental Chemistry testing sections. Testing of animals for rabies virus is an important service, which is offered free of charge. These test results help guide public health decision making regarding postexposure prophylaxis for persons exposed.

The Advisory Committee on Immunization Practices (ACIP) develops national guidelines for determining the likelihood of rabies virus exposure and considers multiple factors, including the species of animal, type of contact, and circumstances of the incident (*1*). Analyses of testing data published since 2010 showed specimens were submitted under circumstances that did not constitute human exposures (*2*,*3*,*4*). To better align rabies testing activities with public health priorities and laboratory resources, modifications to rabies testing requirements were published in April 2016, and fully implemented in July of the same year (*5*). This report provides 2016 rabies testing data and shows the progress made in reducing the number of animal

submissions since implementation of stricter adherence to CDC testing guidelines.

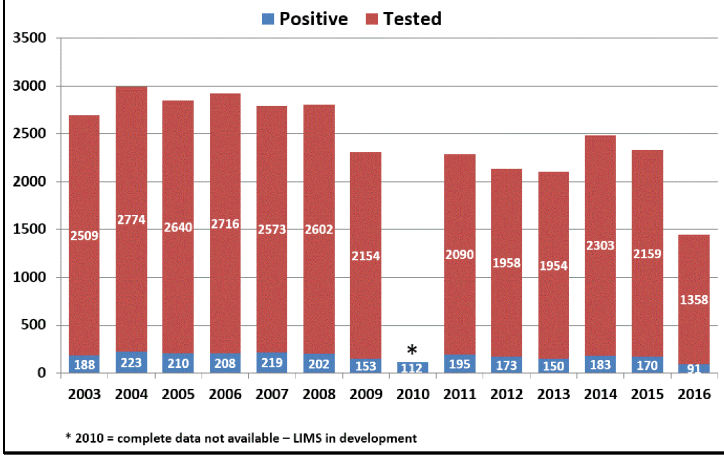
During 2016, the total number of specimens tested was 1,358, and included 468 (34%) bats, 359 (26%) cats, 283 (21%) dogs, 104 (8%) raccoons, 52 (4%) skunks, 21 (2%) groundhogs, and 7 (1%) opossums. These seven species accounted for 95% of all animals submitted. Among all animals tested, 91 (7%) tested positive. Positivity varied by species tested and included 42% of raccoons, 29% of skunks, 14% of groundhogs, 3% of bats, and 2% of cats; no dogs or opossums tested positive.

Of the skunk, raccoon, groundhog and opossum submissions with known exposure types, 58% (66/114) were due to potential exposures of domestic animals only, not involving people. Of bat submissions with known exposure types, 96% (351/367) included reports of potential human exposures only. Of cat and dog submissions, 98% (533/543) reported potential human exposures only. Of the cats and dogs submitted for testing with a known vaccine history and history of biting a human only, 76% (129/171) of dogs and 25% (42/171) of cats were current on their vaccinations.

When compared to 2015 data, the total number of specimens tested decreased by 37% (801) and included reductions in the number of bats (145, 38%), cats (145, 29%), dogs (71, 20%), raccoons (88, 46%), skunks (93, 64%), groundhogs (49, 70%), and opossums (34, 83%). (Figure). The overall proportion of positive findings was similar (8% vs 7%). Positivity varied by species and included 44% of raccoons, 30% of skunks, 3% of groundhogs, 4% of bats and 1% of cats; one dog tested positive. No opossums tested positive.

Also of animals submitted with known exposure types, there was a 22% decrease in the proportion of skunk, raccoon, groundhog, and opossum submissions with domestic animal exposures not involving people (80% vs 58%). The proportion of bats submitted with potential human exposure increased by 9%, from 87% in 2015. Cat and dog submissions due to human exposure saw a 2% increase. Of the cats and dogs submitted for testing with a known vaccine history and history of biting a human only, similar proportions of dogs (71%, 189/267) and cats (29%, 50/173) were current on their vaccinations.

Figure. Number of animals tested and positive for rabies by the DPH Laboratory - Connecticut, 2003-2016



* 2010 = complete data not available – LIMS in development

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Editorial

In 2016, rabies testing requirements were modified to assure the DPH PHL resources are appropriately utilized to improve the health and safety of people in Connecticut. These requirements emphasize testing of animals involved in potential human exposures. This testing continues to be offered at no charge to the public, state agencies, and municipal governments. Although the changes were initiated mid-2016, they resulted in reducing the rabies testing burden on the PHL by nearly 40%, while preserving necessary testing to guide medical management of patients at potential risk of rabies virus infection. Testing of animals not involved in human exposures is available for a fee at the Connecticut Veterinary Medical Diagnostic Laboratory, University of Connecticut. Information regarding specimen submissions including the submission form is available at: http://cvmdl.uconn.edu/ or by calling (860) 486-3738.

Animals accepted for testing by the PHL are those involved in incidents with humans that are characterized by bites or introduction of infectious

material, including saliva or central nervous system tissues, into open wounds or mucous membranes. These may include wild terrestrial mammals known to transmit rabies, bats in direct contact with people or present in a room when a person was unable to recognize (e.g. sleeping) or communicate (e.g.young child) that contact occurred, and domestic animals in quarantine for biting a person that become ill and are euthanized.

For questions regarding human rabies exposures, contact the DPH Epidemiology and Emerging Infections Program at 860-509-7994. For questions regarding domestic animal rabies exposures, contact the Department of Agriculture Animal Control Division at 860-713-2506. Information regarding specimen submissions to the PHL including the submission form is available at: http://www.ct.gov/dph/lib/dph/infectious_diseases/rabies/rabiestestform_ol97a.pdf or by calling 860-920-6662 or 860-920-6500 during normal business hours.

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1. CDC. Human Rabies Prevention-United States, 2008. MMWR 2008:57(No.RR-3)
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For Public Health Emergencies After 4:30 P.M. or on Weekends Call the Department of Public Health at 860-509-8000.

Table. Summary of Tuberculosis Cases Reported in Connecticut*, 2016

Classification	n= 52 No. (%)
Age (years)	
<5	1 (2)
5–14	0 (0)
15–24	6 (12)
25–44	21 (40)
45–64	12 (23)
≥65	12 (23)
Race/Ethnicity	
Asian	23 (44)
Black	8 (15)
White	5 (10)
Hispanic	16 (31)
Gender	
Male	26 (50)
Female	26 (50)
Birth Origin	
U.S. and Territories	8 (15)
Other Nations (21 different Nations)	44 (85)
Pulmonary cases	35 (67)
HIV positive	1 (2)
Multi-drug resistant (resistance to at least isoniazid and rifampin)	1 (2)
Birth Nations with ≥4 Cases	
India	7
Philippines	4
Towns with ≥4 cases	Rate**
Stamford	6 (4.6)
Danbury	5 (5.9)
Norwalk	5 (5.6)
Hartford	4 (3.2)

*Cases were reported from 27 towns.

**Rate per 100,000 population.

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Immunizations	860-509-7929
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Tuberculosis Control	860-509-7722

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