

# SEMMELWEIS TIMES



May/June 2016  
Volume 3

## Novel Alert in Catheters Could Tackle Hospital Superbugs

100 million urinary catheters are used around the world every year, but the infections they sometimes cause can be problematic for thousands of people. Hospital acquired urinary infections affect more than 90,000 patients a year in the US alone, according to the Centers for Disease Control and Prevention. "Catheter-related infections are a serious problem, especially if the bacteria are resistant to antibiotics. We hope that with this simple to use sensor system we can ultimately make a real difference to patients' lives," said Dr. Jenkins. The new system designed by Dr. Toby Jenkins and his colleagues provides a means of early detection, so the catheter can be changed and the infection treated before a person becomes unwell. Over time bacteria can build a layer called a biofilm inside the catheter tubes that eventually blocks them. The urine can't escape and pushes back into the kidneys where the bacteria can cause kidney failure, body-wide infection and death. Up to half of people who use catheters long-term have problems with blockages caused by bacteria, but there is currently no way to detect potential blockages before they cause problems.

This catheter's new coating detects biofilms built by a bacterium called *Proteus mirabilis*, the most common cause of catheter blockage. The system gives advanced warning of a catheter blockage 10 to 12 hours before it happens. The coating is made up of two layers. The first reacts to changes in urine caused by the bacteria, the second layer releases the dye. The dyed urine gathers in the collection bag, turning the urine bright yellow. The color change reveals the infection.

Biofilms built by bacteria are not easy to treat. They avoid the natural defenses of the immune system and can't be broken down by antibiotics. Dr. Jenkins is optimistic about the benefits of the system: "Our new coating works with existing catheter designs and gives a clear, early visual warning of infection before a catheter is blocked. It could dramatically reduce the number of infections resulting from bacterial blockages." The team's ultimate goal is to run a clinical trial to show the system is safe and beneficial for patients and will be a cost savings in treating infections.

***"Our new coating works with existing catheter designs and gives a clear, early visual warning of infection before a catheter is blocked. It could dramatically reduce the number of infections resulting from bacterial blockages".***

- Dr. Toby Jenkins  
University of Bath

Source: Science Daily, source Elsevier

## Clean Hands Count



On May 5 the CDC introduced a new campaign to promote hand hygiene in healthcare settings. It's aim is to improve healthcare providers adherence to CDC hand hygiene recommendations, to address the myths and misperception about hand hygiene, and empower patients to play a role in their care by asking or reminding healthcare providers to clean their hands.

## Hospital Visitors and Isolation Precautions: Clearing Up the Confusion

Evidence supports the use of standard and contact isolation precautions of healthcare workers. However, the role of visitors in transmitting or becoming infected in acute care hospitals is not known. A new guidance statement from the Society for Healthcare Epidemiology of America (SHEA) on isolation precautions for visitors in adult and pediatric acute care hospitals includes recommendations based on a synthesis of limited evidence, theoretical rationale, practical considerations, a survey of SHEA membership and the SHEA Research Network, author opinion, and the consideration of potential harm. The recommendations attempt to balance visitor and patient safety, the potential for the spread of pathogens within the hospital, the psychosocial implications of isolation practices, and the feasibility of enforcement of isolation precautions among visitors. An objective of the SHEA guidance document is to help facilities develop or modify their own policies related to the use of isolation precautions by visitors to acute care hospitals.

### RECOMMENDATIONS

- All visitors should perform hand hygiene prior to entering a patient room and immediately after leaving the patient's room.
- For parents/guardians/visitors with extended stay in a patient's room, including overnight visitation, isolation precautions may not be practical. The risk of infection for parents/guardians visitors is likely reduced if they practice good hand hygiene and any additional benefit of wearing gowns and gloves in these scenarios of prolonged exposure is unclear. The risk for infection to parents/guardians/visitors is likely reduced if they practice good hand hygiene.
- In special situations, in which patients acquire new transmissible infections after admission to the hospital, protection of parents/guardians/visitors by the use of isolation precautions may be considered.
- In situations in which heightened horizontal transmission is detected (e.g. outbreak or increased baseline rates) or a novel, potentially virulent pathogen is suspected or identified (e.g. Ebola virus, Middle East Respiratory Syndrome Coronavirus (MERS-coV), Severe Acute Respiratory Syndrome (SARS), etc.), enforcing isolation precautions among visitors (including parents/guardians/visitors) should be prioritized.
- Intestinal pathogens, such as *Clostridium difficile* and Norovirus, are potentially harmful to visitors and have low prevalence in the community, so contract precautions for visitors should be in place.
- Methicillin resistant Staphylococcus aureus (MRSA) and vancomycin resistant enterococci (VRE)**  
Recommend not using contact isolation precautions for visitors in routine circumstances. If visitors to patients with MRSA or VRE will be interacting with multiple patients, they may be at greater risk of transmitting pathogens between patients and should us isolation practices in a fashion similar to that of HCP.
- Drug-resistant Gram-negative Organisms**  
Utilization of contact precautions should be considered for visitors to patients either colonized or infected with extensively drug-resistant Gram-negative organisms (e.g. KPC, carbapenem resistant Enterobacteriaceae (CRE))
- Enteric Pathogens**  
For visitors of patients infected with enteric pathogens (e.g. *C. difficile*, norovirus), we suggest the use of contact isolation precaution
- Droplet Precautions**  
We suggest the use of surgical masks
- Airborne Precautions**  
Visitors to patients on airborne precaution we recommend the us of surgical masks. An alternative is an N-95 respirator; however, this equipment is best used with training and fit testing.

## Screening Method Uncovers Drugs that May Combat Deadly Antibiotic-Resistant Bacteria

In recent years, hospitals have reported dramatic increases in the number of cases of the highly contagious, difficult-to-treat, and often deadly antibiotic-resistant bacteria carbapenem-resistant Enterobacteriaceae (CRE). Now, investigators at Beth Israel Deaconess Medical Center (BIDMC) have developed a promising method of identifying new antimicrobials that target these organisms. The research is published in the April issue of the journal *ASSAY and Drug Development Technologies*.

CRE are Gram-negative bacteria that frequently express a gene that codes for carbapenemase--an enzyme that breaks down carbapenem and other antibiotics--and that is located on "mobile genetic elements" called plasmids, which can jump from one bacterium to another. The two most common types of CRE are carbapenem-resistant *Klebsiella* species and carbapenem-resistant *Escherichia coli*. Patients who become infected with these bacteria have few antibiotic treatment options.

"The US Centers for Disease Control and Prevention recently classified these carbapenem-resistant organisms in their highest, most urgent antimicrobial resistance threat level," said James Kirby, MD, director of the Clinical Microbiology Laboratory at BIDMC and an associate professor of pathology at Harvard Medical School. "Unfortunately, often either no effective or only toxic antimicrobial options remain for CRE treatment. Moreover, CRE are particularly frightening as they are now increasing in prevalence across the United States and the world."

While there is a critical need for new antimicrobial agents against CRE and other emerging antibiotic-resistant bacteria, the number of new antibiotics that have been developed and approved has steadily decreased in recent decades. To identify new or existing drugs that can destroy multidrug-resistant CRE, Kirby and postdoctoral fellow Kenneth Smith, PhD examined approximately 10,000 compounds with known activity--so called known bioactive molecules--including most previously FDA-approved drugs, veterinary drugs and inhibitors of various cellular processes not currently used as therapeutics.

Through a process called high throughput screening, the investigators looked to see whether any of these compounds could either directly inhibit the growth of CRE or restore the effectiveness of carbapenem against these organisms.

From these screening experiments, 79 compounds were found to inhibit CRE. Of these, three had already been approved for human and veterinary use: azidothymidine (also known as AZT, a therapy for HIV infection), spectinomycin (a treatment for gonorrhea infection) and apramycin (a veterinary antimicrobial). When tested against a large number of CRE strains, the three compounds were broadly active against the strains.

"These antimicrobials currently have other intended uses and are not currently considered as treatments for CRE, however our findings suggest they could potentially be repurposed for CRE treatment," said Smith. Apramycin and spectinomycin are of particular interest because they have minimal side effects, making them potentially ideal new therapeutic options for CRE infection.

Smith added that while these drugs might be used by themselves to treat CRE infection, they could also be used as starting points for further drug development. "Specifically, these antibiotics could be structurally modified to further increase their activity and prevent resistance from developing against them," he explained.

The next step in this line of research is to examine the potency of the identified drugs in an animal model of CRE infection. "We are also using the same high throughput screening technology to investigate a collection of more than 200,000 completely novel compounds with as yet uncharacterized biological activity in the hopes of identifying new classes of compounds with potent activity against CRE and other multi-drug resistant pathogens," Kirby said.



## NHSN Data and Analysis Corner

### Targeted Assessments for Prevention (TAP) Reports

By Robert Geist, MPH, CIC

Of course our ultimate goal as infection preventionists are to have no healthcare-associated infections (HAIs) occur in our organizations. And while we wish it could occur instantaneously and we try to prevent all infections, the reality is that our journey to reduce HAIs requires a *working* incremental approach with improvement goals and improvement activities over time to ultimately develop healthcare environments that produce as few HAIs as possible. That's why they call it *work* right? We have to *work* towards goals to reach them. In this quest, have you ever just said, I wish there was a way to tell how many healthcare-associated infections we need to prevent to reach various benchmark goals? Information like that would be useful to share with your infection control committees and front-line clinical staff to promote infection prevention activities, wouldn't it? Luckily there is a measure, a very simple one that allows us to do this. In addition there are a few key measure-specific, incremental goals to compare to; on top of any goals your organization may set. In 2014 the CDC's National Healthcare Safety Network (NHSN) made this measure available to many NHSN users for some healthcare facility types and for some of the HAI measures.

First let me say, don't let the terminology and acronyms scare you away because as I mentioned, this is a very simple measure and an easy one to use, which I'll demonstrate shortly. Among the many great data analysis features in NHSN, acute care hospitals, inpatient rehabilitation facilities (IRFs), and long-term acute care hospitals (LTACHs) have the ability to run an analysis that has been termed by NHSN as a "Targeted Assessment for Prevention (TAP) Report." This report helps you determine how many infections you need to prevent to reach the goal you're interested in and for facilities with more than one unit in which an HAI measure is followed, this report helps you target which of those units you may have the most opportunity to prevent the most infections. If you are a group user (have an NHSN group with more than one healthcare facility in it), this report can additionally help you target which facility may have the most opportunity to prevent the most infections. NHSN has demonstrated mathematically that targeting infection prevention interventions using this method should be far more efficient in reducing the overall Standardized Infection Ratio (SIR) over prior strategies of targeting infection prevention intervention activities toward facilities with the highest SIRs.

So what is this simple measure? It's called the Cumulative Attributable Difference (CAD). This simply means... what is the difference between the number of infections that occurred minus the number of infections that were "predicted".

#### **CAD = Observed # of HAIs – Predicted # of HAIs**

Of note, "predicted" in this equation means the number of expected HAI based on a defined goal, which we will talk about more shortly.

The result of this calculation will either be a negative number or a positive number. A negative number means you had fewer observed HAIs than were predicted and can be interpreted as this unit or facility met the goal (had fewer HAI) than were predicted for the goal. In this assessment you can dismiss those units and facilities from your analysis. A positive number, conversely, means the unit or facility had more observed HAIs than were predicted for the goal. The positive number can be interpreted as a very specific, meaningful result which can be verbalized and easily understood by almost anyone. The positive result would be the number of infections the unit or facility needed to prevent to meet the goal. If you had multiple units or facilities, simply ranking this from the highest positive value to lowest would provide you with a ranked list of targeted units, or facilities, in which infection prevention intervention activity may be most effective in reducing your overall SIR.

So you may be asking what goal do I use to help determine the predicted (goal) number of infections in this equation. It's probably of most value to assess this for multiple goals and then determine what is most appropriate to present based on audience, or if using the information for action, determine what the most appropriate goal is for your activities. Luckily NHSN has made it easy. When you are in the NHSN analysis feature for producing TAP reports and on the webpage that allows you to modify the options for the output (e.g. editing the timeframe, etc.) at the bottom of the page you will see a section where you can select the Cumulative Attributable Difference (CAD) Multiplier.

Again, don't let the terminology scare you, it just means what goal you want to compare your number of observed infections against. The option in the dropdown is defaulted to the HHS Goal, which is based on the 2013 Department of Health and Human Services (HHS) 5-yr reduction targets. In essence, the goal at the end of 2013 was a 50% reduction from the 2006-2008 national baseline in Central line-associated bloodstream infections (CLABSI), a 25% reduction from the 2006-2008 national baseline in Catheter-associated urinary tract infections (CAUTI) and a 30% reduction from the 2010-2011 national baseline in Facility-Wide Inpatient Laboratory-Identified *Clostridium difficile*. With the new 2015 national baseline currently being set and as those become available in NHSN the HHS 2020 goals should be added to this report as an option. Additionally, you can select "National SIRs" which will allow you to set the most recent published national SIRs (currently 2013), as the goal. Lastly you can select an option that allows you to put in a custom value for the reduction goal (e.g. 0.60 for a 40% reduction goal).

The CAD measures are available for:

Facility-Type	CLABSI	CAUTI	<i>C. difficile</i>
Acute care hospitals	✓	✓	✓
LTACHs	✓	✓	
IRFs		✓	

One last note, TAP reports provide additional useful information (like HAI organism trends) for facilities and groups as well. If you would like to learn more about implementing Targeted Assessments for Prevention (TAP) Strategies and see specific instructions on how to run and interpret these reports visit: <http://www.cdc.gov/hai/prevent/tap.html> and a video is available on YouTube at: <https://www.youtube.com/watch?v=CQwJ1FyUiuM>.

## Searching for *C. difficile* at Hospital Admission

Patients receiving medical care for something else can get an infection known as a healthcare-associated infection. The most common bacteria responsible for these infections in hospitals is *Clostridium difficile* (*C. difficile*). In a recent issue of *JAMA Internal Medicine*, my CDC colleague Alice Y. Guh, MD, MPH, and I have offered commentary on a study that investigated whether actively identifying and isolating patients who asymptotically carry *C. difficile* (do not experience symptoms) can reduce the number of healthcare-associated *C. difficile* infections.

*C. difficile* can be spread in healthcare facilities between patients by contaminated surfaces and soiled hands when appropriate hygiene and infection control actions are not taken. Currently limiting spread of *C. difficile* in healthcare facilities involves infection control targeting patients with symptoms, such as isolating these patients in individual rooms. However, there is now increasing evidence that patients who carry *C. difficile* without symptoms can contribute to contamination and spread in healthcare facilities. Still few, if any, previous studies have demonstrated whether searching for asymptomatic carriers of *C. difficile*, and then isolating them, can further limit transmission and prevent infections.

The study found that detecting and isolating *C. difficile* carriers at the time of hospital admission was associated with a significant decrease in the incidence of healthcare-associated *C. difficile* infections. However, because there are inherent limitations in any single study on such a complex topic, the authors of this study called for additional studies to further investigate this strategy, a call we agree with in our commentary. Our commentary touches on additional factors that future studies should focus upon, including assessing the feasibility and challenges of routinely implementing active surveillance for *C. difficile*.

*C. difficile* was estimated to cause almost half a million infections in the United States in 2011. The results of this study are promising for not only increasing our understanding of how this organism is spread in healthcare facilities, but also casting light on potential supplemental measures to reduce healthcare-associated *C. difficile* infections. While we continue to further investigate this topic, it's important to remember that even with what we know already, many *C. difficile* infections can be prevented by using current infection control recommendations and more careful antibiotic use. Visit [CDC's \*C. difficile\* website](#) to find resources for patients and healthcare providers.

## Role of the Environmental Surfaces in Disease Transmission

---

Healthcare-associated infections (HAIs) remain an important source of morbidity and mortality with an estimated 1.7 million infections and 99,000 deaths annually. A major source of nosocomial pathogens is thought to be the patient's endogenous flora, but an estimated 20-40% of healthcare-associated infections have been attributed to cross-infection via the hands of healthcare personnel. Contamination of the hands of healthcare personnel could in turn result from either direct patient contact or indirectly from touching contaminated environmental surfaces. Healthcare personnel have frequent contact with the environmental surfaces in patients' rooms providing ample opportunity for contamination of gloves and/or hands. Two recent studies demonstrated that contact with the environment was just as likely to contaminate the hands of healthcare workers as was direct contact with the patient. Reviewing the scientific literature found that improving surface cleaning and disinfection reduces healthcare-associated infections (Am J Infect Control 2013; 41:S12-S19). Another recent paper showed that daily disinfection of surfaces (versus standard cleaning surfaces when visibly soiled) with a sporicidal disinfectant in rooms of patients with *Clostridium difficile* and methicillin-resistant *Staphylococcus aureus* (MRSA) reduced acquisition of pathogens on gloved hands after contact with room surfaces. While disinfectants are used to prevent transmission of pathogens from both noncritical and semi-critical items, selection of the optimal disinfectant for use with environmental surfaces and noncritical patient care items (devices that contact only intact skin such as stethoscopes) are important. The same characteristics for an ideal low-level disinfectant would be used for high-level disinfectants; however, the contact time would be longer and antimicrobial spectrum would be broader (e.g., may include *C. difficile* spores). All of these pathogens have been demonstrated to persist in the environment for hours to days (and, in some cases, months), to frequently contaminate the surface environment and medical equipment in the rooms of colonized or infected patients, to transiently colonize the hands of healthcare personnel (HCP), to be associated with person-to-person transmission via the hands of HCP, and to cause outbreaks in which environmental transmission was deemed to play a role. Furthermore, hospitalization in a room in which the previous patient had been colonized or infected with MRSA, VRE, *C. difficile*, multidrug-resistant *Acinetobacter*, or multidrug resistant *Pseudomonas* has been shown to be a risk factor for colonization or infection with the same pathogen for the next patient admitted to the room.

To decrease the frequency and level of contamination of environmental surfaces and medical equipment in hospital rooms, routine and terminal disinfection with a germicide has been recommended. Unfortunately, routine and terminal cleaning of room surfaces by environmental services personnel and medical equipment by nursing staff is frequently inadequate. Multiple studies have demonstrated that less than 50% of hospital room surfaces are adequately cleaned and disinfected when chemical germicides are used. Similarly, inadequate cleaning of portable medical equipment by nursing staff has also been demonstrated. The implementation of enhanced education, checklists, and methods to measure the effectiveness of room cleaning (e.g., use of fluorescent dye) with immediate feedback to environmental services personnel has been found to improve cleaning and lead to a reduction in healthcare-associated infections. No-touch methods (eg, ultraviolet C [UV-C] light and hydrogen peroxide systems) have been developed to improve terminal room disinfection. UV-C light has been demonstrated to decrease the level of *C. difficile* spores on contaminated surfaces in patient rooms, while hydrogen peroxide systems used in rooms of patients colonized or infected with a multidrug-resistant organism has been shown to decrease the risk of a subsequent patient admitted to the room developing infection or colonization with any multidrug-resistant organism.

The most commonly used germicides for surface and equipment disinfection in hospital rooms have been quaternary ammonium compounds and phenolics. Fertelli et al report similar effectiveness for equipment disinfection using an electrochemically activated saline solution containing 0.05% hypochlorous acid. Boyce and Havill report excellent effectiveness of an improved hydrogen peroxide wipe product for both surface and medical equipment disinfection. The five key considerations when selecting a disinfectant are, kill claims, kill times and wet-contact times, safety, ease-of-use, and other factors; supplier training and ongoing education, overall cost, can the product help standardize disinfectants used in your facility.

For a deeper look into the issue, download Dr. Rutal's webinar. It gives a comprehensive review of the imperatives associated with environmental hygiene and the role of the healthcare environmental surface in the transmission of pathogenic organisms. Download at <http://www.infectioncontroltoday.com/webinars/2016/04/role-of-the-environmental-surfaces-in-disease-transmission>

## ONE Needle ONE Syringe ONE Time Only

CDC's [One & Only Campaign](#) aims to ensure patients are protected each and every time they receive a medical injection, including those from insulin pens. In 2009, in response to reports of improper use of insulin pens in hospitals, the Food and Drug Administration issued an alert reminding healthcare providers that insulin pens are meant for use on a single person only and are not to be shared. Unfortunately, there continue to be reports of insulin pen sharing, which puts patients at risk of getting blood borne and bacterial illnesses including hepatitis and HIV.

To prevent infections and protect patients, the campaign is reminding healthcare providers, patients, and families that injection equipment (e.g. insulin pens, needles and syringes) should never be used for more than one person. The *One & Only Campaign's*, "[Be Aware, Don't Share: Insulin Pen Safety Brochure](#)," has information about the risks posed by reuse of insulin pens and recommendations to prevent this unsafe practice. In addition to the insulin pen safety resources, [CDC's Injection Safety](#) page has information for healthcare providers about infection prevention during blood glucose monitoring and insulin administration.



The campaign also has resources to help providers ensure safe injection practices more broadly, including guidance regarding handling of medication vials, needles and syringes. Learn more at [www.OneandOnlyCampaign.org](http://www.OneandOnlyCampaign.org).

Interested in staying up-to-date with the *One & Only Campaign*? Follow the campaign on [Facebook](#) and [Twitter](#).

Source: CDC, One and Only Campaign

## How Does Ultraviolet Light Kill Cells?

Superbugs such as MRSA and *Clostridium difficile* are the fourth leading cause of death in the U.S., according to the Centers for Disease Control and Prevention. MRSA is an infection that resists antibiotics. *C. difficile* is an anaerobic, gram-positive bacterium. Normally fastidious in its vegetative state, it is capable of sporulating when environmental conditions no longer support its continued growth. The capacity to form spores enables the organism to persist in the environment (e.g., in soil and on dry surfaces) for extended periods of time. Environmental contamination by this microorganism is well known, especially in places where fecal contamination may occur. The environment (especially housekeeping surfaces) rarely serves as a direct source of infection for patients. However, direct exposure to contaminated patient-care items (e.g., rectal thermometers) and high-touch surfaces in patients' bathrooms (e.g., light switches) have been implicated as sources of infection.

Scientifically proven to kill all major classes of microorganisms that cause hospital-acquired infections (HAIs) and "superbugs" such as MRSA (methicillin-resistant *Staphylococcus aureus*), *C. difficile* and flu viruses, among other germs, an ultraviolet light is the fastest, safest and most effective method for the advanced cleaning of hospital and operating rooms.

Ultraviolet (UV) light kills cells by damaging their DNA. The light initiates a reaction between two molecules of thymine, one of the bases that make up DNA. The resulting thymine dimer is very stable, but repair of this kind of DNA damage--usually by excising or removing the two bases and filling in the gaps with new nucleotides--is fairly efficient. Even so, it breaks down when the damage is extensive. The longer the exposure to UV light, the more thymine dimers are formed in the DNA and the greater the risk of an incorrect repair or a "missed" dimer. If cellular processes are disrupted because of an incorrect repair or remaining damage, the cell cannot carry out its normal functions. At this point, there are two possibilities, depending on the extent and location of the damage. If the damage is not too extensive, cancerous or precancerous cells are created from healthy cells. If it is widespread, the cell will die. Basically, UV kills cells because of the accumulation of DNA damage. A gene product, called p53, is one of the responsible parties for slowing the cell cycle and checking for damage. If the damage is fixable, p53 sends in the repair machinery. If the damage is too extensive, it directs the cell to apoptosis, or programmed cell death.

Source: Scientific American; Anne Rammelsberg, Millikin University - CDC - Cooley Dickinson Hospital, Massachusetts

## Unnecessary Antibiotic Prescriptions

At least 30 percent of antibiotics prescribed in the United States are unnecessary, according to new data published in the Journal of the American Medical Association (JAMA) by the Center of Disease Control and Prevention (CDC), in collaboration with Pew Charitable Trust and other public health and medical experts.

The study analyzed antibiotic use in doctors' offices and emergency departments throughout the United States. CDC researchers found that most of these unnecessary antibiotics are prescribed for respiratory conditions caused by viruses-including common cold, viral sore throats. Bronchitis, and sinus and ear infections, which do not respond to antibiotics. These 47 million excess prescriptions each year put patients at needless risk for allergic reactions or sometimes deadly diarrhea, *Clostridium difficile*. In 2015, the White House released The National Action Plan for Combating Antibiotic-Resistant Bacteria (CARB), which set a goal of reducing inappropriate outpatient antibiotic use by at least half by 2020. In 2016, Congress appropriated \$160 million in new funding for CDC to implement its activities listed in the National Action Plan for Combating Antibiotic-Resistant Bacteria. Health care professionals, health systems, and patients must take these actions to improve antibiotic use:

- Outpatient healthcare providers can evaluate their prescribing habits and implement antibiotic stewardship activities.
- Health systems can improve antibiotic prescribing in offices and outpatient facilities within their networks by providing communications training, clinical decision support, patient and healthcare provider education, and feed-back to providers on their performance.
- Patients can talk to their healthcare providers about when antibiotics are needed and when they are not.

Kansas has applied for additional funding through CDC's Epidemiology and Laboratory Cooperative Agreement to enhance antimicrobial stewardship practices throughout the state. This enables us to hire a new Antimicrobial Resistance Coordinator to be housed within the existing HAI Program. This individual will chair a statewide advisory group specifically looking at issues relating to antimicrobial resistance and antimicrobial stewardship as well as assisting facilities in using NHSN's Antibiotic Use and Resistance (AUR) module.

Source: ICT Infection Control Today; Joseph Scaletta, MPH, BSN, RN, CIC, Program Director, Healthcare Associated Infections Program



***"Antibiotics are lifesaving drugs, and if we continue down the road of inappropriate use we'll lose the most powerful tool we have to fight life-threatening infections. Losing these antibiotics would undermine our ability to treat patients with deadly infections, cancer. Provide organ transplants, and save victims of burns and trauma".***

- CDC Director, Tom Frieden, MD, MPH

## New Playbook for Improving Antibiotic Use in Hospitals

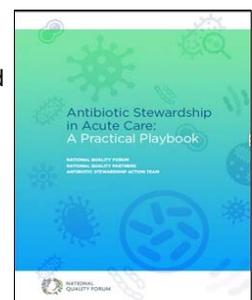
[CDC](#), [National Quality Forum \(NQF\)](#), and [Hospital Corporation of America \(HCA\)](#), in collaboration with more than 25 professional societies and national stakeholders, released a practical guide to help hospital leaders improve antibiotic use in their facilities.

Featuring a flexible structure and real-world examples, the "[Antibiotic Stewardship in Acute Care: A Practical Playbook](#)," is based on CDC's [Core Elements of Hospital Antibiotic Stewardship Programs](#) and will help hospitals and health systems create and strengthen antibiotic stewardship programs.

In addition, read more about the Playbook on CDC's [Safe Healthcare Blog](#). Drs. Arjun Srinivasan and Ed Septimus, co-chairs of NQF's National Quality Partners' antibiotic stewardship action team, delve into the details of this helpful tool.

Share with your colleagues, and join the conversation!

Safe Healthcare Blog: [New Guide Developed to Help U.S. Hospitals Improve Antibiotic Use; A National Health Priority](#) Twitter: [@CDCgov](#), [@CDC\\_NCEZID](#); Facebook: [CDC](#); Get Smart for Healthcare: <http://www.cdc.gov/getsmart/healthcare/index.html>.



Source: Centers for Disease Control & Prevention (CDC)

## A Survey of Antimicrobial Stewardship Practices in Kansas

The objective of this survey was to characterize current antimicrobial stewardship practices in the state of Kansas in order to discover areas for improvements in stewardship practices and find ways to work towards a more robust future of antimicrobial stewardship in Kansas.

Antimicrobial stewardship is defined by the Association for Professionals in Infection Control and Epidemiology (APIC) as: "... a coordinated program that promotes the appropriate use of antimicrobials (including antibiotics), improves patient outcomes, reduces microbial resistance, and decreases the spread of infections caused by multidrug-resistant organisms." Ultimately antimicrobial stewardship is: Using the right drug, at the right dose, for the right duration, under to right conditions.

The Infectious Disease Society of America (IDSA) has defined two core elements that they feel should be included in all stewardship programs they are: Prospective audit and feedback, and formulary restriction and preauthorization. The IDSA also outlines several supplemental elements that are beneficial to an ASP. These include: education, institutional guidelines for the management of common infection syndromes, switching from intravenous to oral administration, de-escalation, and dose optimization

The IDSA also defines who should be members of this team in order for it to succeed. The required members include an infectious disease physician and an infectious disease trained pharmacist; with supplemental members from infection prevention, microbiology, hospital administration, and information technology.

Based on these guidelines we set out to develop a survey that would capture this information for facilities in Kansas. This survey was sent out to all 154 acute care facilities in the state. Of the 154 eligible facilities invited to participate, 129 responded. For the purpose of this study, acute care facilities were defined as hospitals that participate in Inpatient Prospective Payment System with the Centers for Medicare and Medicaid Services (CMS). These facilities are generally acute care hospitals with more than 25 beds. Critical access hospitals have 25 or fewer beds and have additional requirements to meet rural status. The highest response in this survey was from acute care facilities, followed by critical access hospitals.

When asked whether or not their facility had a formal committee devoted to antimicrobial stewardship 61 of 127 (48%) facilities responded yes. Acute care facilities were more likely than critical access facilities to have formal committees.

When assessing the presence of core measures, regardless of the presence of a formal antimicrobial stewardship committee, 41.1% of respondents reported that their facility participated in preauthorization, while 49.6% reported that their facility participated in prospective audit with feedback. Critical access hospitals were less likely to engage in these core practices when compared to acute care facilities.

Overall in Kansas, the supplemental measures that are most utilized include: dose adjustment in the case of organ dysfunction, dose optimization, monitoring antibiotic consumption rates, and the development of facility specific guidelines. The least utilized measures include: time sensitive stop orders, education, intravenous to oral switching, and antibiotic time out.

This survey showed that moving forward, additional focused support for critical access hospitals will be needed to aid in the development of effective antimicrobial stewardship programs and provide insight into which core and supplemental elements of ASP are being utilized.

Source: Carrie Poteete - The University of Kansas Medical Center Intern

### Contact Information

If you have comments, questions, have suggestions for articles, or would like to contribute an article for this newsletter, please contact:

**Joseph Scaletta, MPH, BSN, RN, CIC**  
**Program Director, Healthcare Associated Infections Program**  
*[jscaletta@kdheks.gov](mailto:jscaletta@kdheks.gov)*

D. Charles Hunt, MPH,  
 State Epidemiologist  
 & Director, BEPHI

Curtis State Office Building  
 1000 SW Jackson St  
 Topeka, Kansas 66612

Lou Saadi, Ph.D.  
 Deputy Director  
 State Registrar

Robert Geist, MPH, CIC  
 Advanced Epidemiologist, Healthcare Associated Infections Program

Karen Crawford, Infection Prevention Cord.  
 Healthcare Associated Infections Program