

**DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion**



**Healthcare Infection Control Practices Advisory Committee
July 13-14, 2017
Atlanta, Georgia**

Record of the Proceedings

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Healthcare Infection Control Practices Advisory Committee (HICPAC)

July 13-14, 2017

Centers for Disease Control and Prevention

Tom Harkin Global Communications Center (Building 19, Aud. B)

1600 Clifton Rd., NE, Atlanta, GA

Thursday, July 13, 2017

Time	Topic	Purpose	Presider/Presenter (s)
9:00	Welcome and Introductions	Information	Daniel Diekema (HICPAC Co-Chair) Deborah Yokoe (HICPAC Co-Chair) Mike Bell (DFO, HICPAC; CDC)
9:15	CDC Updates: Division of Healthcare Quality Promotion (DHQP)	Information	Denise Cardo (DHQP)
9:45	Healthcare Water Management Update	Information	Cliff McDonald (DHQP)
10:15	Break		
10:35	DHQP Modeling Overview	Information/ Discussion	Rachel Slayton (DHQP) John Jernigan (DHQP)
11:25	Products and Practices Workgroup Update	Information/ Discussion	Lynn Janssen (HICPAC)
12:00	Lunch		
1:15	HICPAC Workgroup Update: Antibiotic Stewardship for Incorporation into Clinical Practice Guidelines	Information/ Discussion	Jan Patterson (HICPAC) W. Charles Huskins (HICPAC)
2:00	HICPAC Workgroup Update: Recommendation Categorization Scheme Update	Information/ Discussion	Dan Diekema (HICPAC) Deborah Yokoe (HICPAC)
3:00	Break		
3:20	HICPAC Workgroup Update: Recommendation Categorization Scheme Update (cont.)	Information/ Discussion	Dan Diekema (HICPAC) Deborah Yokoe (HICPAC)
4:15	Public Comment		
4:30	Liaison/ Ex-officio Reports		
5:00	Adjourn		

Friday, July 14, 2017

Time	Topic	Purpose	Presider/Presenter
9:00	Welcome and Roll Call	Information	Daniel Diekema (HICPAC Co-Chair) Deborah Yokoe (HICPAC Co-Chair) Mike Bell (DFO, HICPAC; CDC)
9:15	NHSN Update NSHN Workgroup Update	Information/ Discussion	Daniel Pollock (DHQP) Michael Howell (HICPAC)
10:00	Break		
10:20	Guideline Updates <ul style="list-style-type: none">• NICU Guideline• Healthcare Personnel Guideline	Information/ Discussion	Kristina Bryant (HICPAC) David Kuhar (DHQP)
11:30	Public Comment		
11:55	Summary and Work Plan		
12:00	Adjourn		

Attendees

List of Attendees Day 1: July 13, 2017

HICPAC Members

Dr. Daniel Diekema, Co-Chair
Dr. Deborah Yokoe, Co-Chair
Dr. Hilary Babcock
Ms. Vickie Brown
Dr. Kristina Bryant
Dr. Vineet Chopra
Ms. Loretta Fauerbach
Dr. Michael Howell
Dr. W. Charles Huskins
Ms. Lynn Janssen
Dr. Lisa Maragakis
Dr. Jan Patterson

Ex Officio Members

Ms. Elizabeth Claverie-Williams, US Food and Drug Administration
Dr. David Henderson, National Institutes of Health
Dr. Melissa Miller, Agency for Healthcare Research and Quality

Dr. Gary Roselle, US Department of Veterans Affairs
Dr. Daniel Schwartz, Centers for Medicare and Medicaid Services
Ms. Judy Trawick, Health Resources and Services Administration

Liaison Representatives

Dr. Elaine Dekker (America's Essential Hospitals (AEH))
Dr. Mark Russi (American College of Occupational and Environmental Medicine (ACOEM))
Ms. Evelyn Knolle (American Hospital Association (AHA))
Ms. Sharon Morgan (American Nurses Association (ANA))
Ms. Amber Wood (Association of periOperative Registered Nurses (AORN))
Ms. Darlene Carey (Association of Professionals of Infection Control and Epidemiology (APIC))
Ms. Emily Lutterloh (Association of State and Territorial Health Officials (ASTHO))

Dr. Marion Kainer (Council of State and Territorial Epidemiologists (CSTE))
Ms. Lisa McGiffert (Consumers Union (CU))
Dr. Jacqueline Lawler (National Association of County and City Health Officials (NACCHO))
Ms. Kathleen Dunn (Public Health Agency of Canada (PHAC))
Dr. Craig Coopersmith (Society for Critical Care Medicine (SCCM))
Ms. Louise Demby (Society for Healthcare Epidemiology of America (SHEA))
Dr. Valerie Vaughn (Society of Hospital Medicine (SHM))

CDC Representatives

Ms. Fran Abanyie, CDC/DHQP
Ms. Allison Albert, CDC
Dr. Matt Arduino, CDC/DHQP
Ms. Sonya Arundar, CDC/DHQP
Ms. Brittany Barnett, CDC/DHQP
Dr. Michael Bell, CDC/DHQP

Ms. Shantel Benjamin, CDC/DHQP
Dr. Isaac Benowitz, CDC/DHQP
Dr. Chris Braden, CDC/DHQP
Mr. Cedric Brown, CDC
Ms. Susan Cali, CDC/DHQP
Ms. Catherine Capers, CDC/DHQP

Dr. Denise Cardo, CDC/DHQP
Ms. Danielle Carter, CDC/DHQP
Ms. Sheralyn Chrisholm, CDC/DHQP
Ms. Christina Chu, CDC/DHQP
Mr. Koo-Whang Chung, CDC/DHQP
Dr. Laura Cooley, CDC/NCIRD
Dr. Jennifer Cope, CDC
Ms. Kendra Cox, CDC/ DHQP
Dr. Matthew Crist, CDC/DHQP
Mr. Dave Dagle, CDC
Ms. Mahnaz Dasti, CDC/DHQP
Dr. William Edens, CDC/DHQP
Ms. Lauren Epstein, CDC/DHQP
Ms. Taniece Eure, CDC/DHQP
Dr. Anthony Fiore, CDC DHQP
Ms. Monique Fleurant, CDC/DHQP
Mr. Steven Franklin, CDC/DHQP
Ms. Nancy Gallagher, CDC/ DHQP
Ms. Demetria Gardner, CDC/ DHQP
Ms. Dominique Godfrey, CDC/DHQP
Ms. Tammy Goode, CDC/DHQP
Mr. Jeremy Goodman, CDC/ DHQP
Dr. Bill Greim, CDC/ DHQP
Dr. Rita Helfand, CDC
Ms. Rosa Herrera, CDC/DHQP
Dr. Lauri Hicks, CDC DHQP
Dr. Kathleen Irwin, CDC/DHQP
Dr. John Jernigan, CDC/DHQP
Dr. Sarah Kabbani, CDC/DHQP
Dr. Alex Kallen, CDC/DHQP
Dr. David Katz, CDC/DHQP
Ms. Sophia Kazakova, CDC/DHQP
Ms. Lauren Korhonen, CDC/DHQP
Dr. David Kuhar, CDC/DHQP
Dr. Allison Laufer Halpin, CDC/DHQP
Ms. Bernadette Loncke, CDC/DHQP
Ms. Claressa Lucas, CDC

FDA Representatives

Dr. Karoll Cortez, FDA/CDRH
Dr. Clarence Murray, FDA

Members of the Public

Mr. Jim Arbogast, GoJo
Ms. Amy Bardin, Teleflex
Ms. Lynne Batshon, Society for Healthcare
Epidemiology
Mr. David Blake, Sherwin Williams Paint
Ms. Rachel Brummert, USA Patient Network
Ms. Kathy Day, Safe Patient Project

Dr. Cliff MacDonald, CDC/DHQP
Dr. Shelley Magill, CDC/DHQP
Ms. Anita McLees, CDC
Ms. Kerri Moran, CDC/DHQP
Ms. Elizabeth Mothershed, CDC/DHQP
Dr. Shannon Novosad, CDC/DHQP
Dr. Justin O'Hagan, CDC/DHQP
Ms. Erin O'Leary, CDC/DHQP
Ms. Amibola Ogundimu, CDC/DHQP
Ms. Badatunde Olubajo, CDC/DHQP
Ms. Hanako Osuka, CDC/DHQP
Ms. Amanda Overholt, CDC/ DHQP
Ms. Molly Patrick, CDC/DHQP
Mr. Prabasaj Paul, CDC/DHQP
Dr. Kiran Perkins, CDC/DHQP
Dr. Joe Perz, CDC/ DHQP
Ms. Ruby Phelps, CDC/DHQP
Ms. Latasha Powell, CDC DHQP
Dr. Krista Powell, CDC/DHQP
Ms. Kristin Rainisch, CDC/DHQP
Ms. Catherine Rebmann, CDC/DHQP
Dr. Sujan Reddy, CDC/DHQP
Ms. Kristin Roberts, CDC/DHQP
Dr. Melissa Schaefer, CDC/DHQP
Ms. Martha Sharan, CDC/ DHQP
Mr. Edward Sheriff, CDC/DHQP
Dr. Brajendra Singh, CDC/DHQP
Dr. Rachel Slayton, CDC/DHQP
Ms. Jessica Smith, CDC/NCIRD
Ms. Erin Stone, CDC/DHQP
Dr. Nimalie Stone, CDC/DHQP
Dr. Nicola Thompson, CDC/DHQP
Ms. Erica Tindall, CDC/DHQP
Dr. J. Todd Weber, CDC/ DHQP
Dr. Mark Weng, CDC
Ms. Taitainia Williamson, CDC/DHQP
Ms. Sarah Yi, CDC/DHQP

Ms. Catherine Duff, Fecal Transplant
Foundation
Ms. Pamela Falk, Northside Hospital
Dr. Scott Fridkin, Emory University
Ms. Maryellen Guinan, America's Essential
Hospitals
Ms. Lori Harmon, Society for Critical Care
Medicine

Ms. Mindy Hecht, Patient Shield Concepts
Dr. Stephanie Henry Wallace, Cambridge
Communications
Dr. Edmond Hooker, Xavier
Ms. Docia M. Johnson, Northside Hospital
Dr. Kevin Kavanagh, Health Watch USA
Mr. Christian Lillis, Peggy Lillis Foundation
Ms. Rebekah Limato, Teleflex
Ms. Carole Moss, Nile's Project
Mr. Ty Moss, Nile's Project
Ms. Jeane Negley, Georgia Department of
Public Health
Ms. Lori Nerbonie, Consumers Union

Ms. Stephanie Poe Thomas, Sherwin
Williams Paint
Ms. Silvia Quevedo, Association of
Professionals in Infection Control
Ms. Maria Rodriguez, Xenex Disinfection
Services
Mr. Keith St. John, PDI
Ms. Rachel Stricof, Council of State and
Territorial Epidemiologists
Ms. Darla Tarvin, Teleflex
Ms. Mardris Tomes, Device Events
Ms. Lisa Tomlinson, APIC
Ms. Nancy Trick, BD

List of Attendees Day 2: July 14, 2017

HICPAC Members

Dr. Daniel Diekema, Co-Chair
Dr. Deborah Yokoe, Co-Chair
Dr. Hilary Babcock
Ms. Vickie Brown
Dr. Kristina Bryant
Dr. Vineet Chopra
Ms. Loretta Fauerbach
Dr. Michael Howell
Dr. W. Charles Huskins
Dr. Lisa Maragakis
Dr. Jan Patterson

Ex Officio Members

Ms. Elizabeth Claverie-Williams, US Food
and Drug Administration
Dr. David Henderson, National Institutes of
Health
Dr. Melissa Miller, Agency for Healthcare
Research and Quality

Dr. Gary Roselle, US Department of
Veterans Affairs
Dr. Daniel Schwartz, Centers for Medicare
and Medicaid Services
Ms. Judy Trawick, Health Resources and
Services Administration

Liaison Representatives

Dr. Elaine Dekker (America's Essential
Hospitals (AEH))
Dr. Mark Russi (American College of
Occupational and Environmental Medicine
(ACOEM))
Ms. Evelyn Knolle (American Hospital
Association (AHA))
Ms. Sharon Morgan (American Nurses
Association (ANA))
Ms. Amber Wood (Association of
periOperative Registered Nurses (AORN))

Ms. Darlene Carey (Association of
Professionals of Infection Control and
Epidemiology (APIC))
Ms. Emily Lutterloh (Association of State
and Territorial Health Officials (ASTHO))
Dr. Marion Kainer (Council of State and
Territorial Epidemiologists (CSTE))
Ms. Lisa McGiffert (Consumers Union (CU))
Dr. Jacqueline Lawler (National Association
of County and City Health Officials
(NACCHO))
Ms. Kathleen Dunn (Public Health Agency
of Canada (PHAC))

Dr. Craig Coopersmith (Society for Critical Care Medicine (SCCM))
Dr. Louise Dembry (Society for Healthcare Epidemiology of America (SHEA))

Dr. Valerie Vaughn (Society of Hospital Medicine (SHM))

CDC Representatives

Ms. Fran Abanyie, CDC/DHQP
Dr. Matt Arduino, CDC/DHQP
Dr. Michael Bell, CDC/DHQP
Ms. Shantel Benjamin, CDC/DHQP
Dr. Chris Braden, CDC
Ms. Kathy Bridson, CDC/DHQP
Dr. Denise Cardo, CDC/DHQP
Dr. Bryan Christensen, CDC/DHQP
Mr. Koo-Whang Chung, CDC/DHQP
Ms. Kendra Cox, CDC/DHQP
Ms. Mahnaz Dasti, CDC/DHQP
Ms. Toni B. Ector, CDC/DHQP
Dr. Anthony Fiore, CDC/DHQP
Ms. Monique Fleurant, CDC/DHQP
Dr. Scott Fridkin, CDC/DHQP
Ms. Demetria Gardner, CDC/DHQP
Dr. Cheri Grigg, CDC/DHQP
Dr. Rita Helfand, CDC
Ms. Rosa Herrera, CDC/DHQP
Dr. Lauri Hicks, CDC/DHQP
Ms. Carissa Holmes, CDC/DHQP
Dr. Kathleen Irwin, CDC/DHQP
Dr. Katy Irwin, CDC/DHQP
Dr. Alex Kallen, CDC/DHQP

Dr. David Kuhar, CDC/DHQP
Ms. Denise Leaptrot, CDC/DHQP
Mr. Kent Lemuine, CDC/DHQP
Dr. Cliff McDonald, CDC/DHQP
Ms. Anita McLees, CDC
Ms. Shunte Moon, CDC/DHQP
Ms. Kerri Moran, CDC/DHQP
Ms. Elizabeth Mothershed, CDC/DHQP
Ms. Shannon Novosad, CDC/DHQP
Ms. Amanda Overholt, CDC/DHQP
Dr. Joe Perz, CDC/DHQP
Ms. Latasha Powell, CDC/DHQP
Dr. Krista Powell, CDC/DHQP
Ms. Cathy Rebmann, CDC/DHQP
Ms. Kristin Roberts, CDC/DHQP
Ms. Srila Sen, CDC/DHQP
Mr. Edward Sheriff, CDC/DHQP
Ms. Erin Stone, CDC/DHQP
Dr. Matt Stuckey, CDC/DHQP
Ms. Jennifer Watkins, CDC/DHQP
Dr. Mark Wey, CDC
Ms. Emily Witt, CDC/DHQP
Ms. Shuai Zheng, CDC/DHQP

Members of the Public

Mr. Jim Arbogast, GoJo
Ms. Amy Bardin, Teleflex
Ms. Lynne Batshon, Society for Healthcare Epidemiology
Ms. Kathy Day, Safe Patient Project
Ms. Catherine Duff, Fecal Transplant Foundation
Ms. Diane Everett, University of Miami Hospital
Ms. Pamela Falk, Northside Hospital
Ms. Maryellen Guinan, America's Essential Hospitals
Ms. Lori Harmon, Society for Critical Care Medicine
Ms. Helen Haskell, MAME
Ms. Mindy Hecht, Patient Shield Concepts
Dr. Stephanie Henry Wallace, Cambridge Communications
Dr. Edmond Hooker, Xavier

Ms. Docia Johnson, Northside Hospital
Dr. Kevin Kavanagh, Health Watch USA
Ms. Rebekah Limato, Teleflex
Ms. Jeanne Negley, Georgia Department of Public Health
Ms. Lori Nerbunne, Safe Patient Project
Ms. Silvia Quevedo, Association of Professionals in Infection Control
Ms. Maria Rodriguez, Xenex Disinfection Services
Mr. Keith St. John, PDI
Ms. Rachel Stricof, Council of State and Territorial Epidemiologists
Ms. Darla Tarvin, Teleflex
Ms. Madris Tomes, Device Events
Ms. Lisa Tomlinson, Association of Professionals in Infection Control
Ms. Nancy Trick, BD

Executive Summary

The US Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) Division of Healthcare Quality Promotion (DHQP) convened a meeting of the Healthcare Infection Control Practices Advisory Committee (HICPAC) on July 13-14, 2017 in Atlanta, Georgia. The Designated Federal Official (DFO) and Chair confirmed the presence of a quorum of HICPAC voting members and *ex officio* members, which was maintained throughout each day.

The meeting was called to order at 9:05 am on July 13, 2017. Dr. Denise Cardo provided updates from DHQP, sharing current issues and challenges facing DHQP for HICPAC to consider in making prevention recommendations. Dr. Cliff McDonald updated HICPAC on healthcare water management, including a discussion about recent water-related outbreaks in healthcare settings and approaches to prevention. Drs. Rachel Slayton and John Jernigan discussed the use of mathematical modeling as an approach to complement traditional epidemiologic studies and described intramural and extramural modeling activities in DHQP. Ms. Lynn Janssen explained the charge and membership of the Products and Practices HICPAC Workgroup and discussed its progress to date and future plans. Dr. Charles Huskins and Dr. Jan Patterson provided an update on the reconvening of the Antibiotic Stewardship Workgroup and its charge to develop supplemental materials to aid guideline-writing organizations in incorporating the principles of the HICPAC Antibiotic Stewardship Statement for Antibiotic Guidelines. HICPAC discussed in detail, and voted unanimously to approve, revised language for the HICPAC Antibiotic Stewardship Principles for Clinical Practice Guidelines, including the Implementation Considerations for Guideline Development. Dr. Daniel Diekema led a HICPAC discussion of the current recommendation categorization scheme and the consideration of other categorization schemes.

HICPAC stood in recess from 5:00 pm on July 13 until 9:00 am on July 14. Drs. Daniel Pollock and Michael Howell provided an update on the National Healthcare Safety Network (NHSN), including its history. They also announced the establishment of the HICPAC NHSN Workgroup and described its goals, membership, and charge, and provided a brief report from the Workgroup's first meeting. Dr. Kristina Bryant provided an update on the Neonatal Intensive Care Unit (NICU) Guideline, including information about the topics, key questions, and progress since the December 2016 HICPAC meeting. Dr. David Kuhar provided an update on the Guideline for Infection Control in Healthcare Personnel (1998), including a discussion of the background of the 1998 guideline, the status of the update on Section 1, plans for updating Section 2, and the next sections to be updated. HICPAC provided input on plans for updating Section 2, specifically regarding whether important topics were missing.

HICPAC stood in recess at 11:48 am on July 14, 2017.

**DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
National Center for Emerging and Zoonotic Diseases
Division of Healthcare Quality Promotion**

Healthcare Infection Control Practices Advisory Committee (HICPAC)

July 13-14, 2017
Atlanta, Georgia

DRAFT Minutes of the Meeting

The United States Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) Division of Healthcare Quality Promotion (DHQP) convened a meeting of the Healthcare Infection Control Practices Advisory Committee (HICPAC) on July 13-14, 2017 at the Tom Harkin Global Communications Center at the Centers for Disease Control and Prevention, 1600 Clifton Road NE, Atlanta, Georgia.

Thursday, July 13, 2017

Welcome and Introductions

**Deborah Yokoe, MD, MPH
HICPAC Co-Chair
Brigham & Women's Hospital
Associate Professor, Harvard Medical School**

**Daniel Diekema, MD, MS, D(ABMM)
HICPAC Co-Chair
University of Iowa Carver College of Medicine**

**Michael Bell, MD
Deputy Director, Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention**

Dr. Deborah Yokoe called the meeting to order at 9:00 am and welcomed HICPAC members, *ex officio* members, and liaison representatives. Dr. Diekema conducted a roll call, establishing that a quorum was present. Quorum was maintained throughout the day. HICPAC members disclosed the following conflicts of interest:

- Ms. Vickie Brown has served on an advisory committee for bioMérieux.
- Dr. Kristina Bryant has been an investigator on clinical vaccine trials funded by Pfizer.
- Dr. Sheri Chernetsky Tejedor is working on an assignment with DHQP / CDC.
- Dr. Daniel Diekema has received research funding from bioMérieux.

- Ms. Lynn Janssen's spouse works for a biotech company that develops vaccines and immunology products for cancer.
- Dr. Lisa Maragakis receives research funding from Clorox.
- Dr. Jan Patterson has been a consultant for Pfizer Medical Education, she does work for Young Living Essential Oils, and her husband conducts antifungal research for Gilead and Merck.

CDC Updates: Division of Healthcare Quality Promotion (DHQP)

Denise Cardo, MD

Director, Division of Healthcare Quality Promotion

National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

Dr. Denise Cardo welcomed HICPAC members, experts, and partners. She recognized several patient advocates joining them who had participated in a meeting at CDC the previous day. In addition, she welcomed Dr. David Wright from the Centers for Medicare and Medicaid Services (CMS), a critical partner as CDC continues to work to make a difference in infection prevention.

Dr. Cardo recalled that at the last HICPAC meeting, she discussed some of DHQP's approaches to the prevention of healthcare-associated infections (HAIs) and antibiotic resistance (AR). It is important to note that sepsis also is within DHQP's purview in terms of early recognition. Through practices, programs, and policies, DHQP focuses on patient protection with its goals for healthcare-associated infection (HAI) prevention and AR solutions:

- To detect and contain infections;
- To prevent infections; and
- To improve antibiotic use.

DHQP now has data from almost all hospitals in the US, as well as from other healthcare facilities. Dr. Cardo presented data from acute care hospitals. There has been a great deal of progress in preventing some infections, but also a plateau or little to no change in prevention of other infections. Catheter-associated urinary tract infection (CAUTI) is a great example of how much the field has moved forward. Two studies from CDC and the Agency for Healthcare Research and Quality (AHRQ) showed that following CDC guidelines can lead to decreases in CAUTI rates. Improvements in insertion practices are one example of success in infection prevention in the intensive care unit (ICU) setting in particular: data from the National Healthcare Safety Network (NHSN) on trends in central line-associated bloodstream infections (CLABSI) in hospitals, 2009-2015, show a major decrease in CLABSI overall and in ICUs, wards, and neonatal intensive care units (NICUs).

NHSN data also reveal, however, fewer prevention efforts elsewhere. In addition, fewer prevention efforts are demonstrated in specific populations by age or specialty, such as oncology. In the past, infections in other settings and populations have been presumed not to be preventable. These perceptions are changing: infections may not be preventable solely by implementing recommended insertion practices, but they can be prevented using other strategies. These possibilities require further consideration.

Achieving success in decreasing CAUTI rates has proven to be more difficult than initially expected. Reductions in rates have been achieved more easily outside of the ICU because it is easier to remove a catheter when someone is not in the ICU. The challenges may be greater in the ICU not only due to the removal itself, but also because CAUTI prevention strategies require implementing many changes in ICU procedures. The data indicate that CDC's recommendations are more effective in units outside of the ICU and will need to be adapted for patients in the ICU.

Dr. Cardo pointed out different points in the overall trend of CAUTI rates. An increase in CAUTI rates in 2012 was a result of a "bump" in reporting due to training on how to use existing definitions. Further, the data reflect a notable drop in reported infections after the CAUTI definition was changed, with HICPAC input, not to include yeast: the preliminary results and analysis of NHSN data from 2009-2015 do not include yeast. However, even when yeast over time is not included, a decrease is observed in infections. When the new baseline was entered for 2015, the downward trend continued.

The CAUTI prevention guidelines are based on evidence for patients in acute care settings. With implementation of the existing recommendations, infection continues to occur. It must be considered, therefore, how to move forward in different situations, such as a unit in which different procedures are performed, or among special populations

Regarding the proportion of pathogens for CLABSI, gram-positives are decreasing and gram-negatives are increasing. This change is not just reflected in NHSN, but also from other data sources.

HICPAC's help would be welcome as DHPQ considers how to focus on areas in which there are plateaus, or where limited prevention is occurring. DHPQ believes in the concept of elimination and implementing what is known to work, while at the same time identifying additional needed efforts. Dr. Cardo emphasized that while HICPAC could define research questions, the work should not wait for evidence from randomized controlled trials (RCTs); it has become clear that it will only become more and more difficult to conduct ideal trials to identify the best methods for prevention. This process is dynamic, and data are available to support moving forward with additional prevention strategies and ways of thinking. DHQP is examining the data in a more detailed way that can assist with that approach.

DHQP has other ways of examining trends, such as the Point Prevalence Survey in acute care hospitals. The results are still being analyzed, but a trend is emerging. While it is extremely important to address device-related infections and this work needs to continue, many infections are not device-related. For instance, the point prevalence survey is finding pneumonias that are not related to ventilators. HICPAC's advice will help DHQP think about how CDC and its partners can better understand those infections in order to better prevent them in the future. This trend is also observed outside the US. Data from point prevalence surveys in Europe show similar findings. Critical care comprises an important percent of the infections (34%) in the point prevalence survey, a figure similar to what has been observed in other data sources.

The Emerging Infections Program (EIP) assessed methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infection (BSI) rates in the US from 2005-2014. They found a significant decrease in rates of 76%, in part because of the decrease in CLABSI and because of a decrease in patient-to-patient transmission. Beyond 2014, there is a plateau in the prevention of hospital onset with similar decreases in healthcare, nursing home, and dialysis settings. DHQP also is working with the US Department of Veteran's Affairs (VA) to look for similarities in their

data. In addition to the plateau observed in NHSN and EIP data, different strains are being identified. For example, MRSA pulsed-field type USA100 has decreased and USA300 has increased in hospitals. These pieces of information are critical to help build understanding of how the prevention of MRSA infections can be improved.

Based on NHSN data, less prevention is observed for *Clostridium difficile* (*C. diff*). The trends are the same for the old and the new baselines. Prevention of *C. diff* is complex, as this pathogen involves not only infection prevention, but also stewardship. This issue is important for HICPAC because many in the field still believe that there is no way to prevent *C. diff* infection; however, other countries, and some facilities in the US, have combined infection control and stewardship strategies, resulting in *C. diff* prevention.

MRSA and *C. diff* are problematic in settings other than hospitals. The traditional approach to prevention is not effective in this case: for instance, in infection prevention regarding devices and procedures, it is possible to help clinicians and institutions follow recommendations and have control. The public health-health care connections associated with MRSA and *C. diff* present different challenges. The primary source of these pathogens may a single facility; however, occurrences in one facility may affect many other facilities. A regional approach is needed to determine the needed interventions to address the primary pathogen source as well as other affected institutions. HICPAC can be helpful in building these approaches and moving the field forward not only at individual members' institutions, but also as leaders.

Stewardship is critical. CDC maintains strong collaborations for developing hospital stewardship programs. However, data are lacking regarding these programs, action is needed to focus on specific strategies. Further, the concept of a "program" is somewhat different in the outpatient setting, and little is known about what is occurring in nursing home settings. CDC is working with various groups to determine how to move forward not only with regard to implementing programs, but also to better understand what is occurring in order to improve specific practices. To support the Core Elements of Antibiotic Stewardship Programs, CDC is working in partnership with CMS on quality improvement efforts to support implementation across the spectrum of healthcare. In addition, collaborative efforts are underway with professional organizations, including nursing organizations. Patient engagement and education are being expanded with a new educational effort focusing on patients. New incentives and requirements for antibiotic stewardship in all healthcare settings include:

- For hospitals, a Joint Commission standard and a proposed CMS requirement
- For nursing homes, a new CMS requirement
- For the outpatient setting, stewardship is included in a new payment system

The last HICPAC meeting included a presentation on CDC's approach to containment. CDC is taking an aggressive approach to containment with the goal of slowing the spread of novel or rare MDROs or mechanisms so that they do not become endemic. This approach is a systematic, aggressive response to single cases of high concern with a focus on stopping transmission. Response activities have a tiered approach based on organism/mechanism attributes. This containment strategy complements existing guidance: [Interim Guidance for a Health Response to Contain Novel or Targeted Multidrug-resistant Organisms \(MDROs\)](https://www.cdc.gov/hai/outbreaks/mdro/index.html) (<https://www.cdc.gov/hai/outbreaks/mdro/index.html>).

Dr. Cardo shared updates on carbapenem-resistant *Enterobacteriaceae* (CRE), Cefepime-resistant *pseudomonas aeruginosa* (CRPA), and *mcr-1*. Since January 1, 2017, 1122 CRE and 235 CRPA isolates have been submitted to CDC through the Antibiotic Resistance Laboratory

Network (AR Lab Network). Of these, 340 (30%) carbapenemase-producers were identified; approximately 20% of carbapenemases are non-*Klebsiella pneumoniae* carbapenemase (KPC). CDC consulted on 28 investigations of carbapenemase-producing organisms across 19 states, with 19 cases of *mcr-1* identified in US patients. There were 386 healthcare contacts screened, with 24 asymptotically-colonized individuals identified. CDC is being proactive not only in terms of collecting more CRE isolates from state laboratories, but also in examining what occurs outside of the state laboratories, including screening contacts, especially when the mechanism of transmission is unknown. CDC has learned from this activity that some facilities are now reservoirs, especially facilities such as skilled nursing facilities, with patients on ventilators.

CMS data illustrate how patients move back and forth between and among facilities. Therefore, it is important to think about how to focus specific prevention efforts in acute care facilities. Basic infection control is extremely important in these facilities, and a targeted and tailored approach to prevention is important. Modes of transmission are also important. Resistant microorganisms do not respect healthcare, state, or international borders; it is necessary to adopt a more holistic approach to protecting patients across the spectrum of patient care. This work can be accomplished by applying current recommendations for prevention of infections combined with innovation based on data, early detection with faster diagnostic tools, and appropriate treatment with a focus on antibiotic stewardship. The focus on survivors as well as those who have been lost to infection is growing, especially regarding sepsis.

More data, different sources of data, and better data are contributing to better understanding and tracking of the problem and to identifying prevention opportunities. Data on pathogens come from improved laboratory capacity in 50 states, five major cities/territories, and seven regions to identify new resistances and trends rapidly. Data on human infections come from NHSN, a robust system for tracking resistant infection in 20,000 healthcare facilities. Data on risk come from active surveillance in ten EIP sites, with a catchment area of approximately 44 million people, to monitor resistance across populations and to measure risk by population and community. The current metrics are not appropriate for small hospitals: even the metrics available for CLABSI in the ICU are small and not ideal.

Dr. Cardo thanked HICPAC for working with CDC and its partners to address challenges and move forward to use available data and increase prevention efforts. Prevention is their goal and their responsibility. CDC and HICPAC's recommendations are used for prevention. Putting a face to patient protection is important, and it is increasingly clear that action to protect patients is local. Their work must consider not only facilities, but also local special groups that can help in infection prevention.

Discussion Points

HICPAC thanked Dr. Cardo for raising important issues, especially regarding using NHSN surveillance data to identify target prevention strategies and promoting a holistic, community-based approach to HAI prevention and antimicrobial stewardship.

Regarding metrics, HICPAC noted the challenges associated with why prevention might plateau. Some elements of metrics from laboratory identification methods come from coding and could be challenging when examining individual cases and determining how a given case could have been prevented.

One example comes from Barnes-Jewish and St. Louis Children's Hospitals (BJC), which hopes to publish data from two studies on each of the metrics. They have found that approximately

one-third of their MRSA bacteremia cases were related to HAIs captured in other metrics, such as CLABSI or surgical site infection (SSI) associated with bacteremia. For approximately a third, more work needs to be done regarding prevention because it is not clear what is occurring. Another third clearly were known to have MRSA bacteremia somewhere else in the healthcare system and entered BJC. Through the vagaries of the nature of the disease, perhaps controlled the first week followed by relapse, these cases are included. From BJC's perspective, the cases are not preventable on BJC's "watch," as the patients were accepted with known MRSA bacteremia, and BJC does its best to treat them. This example is important for DHQP to keep in mind as they work nationally to develop prevention strategies. Partnering with public health must increase in order to examine the data more globally, beyond the institution level, in order to avoid double-counting and plateauing. The second challenge BJC identified was clinician testing behavior. There are cases in which tests are performed on patients who have no clinical signs or symptoms of *C. diff*, but the organism is detected by polymerase chain reaction (PCR). This plateau needs to be addressed. It is important to understand that the metric has different components, some of which can be targeted with traditional infection prevention and stewardship, and some of which can be targeted by educating providers about how to use tests appropriately.

Dr. Cardo applauded BJC for examining their data and noting the issue of infections that come to an institution and may become the source of other infections. The metric is not perfect, but does exemplify that more needs to be done. MRSA, CRE, and *C. diff* must be addressed as a network, working across facilities, or they will become even worse problems. CDC is working with Emory regarding *C. diff* prevention. Emory assessed patient types and found patients who should not have been tested. Their goal is not diagnostic stewardship to decrease infection rates; the goal is to improve patient outcomes because patients are being treated. These ideas also apply to CAUTI. There must be improvement in how practitioners are ordering cultures. She emphasized the importance of thinking holistically in terms of patients, how diagnostic tools are used, patient movement, and the community.

The Council of State and Territorial Epidemiologists (CSTE) reported that Tennessee has a problem with a high rate of hospital-onset MRSA. In 2016, there were 562 hospital onset laboratory-identified events and 2729 community-onset infections in the state. This data illustrates the enormous public health importance of community-onset MRSA. Of the 562 hospital-onset MRSA, only 43 (less than 8%) were CLABSIs. There could be other CLABSIs in other locations that are not being captured. Step-down units represent a problem. MRSA was identified as the pathogen in 100 SSIs, but only five of them had a secondary BSI. The Tennessee Department of Health is delighted to have assistance from CDC colleagues as they undertake a "deep dive" to better understand the problems in its three major outlier facilities with excess MRSA infections. It is important to remember that the huge number of community-onset MRSA BSIs may not be counted in CDC's metric as an individual facility, but they cause significant problems for patients. Many of these infections may be acquired in the inpatient or outpatient setting.

Dr. Cardo clarified that healthcare epidemiologists or hospital programs need not go beyond hospitals; it is not their role to address those issues. CDC funds states to have HAI/AR programs. A program in DHQP assesses state-based activities. There are examples in some states of healthcare epidemiologists working with health departments. A public health/healthcare Fellowship program is being established to provide a pathway for infectious disease trainees to engage in cross-cutting public health/HAI efforts. Fellows could serve to bridge between public health and healthcare and add value to the HAI/AR programs.

HICPAC recognized the importance of diagnostic stewardship. HICPAC could engage with CDC and laboratory colleagues to raise diagnostic stewardship to the same level as antimicrobial stewardship. This effort is “low-hanging fruit” that could have a major impact. The time to move forward aggressively on this work is now, because the issues will become increasingly complicated every year. As diagnostics become more sensitive, as has occurred with *C. diff*, the issue becomes even more urgent. This concept includes diagnostics such as the so-called syndromic panels with 20 different targets in a single assay and a wide variety of pre-test likelihoods of disease that make many of the results either meaningless or confusing. These diagnostics could drive antimicrobial use that may not be appropriate or drive infection rates in a way that did not occur before this technology became available. Perhaps HICPAC could help move toward formalized diagnostic stewardship principles and similarly toolkits that institutions could use to begin to make an impact.

The National Institutes of Health (NIH) emphasized and underscored treating the isolation of some of these important pathogens almost as a sentinel event, and shared an example of a 2011 CRE outbreak in a hospital in which 60% of patients were immunosuppressed. Once the outbreak was controlled, since 2012, they now have 31 isolates of CREs, all of which have been sequenced. Whole-house surveillance is conducted once per month, making it possible to report definitively that there have been no transmissions of CRE in this hospital since 2012. Implementation of the strategies that CDC has promulgated makes implicit sense and works if taken seriously.

Healthcare Water Management Update

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On Behalf of the DHQP HAI Water Issues Workgroup

Dr. McDonald explained that water quality is regulated under the Environmental Health Protection Agency (EPA) Safe Water Drinking Act (SDWA), which states that coliforms cannot exceed 0/mL, and heterotrophic plate count (HPC) cannot exceed more than 500/mL. Recent water-related outbreaks in healthcare settings have included:

- *Legionella*
- *Pseudomonas aeruginosa*
- CRE and other antimicrobial resistant bacteria in sink drains
- Nontuberculous Mycobacteria (NTM)
 - Invasive *M. chimaera* related to heater-cooler devices
 - Surgical site infections (e.g., breast)
 - Respiratory *M. abscessus* in lung transplant patients
 - Dental unit water lines

Extrapulmonary NTM infections are a problem, with incidence on the order of approximately 1/100,000 population. When non-pulmonary NTM infections occur in healthcare, they almost always are from a water source. Pulmonary NTM infections are probably water-related as well; the problem has to be traced back to the water source. This organism loves water, and HICPAC has struggled with this issue in its consideration of contaminated heater-cooler devices.

A recent *VitalSigns*[™] report described a healthcare-associated Legionnaire's disease event.¹ DHQP worked closely with their colleagues in the National Center for Immunization and Respiratory Diseases (NCIRD) on this effort. The report was drawn from data from 20 states and one city reporting *Legionella* cases, which are nationally notifiable. States and localities have the option to investigate for exposure history, including whether there was a healthcare exposure. The focus of this report was on cases that were traced and found to be healthcare-associated. Of the jurisdictions that reported exposures, 76% had definite healthcare-associated Legionnaire's cases. Water management programs have shown effectiveness in amelioration of *Legionella* in several outbreaks. The water management programs described in this *VitalSigns*[™] are based upon the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 188.

DHQP is considering a framework for thinking about water in terms of supply, use, and waste. This framework could have broad applications for use. There have been discussions about problems with endoscope disinfection. While those processes involve water, the problems are not necessarily a result of contamination from water; the recent duodenoscopic issue was probably from a patient source and instruments that were not well-cleaned. Certainly, the heater-cooler unit device problem could be perceived as water misuse. However, this framework for use is more closely related to the actual use of potable water or sinks in general. For the purposes of the framework, "supply" includes municipal water and premise plumbing. "Use" includes non-domestic use (fountains, fish tanks, etc.), typical domestic use (potable water, sinks, handwashing, toilets), and healthcare-related use. "Waste" includes waste within a healthcare facility as well as waste that leaves a healthcare facility and can become a risk to the community, particularly in terms of antibiotic resistance.

Dr. McDonald described an example of an outbreak involving a cluster of *Pseudomonas* infections among NICU patients in Maryland in 2016.² In this case, not only was there a problem with the potable water supply, but there was also a problem with use. Addressing a threat to patients involves addressing both problem areas. *Pseudomonas* was found in the facility's water and was initially controlled with point-of-use filters. A marked decrease in *Pseudomonas* occurred with the point-of-use filters, dropping from 200 colony forming units (CFU) to 1 – 3 CFU. The water system in this facility was fairly old. CDC's recommendations were to put a water management plan in place, continue to monitor the potable water supply, and further assess how water was being used. For example, tap water was being used for breast pump cleaning, and reservoirs for humidifiers underneath the isolettes were being filled with tap water. Even though the potable water supply had been made much safer in terms of colony counts, further recommendations needed to be made with the emphasis of protecting the neonates.

Better articulation of these issues is part of the purview of the DHQP Water Management Workgroup. HICPAC's input is welcomed in these areas. In another example from California, numerous approaches were applied to ameliorate a *Pseudomonas aeruginosa* outbreak in a NICU, including removal of aerators, additional chlorination, and installation of point-of-use filters.³ While the water supply improved, it is still important to think about other aspects of water use as in the Maryland example.

¹ Soda EA, Barskey AE, Shah PP, et al. Vital Signs: Health Care–Associated Legionnaires' Disease Surveillance Data from 20 States and a Large Metropolitan Area — United States, 2015. *MMWR Morb Mortal Wkly Rep* 2017;66:584–589

² Cluster of *Pseudomonas* Infections among Neonatal Intensive Care Unit Patients; Maryland, 2016. Weng M, et al. EIS Conference 2017

³ *Infect Control Hosp Epidemiol* 2017;1–8

Turning to the problem of antibiotic resistance and drains, a recent systematic review of the literature examined Carbapenem-resistant organisms causing HAIs.⁴ As mentioned earlier, a small portion of all *Pseudomonas* infections in hospitals are due to a direct water source. This situation differs from NTMs, which are not transmitted person-to-person. However, *Pseudomonas* is transmitted person-to-person, even if it originates with a water source. This transmission involves the drain and enteric organisms, which should never be in the tap water. The organisms are not coming from tap water; instead, they are in the drains. A very small proportion of CRE probably coming directly from drains, but they can be a major problem in terms of containing CRE. This systematic review found that drains are the most common environmental reservoir for these multidrug-resistant organisms.

CDC has been working closely with external partners to study the dynamics of biofilms in drains. The predominant problem is in the p-trap, where biofilms are growing. The biofilms can also be in the hoppers of the toilets in an area where there is stagnant water.⁵ They can grow out of the p-traps upward and then spread by splashing, as demonstrated in the following photograph, with fluorescing of *Escherichia coli* (*E. coli*):⁶



This photograph demonstrates how far the organisms can spread. It is likely that this type of spreading has occurred for a long time in healthcare, but it is coming to light now because of CRE. It is possible to move the field forward in understanding where sinks should be placed and how they should be designed. Some facilities have resorted to removing the sinks, such as in the Netherlands, where sinks were removed to reduce the rate of ICU-acquired gram-negative bacilli.⁷

The recent CMS Survey and Certification memo on “Legionella and other Opportunistic Water Pathogen Prevention” states the following:

- Facilities must develop and adhere to policies and procedures that inhibit microbial growth in building water systems that reduce the risk of growth and spread of *Legionella* and other opportunistic pathogens in water.

⁴ Clinical Infectious Diseases© 2017;64(10):1435–44

⁵ April 2017 Volume 83 Issue 8 e03327-1

⁶ Photo credit: Kotay S, Chai W, Guilford W, Barry K, Mathers AJ. 2017. Spread from the sink to the patient: *in situ* study using green fluorescent protein (GFP)-expressing *Escherichia coli* to model bacterial dispersion from hand-washing sink-trap reservoirs. Appl Environ Microbiol 83:e03327-16.

⁷ Hopman et al. *Antimicrobial Resistance and Infection Control* (2017) 6:59, DOI 10.1186/s13756-017-0213-0

- This applies to hospitals, critical access hospitals, skilled nursing facilities and nursing facilities.
- Surveyors will verify that facilities:
 - Conduct a facility risk assessment to identify where *Legionella* and other opportunistic waterborne pathogens (e.g. *Pseudomonas*, *Acinetobacter*, *Burkholderia*, *Stenotrophomonas*, nontuberculous mycobacteria, and fungi) could grow and spread in the facility water system.
 - Implement a water management program that considers the ASHRAE industry standard and the CDC toolkit, and includes control measures such as physical controls, temperature management, disinfectant level control, visual inspections, and environmental testing for pathogens.
 - Specify testing protocols and acceptable ranges for control measures, and document the results of testing and corrective actions taken when control limits are not maintained.

Returning to the issue of extrapulmonary NTM infections that are often healthcare water-associated, these infections do not represent a major reporting burden and therefore more comprehensive surveillance for them may offer an opportunity to better identify transmission from water sources and intervene. Ordinarily, extrapulmonary NTM outbreaks can be difficult to detect due to their long incubation time, as in the case of the heater-coolers. In addition, diagnosis of the infection may not occur at the same location as where exposure occurred, and there may be variable clinical manifestations. In turn, these infections may be difficult to treat. These challenges highlight opportunities for public health action. CSTE has been working with DHQP to develop a position statement that standardizes the case definition for reporting extrapulmonary NTM infections. It does not make this disease nationally notifiable, but some states are likely to make it notifiable. Oregon made extrapulmonary NTM reportable in 2014. In the first 17 months of notification, they identified 66 cases of NTM infections in three clusters, involving 11 patients. The exposure locations were prosthetic joint surgery facility, abdominoplasty performed in an ambulatory surgery center, and a tattoo parlor.⁸

In closing, Dr. McDonald posed the following questions for HICPAC discussion:

- What is the current level of engagement between infection prevention, hospital epidemiologists, and facility managers regarding assessment and management of water risks?
 - In hospitals
 - In nursing homes
- How does HICPAC see itself in playing a role in fostering better uptake of Water Management Programs?
- What are the most important gaps in preventing water-related HAIs?
 - Approaches to monitor water quality
 - Actionable limits
 - Decision aids for using supplemental control measures
 - Better water uses infection control guidance and training
 - Other?

Discussion Points

⁸ Buser, GL et al. Surveillance for Extrapulmonary Non-tuberculous Mycobacteria. IDWeek 2015

HICPAC commented on the potential for dispersion of water to places it should not be, as observed with heater-cooler units. During the Society for Healthcare Epidemiology of America (SHEA) conference, Boston Children's Hospital presented information about their new operating room (OR) water management system that eliminated the need for a heater-cooler unit. This and similar innovative approaches would be beneficial in moving the field forward.

Dr. McDonald noted that dialysis units have their own water systems, and there are actionable limits for these systems.

HICPAC reported that BJC's multi-hospital system increased the level of detail and guidance in its water management policies in response to recent events with *Legionella*, and with increased guidance from CDC. That effort incorporated explicit instructions to assemble multifaceted teams to address these issues and fostered better engagement among BJC's Infection Prevention group and its Facility Managers. The built environment and water dispersal are of concern as BJC has been building new facilities. Sink placement and barriers were a major focus, but they encountered pushback. Increased recognition of the risks associated with water dispersal will help inform their construction colleagues.

NIH pointed out that Whole Genome Sequencing (WGS) is one of the next great horizons in hospital epidemiology, given that it can help identify organisms and offer insight into developing strategies to prevent them.

HICPAC emphasized the high risk for transmission of organisms associated with standing water in patient areas. Even point-of-use filters can be problematic if the water is not used regularly, keeping the filter flushed. Contamination also can occur at different joints and valves. More evaluation needs to be done to better understand design approaches that will keep patients and their families safe.

Regarding the NICU outbreaks and their real-world challenges, HICPAC commented that the development of a single guidance document with clear, unambiguous statements could be a significant contribution to the field. With such guidance, individual NICUs could focus on important areas such as bathing, cleaning breast pump parts, and water reservoirs of isolettes.

Consideration should be given to how HICPAC can help infection preventionists (IPs) approach the infrastructure of their facilities in terms of assessment and management of water risks, and narrowing those risks based upon the existing metrics (temperature, pH, etc.).

With regard to the practicalities of implementing HICPAC guidance or guidelines, America's Essential Hospitals (AEH) noted challenges associated with multiple point sources. Guidance is needed about the number of places that should be tested in an organization, membership make-up of water management teams, and actionable units versus CFUs of a generic class. Regarding design, it is important to recognize that when designs have been drawn or a hospital has been built, it may be too late to factor in water-related risks. Perhaps HICPAC could work with a field guide institute, such as the American Institute of Architecture (AIA), to place more emphasis on the architectural firms that are qualified to design healthcare facilities and on the issues that they should consider, including how soon they should work with hospital water management teams.

HICPAC pointed out that water features do not belong in hospitals.

Dr. Bell observed that the discussion illustrates how these issues cannot be addressed by individual, separate specialties. A hospital infection preventionist (IP) cannot be a water quality expert in addition to everything he or she does. Data can be generated to help think meaningfully about a problem, but the profession also needs to be more engaged with facilities management, environmental services, design, purchasing, water management, AIA, and other entities “across the board.” There are many aspects of infection control in a facility, including triage, water management, and environmental hygiene. It is important not to lose track of the efforts that can be made immediately. A hospital may not need to be completely redesigned, for instance: perhaps lids can be placed on toilets.

DHQP Modeling Overview

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Dr. Jernigan commented on the value of mathematical modeling, which he has come to appreciate through collaborative work with DHQP’s extramural investigators, Prevention Epicenters Program, the Safe Healthcare, Epidemiology, and Prevention Research Development (SHEPheRD) program, and others. Modeling can be a helpful tool, and it is an underutilized tool, particularly in this field. DHQP is recognizing the importance of modeling, both intramurally and extramurally. The Office of HAI Prevention Research and Evaluation now has a Modeling Team, which is doing great work. Extramurally, DHQP already has been working through the Prevention Epicenters Program and SHEPheRD with modelers in academia. They now plan to award a Prevention Epicenter Program-like group comprised primarily of mathematical modelers to address problems in healthcare epidemiology.

Infection prevention is a complicated field, and it is difficult to find answers for some of the most important and vexing questions that arise, particularly regarding the transmission of pathogens. Pathogen transmission is a complex interplay of many factors and variabilities:

- Variability in healthcare worker behavior, including healthcare workers serving as vectors for some transmissions;
- Variability in healthcare settings in terms of facility and patient types;
- Variability in, and susceptibility of, patients acquiring colonization and infections;
- Variability in antimicrobial use.

Population dynamics bring additional variabilities that are different from individual disease. There are population dynamics within a facility at the unit and facility levels, and dynamics of populations in a region. The importance of the interplay between healthcare facilities in a region has grown increasingly clear. In addition, many events of interest can be difficult to measure. Transmission of MDROs is an event that is rarely directly recognized or measured. Surrogates of the events are typically the focus, and the events can be rare, particularly from the unit or facility perspective. At the region level and beyond, these events are not so rare and must be better understood.

The application of traditional epidemiologic methods to try to answer some of these questions can be difficult and infeasible, if not outright impossible. Modeling can be helpful in this “gap.” Modeling is not a replacement for traditional epidemiology, but it can serve as a supplement. There is a two-way interaction between traditional epidemiologic research and surveillance and modeling: traditional epidemiology can enhance the value of the model, and vice versa. Public health ultimately has move toward action. The literature can be limited in answering questions, and in order to act in the absence of cluster randomized trials, modeling can potentially be valuable.

Dr. Jernigan concluded that this presentation will make the case that modeling can be a useful tool in the toolkit and that it can be useful to HICPAC when formulating guidance and recommendations. The presentation would challenge HICPAC to consider using mathematical modeling in its deliberations; make HICPAC aware of the current modeling activities underway within DHQP and between DHQP and some of its extramural partners; and offer DHQP and its extramural partners as resources to HICPAC.

Dr. Slayton explained that mathematical modeling includes the development of a virtual representation of a real-world system. For DHQP’s purposes, modeling allows for examination of a simulation of infectious disease transmission in a dynamic way that allows for indirect effects, such as herd immunity and others, to be modeled. These types of models are calibrated with real-world, historic data built from epidemiologic studies conducted to date. The goals are:

- To improve scientific understanding about transmission and prevention, and
- To inform decision-making.

Models are simplifications of real-world systems. It is interesting to note that increasing the complexity of a model does not necessarily equate to increasing its accuracy. J. Maynard Smith said, “Describing complex, poorly-understood reality with a complex, poorly understood model is not progress.” Models that are scaled appropriately to questions about transmission and prevention can provide important insights about key drivers and prevention mechanisms. When conducting a mathematical modeling study, the assumptions are explicit and the relationships among parameters are written in mathematical equations to aid in communication. Experiments can be systematically conducted to consider “what if” scenarios about the effects and potential effects of interventions.

Determining whether mathematical modeling can complement traditional epidemiologic studies, and whether mathematical models can lend themselves well to traditional studies, can be facilitated by a series of questions:

- Is conducting the proposed epidemiological study ethical?

- How long should the study run to record an intervention's full impact?
- Is an appropriately designed study economically feasible?

If the answer is “yes” to all of these questions, an epidemiologic study should be conducted. If the answers to any of these questions are more equivocal, modeling studies can complement the work done in epidemiologic studies.

There are many synergies between mathematical modeling and traditional epidemiology. DHQP is beginning to use mathematical models to refine study designs, guide sample size estimations, quantify indirect effects of interventions, and explore “what if” scenarios for future prevention. Similarly, epidemiologic studies can inform models, refining their structure and parameterization to yield a more accurate representation of the real-world system. Models can also complement epidemiology in the case of conflicting findings, and they may aid in understanding of what seem like counterintuitive results, such as finding that a childhood immunization program could increase adult susceptibility. Modeling allows for systematically thinking through some of those questions and their impacts.

Modeling studies have been used in the guidance development processes of national and multi-national bodies:

- The United Kingdom Department of Health (UK DH) has utilized at least eight modeling studies since 2005
- The Advisory Committee on Immunization Practices (ACIP) utilized at least three modeling studies since 2006
- HICPAC utilized at least two modeling studies since 2006
- The World Health Organization's (WHO) Strategic Advisory Group of Experts (SAGE) on Immunization has utilized at least 11 modeling studies since 2008

HICPAC has used modeling studies in two different guidelines. The first was the *Management of Multidrug-Resistant Organisms in Healthcare Settings (2006)*, in which two modeling studies are included in the broader discussion regarding evidence for active surveillance recommendations. The second was the *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007)*, which included three modeling studies in the evidence for a recommendation for infected and colonized patients.

DHQP has a newly-created mathematical modeling unit under Dr. Jernigan's Office of Prevention Research and Evaluation in the Epidemiology Research and Innovations Branch (ERIB). The unit is comprised of four doctoral scientists. The unit's objectives are:

- To support projects throughout DHQP in order to better understand the transmission of key HAIs;
- To improve the design and interpretation of epidemiologic studies, particularly by investigating validity and the power of alternative epidemiologic studies to improve the evidence base; and
- To support outbreak investigations.

The Intramural Modeling Unit has delivered a number of presentations at recent scientific meetings:

- **Role of asymptomatic *Clostridium difficile* carriers in intra-hospital transmission and healthcare-associated *Clostridium difficile* infection: a transmission modeling analysis (O'Hagan IDWeek 2016)**

This model built on an interesting study in a Canadian acute care hospital, which found a 63% decline in healthcare-associated *C. diff* infections when 40% of asymptomatic patients that were admitted to that hospital were actually tested for *C. diff* carriage and isolated if positive. However, the antibiotic use among unknown carriers was not included in that study, and the mechanism that caused the declines in *C. diff* incidence was unclear. Dr. Justin O'Hagan led a study to understand what mechanisms could have led to that decline, whether there was reduced transmission when the isolated carriers progressed to disease because there was no delay in instituting enhanced contact precautions, whether there was less antibiotic use among known carriers, whether there was lower transmission due to isolation of infectious carriers, or some combination of these mechanisms. His study found that both carrier isolation and antibiotic stewardship could have been important in the success of the carrier screening intervention in reducing *C. diff* infections (CDI). This study illustrates how modeling can help support traditional studies by reanalyzing data to better understand the mechanisms by which they did or did not succeed.

- **Association Between Healthcare Facility Connectedness and the Incidence of *Clostridium difficile* Infections, Washington and Oregon (Slayton IDWeek 2016)**

This study by Dr. Slayton found that connectedness to other healthcare facilities via the sharing of patients was independently associated with facility-level CDI incidence.

- **Using Patient Transfer and Length of Stay Data to Target Regional Carbapenem-resistant Enterobacteriaceae (CRE) Prevention Effort (Paul, SHEA Spring Meeting 2016)**

This study, led by Dr. Prabasaj Paul, examined whether hospital patient transfer and length of stay data could be used to better guide where to target CRE prevention efforts in a region. His work found that hospitals with a longer length of stay and with more connectivity to other facilities in the region via patient transfer play a disproportionate role in the spread of CRE in a regional network. These conclusions could have implications for targeting prevention efforts.

- **Assessing Connectedness Among U.S. Healthcare Facilities To Guide Regional Prevention Of Multidrug Resistant Organisms (MDROs) (Slayton Informs Healthcare 2017)**

Another study the Intramural Modeling Unit has conducted assessed the connectedness of US healthcare facilities to guide the prevention of MDROs. Again, this study found that highly connected hospitals can be a target group for coordinated public health interventions to reduce multi-drug resistant organism (MDRO) incidence at the broader regional level.

- **Bias in Studies of Antimicrobial Resistant Healthcare-Associated Infection (HAI) Interventions Due to Trends in Length of Stay and Patient Census (O'Hagan IDWeek 2017)**

This study by Dr. O'Hagan will be presented during IDWeek 2017. It focused on bias in studies of AR HAI infections. He is interested in understanding better whether national trends, changing hospital length of stay, and patient census over a longer time period could affect results about rates over that period of time. His work has found that these national changes can differentially impact the incidence of resistant versus sensitive strains. This concept is important for understanding how to evaluate the impacts of interventions,

especially those focused on antimicrobial resistant pathogens, and changes in resistance rates over time.

- **Projected Burden of Complex Surgical Site Infections (SSI) following Total Hip Arthroplasty (THA) and Total Knee Arthroplasty (TKA) among Adults in the United States, 2020 through 2030 (Wolford IDWeek 2017)**

This project by Ms. Hannah Wolford, which also will be presented during IDWeek 2017, estimates the projected burden of complex SSIs following THA and TKA. This study found that without improved infection prevention measures, complex SSI burden for primary and revision THA and TKA would likely increase over the coming years.

Another key area of the Intramural Modeling Unit's work is determining how intramural use of social network analysis (SNA) can support outbreak investigations. Data at the beginning of an outbreak investigation may not be as robust as desired to support making decisions. Modeling can contribute to understanding of the impact of different assumptions on the results observed. The Unit has used SNA to examine the connectedness of healthcare facilities using historic Medicare data regarding how patients move across facilities. This work has the potential to identify targets for admission screening and/or point prevalence surveys because facilities that are downstream of where an outbreak is known to be occurring may be at increased risk of importing colonized or infected individuals, and upstream facilities where cases are known to be occurring could have previous, undetected transmission events. Assessing real-world data on incidence and the connectedness of healthcare facilities can help health departments find a more systematic way to expand the scope of their investigation beyond the facilities where ongoing transmission is already identified.

Turning to extramural modeling efforts, several activities support the development of regional prevention collaboratives. One of the first instances of DHQP's mathematical modeling with extramural collaborative partners had high impact: a 2015 *Vitalsigns*[™] publication titled, "[Estimated Effects of a Coordinated Approach for Action to Reduce Antibiotic-Resistant Infections in Health Care Facilities—United States](https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a4.htm)" (<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a4.htm>). DHQP worked with two extramural partners to develop two independent mathematical models. A group at the University of California Irvine (UCI) and modelers at Johns Hopkins University (JHU) developed a model of Orange County, California, with all 102 healthcare facilities explicitly represented. A group at the University of Utah developed a ten-facility model of a hypothetical region. Both of these studies sought to estimate the effects of preventing CRE, comparing a coordinated augmented approach to independent facility-based efforts to determine the impact of a large, directed "push" from the health department based on surveillance data. The Orange County model estimated that the average prevalence of CRE in the region after 15 years would be approximately 15%; with a coordinated approach, the model predicted an average prevalence of approximately 8%. Over 15 years, the coordinated approach resulted in a cumulative 55% reduction in CRE prevalence compared with independent facility efforts. The model developed by the University of Utah had similar findings.

Another modeling study that had a high impact because timely data were needed to help inform a decision was an extension of the Orange County model to help investigate the potential impact of delays in changing interpretive criteria. This example assessed CRE in particular and found that delays in changing interpretive criteria from 1 to 5 years resulted in between 264 to almost 8,500 additional CRE carriers countywide. The timely publication of these findings supported strategic policy initiatives at DHQP. The study helped to provide quantitative evidence to support the 21st Century Cures Act. DHQP's partner organizations cosigned a letter

citing these findings in particular. These partners included The Pew Charitable Trusts, Infectious Disease Society of America (IDSA), BD, and American Society for Microbiology (ASM). DHQP believes that this work helped strengthen the CDC/US Food and Drug Administration (FDA) partnership. CDC worked with FDA on this study to better understand the real-world impact of delays on transmission events.

Another ongoing extramural activity includes two demonstration projects, both of which are assessing the regional benefit from a targeted approach, using SNA and a mathematical model as a first step to guide the design and implementation of regional prevention collaboratives. These two projects are the Shared Healthcare Intervention to Eliminate Life-threatening Dissemination of MDROs in Orange County (SHIELD-OC) in California, and Providing Regional Organizations with TEchniques to ConTrol MDROs (Chicago PROTECT) in the Chicago region. In both cases, models are being developed to help influence the design of epidemiologic studies.

DHQP is excited about an upcoming opportunity, a sister program to the Prevention Epicenters called Modeling Infectious Diseases in Healthcare (MInD-Healthcare). The goal of this program is to improve the ability to prepare for, detect, control, and prevent the growing problem of antimicrobial resistant HAI pathogens in the US. This work includes the creation of a network of multidisciplinary scientists who will conduct applied computational, statistical, and mathematical research collaboratively with CDC. Five grantees will be funded for a three-year project period. They will focus on the following thematic research areas:

- Antimicrobial Resistance
- Connectedness of Patients Within and Across Healthcare Facilities
- Economic Modeling
- Genomics
- Outbreak Response
- Simulations of Epidemiologic Studies
- Surveillance
- Systems Approaches
- Zoonotics

Evidence generated through mathematical modeling complements evidence generated through traditional trials. Transmission modeling has been used by national and international advisory bodies that make public health policy decisions. DHQP is investing in intramural and extramural mathematical modeling activities. DHQP is developing a framework for appraising transmission modeling studies and critically interpreting their results.

Discussion Points

HICPAC applauded these powerful tools to increase the understanding about issues when data are limited.

HICPAC inquired about DHQP's approach to selecting parameters drawn from the epidemiologic data. Dr. Slayton explained that modeling is a collaborative activity at DHQP. The scientists developing the models need interaction with decision-makers to determine the question being posed, and to determine the mechanism by which they think interventions are working. That information will inform the level of complexity and the kinds of parameters needed to conduct a well-designed modeling study. Further, modeling may drive a research agenda

regarding the natural history of organisms that are not well-understood and that may influence continued transmission.

Dr. O'Hagan added that DHQP was concerned, for example, that the evidence base for some *C. diff* modeling was not as strong as they would like. Part of the process this year was to fund some natural history studies to better understand *C. diff*. DHQP wanted to identify the weak points of its models and determine what data would be most useful to help improve their accuracy. As with epidemiologic and observational studies, some modeling studies are done well, and some are not. Metrics are available to help critically evaluate trials and observational studies, but there was a lack of an analogous tool to help critically evaluate modeling studies. To address this gap, DHQP developed a 10-point checklist for people to use when reading through a modeling study and help critically evaluate it. While this approach is not exactly like the Grading of Recommendations Assessment, Development and Education (GRADE) system, it is somewhat analogous in terms of how it can help readers assess a study's quality, and how much weight it should be given. Modeling can be most useful when there is uncertainty. Modeling can help to assess the impact of the uncertainty on the expected power or validity of the study design. For example, in planning a randomized trial for an environmental cleaning intervention, a statistician can define the number of hospitals, their size, and number of patients. Modeling can help show how study power will depend upon admission prevalence, incidence of new colonizations during hospitalizations, or test sensitivity.

Dr. Jernigan added that he has learned from the Modeling Unit that at its core, modeling's first step depends upon a systematic look at how things happen. It requires deep thinking about the mechanisms of the study outcome. Each parameter represents something important in that mechanism. The very process of modeling can identify which of the parameters are important. The model might show that a certain parameter could be 1% or 99% and the outcome would not change, so it is not necessary to know much more about that parameter. If a model shows a major difference depending upon whether a parameter is 40% or 60%, that finding creates a research question that can be addressed by traditional epidemiologic methods. It is true that models are parameter-dependent. For some parameters, there are very good data. For others, there are not. That creates a research agenda.

Dr. Bell explained DHQP is sharing this information with HICPAC for several reasons. For producing recommendations and deciding how to include modeling information, it will be helpful to have a checklist such as Dr. O'Hagan described. There is research benefit as well as benefit to HICPAC when making recommendations in the absence of robust data. He hoped that Drs. Jernigan, Slayton, and O'Hagan could give HICPAC a sense of the types of questions that might be addressed well using modeling when there is insufficient evidence to develop an evidence-based recommendation otherwise, and whether expert opinion could be augmented with modeling in a manner that would be useful to HICPAC.

Dr. Jernigan pointed out that HICPAC could wait for a paper to be published by a group of modelers and assess it, or they actively and specifically request modeling for a particular evidence gap. DHQP could help do this work intramurally or in connection with its extramural partners.

In response to a HICPAC inquiry about model types, (e.g., Markov, discrete event simulations (DES), agent-based), Dr. Slayton replied that the models span the entire spectrum. SNA is not modeling per se; it is a descriptive analysis that can inform models and can be used to parameterize them in the future. DHQP utilizes ordinary differential equation (ODE) models for a number of pathogen-specific questions and is beginning to develop an internal agent-based

model that will look at *C. diff* transmission as a first test case. DHQP's partners' tools span the spectrum. The work focuses on scaling the right model for the right question.

HICPAC suggested considering using these techniques to predict gaming behavior for national measures, which may be amenable to an agent-based technique, given what is known. In addition, some of these techniques could be used for prioritization of scarce resources. For example, if CDC has 10 FTEs to work on activities for national impact, is it better to work on CLABSI, CAUTI, or hand hygiene?

Dr. Cardo congratulated the presenters. This work began with a small group and a few concepts and questions. The Modeling Unit is now helping DHQP tremendously. She did not support the idea of choosing infections, as each facility can assess its own issues and employ tailored approaches. Modeling is also helping DHQP consider strategies to recommend that can have impact in many regards. It is critical for Congress to understand that if no investments are made in AR, the situation will continue to worsen. Modeling can help demonstrate this path.

While surveillance was not highlighted during this session, Dr. Jernigan noted that it is another area in which modeling can be helpful. The Prevention Epicenters performed some work years ago on simulating surveillance activities and creating mathematical simulations looking at inter-rater reliability in applying clinical definitions for which there is a great deal of clinical judgment. The data were good and suggested that inter-rater reliability was large. These mathematic simulations in which ground truth was known absolutely were able to demonstrate clearly that the major driver of institutional variability is not the underlying rate of infection, but variability in applying definitions. This is one reason to use simple objective surveillance definitions that are further away from clinical definitions: if one of the objectives of surveillance is to rank facilities, the simulation suggests that it is preferable to use a very simple, less "gameable" definition. Modeling also can illuminate where to focus surveillance efforts, for instance if there is concern in a community to pick up the earliest introductions to detect and contain.

HICPAC pointed out the importance of thinking about the user at the frontend. It is easy to forget that if the assumptions or setting do not fit the end user, the outcome is useless. For example, the tool can be constructed so that users input data: What is your CAUTI rate? What is your CLABSI rate? What are you seeing in your institution? The models then run on the backend to give a user content-specific output that they can use in powerful way.

CSTE applauded the example of the FDA and interpretive criteria, and the use of modeling to assess the impact of certain policies, or delays of certain policies, on MDROs. There continue to be issues with instrument manufacturers regarding validating the new interpretive guidelines for the detection of CRE, and the implications for control measures. Modeling offers a powerful opportunity to explore such issues.

HICPAC noted that given the numerous unknowns with regard to waterborne organisms, modeling using existing data could help to determine critical first and second steps to help direct prevention activities.

Products and Practices Workgroup Update

Lynn Janssen, MS, CIC, CPHQ
Chair, HICPAC Products and Practices Workgroup
Chief, Healthcare-Associated Infections Program
Center for Health Care Quality

California Department of Public Health

Ms. Janssen presented an update on the HICPAC Products and Practices Workgroup, which has met one time. The evidence for recommending the use of specific products and devices marketed for infection prevention is growing. Studies of these products are funded by universities and manufacturers, but not all of them are conducted using systematic research standards. The question is, “How do recommendations formulated for products differ from those formulated for practices, and why?” To address that question, the charge to the Products and Practices Workgroup is to develop a process for HICPAC to use when formulating recommendations for products, describe how these criteria may be different from those used to develop practice-specific recommendations, and provide a rationale for the criteria. The criteria will outline the following:

- How the process should be applied (all products versus selected product types)
- When and which products should be grouped as a class versus independently evaluated
- How the process will address novel commercial products that have been shown to positively impact patient outcomes
- Where recommendations should be generic to allow for future product development

The Products and Practices Workgroup membership includes HICPAC members Hilary Babcock, Kris Bryant, Vineet Chopra, Loretta Fauerbach, and Lynn Janssen. Additional expertise is provided by a former HICPAC member, Tom Talbot of Vanderbilt University. CDC technical support is provided by Mike Bell. Support staff include Koo-Whang Chung, Kendra Cox, and Erin Stone. The group will meet by teleconference and will conduct much of the development work by email, with the outcome to be a white paper or algorithm that presents this guidance.

The framework for their work is to develop a product review process for HICPAC to use that is as widely applicable as possible, with a focus on devices and products marketed with infection prevention claims. The process will outline guidance for HICPAC to use when evaluating the evidence of product efficacy. Their next steps are to add FDA expertise to the workgroup in order to better understand the medical device approval process, and to develop a draft framework and apply it to a product or class of products as a “test case.” Ms. Janssen posed the following question for HICPAC consideration:

- What are the most important points to consider in drafting the framework?

Discussion Points

FDA expressed support for the Products and Practices Workgroup’s considerations. The 510(k) process is one of FDA’s substantial processes used to clear a medical device. FDA does not allow claims in labeling, but does allow claims in the review process. The sponsor must make certain that their product is substantially equivalent to a predicate in its functionality as well as its safety and effectiveness. In light of that, FDA recommended that the Workgroup examine functionality in addition to claims. If the functionality consists of infection control or prevention, those devices should be examined as well. FDA will be happy to assist the Workgroup.

Consumers Union (CU) emphasized that the FDA 510(k) process assesses whether a product is similar to something that has been done before. When a product goes on the market and HICPAC reviews it and decides that it meets the standard, that decision will “catapult” the

product. Therefore, it is important for HICPAC to take some extra steps. In addition to infection control, whether a product actually works and is safe should be considered in HICPAC reviews.

HICPAC recalled two examples that prompted this effort to some extent, which were their struggles with chlorhexidine-impregnated dressings and antimicrobial-impregnated sutures. The challenges for two issues should be identified clearly and documented for the purpose of committee memory, particularly given HICPAC turnover and what might be presented in the future about the rationale for this activity and the issues HICPAC was trying to solve.

While it seems different for HICPAC to make product-specific recommendations, it is important to be aware that practice-related recommendations can be tremendously expensive as well. Those recommendations appear in different parts of the balance sheet in healthcare organizations. HICPAC should not assume that practice-based recommendations are free while products are expensive, because the opposite is true in many cases.

American Nurses Association (ANA) emphasized the importance of being sensitive to end users and the impact of burden and workflow management over time as part of the implementation of a type of device or management functionality.

AEH understood the purpose of the workgroup to be to create an algorithm to decide if HICPAC is going to look at products, and how products might be incorporated into a guideline, not to create a product guideline per se. Recommending products could cause problems for facilities that are more resource-constrained. An example of a similar effort is the SHEA/IDSA ["Compendium Of Strategies for Detection and Prevention Of Healthcare Associated Infections,"](http://www.shea-online.org/index.php/practice-resources/41-current-guidelines/417-compendium-of-strategies-to-prevent-healthcare-associated-infections-in-acute-care-hospitals-2014-update) (<http://www.shea-online.org/index.php/practice-resources/41-current-guidelines/417-compendium-of-strategies-to-prevent-healthcare-associated-infections-in-acute-care-hospitals-2014-update>) which seems to have worked very well in AEH facilities.

Ms. Janssen clarified that HICPAC is not in the business of evaluating products and determining whether they meet a label claim. The workgroup's objective is to help HICPAC think about situations in which there may be a superior product, such as a specific kind of sterile dressing, by developing a standard approach to examine the evidence and make a recommendation.

Dr. Bell added that innovations in this field in commercial products are coming fast and furious, which is generally good. There is a level of discomfort in recommending a commercial product, sometimes due to cost and sometimes due to the residual feeling of the "separation of church and state" created in medical care. He requested that HICPAC think about what holds them back from being enthusiastic about recommending specific products. In some cases, the evidence is much stronger for a product than for some of IA recommendations that HICPAC has historically supported. If the process and system is inconsistent, the inconsistencies should be identified. If HICPAC should be thinking about commercial products differently, the differences should be articulated so that they can consider the issues together and come to agreement. In addition, HICPAC must not get "bogged down" every time such an issue arises. HICPAC and industry need to understand how they will approach these issues. The work is not meant to be restrictive, but instead is intended to be a tool to assist HICPAC and help them ensure that they are not at odds with another agency that happens to be regulatory. As a government body, HICPAC cannot countermand a regulatory statement of another agency. The wisdom and lessons learned from their FDA colleagues who have examined products throughout the years should be incorporated into the process.

Ms. Janssen noted that she and Dr. Bell had discussed the idea of conditional recommendations, ensuring that all other practices are in place, especially to address the issue of cost.

Dr. Bell commented on the opportunity to model the optimum insertion point for some products and devices. They can do a better job of guiding facilities on how best to think about incorporating products and devices. Cost is important and they do not want to create a process that is untenable; however, cost is not the main issue. Helping patients survive their hospital stay is the main issue. If a strategy is cost-prohibitive, then there should be further examination to determine why. Issues associated with cost should be associated and discussed, but effectiveness should lead HICPAC's discussion whenever possible.

NIH pointed out that the effectiveness calculus will be different in different facilities. It may be difficult to come to consensus around these issues.

Regarding discomfort with the commercial interest aspects of recommending products, HICPAC pointed out that this dynamic arises with antibiotic guidelines as well. Conflicts must be disclosed, and HICPAC must be transparent about the potential conflicts of the people writing the guidelines. There should be a balance on the writing groups of people without conflicts and experts, who usually have conflicts. Devices are products just as antibiotics are products, and HICPAC would not be fulfilling its service if it did not address how they should be used.

HICPAC emphasized caution regarding equivalencies in terms of recognizing different settings and focusing on the most effective strategies.

Perhaps a role that HICPAC could play regarding new proprietary technologies could be to create a fairly detailed two- to three-page monograph or position statement describing a strategy or product in detail, discussing considerations, and describing potential benefits and harms. Touchless disinfection systems are a good example of an area in which the field is shifting quickly, the data are not keeping up with the shifts, and many products are already being marketed and adopted in hospitals. An interim, shorter position statement offering practical advice could be issued before HICPAC next addresses environmental guidelines.

Dr. Cardo pointed out that product guidance will be helpful not only in deciding when to recommend a specific product, but also in avoiding duplicating the process with similar products in the future. This work should be practical and helpful for HICPAC now and in the future.

IPs are likely to appreciate this effort because it will help them as they look at products that may help them achieve priority infection reduction goals in their respective facilities, and to help administrative decision makers decide how much money they are going to spend on certain devices, equipment, etc.

Ms. Janssen indicated that other activities are underway that are directed toward purchasers and how to evaluate products.

Dr. Bell stressed that HICPAC will not use this process to recommend something for which there is no evidence. When good evidence is available, HICPAC will proceed in a rational and thoughtful manner and address any concerns underlying any hesitation to recommend medical products that are used to prevent infection.

HICPAC Workgroup Update: Antibiotic Stewardship for Incorporation into Clinical Practice Guidelines

Jan Patterson, MD, MS
Antibiotic Stewardship Workgroup Co-Chair
Professor of Medicine and Pathology
Division of Infectious Diseases
Associate Dean for Quality and Lifelong Learning
Director, Center for Patient Safety and Health Policy
University of Texas Health Science Center at San Antonio

Dr. Patterson reminded the group that HICPAC published the “Antibiotic Stewardship Statement for Antibiotic Guidelines” in September 2016 with points to consider regarding antibiotic stewardship for antibiotic guidelines. Professional societies then requested additional details and examples to aid in implementing the recommendations as they craft their guidelines. In December 2016, HICPAC reconvened the workgroup with additional representation from stakeholder organizations. The reconvened workgroup’s charge was to develop supplemental materials (e.g., concrete examples, templates, an algorithm, etc.) to help antibiotic guideline-writing organizations incorporate the principles of the HICPAC “Antibiotic Stewardship Statement for Antibiotic Guidelines” into their guidelines.

The Antibiotic Stewardship Workgroup was comprised of HICPAC members Jan Patterson (Co-Chair), Charlie Huskins (Co-Chair), and Lynn Janssen. Stakeholder representatives included Craig Coopersmith (Society of Critical Care Medicine (SCCM)), Stan Deresinski (IDSA), Nalini Singh (IDSA), Dean Winslow (IDSA), and Theoklis Zaoutis (American Academy of Pediatrics (AAP)). CDC technical support was provided by Katherine Fleming Dutra, Arjun Srinivasan, and Lauri Hicks. Support staff included Kendra Cox and Erin Stone. The group met by teleconference and also by email. Draft supplemental implementation guidance was developed and edited largely by email.

Within the context of the problem of antimicrobial resistance and the importance of antibiotic stewardship, guidelines are helpful for defining antibiotic use but have not routinely been incorporated into antibiotic stewardship principles. One of the questions posed to the workgroup was, “During what stages of guideline development should guideline writing groups review the Stewardship Statement to ensure the principles are adequately captured in the guideline?”

The workgroup reviewed three guidelines to determine how well the stewardship principles are captured, answering the following questions for each:

- Which Stewardship Principles were described?
- Is there language in the guidelines that could be provided as a sample or template to guideline writing groups?
- Are there any gaps?

The three guidelines the workgroup examined were:

- 1) Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society.⁹
- 2) Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock. Society of Critical Care Medicine, 2016.¹⁰
- 3) Clinical Practice Guideline: The Diagnosis and Management of Acute Otitis Media. American Academy of Pediatrics, 2013.¹¹

To ensure that these principles are incorporated into the recommendations of clinical practice guidelines, the workgroup asked stakeholder organizations that write the guidelines to indicate where the principles might be considered in guideline development. It was recommended that panels review the principles at multiple stages of the guideline development process, including:

- Establishment of the Guideline Panel and Writing Group
 - Include the Antibiotic Stewardship Principles in the training and education of the guideline panel or writing group chairs.
- Scoping of the Guideline
 - Provide panel chairs with a checklist of the principles at the scoping phase of the development process so that the principles inform the guideline’s scope.
- Development of Patient/Problem, Intervention, Comparison, Outcome (PICO) and Type (T) of Guideline Questions
 - Review the principles at each step of the development of PICO(T) questions to determine which of the Principles should be applied.
- Review of Draft Recommendations and Evidence Summaries
 - Include a checklist of the principles in the instructions for outside reviewers, society boards, and expert panels so that their review of draft recommendations or guidelines will include an assessment of the incorporation of the Principles.

Clinical treatment guideline writing groups can use this checklist while reviewing and editing their guidelines to assure successful incorporation of the HICPAC “Principles of Antimicrobial Stewardship” into their guidelines:

HICPAC Principles of Antimicrobial Stewardship	Principle Represented	Principle Not Represented	Principle Not Applicable
1) Professional societies and guideline developers should incorporate the principles of testing and treatment directly into the recommendations included in their treatment guidelines by creating a hierarchy of antibiotic treatment recommendations with “first choice” antibiotics representing those that both optimize effective treatment and minimize adverse consequences, including the development of antibiotic resistance.			
a. Principles of Testing			

⁹ Kalil AC, Metersky ML, Klompas M, et al. Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society. Clin Infect Dis. 2016 Sep 1;63(5):e61-e111

¹⁰ Rhodes A, Evans LE, Alhazzani W, et al. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016. Intensive Care Med. 2017 Mar;43(3):304-377

¹¹ Lieberthal AS, Carroll AE, Chonmaitree T, et al. Clinical Practice Guideline: The Diagnosis and Management of Acute Otitis Media. Pediatrics. 2013;131(3):e964–e999.

HICPAC Principles of Antimicrobial Stewardship	Principle Represented	Principle Not Represented	Principle Not Applicable
i. Diagnostic tests should be used wisely to avoid unnecessary antibiotic therapy or therapy that is unnecessarily broad-spectrum.			
ii. Rapid diagnostic tests, biomarkers, and decision rules that have acceptable performance characteristics to differentiate bacterial vs. non-bacterial infection should be used to avoid use of unnecessary antibiotic therapy.			
iii. Bacterial cultures with susceptibility testing should be collected, handled and processed promptly and appropriately to identify specific bacteria causing infection and facilitate use of narrow-spectrum antibiotics whenever possible.			
iv. When available and appropriate for the infection and the bacterial isolate, molecular testing to identify specific resistance genes (for example, mec in Staphylococcus, van in Enterococcus) or novel non-culture based phenotypic assays of susceptibility may be used to target antibiotic therapy toward susceptible or resistant isolates.			
v. Avoid diagnostic testing without an appropriate clinical indication when the results may have unintended consequences. For instance, a urine culture, rapid strep test, or C. difficile testing should not be performed unless the patient meets criteria for testing.			
b. Principles of Treatment			
i. When appropriate for the infection, source removal (e.g., drainage of abscess, removal of an implicated device) should be accomplished early in the course of treatment.			
ii. Recommendations for initial empiric antibiotic therapy choices should balance treatment efficacy, severity of illness (i.e., sepsis), and the potential for adverse events including the development of antibiotic resistance. When multiple therapeutic options are available, the option with the narrowest therapeutic range and least risk of promoting C. difficile and other adverse events should be prioritized.			
iii. Recommendations for optimal dosing of antibiotics should be based on efficacy studies and pharmacokinetic and pharmacodynamics principles.			
iv. Recommendations for the minimum effective duration of antibiotic therapy should be provided.			
v. Recommendations for de-escalation of initial empiric antibiotic therapy should be provided, including:			
1. Using the results of bacterial cultures and diagnostic tests to discontinue or narrow unnecessarily broad-spectrum antibiotic therapy.			
2. Using other stewardship tools, such as consultation with an antibiotic stewardship team and/or infectious diseases specialist, daily review of antibiotic therapy, and automatic stop orders after adequate treatment duration.			
vi. Potential adverse events related to antibiotic treatment should be noted in the guideline so that providers may opt not to prescribe an antibiotic, or to choose a recommended agent that has a lower potential for adverse events.			
2) Professional societies and guideline developers should consider presenting advantages and disadvantages of antibiotic treatment choices with respect to efficacy and adverse consequences, including antibiotic resistance, either in the text or a table.			

In conclusion, Dr. Patterson posed the following questions for HICPAC discussion:

- Should cost and value be incorporated into the HICPAC “Antibiotic Stewardship Statement?” If so, how?
- When more than one antibiotic is recommended, would a table format considering pros and cons for each antibiotic (AEs, C. diff risks, etc.) be useful for guideline writing groups to consider?
- Are there other points to consider?

Discussion Points

While HICPAC recognizes the important issue of value, the cost of antibiotics is often related to purchasing agreements and contracting issues. Some antibiotics are more expensive than

others, but actual costs to institutions are variable. As a concept, cost is reasonable to consider. However, the details will be difficult to sort out for guideline writing groups because they are too dependent on local issues.

A table format could be useful but should not be a requirement, given that guideline writing groups will have to consider whether the data for the antibiotics in question are appropriate for a tabular format. Perhaps the value component could be addressed in the diagnostic testing piece. The first principle of testing is that “Diagnostic tests should be used wisely to avoid unnecessary antibiotic therapy or therapy that is unnecessarily broad-spectrum.” Perhaps “to create value from the patient’s perspective” could be added.

Dr. Patterson emphasized that local variation in terms of antibiogram and particular cost acquisitions, which can vary from place to place, is a consideration for designating a single antibiotic. Local variation is a limitation, but it would be helpful at least to mention the concept of value in guideline considerations. However, it is likely to be difficult to be specific about how that is accomplished.

The Society of Hospital Medicine (SHM) and NIH expressed their support for a focus on the value of diagnostic and testing stewardship, and highlighting the issue of increased testing that does not necessarily result in decreased antibiotic use.

The Workgroup would draft language regarding value and bring it back to HICPAC for review and discussion. The following additional edits were suggested:

- The first box on the checklist recommends “creating a hierarchy of antibiotic treatment recommendations with ‘first choice’ antibiotics.” It follows the sentence about principles of testing and treatment, but no reference is made specifically to testing, and it is not clear whether someone is supposed to be able to check the box that they do/do not have that algorithm. Restate or include a separate sentence/box on the checklist to promote the idea.
- *b. Principles of Treatment, iv*, “Recommendations for the minimum effective duration of antibiotic therapy should be provided,” seems to be about recommending the use of the minimum duration that is effective, rather than prolonged courses. If that is true, it should be made clearer.
- There does not appear to be any mention of the patient, including education of the patient. This element is a key component of a patient-centric environment and understanding why patients are receiving medications, and building their understanding of why a certain form of treatment is or is not being used. This concept should be represented in the principles.

On the second day of the HICPAC meeting, Dr. Patterson proposed revised wording [revisions indicated in bold]:

- 1) Professional societies and guideline developers should incorporate the principles of **diagnostic** testing and treatment directly into the recommendations included in their treatment guidelines. **Recommendations for diagnostic testing and treatment choices should consider representing both optimal effective treatment**, minimal adverse consequences including the development of antibiotic resistance, **and healthcare value**.
 - a) Principles of Testing

- i) Diagnostic tests should be used wisely to avoid unnecessary antibiotic therapy or therapy that is unnecessarily broad-spectrum, **with consideration of healthcare value.**
- b) Principles of Treatment
 - ii) Recommendations for initial empiric antibiotic therapy choices should balance treatment efficacy, severity of illness (i.e., sepsis), and the potential for adverse events including the development of antibiotic resistance. When multiple therapeutic options are available, **a hierarchy of antibiotic treatment recommendations should be provided with “first choice” options being those with adequate therapeutic efficacy, the lowest risk of facilitating antimicrobial resistance, and the lowest risk of promoting *C. difficile* and other adverse events, with consideration of healthcare value.**
 - iv) Recommendations for **duration of therapy should be made, emphasizing the shortest effective duration.**

2) Professional societies and guideline developers should consider presenting advantages and disadvantages of **diagnostic tests and** antibiotic treatment choices with respect to efficacy and adverse consequences, including antibiotic resistance, **with consideration of healthcare value**, either in the text or a table.

3) Recommendations for patient education regarding appropriate diagnostic testing, antibiotic therapy, and duration of therapy should be provided when feasible and appropriate.

Dr. Patterson noted that the list of contributors to the document would be updated to include the stakeholder organization groups.

Vote: HICPAC Antibiotic Stewardship Principles for Clinical Practice Guidelines

Dr. Yokoe called for an official vote to approve the language proposed for the HICPAC Antibiotic Stewardship Principles for Clinical Practice Guidelines as revised, including the Implementation Considerations. The motion carried unanimously, with no opposition and no abstentions. The disposition of the vote was as follows:

11 Favored: Babcock, Brown, Bryant, Chopra, Diekema, Fauerbach, Howell, Huskins, Maragakis, Patterson, Yokoe

0 Opposed: N/A

0 Abstained: N/A

HICPAC Workgroup Update: Recommendation Categorization Scheme Update

**Dan Diekema, MD
Co-Chair, HICPAC Recommendation Categorization Update Workgroup
Director, Division of Infectious Diseases
Department of Internal Medicine
University of Iowa Carver College of Medicine**

Dr. Diekema introduced the session, explaining that it would focus on discussion of recommendation categorization schemes. The language for the HICPAC's current approach is:

- **IA:** A strong recommendation supported by high to moderate-quality evidence suggesting net clinical benefits or harms
- **IB:** A strong recommendation supported by low-quality evidence suggesting net clinical benefits or harms; or an accepted practice supported by low to very-low quality evidence
- **IC:** A strong recommendation required by state or federal regulation.
- **II:** A weak recommendation supported by any quality evidence suggesting a trade-off between clinical benefits and harms
- **No recommendation/unresolved issue:** An issue for which there is low to very low-quality evidence with uncertain trade-offs between the benefits and harms or no published evidence on outcomes deemed critical to weighing the risks and benefits of a given intervention.

Questions have arisen frequently regarding whether this categorization scheme is too complex and too difficult to translate into discrete practice recommendations. Further, it has been noted that the rationale for the category choices is not always completely transparent. The categorization scheme is problematic regarding data gaps, particularly for those practices for which there may be some value and/or that should be practiced routinely, but for which there are insufficient data, resulting in “no recommendation.” With this approach, it is difficult to address bundled interventions and/or situations in which a single intervention seems to be effective with high-quality evidence, but is conducted in a setting in which many other known interventions have not been implemented. There may be a lack of coordination with other partners, stakeholders, professional societies, etc. To address some of these issues, Dr. Diekema posed the following questions for discussion:

Question 1a: How can HICPAC simplify its categories?

- Should we be more specific about what we mean when we say “IB” or “II,” and are those practices that we always want to recommend?
- Should we include more “directive” language in how we translate a category into a specific practice recommendation?
- Selected examples:
 - [WHO Hand Hygiene guideline \(http://www.who.int/gpsc/5may/tools/9789241597906/en/\)](http://www.who.int/gpsc/5may/tools/9789241597906/en/):
 - Strongly recommended for implementation
 - Required for implementation
 - Suggested for implementation
 - [VA/DoD \(https://www.healthquality.va.gov/\)](https://www.healthquality.va.gov/)
 - Strong for; Weak for; Weak against; Strong against
 - [IDSA \(http://www.idsociety.org/uploadedFiles/IDSA/Guidelines-Patient_Care/Guidelines_By_Others/IDSA%20Handbook%20on%20CPG%20Development%20for%20Web%2010.13.pdf\)](http://www.idsociety.org/uploadedFiles/IDSA/Guidelines-Patient_Care/Guidelines_By_Others/IDSA%20Handbook%20on%20CPG%20Development%20for%20Web%2010.13.pdf)
 - Good evidence for/against
 - Moderate evidence for/against
 - Poor evidence to support a recommendation

Question 1b: How can HICPAC improve transparency around the rationale for choosing specific recommendation categories?

- Be clearer about distinguishing “level of evidence” grading vs. “strength of recommendation” category
- Specify potential benefits vs. harms that weigh into choice of the specific recommendation category
- Create a mechanism to include but clearly identify recommendations that are based on expert consensus/standard of care, especially when there’s unlikely to be additional data forthcoming

Question 2: How should HICPAC address practices for which evidence is scant or absent?
Selected examples:

- IDSA: agree upon what type of information is to be used (case reports/observational/expert opinion); document deliberations & vote results in guideline
- [AAO-HNS \(http://journals.sagepub.com/doi/abs/10.1016/j.otohns.2009.04.015\)](http://journals.sagepub.com/doi/abs/10.1016/j.otohns.2009.04.015): “consider using consensus,” “process should be robust, thoroughly documented, and based upon group discussion with all stakeholders”
- WHO: no rec made, present overview of optional interventions without indicating a preference
- VA/DoD: may develop consensus-based recs as needed when there is inadequate evidence

Question 3: How should HICPAC address bundled practices?

- Can strength of recommendation take into account studies using a single practice in absence of other practices now considered basic or effective?
- Should strength of recommendation for a single intervention take into account studies that include that intervention as part of a bundle?
- Should we provide recommendations around practice bundles when evidence supports?

Question 4: How should HICPAC partner with professional societies and other guideline-promulgating organizations?

- Evidence-based recommendations versus implementation guide
- Endorsement of other organizations
- Input regarding practices where high-quality evidence to support is lacking

Discussion Points

General Points

Dr. Yokoe pointed out that previous categories used for HICPAC guidelines were thought to be fairly non-structured. A major criticism at the time was the lack of transparency regarding how HICPAC recommendations were classified. Because of those criticisms, there was a movement toward the much more rigorous GRADE approach. However, HICPAC has been struggling with that framework for some time because it is highly structured and has led to an inability to provide recommendations due to poor-quality evidence. The work of this group is to find the right balance of structure with the flexibility to provide guidance pertaining to issues that are important, but for which there may not be rigorous evidence.

Dr. Bell added that HICPAC has improved transparency by providing the evidence tables that support a recommendation. The evidence is directly tied to the recommendation; the addition of this context represents a step forward. The opacity of the language itself is challenging. GRADE notwithstanding, it is confusing to a user when HICPAC says that there is weak evidence for a strong recommendation. If HICPAC thinks that something should be done all of the time, they should say so. If HICPAC recommends that a user consider an option in certain circumstances, ideally, the language should say so. The IA, IB, IC, and II categories are a “holdover” from the original guideline process. As HICPAC moved toward GRADE, the decision was made not to change those labels at the same time in order to avoid too abrupt of a transition. Now that HICPAC has transitioned its process, it may be a reasonable time to consider clarifying the categories.

Question 1a: How can HICPAC simplify its categories?

Question 1b: How can HICPAC improve transparency around the rationale for choosing specific recommendation categories? (The discussion was blended for Questions 1a & 1b)

HICPAC emphasized that the clarity of the language is important for the end user to be able to interpret a recommendation. End users may not interpret the levels, numbers, and letters in the same way HICPAC might after considering GRADE. Users want to know what they must do and what they must consider.

The SHEA “Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals” may be a useful paradigm. It separates recommendations into two categories, Core Practices and Special Approaches, and then summarizes the evidence concisely so that people can make their own judgments. However, it may not be sufficiently rigorous for a HICPAC guideline.

Of the examples provided, HICPAC observed that the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) sample addressed many issues. That scheme’s categories include: *Strong Recommendation*, *Recommendation*, and *Option*. Those categories can be for or against a practice, and almost any evidence grade could be tied to almost any recommendation. The scheme provides a specific statement to the effect that users look to expert guidelines because they value expert opinion based on the available evidence.

Comments specific to the AAO-HNS framework:

- AAO-HNS uses GRADE-like methods to evaluate evidence.
- In previous HICPAC discussions about the SSI guidelines, it was noted that if there is not enough evidence to make a recommendation, the field looks to HICPAC for an expert opinion.
- The ability to separate the evidence base from the recommendations, the clear wording about the strength of the recommendations, and the separate table regarding how to handle available data coupled with expert opinion, would be a helpful framework that is transparent for end users.
- There will not always be evidence from RCTs. While most HICPAC recommendations based on non-RCT evidence probably would fall under an “optional” recommendation, there may be scenarios in which HICPAC may still feel that a practice is very important and possibly

could make a strong recommendation based strictly upon expert opinion. AAO-HNS addresses such a scenario as an *Exceptional Situation*. SCCM commented that this situation may not be uncommon: the “Surviving Sepsis” Campaign contains 93 recommendations, 18 of which were called *Best Practices Recommendations*, 32 of which were *Strong* (recommend), and 39 of which were *Weak* (suggest).

- AAO-HNS ties consistent wording to the recommendations such that there is consistent wording of Must, Should, and May, which is useful.
- It is not clear how AAO-HNS handles state or federal regulations or standards, the HICPAC Category IC.
- The Association of Professionals of Infection Control and Epidemiology (APIC) supported the way that AAO-HNS categorizes its recommendations, especially from an end-user perspective. APIC cautioned that HICPAC should not remove a category such as IC, which gives IPs strength and a voice that they might not otherwise have. This category is helpful, for instance, for an IP who may be “on his or her own” because the facility does not have a Hospital Epidemiologist.
- AEH supported the current GRADE framework, as well as the idea of the AAO-HNS categorization. Further, AEH suggested that safety should be pulled out separately as a subcategory.
- The categories of *Strong Recommendation* and *Recommendation* offer clear language that should be easy for most users to implement.
- Given that the goal is simplification for the end user, the AAO-HNS framework seems to be the best of all of the examples provided.

Some HICPAC members did not think that a guideline framework that includes a weak recommendation would be beneficial. If a recommendation is weak, why make it?

Some HICPAC members expressed concern about trying to divorce themselves completely from GRADE, which is utilized by a number of organizations for guideline development process. Members clarified that some of the difficulty formulating recommendations within the SSI Guideline reflected the SSI Guideline writing group’s decision to limit evidence to randomized control trial-level data. GRADE methodology, on the other hand, allows for incorporation of observational/ lower-quality evidence. In the clinical community, the difference between strong recommendations, which almost all of the time should be done for nearly everyone, and weak recommendations, such as “we suggest you think about doing this in some cases,” should be straightforward and easy to interpret.

Dr. Bell clarified that HICPAC has moved in the direction of including practices that are not likely to be scientifically evaluated into its *Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings* document. He emphasized that expert opinion is separate from the GRADE process. When they have exhausted GRADE, or whichever systematic process is being used, but a recommendation still needs to be made, HICPAC or its workgroup working on the recommendations can reach out to professional societies for additional expert opinion. CDC does periodically make interim recommendations or offer interim guidance based

on professional opinion, with the knowledge that the guidance could change once evidence becomes available.

NIH has been troubled about “locking in on GRADE,” because there are core principles for which there will never be evidence. Hand hygiene is perhaps the best example. Jumping out of an airplane with or without a parachute is a good example of a best practice that does not require an RCT. As the quality of observational data increases and the difficulty of conducting an RCT increases, it becomes all the more important to rely on those types of observational data and expert opinion.

APIC asked about the potential to use modeling retrospectively with guidelines, or if modeling would be applied only prospectively.

Dr. Bell could imagine asking for assistance from the Modeling Unit if HICPAC is attempting to render a recommendation in the absence of evidence and they want to understand what the dependencies might be. He will raise this question with the Modeling Unit.

HICPAC agreed that modeling is an important aspect to consider. It would be helpful to request modeling not only to help identify factors that may have a major impact, but also regarding how to use existing modeling studies in evidence grading. The GRADE methodology is important for the evidence review component of creating recommendations and remains an important part of the process. However, it seems that there should be a separate process for recommendations that is not driven solely by the evidence grading. That separation is also where HICPAC’s expert opinion would apply.

CU asked whether there has been any testing in the field, such as surveys of end users. This effort might warrant testing to determine how people in the field interpret categories and terminology: “What do you understand X word to mean?” It may be useful to seek input from communications experts who are knowledgeable about communicating different ideas to people in a clear manner, such as through illustrations and examples.

It was noted that GRADE frees groups from dogmatically following levels of evidence to make strong or weak recommendations. The reason for convening an expert panel to write a recommendation is so that they can interpret the evidence table. A large number of groups make strong recommendations or best practice statements based on low- or very low-quality evidence, and they are explicit about how they do that work and which values are taken into account. The approach to the SSI guideline did not allow that flexibility.

The Association of periOperative Registered Nurses (AORN) commented on the discussion regarding strong recommendations and other special considerations. AORN’s guidelines are tied to the evidence ratings. Their model includes five levels based on the strength of the evidence. They have observed that hospitals implement only the very highest levels and will not implement other recommendations. It is challenging when they have a recommendation that does not have strong evidence and is identified as likely to lead to benefit versus harm, such as allowing an alcohol-based skin antiseptic to dry completely so that it does not burn the patient, and that recommendation may not be implemented. AORN supported HICPAC’s thinking about expert opinion.

AEH has found the GRADE framework to be helpful. People are confused by how to distinguish between the current HICPAC IA, IB, and IC categories. Perhaps there should just be three categories: I, II, and III for the current IC. IC should stand alone because it is regulatory. AEH

believes it should be retained as part of the infection prevention process. Perhaps a subheading could be added for those practices for which there is no evidence, but that should be implemented for safety reasons. Ranking is risky for infection prevention because there will never be agreement on what is most important. Even when there is evidence, there may be pros and cons for the same practice.

Dr. Yokoe noted that if HICPAC moves to a model with better separation between evaluating the quality of evidence and classifying the strength of recommendations, IA and IB could merge into *Strong Recommendation*. The quality of evidence could then be specified separately from the strength of recommendation. It seems that this approach would be less confusing to those who are trying to implement recommendations.

HICPAC pointed out confusion regarding the Category II recommendations. As state regulators work with hospitals, surveyors tend to think that hospitals should implement recommendations in guidelines; however, hospitals may not believe that a Category II recommendation has to be implemented. The recommendation framework could be simplified by dividing the categories into *Recommended* or *No Recommendation*. The rationale for HICPAC's decision could be articulated to help users understand the context of the categorization. When recommendations are ranked, hospitals may "pick and choose" recommendations that they perceive must be implemented, versus recommendations that are optional. If HICPAC wants some practices to be considered situationally, then that decision should be stated clearly. A recommendation category of *Optional* would likely be interpreted as optional and would be less likely to be implemented.

HICPAC suggested combining the concept of expert opinion with Category II. The hesitancy behind expert opinion is that it is not necessarily evidence-based: experts have observed a practice and believe in it strongly, but perhaps high-quality evidence is lacking.

The way that end users read recommendations is critical. HICPAC could consider providing guidance on how the recommendations should be read. While the ratings and categories are important, they seem to add to the complexity and confusion for end users.

AEH agreed with the suggestion to provide tools or guidance about how to use recommendations. In the past, it was recommended that facilities conduct a risk assessment for any recommendation that was not deemed *Strong*.

Guidance may be particularly useful when strong evidence is lacking and a best option is not clear. Perhaps rather than stating that there is no evidence to support a recommendation, HICPAC could frame a recommendation in a clinical scenario and narratively summarize what the committee believes to be the right approach to those specific clinical questions. This approach may not capture all of the information and nuances, but HICPAC could narratively summarize the evidence in a transparent way, stating clearly opinion versus data, and offering end users clear direction regarding what HICPAC believes to be best practice.

HICPAC emphasized the quality improvement aspects that are related to implementation. These points are important to remember as recommendations are worded and graded. Quality improvement incorporates high reliability and the need to measure. A strong recommendation should be able to be confirmed as being done, should be measurable, and should be feasible to measure.

One of the most valuable steps that HICPAC can take is to minimize “no recommendations” regarding key questions HICPAC could adopt the WHO approach of stating that there is no evidence, but offering a series of options that a prudent person may consider, or would never consider. Another appropriate approach might be the SCCM Best Practice Statement approach when a practice is low-risk and common-sense.

Rather than waiting 5 to 10 years to update recommendations, HICPAC suggested posting recommendations on its website and updating them as new evidence comes to light. This approach should be helpful, regardless of the methodology used.

NIH commented on the generalizability of the recommendations. In some instances, recommendations may be made that are highly specific, but may not be relevant to every environment. Healthcare is complex, and sometimes recommendations may be useful in specific situations or for specific populations. Expert opinion could be beneficial in parsing out these instances. Perhaps statements such as, “This may be useful for institutions that do X, Y, and Z versus institutions that do not,” could be helpful.

Dr. Cardo commented on the importance of conveying not only how HICPAC makes a recommendation, but also conveying the best way to interpret recommendations and providing additional tools to help users implement them. The most significant problem seems to lie in situations for which HICPAC has been unable to make a recommendation using the current guideline recommendation framework. Perhaps the committee could assess some of the more difficult decisions that they have had to make, such as with the SSI Guideline, to test the framework(s) being considered.

HICPAC agreed with this proposal and suggested testing practices for which HICPAC made high-level recommendations as well. For example, there was a great deal of evidence for antimicrobial coated sutures, but expert opinion downgraded that evidence. However, it was noted that this exercise could be difficult, unless additional time is committed to the systematic review time for non-RCT types of evidence.

Dr. Bell pointed out, and HICPAC and AEH agreed, that the starting point is important for making recommendations. For example, a practice may have been shown to be effective in a filthy environment. In a place that it is not filthy, that practice is unlikely to be incrementally useful. That type of evidence is mixed, especially in terms of international sources. It is not yet clear whether the categorization and recommendation component will be the place to address this question, or whether the question would be better suited for a synthesis statement. He reminded the group that in contrast with some of the sample guidelines they were considering for comparison and inspiration, two factors differ for HICPAC guidelines:

HICPAC recommendations are used by an array of people for different purposes, not just to inform clinician decisions.

HICPAC guidelines are used for regulatory oversight. This use impacts how recommendations should be framed. Further, HICPAC recommendations must be defensible. HICPAC has addressed this point with systematic reviews of evidence.

Dr. Bell supported having expert opinion and reaching out to subspecialty society leaders for their input. Whether there is weak evidence or no evidence undergirding a practice, HICPAC must make a statement. Throughput must be managed: HICPAC has approximately 1100

discrete recommendations that need to be maintained and updated over time. Therefore, efficiency and nimbleness should be built into this process.

Question 2: How should HICPAC address practices for which evidence is scant or absent?

Dr. Diekema invited further discussion regarding how recommendations can incorporate opinions from HICPAC experts as well as partner organizations and stakeholders when there are evidence gaps or when evidence is of lower quality. IDSA guidelines are highly transparent in these cases and include the results of each vote with the initials of the various authors who voted “yes” or “no.” AAO-HNS emphasizes thorough documentation of any recommendations based primarily upon expert opinion and describes group discussion with all stakeholders. WHO does not make a recommendation when little evidence, or very low-quality evidence, is available; rather, WHO presents an overview of optional interventions without stating a preference. VA/Department of Defense (DoD) develops consensus-based recommendations as needed when evidence is inadequate.

AORN supports transparency and consensus. When AORN develops guidelines but has insufficient evidence, they typically advise the multi-disciplinary team at a facility to make a policy or decision. This approach can be frustrating.

The Public Health Agency of Canada (PHAC) has experienced similar challenges. Canada moved away from GRADE several years ago. They created a [Critical Appraisal Toolkit \(CAT\)](https://www.canada.ca/en/public-health/services/infectious-diseases/nosocomial-occupational-infections/infection-prevention-control-guidelines-critical-appraisal-tool-kit.html) (<https://www.canada.ca/en/public-health/services/infectious-diseases/nosocomial-occupational-infections/infection-prevention-control-guidelines-critical-appraisal-tool-kit.html>) that captures modeling, descriptive studies, and elements of bundled practices that are difficult to separate. PHAC has separated the grading of the evidence from the strength of the recommendations. This approach is not perfect; they are experiencing pushback regarding why they are not using GRADE as they revise their “Occupational Infections Guideline.” CDC participated in their last call and discussed the investment of time to review the literature where there is no strength of evidence, and whether that review is a good use of resources. It would be helpful to utilize a standard process, as it is confusing to compare guidelines.

The Cystic Fibrosis Foundation has an “[Infection Control Guideline](https://www.cff.org/Care/Clinical-Care-Guidelines/Infection-Prevention-and-Control-Clinical-Care-Guidelines/Infection-Prevention-and-Control-Clinical-Care-Guidelines/)” (<https://www.cff.org/Care/Clinical-Care-Guidelines/Infection-Prevention-and-Control-Clinical-Care-Guidelines/Infection-Prevention-and-Control-Clinical-Care-Guidelines/>) that front-end users find beneficial. It makes specific recommendations that do not always have a great deal of evidence from RCTs, but the document includes consensus votes and states how many of the recommendations had 100% consensus from the writing group. They also have a good process for stakeholder involvement. The stakeholder group is narrower than what a HICPAC guideline would utilize, but their approach might be instructive.

NIH pointed out that the evidence will never be strong for occupational exposure and issues with healthcare workers. It is possible to make solid recommendations based simply on 30 years of observation.

HICPAC asked what constitutes “all stakeholders.” Dr. Yokoe explained that AAO-HNS uses a Delphi process for developing consensus statements. This process is separate from the clinical guideline process. AAO-HNS defines its stakeholders.

There is HICPAC support for the IDSA approach to a lack of evidence. It may not always be possible to implement this approach in advance, depending upon the clinical question and the

information available. However, describing how decisions were made in formulating a recommendation is sensible. Inclusion of the voting tally can also be considered, as it provides the highest possible level of transparency and at least shows the level of consensus. This information can be helpful for decision-making. Reaching out to stakeholders who have addressed a particular clinical question could be beneficial.

HICPAC observed that the IDSA framework is similar to the HICPAC guideline approach of providing background information, which strengthens the rationale for a recommendation. Regarding expert opinion, it could be valuable for users to have access to the discussions, deliberations, case reports, observations, etc., that the writing group used to come to consensus on recommendations based on expert opinion.

Core principles should be “front and center” of any prevention guideline. Anyone investigating a unit with elevated rates would ask how staff are trained, how staff competency is ensured, etc.

Regarding the VA/DoD framework, VA typically does not receive calls about how to interpret a guideline. The categorization scheme may need some fine-tuning, particular in terms of IA, IB, and IC because it seems like a “multiple-choice game.”

HICPAC observed that VA has been very good about issuing directives, which can be somewhat like implementation guides. Other hospital or IP settings may not have that specific type of guidance available to them.

Question 3: How should HICPAC address bundled practices?

No additional discussion was offered regarding Question 3.

Question 4: How should HICPAC partner with professional societies and other guideline promulgating organizations?

SHEA has moved away from promulgating guidelines due to challenges associated with the types and levels of evidence. SHEA has moved toward Expert Guidance Documents or Expert Opinion Documents. SHEA approaches this work from the perspective of the “burning questions” in the field for which there probably will never be any evidence. A recent example is, [“New Guidance on Contact Precautions for Hospital Visitors: Expert Recommendations for Visitors of Patients with Infectious Diseases.”](https://www.shea-online.org/index.php/journal-news/press-room/press-release-archives/99-new-guidance-on-contact-precautions-for-hospital-visitors) (<https://www.shea-online.org/index.php/journal-news/press-room/press-release-archives/99-new-guidance-on-contact-precautions-for-hospital-visitors>). This document is intended to provide guidance to those on the front line. SHEA and its members look to HICPAC to promulgate guidelines. SHEA commented on an opportunity to work with HICPAC when HICPAC is working on a guideline and there are topics where the quality of evidence is very weak. Perhaps SHEA could help address the unanswered questions from an expert guidance perspective. Ideas that SHEA receives from its membership go to the Guidelines Committee and the Board, and a decision is made about the number of guidance documents that can be done in a year. These documents involve a literature review, surveys, and a ranking process. This approach may be a good way to anticipate questions that might be coming out of a HICPAC guideline that will not be answerable using GRADE-based methods. It may also represent an opportunity for SHEA to provide expert guidance and may provide an opportunity for synergy. The mechanism is already in place for SHEA and HICPAC to collaborate.

In 2012, CDC and HICPAC approached SHEA to develop a companion document to accompany the NICU Guideline as a way to provide expert guidance regarding topics for which there is a limited evidence base. At that time, HICPAC realized that there would be

unanswerable questions in the NICU Guideline, but wanted to offer practical guidance to the field. HICPAC generated a list of clinical questions that they hoped an expert group could answer. SHEA assembled a group using the framework of the SHEA/IDSA Compendium. There was an addendum to the memorandum of understanding (MOU) to the Compendium. The writing group for this document included partners from many organizations, such as the Vermont Oxford Network (VON), which is an important stakeholder for a NICU guideline. As the NICU Guideline has evolved and will be presented, SHEA is rethinking and evolving the SHEA-sponsored document. This model is useful and potentially fills a gap.

In response to a question about how often HICPAC endorses professional society guidelines, Dr. Bell said that CDC does not endorse guidelines post-hoc, generally speaking. It is not possible to be clear about potential COIs, how the guidelines were produced, etc. CDC welcomes work with other groups prospectively, but that work is contingent upon meeting the agency's required standards. Everything that CDC does is in the public domain and is available for free, so any collaborations cannot result in a product that is for sale.

Like CDC, SCCM does not endorse documents post-hoc. SCCM writes guidelines, with 12 currently in process. Of those, a few related to HICPAC. It would be valuable to work together from the start. CDC carries more weight than any individual society, and the addition of CDC at a guideline's baseline would be beneficial.

AEH and other professional organizations are challenged by guideline interpretation. Perhaps CDC and HICPAC could work with professional organizations to offer a class, provide handouts, deliver online presentations, etc., to explain how CDC and HICPAC envision guideline implementation. One of the largest groups, IPs, uses these guidelines for their daily practice. It is also helpful for physicians who chair programs to better understand the background and purpose of CDC/HICPAC guidelines.

Dr. Cardo said that HICPAC Liaison Representatives inform their respective organizations when HICPAC is working on a guideline, and vice versa.

HICPAC pointed out a potential role for professional societies in providing implementation guidance when guidelines are published.

AORN does not seek endorsement for its guidelines, but it does have an Advisory Board. AORN would be happy to have a voting member from CDC serve on that board and to be involved in AORN's monthly calls and discussions.

AAO-HNS Table 14: Strength of Action Terms in Guideline Statements and Implied Levels of Obligation

Table 14 from the [*Clinical Practice Guideline Development Manual, Third Edition: A Quality-Driven Approach for Translating Evidence into Action*](#)

(<http://journals.sagepub.com/doi/figure/10.1177/0194599812467004>) was placed on the screen for discussion. Dr. Yokoe pointed out that the strength of evidence could vary within each of the AAO-HNS categories. There is a separation between the quality of evidence and the strength of recommendation. She invited input from the HICPAC members about whether a format like this would be useful for consideration moving forward:

Table 14. Strength of Action Terms in Guideline Statements and Implied Levels of Obligation^a

Strength	Definition	Implied Obligation
Strong recommendation	A strong recommendation means the benefits of the recommended approach clearly exceed the harms (or, in the case of a strong negative recommendation, that the harms clearly exceed the benefits) and that the quality of the supporting evidence is high (grade A or B). ^b In some clearly identified circumstances, strong recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms.	Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present.
Recommendation	A recommendation means the benefits exceed the harms (or, in the case of a negative recommendation, that the harms exceed the benefits), but the quality of evidence is not as high (grade B or C). ^b In some clearly identified circumstances, recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits outweigh the harms.	Clinicians should also generally follow a recommendation but should remain alert to new information and be sensitive to patient preferences.
Option	An option means that either the quality of evidence is suspect (grade D) ^b or that well-done studies (grade A, B, or C) ^b show little clear advantage to one approach vs another.	Clinicians should be flexible in their decision making regarding appropriate practice, although they may set bounds on alternatives; patient preference should have a substantial influencing role.

^aAdapted from the American Academy of Pediatrics.²¹
^bSee **Table 12** for definitions of evidence grades.

Comments / Suggestions

- There has been discussion about having 2 or 3 categories:
 - *Recommendation, Optional*
 - *Strong Recommendation, Recommendation, Special Approaches*
- Consider the term *Conditional Recommendation*.
- Under *Recommendation*, the phrase “should remain alert to new information” is potentially problematic, because HICPAC does not want IPs or hospitals reacting to single studies. Consideration must be given to the audience if language such as that is inserted.
- Table 14 does not reflect how *High-Quality Evidence* is defined. HICPAC should ensure that they are all “speaking from the same hymnal” in terms of definitions.
- Some members felt strongly that a third category is needed and that if a third category is included, the following should be considered:
 - The *Optional* category would be similar to *Special Approaches*, in which evidence suggests benefit, but there may be specific situations where that benefit is observed.
 - Consider calling the third category a *Conditional Recommendation*, because the conditions that should be considered before acting upon such a recommendation could be delineated. The conditions could be presented with clinical scenarios or risk assessment models to help users understand how to apply this type of recommendation to their specific setting: hospital size, usual cleanliness of the hospital, bundle compliance, number of items in a bundle, how many times this happens, etc. Presumably, the elements to consider would vary depending upon the recommendation.

If a third category is used, HICPAC should be clear and transparent about how they came to decide that a particular recommendation should fall into this category.

- The third option should state *Weak Evidence* with clear language to indicate that there is little information to support it.
 - Perhaps the third category could include a situational assessment to take into account the level of need for the intervention based on, for example, hospital-specific HAI outcomes.
 - Dr. Cardo advocated for promotion of the Targeted Assessment for Prevention (TAP) Strategy because it is a unit that offers several ways for facilities to assess whether they are preventing infections. They need to think about the conditions in a way that considers the patient.
 - The “American College of Chest Physicians Guidelines for Venous Thromboembolism Prevention” offers suggestions for patients who are more concerned about the risk of clots versus the risk of bleeding, and different interventions may be implemented based on the patient’s needs and concerns. This example could offer insight into including an option to involve the patient in instances when there is conflicting or equal evidence for an intervention.
 - If a third category is included, it should acknowledge where the quality of evidence is low, there is limited evidence, or if evidence is absent. A statement should be made when there is not a clear advantage in terms of benefits versus harm.
 - Make a statement that a practice included in the third category is not applicable in all populations or settings. There is value in acknowledging that not everything is appropriate in all circumstances.
 - A third category could include a menu of practices that might be added to *Strong Recommendations* and *Recommendations*. If a practice is lumped into a recommendation, it sounds like all of it must be done, but the “all or nothing” approach is not necessarily appropriate.
 - A third category could capture the current Category II recommendations. These practices may have weak evidence, but there is some evidence that they are effective. The recommendation categorization scheme needs to be able to convey that evidence to support a practice may be in an early stage of development, but HICPAC believes that there is likely to be benefit and that the strength of evidence could improve. That approach is a combination of expert opinion and an evidence base.
- Some members opposed the inclusion of the *Option* category, and felt that the following should be considered:
 - If the goal is to make this scheme straightforward, the two categories of *Strong Recommendation* and *Recommendation* make the most sense.
 - Whether it is called *Conditional*, *Suggested*, or *Optional*, a third category seems low-level, and it is unclear why it is needed.

- If HICPAC wishes to state that a recommendation is conditional, this statement could be placed in the text. If HICPAC anticipates that new data will emerge, the “living document” approach would allow for updates.
- A practice could be a strong recommendation based upon weaker evidence. Therefore, this recommendation does not belong in a third category. If a practice shows little advantage with respect to benefit or harm or if there is not an advantage at all, then it is not clear why HICPAC would recommend it. Special considerations could be addressed either way, a *Strong Recommendation* or *Conditional*, because that practice is not appropriate for all patients.
- Concern was expressed that the discussion was conflating the strength of a recommendation and conditional recommendations. The idea of a population-specific recommendation has nothing to do with the strength of a recommendation itself. For example, no one would ever recommend emergent percutaneous coronary revascularization in all patients with chest pain. Just because a recommendation is narrowed to a certain population does not mean that it is not a strong recommendation.
- It is important to remember when creating recommendations to think carefully about the PICO(T) format so that the question is being asked in a way that is specific and actionable. An easy way to do that for a strong recommendation is to ask, “Is this specific recommendation adequately explicit for measurement?”
- The goal should be to align with the Healthy People 2020 goal of HAI prevention and elimination. The justification for an *Option* category is not clear. What do you tell a patient who did not receive an optional practice because he/she was not high-risk, but got an infection anyway?
- Perhaps the middle category is not needed and HICPAC should consider “rolling it up or down.” Sentiments regarding this suggestion follow:

A single *Recommendation* category could be used. A narrative section could address conditional issues, special considerations, etc. However, this approach could result in the issue HICPAC already struggles with in terms of the practices that people will actually implement. Users are likely to perceive a *Strong Recommendation* category as mandatory and implement it, the *Recommendation* category as not mandatory, and the *Option* category as optional. Perhaps some of the desire for additional layers has to do with making it easier on HICPAC.

It would be problematic to eliminate the middle category, *Recommendation*, because not all recommendations are equivalently strong. If three multi-center international trials show an advantage of one practice over another, that evidence is strong. A practice that is significantly less evidence-based is not conditional in the same way as a recommendation in a third category; it is not related to a specific patient population, facility, or practice. If one study in a couple of centers showed a 5% difference, that evidence is not strong, and the practice would not be appropriate for a *Conditional* category, based on the way *Conditional* has been described.

The AAO-HNS Guidelines Manual provided to HICPAC for consideration notes empirical evidence that guidelines with three levels are better accepted by physicians and support more

flexible decision-making. If their goal is to follow the AAO-HNS methodology, it makes sense to include three categories.

Dr. Yokoe observed that HICPAC seemed to think that the overall AAO-HNS system is useful, and there was support for three levels of categories: *Strong Recommendation* (you must), *Recommendation* (you should), and *Conditional or Special Approaches* (you may). Referring to the AAO-HNS Table 11: *Action Statement Profile Constructs for Key Action Statements*, she explained that AAO-HNS creates recommendations and then explicitly includes language within each recommendation regarding each the decision components shown in the table. This approach facilitates transparency and defensibility of recommendations:

Construct	What to Include in the Profile	Comments
Aggregate evidence quality	Specify as A, B, C, D, or X (see Table 12) based on individual study results, magnitude of the effects, and the individual and aggregate sample sizes of the studies.	There are no strict rules and the level of evidence does not automatically drop to the lowest study type included. Rather, the group should reach a consensus rating and document the rationale.
Level of confidence in evidence	Estimates the group's confidence, or certainty, in the aggregate evidence underpinning the recommendation.	Rated as "high," "medium," or "low" based on the quantity, consistency, precision, and generalizability of the aggregate evidence.
Benefit	List the favorable changes in outcomes, as defined by the group, which would likely occur if the action statement were followed.	Include qualitative and quantitative information, the latter often abstracted from randomized trials and reviews. Be explicit and comprehensive.
Risks, harms, costs	List the adverse events or other unfavorable outcomes that may occur if the action statement were followed.	Include qualitative and quantitative information, and report with the same rigor and detail used in defining benefits; include direct and indirect costs, if applicable.
Benefit-harm assessment	Classify as a "preponderance of benefit over harm" (or vice versa) or a "balance of benefit and harm."	Stronger recommendations are possible when clear benefit is not offset by important harms or costs (or vice versa); conversely, when the benefit is small or offset by important adverse events, the balance between benefit and harm prevents a strong recommendation.
Value judgments	Summarize value judgments used by the group in creating the action statement; if none were involved, state "none."	Translating evidence into action often involves value judgments, which include guiding principles, ethical considerations, or other beliefs and priorities; stating them clearly helps users understand their influence on interpreting objective evidence.
Intentional vagueness	State reasons for any intentional vagueness in the action statement; if none was intended, state "none."	Action statements should be clear and specific, but there may be reasons the group chooses to be vague (eg, concern over setting a legal precedent); acknowledging these clearly promotes transparency.
Role of patient preferences	Specify as large, moderate, small, or none, based on the opportunity for shared decision making with the patient or proxy.	Weaker evidence with favorable natural history suggests a large role, whereas strong evidence with clear benefit limits the role.
Exceptions	List situations or circumstances where the action statement should not be applied.	Clear exceptions are of particular importance when guidelines are adapted to measuring performance.
Policy level	Strength of the action statement	The strength of the key action statement conveys the level of obligation and expected adherence.
Differences of opinion	A description and explanation of any differences of opinion regarding the recommendation	Rate as "none," "minor," or "major" and explain if anything other than "none."

Dr. Diekema appreciated the discussion. The workgroup's deliberations and edits will continue on their calls.

Public Comment

Ms. Kathy Day, Retired Nurse Patient Safety Advocate Consumers Union Safe Patient Project

Ms. Day said that in 2009, her father died of what she feels was a completely preventable hospital-acquired MRSA infection. He was in the hospital for 12 days for rehabilitation. He went home for two days after he was rehabilitated, collapsed with sepsis, and was readmitted to the hospital. He never stood and walked again, and he died several weeks later. The saddest part

of this situation is that he was the third of three MRSA patients, and he and her family did not know that. They could have made better or different choices if they had known that there had been a small outbreak in his 25-bed critical access care hospital. Ms. Day pleaded with HICPAC to find a way forward to conduct better real-time local reporting for community members, because all patients have for protection is information and education. If her family had this information, she does not believe her father would have become infected.

Ms. Catherine Duff

Founder & President

The Fecal Transplant Foundation

Ms. Duff is an eight-time *C. diff* survivor and MRSA and sepsis survivor. A fecal microbiota transplant (FMT) saved her life on two occasions. Ms. Duff is a member of the Peggy Lillis Foundation (PLF) Memorial Advocates Council, part of the CU Safe Patients Project, has attended and addressed the Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria (PACCARB), has participated in the CDC's Consumer Conversation Meetings the last two years, and served as a member of the NIH-funded Microbiota Transplantation (MT) Working Group that was tasked with developing a legal framework for MT going forward because NIH has recognized that it is going to be a treatment option. She expressed her appreciation for the opportunity to attend HICPAC and to provide a public comment. She emphasized that the most important point she wanted to make is that she is not a case, an occurrence, an incident, an infection, or even a patient. She is a daughter, a sister, a wife, a mother, and a grandmother to eight children. If *C. diff*, MRSA, or sepsis had taken her life, she would be none of these. Besides those roles, her most important role is speaking for other patients who could not attend the meeting. She applauded those who had mentioned the need to think more holistically in terms of approaches, but most of the discussion continues to interpret the current best practices as being confined to an action or a facility. It is important to remember that the end user frequently mentioned is not the data, the physician, the nurse, the devices, the drugs, or the environmental cleaning services. It is instead the person experiencing the infection. She asked CDC and HICPAC to reflect on how little time or effort in infection control is directed toward that person.

It is known that microbiome disruption dramatically increases the incidence of infection, yet little effort is being made to educate the public or providers regarding this information. Although immunosuppressants are sometimes medically necessary, how many people or providers know of the correlation between proton pump inhibitors (PPIs) and *C. diff*, FLONASE® and *C. diff*, AMBIEN® and *C. diff*, or steroid use and *C. diff*. How many understand the importance of a clean diet at home, as an inpatient, or at a long-term care facility (LTCF) without processed food, sugar, or antibiotics in relation to a healthy microbiome? How familiar is HICPAC with the standard food service selections at most facilities? How often are appropriate probiotics recommended concurrently with the use of antibiotics even though this has been shown to reduce the recurrence of infection? How many understand the importance of connecting to the natural world to increase the diversity of your microbiome? How many recognize the role of stress and anxiety in microbiome disruption? These are just a few examples of where best practices should really begin. Microbiome restoration through fecal transplant is a novel, non-antibiotic alternative treatment in response to infection that should be included in any discussion of infection control practices. In March 2015, CDC itself stated in a press call with over 500 news outlets that "FMT is the only known method for restoring health to a gut microbiome disrupted by use of antibiotics or other means and should no longer be considered a treatment of last resort but be offered earlier in the treatment protocol." Speaking for herself and others, Ms. Duff said she found it shocking that there had been no mention of any of these things included in HICPAC's discussion. As FMT has now shown efficacy for *C. diff*, vancomycin-

resistant *Enterococcus faecium* (VRE), CRE, and multi-drug-resistant infections, it should be part of any discussion of best practices. FMT to many people is a preferable treatment to prolonged and repeated use of antibiotics, which among other serious side effects contributes to the ongoing problem of AR. Because of this, every hospital should be required to have an FMT plan in place until and unless other successful options are available, even if that plan means transfer to another facility. Not offering this treatment option to patients should be equated to a hospital not having access to antibiotics. Until HICPAC's focus goes all the way back to these issues and to the actual person experiencing the infection, Ms. Duff fears that they will be at the mercy of continued rises in the incidence of infections. She urged HICPAC to consider this basic and fundamentally essential portion of infection control practices moving forward.

Dr. Edmond Hooker
Medical Director
Xavier

Dr. Hooker expressed his amazement with, and appreciation for, all of the people and all of the work CDC and HICPAC are doing. He expressed concern about the hospital environment and mattresses and is convinced that CDC and HICPAC need to do more. It is imperative to focus on both stewardship and infection prevention. He does not believe the environment is being emphasized enough. Mattresses have been linked to outbreaks. If a patient is in a bed in which a previous patient had MRSA or *C. diff*, he or she is likely to contract one of these diseases. He does not think that CDC and HICPAC are providing enough advice to hospitals, which are like the "Wild, Wild West" right now in terms of what to do. Mattresses changed from the vinyl to moisture vapor transmission, which decreased decubitus ulcers. The problem is that these mattresses cannot be cleaned, given that they have a porous surface. Hospitals and healthcare organizations have not been given the advice that they need. Currently, the chemicals being used on these mattresses are not EPA-registered to clean soft surfaces: quaternary ammonium compounds (quats), hydrogen peroxide, and bleach. Yet, these are being used every day in every hospital because that is all that is available. The problem is that these products destroy the mattresses and do not clean it. Hill-Rom®, one of the mattress manufacturers, advises the use of dilute bleach only on their product. CMS says to use 1:10. Dr. Hooker conducted some research in multiple hospitals that involved culturing mattresses after they had been terminally cleaned, and he found numerous organisms following terminal cleaning. The chemicals are destroying the mattresses. The mattress manufacturers indicate that they should be cleaned, rinsed, disinfected, and rinsed again. Hospital instructions are to wipe once and get out of the room, because they need the patient bed turned over in 15 minutes. There is a disconnect that CDC and HICPAC need to address, which Dr. Hooker suggested could be done in three ways:

- 1) conduct more research on beds and bed infection, given that there is insufficient evidence;
- 2) provide clear guidance on how to clean mattresses;
- 3) ensure that every mattress is inspected for integrity.

Dr. Kathleen Irwin
Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention

Dr. Irwin indicated that she leads a CDC team that focuses on guideline development in DHQP. She found the discussion throughout the day to be fascinating, especially given the role of her team. She has been a member of two groups of experts in guideline development, one based in North America and one international organization. She said that HICPAC's discussion resonates with the opinions of these guideline development experts. These organizations have encountered the same types of challenges and situations and have come to the same

conclusions. Many of the organizations that participate in these societies are high-stake organizations that develop guidelines for a National Health Service (NHS) for an entire country. There is consensus that:

- It is valuable to dichotomize the strength of recommendation and the quality of evidence or expert opinion behind that
- It is helpful to distinguish a strong recommendation and a recommendation or consideration
- Three levels of recommendations are helpful for flexibility. It is preferred by guideline developers and providers because of the diversity of evidence, with the main driver of the strength of a recommendation being the balance of evidence between the benefits and harms of an intervention, so having a dichotomy between a strong- and moderate-level recommendations allows the evidence balance to drive that distinction
- There is enthusiasm for conditional recommendations, particularly in the context of infection control which often deals with a new intervention added to a set of established core practices or well-established and recommended bundles; the contextual factors related to adding a new intervention to an existing bundle requires contextual advice to the user
- When creating guidelines based on expert opinion, being transparent about that opinion (votes that are demonstrated in appendix or summary of the diversity of opinions) is highly valued by guideline developers for their own accountability and by the end users.

Regarding perceptions of different terms in terms of the level of obligation for implementing a recommendation. there is research on more than 1500 people showing that the words really matter for perception of the level of obligation. In terms of the feeling that IA recommendations may be more likely to be implemented than others because people have a hard time distinguishing between IA and IB, experience shows that if people can be trained on the difference between a strong and less strong recommendation, they can understand that. Training is essential and there are many models for training, particularly in the otolaryngology area.

Dr. Kevin Kavanagh
Board of Directors
Health Watch USA

Dr. Kavanagh expressed concern about the overreliance on healthcare worker (HCW) hand hygiene to the point that some facilities are almost totally dependent upon this intervention to control infections for resistant organisms. It must be remembered that MDROs are dangerous pathogens, and in this context, one could argue that hand hygiene is a very important back-up measure. A HCW should not have MRSA, *C. diff*, or CRE on their hands in the first place. If their hands are contaminated at some time by these pathogens, then there has been a failure of containment and control. The latter needs to be of paramount importance along with hand hygiene in every facility in the US and it needs to be stressed that a bundled approach, not any one single intervention, is needed.

Mr. Christian Lillis
Co-Founder
Peggy Lillis Foundation

Mr. Lillis thanked Dr. Cardo and everyone in DHQP for hosting so many patient advocates for another meeting the day before HICPAC, and to CU for helping him stay on to speak with HICPAC. The foundation is named for his mother, a 56-year-old kindergarten teacher, who died from a community-acquired *C. diff* infection in April 2010. Despite being a fairly well-read person who fund-raised for New York University (NYU) a medical center for many years in his 20s, he

had never heard of *C. diff* before his mother got sick. At this point, only 23% of Americans had ever heard of *C. diff*. In New York State alone last year, 1100 people died from *C. diff*. He asked whether anyone could think of any other preventable thing that kills 1100 people that would not be front page news every day. For comparison, a disgruntled doctor went into Bronx-Lebanon Hospital and shot seven people, one of whom died, and it was front page news for days. Yet, they never heard about the people who died from *C. diff* that week. He asked HICPAC to think about how they could be better partners with patient advocacy groups. They often feel invited but cast to the side to some extent. While he recognizes that things have improved and he applauded Dr. Cardo, Dr. Bell, and others for doing an amazing job of bringing patients to the table, he plans to keep “pushing that envelope.” For example, during the morning he had some questions for the modeling presenters, but he could not ask them. He encouraged HICPAC to consider allotting 5 minutes following presentations for public comments and questions, which would help the public be more engaged. If they are working together, they can create a sense of urgency. He understands that HICPAC does not want to be blamed for scare tactics, but through their social networks, patient advocates can get people to be more informed in a way that a report cannot. As great as HICPAC’s reports are, they are not going to translate to the general public to insight and interest them. Everyone recognizes that between the potential Patient Protection and Affordable Care Act (ACA) repeal and the budget proposals, there are potentially existential and catastrophic cuts coming. People know about ACA and nobody has any idea what the public health harm could be if the funding proposed to be cut is cut. It is important to get the public on their side in this fight, and they can be partners, but patient advocacy groups must be invited to the table a lot more. He thanked HICPAC and invited them to reach out to him at any time if there is anything he can do.

Ms. Carole Moss
Chief Financial Officer
Nile’s Project

Ms. Moss indicated that she was representing her son who acquired MRSA in 2006 from having magnetic resonance imaging (MRI), what they have learned over the last 11 years on how these infections happen, and Alicia Cole who has once again over the last several months been infected in a hospital because the hospital did not implement and follow through with requirements in best practices. The message that Ms. Moss shared with HICPAC was what Ms. Cole stated at the Presidential Advisory Council on Combating Antibiotic Resistant Bacteria (PAC-CARB) meeting. The number one thing that happened to Ms. Cole is that years ago she acquired every kind of infection possible, and she is a survivor of necrotizing fasciitis. She overcame that, but it took her 10 years for her wounds to heal and for her to become a full-fledged citizen who is very productive and giving. Ms. Cole was with Ms. Moss and her husband around Thanksgiving and got a sinus infection from being out in public. Two days later, she had sepsis and was admitted to the hospital. She told them that she had previously had necrotizing fasciitis among other things. They took swabs and tested her, but they did not actually process the tests for four days, even with three Patient Safety Advocates in the room with her to ensure that things were going right. Because they took so long, she began to have a full-blown necrotizing fasciitis infection again. Ms. Moss’s message to HICPAC from Ms. Cole is that everyone in hospitals is talking the talk, the posters are there, everyone is excited about it, but not everybody is walking the walk. Everyone needs to be walking the walk and not just talking the talk. Ms. Cole also emphasized that so many lives would be saved if people leaving the hospital who had treatment and their caregiver(s) were told to return to the hospital if they experience influenza-like symptoms, fever, or low blood pressure and tell the hospital staff it is thought to be sepsis. If HICPAC would think about how to incorporate ways to convey a simple message to the patient and caretaker as they are going home, that would save a lot of lives.

Ms. Mardris Tomes Device Events

Ms. Tomes previously worked at the FDA on a couple of projects: 1) the Manufacturer and User Facility Device Experience (MAUDE), the adverse event reporting system, and 2) the Unique Device Identification (UDI), a barcoding system. She since left the FDA and started a company called Device Events and has developed a solution that helps her identify problems with medical devices that are not being found by FDA, partly because of how they are structured to review reports. There was a *Candida auris* (*C. auris*) test that had some issues, which she found because after she saw the CDC notification about *C. auris* and checked her system to determine whether this was being passed through a device. Instead, she found that someone who worked with the device company had recorded that their test was not working properly. As she was listening throughout the day during the HICPAC meeting about NTM, she checked and found that the same company has a problem with that test kit as well. When she first discovered the *C. auris*, she contacted the people she used to work with at FDA and they indicated that there were a couple of steps they had to go through on their end. They instructed her to send the information to a specific person, which she found telling. Her hope is to identify ways to bridge the bureaucracy. When WellSpan experienced heater-cooler issues they reported it to CDC, but they did not see it as a device issue and did not report it for almost a year. While she had not yet determined how to do this, she thought there should be some cross-communication. As someone who worked at the FDA, she sees that gap and so does FDA. Her goal is to help make the connection whenever possible, but it is just her at this point.

Liaison / Ex-Officio Reports

American College of Occupational and Environmental Medicine (ACOEM)

ACOEM has issued several position statements and guidance documents in recent months, including an updating of its 2009 Guidance for Occupational Health Services in Medical Centers in April 2017. This is meant to be a practical guide that covers the traditional biological, chemical, and physical hazards and psychosocial hazards, including assaults. Those who practice in medical center occupational health seem to make up an ever-larger proportion of ACOEM's very active and large section. ACOEM resurrected a day-long course in medical center occupational health during its national meeting in 2017. In addition, many scientific sessions and talks were presented that addressed the medical center workplace.

America's Essential Hospitals (AEH)

AEH released a press statement on the magnitude of cuts in the 2018 budget, and has established a website called [protectmedicaid.org](http://www.protectmedicaid.org) (<http://www.protectmedicaid.org>) to help their organizations stay current. Other member organizations also have established websites and town forums to help share information on this situation. AEH also continues to partner with IDSA and the US Stakeholder Forum on Antimicrobial Resistance (S-FAR). Member organizations have participated in the California Department of Public Health's (CDPH) San Francisco/Bay Area Collaborative for CRE to discuss the issues. AEH continues to support and broadly share information with CDC on all of its campaign, such as World Hand Hygiene Day and the recent SHEA Outbreak Response Training Program.

American Hospital Association (AHA)

AHA's Health Research and Educational Trust (HRET) was awarded a two-year Hospital Improvement Innovation Networks (HIIN) contract by CMS to continue efforts to reduce all-cause harm and readmissions. About 1600 hospitals are participating in the HIIN, 32 state hospital associations, and six QIOs. AHA also is continuing its work with CDC on antibiotic stewardship, and is partnering with CDC and the Pew Charitable Trust to work on guidance for

small and rural hospitals. This process has involved convening 20 small, rural, and critical access hospitals for a discussion of draft guidance. They will be reconvened to provide input on the revised and updated guidance. HRET is working specifically to release a guide focusing on how hospitals can develop and sustain partnerships and collaborations. That project involved interviewing 50 hospital leaders to identify common themes about developing successful community collaborations.

Agency for Healthcare Research and Quality (AHRQ)

AHRQ continues to support research and implementation projects to support combating antibiotic-resistant bacteria (CARB) in all three domains:

1. Promoting antibiotic stewardship;
2. Preventing transmission of resistant bacteria; and
3. Preventing healthcare-associated infections in the first place in acute care hospitals, long-term care, and ambulatory care.

AHRQ released two new CARB-specific funding opportunity announcements (FOAs) in the fall in addition to the agency's renewed HAI prevention FOAs. The CARB FOAs have stimulated greatly increased research applications in response to that. Three large implementation projects are underway. The first is the AHRQ Safety Program for Improving Antibiotic Use led by Johns Hopkins and NORC, which aims to implement the Comprehensive Unit-based Safety Program (CUSP) in acute care hospitals, long-term care facilities, and ambulatory care settings for a total of 750 to 1500 hospitals or facilities. This is currently in the pilot period in integrated delivery systems and the project has begun recruiting acute care hospitals to begin in December 2017. The second is the AHRQ Safety Program for Improving Surgical Care and Recovery, which aims to implement enhanced recovery after surgery protocols that are evidence-based in addition to CUSP in various types of surgery. The project is aiming for implementation in 750 hospitals nationwide. They are currently recruiting for their first cohort. Third is the AHRQ Safety Program for ICUs with Persistently Elevated Rates of CLABSI/CAUTI is ongoing and is wrapping up its second cohort and just released a task order to take this project nationwide. Over the last 6 months, AHRQ has continued to disseminate the "AHRQ Nursing Home Antimicrobial Stewardship Guide" and three new toolkits. The toolkit to reduce CAUTI and other HAIs in long-term care was released in May 2017. This is based on a three-year project that applied CUSP to the reduction of HAIs in long-term care facilities, which achieved an approximately 50% decrease in CAUTI rates in the long-term care facilities that participated. That toolkit is available on the AHRQ website. AHRQ also released a toolkit to improve safety for mechanically ventilated patients, which is CUSP-based. A toolkit also was released to improve safety in ambulatory care centers.

American Nurses Association (ANA)

ANA/CDC are engaged in a joint project to articulate nurses' role in antibiotic stewardship. The products from this project include a joint white paper and web-based resources and toolkits. The white paper is anticipated to be published in the next week or so. ANA has been involved in a two-year contract with CDC/DHQP to try to articulate infection practice at the specialty level. As part of this contract, ANA and CDC have recently partnered with 20 nursing specialty organizations to develop the Nursing Infection Control Education Network (NICE Network). The goal of the training programs developed through the NICE Network is to improve adherence to infection prevention and control practices and enhance the confidence of nurses to care for patients with highly contagious diseases, such as was experienced with Ebola. ANA held its first webinar on June 12, 2017 to empower nurses to protect themselves and their patients through device reprocessing and sterilization. That webinar had over 2000 participants. ANA thanked

CDC for the many options for implementing guidelines into practice, and looks forward to future collaboration.

Association of periOperative Registered Nurses (AORN)

AORN has been happy to partner with the American Medical Association (AMA) and CDC on the NICE Network, and thanked CDC for that opportunity. AORN has been working on some regional education that has been very successful in terms of reaching members who cannot always go to conferences or get off of work. In Spring 2017, AORN had a series on Preventing Surgical Site Infections that enable them to disseminate the guideline and other information about best practices to Nurse Executives in 10 cities in the US. The hope is to provide this education again in 2018. Guideline Implementation Workshops are upcoming in Fall 2017, which also has been very successful for AORN. AORN's Global Surgical Conference & Expo 2018 is coming up March 24-28 in New Orleans, Louisiana. AORN is accepting poster abstracts through September 22, 2017 and encouraged submission of posters so that work can be seen by frontline nurses, which helps with implementation. This is a busy time of year for AORN in terms of public comment on guidelines and guidance and preparing for publication. Open for public comment until July 20, 2017 is the Guideline for Prevention of Venous Thromboembolism (VTE). The Guideline for Medical Device and Product Evaluation will be open for public comment August 2017. Coming up in August 2017 will be the Guideline for Team Communication, and in September 2017 will be the Guideline for High Level Disinfection. Guidelines are posted for a 30-day public comment period at [the AORN website \(https://www.aorn.org/events/%20public-comments\)](https://www.aorn.org/events/%20public-comments).

Association of Professionals of Infection Control and Epidemiology (APIC)

APIC convened its annual conference in Portland, Oregon, in June 2017. The conference was very successful this year with just under 5000 attendees and over 150 education sessions. The importance of this is that it offers APIC opportunities to network and work in education with frontline IPs who represent multiple healthcare settings. International Infection Prevention and Control Week is upcoming October 15-21, 2017. Rightfully so, the focus is AR. APIC will be developing an online toolkit and other resources to help promote the week, which will be located on this page. Four articles analyzing data from the MegaSurvey were published in the June 2017 issue of the *American Journal of Infection Control (AJIC)*.

Association of State and Territorial Health Officials (ASTHO)

ASTHO has developed a communications toolkit for health departments that aims to enhance communication and coordination around HAIs and antibiotic resistance prevention and control. The toolkit, which was released in late December 2016, includes tips and tools to engage various audiences such as hospitals, facility support staff, and the media. Tools in the toolkit include: key messages and talking points, tips for working with the media, how to sustain the conversation around HAIs, and a social media guide. The toolkit is available on ASTHO's website. ASTHO also has been a co-lead with CSTE for the Council for Outbreak Response: Healthcare-Associated Infection and Antibiotic Resistant Pathogens (CORHA). ASTHO continues to provide support to Council members and working groups to develop tools and products towards achieving its mission and vision. Later this fall, CORHA will launch a website. ASTHO will be showcasing some selected state success stories on HAI prevention and control as part of the organization's 75th Year Anniversary campaign.

Centers for Medicare and Medicaid Services (CMS)

There are several new policy changes. CMS emphasized that for everything reported on their memos, they have worked very closely with CDC. Language is passed back and forth to ensure that it is correct and that there are no issues between CDC and CMS before it is published.

David Wright, Director of CMS's Survey and Certification Group, traveled to the HICPAC meeting to have discussions with CMS's CDC colleagues about the work that they do and how they can strengthen the relationship and work more closely moving forward. Dr. Wright is a strong believer in transparency, so CMS wants to share the work it does with the general public. Dr. Wright has taken specific actions in terms of that. Recently, CMS has developed a Universal Infection Prevention Course for its surveyors. All surveyors, regardless of which facility types, have to take this course. New surveyors are required to take it immediately and existing surveyors have a year to take it. This is a terrific course that is based on work CMS did with CDC and it is now available. CMS's training site is open to providers and the general public.

Council of State and Territorial Epidemiologists (CSTE)

CSTE highlighted the Antimicrobial Resistance Surveillance Task Force (ARSTF), which held its in-person meeting and formed a vision statement, strategic map and profile, and a schema of roles and responsibilities for various levels of public health agencies for the next three years. A 10-page summary of the Strategic Profile is appended to CSTE's full report in Attachment #2 of this document. Also included in the full report is a link to the CSTE website that includes other key documents associated with the ARSTF. The following position statements were passed at the annual CSTE meeting in June:

1. 17-ID-04 Public Health Reporting and National Notification of Carbapenemase Producing Carbapenem-Resistant *Enterobacteriaceae* (CP-CRE) for *E.coli*, *Klebsiella* spp. and *Enterobacter* spp.
2. 17-ID-03 Standardized Case Definition for *Candida auris* causing clinical infection and colonization in people
3. 17-ID-07 Standardized Case Definition for Extrapulmonary Nontuberculous Mycobacteria Infections.

After final formatting, they will be [posted on the CSTE website \(http://www.cste.org/?page=PositionStatements\)](http://www.cste.org/?page=PositionStatements). CSTE emphasized that repeal of the ACA and associated Prevention and Public Health Fund (PPHF) would have a major effect on the resources provided by CDC to state and local health departments supporting infection control and HAI activities, completely decimating those programs.

Consumers Union (CU)

CU thanked CDC staff for meeting with consumer activities the previous day, during which they had a great exchange of ideas and learned a lot. In March 2017, CU sponsored a South by Southwest (SXSW) Panel called "Consumer Reports wants Patients to Track Superbugs," with Safe Patient Project activists Carole Moss and Christian Lillis and CDC's Michael Bell. The panel discussed the idea of crowdsourcing and pulling information off of social media that people are talking about regarding infections to try to get more real-time information about outbreaks. Several people in the audience expressed an interest in working with CU, and conversations have continued about the potential of this idea. CU with patient safety activists petitioned the CDPH to protect patients from hospital-acquired infections. The petition identified hospitals that have consistently had higher systemic inflammatory response syndrome (SIRS) over a three-year period, with a particular concern about one hospital that had high rates 6 to 12 times during that timeframe. CU asked CDPH to share this information with their investigators who are part of the department. CU believes that consistently poor infection prevention should trigger enforcement action and asked that the investigators prioritize poor performers when they investigate complaints and in preparation for relicensing surveys, and apply state-authorized fines with regard to immediate jeopardy violations and infections related to medical devices. In their response, CDPH agreed to share these data with investigators. They also agreed to

prioritize those hospitals that have significantly high rates consistently for inspections for relicensing, and for the inspectors to look at that information when they investigate complaints. CU's goal in this work is to make hospitals more accountable for high infection rates. CU feels that there has been a passive reporting system from the public's view, though that is not CDPH's view. They have offered to help hospitals with higher rates, but the hospitals do not always agree to allow them to help. That is when there needs to be enforcement to protect patients. CU looks forward to continued work with CDPH. These are issues CU continues to raise with CDC on the national level, as CU believes this kind of interaction should be occurring throughout the country.

Food and Drug Administration (FDA)

FDA is working actively with all of the manufacturers of the various scopes, including endoscopes and duodenoscopes. In terms of design and reprocessing, FDA is working actively with manufacturers of the alternate reprocessing methods (AERs) and washing disinfectants. In addition, the agency continues to work closely with the manufacturers of the heater-cooler systems.

Health Resources and Services Administration (HRSA)

HRSA made programmatic changes to the Medicare Beneficiary Quality Improvement Project (MBQIP), which is a quality improvement project to help 1340 critical access hospitals voluntarily report rural-relevant CMS measures. Starting in Fiscal Year 2018, critical access hospitals will have four years to implement an antibiotic stewardship program. HRSA is currently collaborating with CDC/DHQP to support hospitals in this effort. Dr. Cardo will be attending a conference in two weeks during which the MBQIP will be rolled out to HRSA's Medicare Rural Hospital Flexibility grantees.

Infectious Diseases Society of America (IDSA)

No verbal report was provided. IDSA's Liaison Report submitted to HICPAC can be found in Attachment #2 of this document.

The Joint Commission

No verbal report was provided. The Joint Commission's Liaison Report submitted to HICPAC can be found in Attachment #2 of this document.

National Association of County and City Health Officials (NACCHO)

NACCHO emphasized that local health departments are at the forefront of many infectious diseases, and HAIs are no exception. To that end, NACCHO has been very busy in the past year working with HAIs and health departments and supporting them through a number of opportunities, including funding opportunities, providing technical assistance, and publishing useable toolkits and documents around HAIs geared toward local health departments. NACCHO has had local health department representation at numerous meetings and conferences focused on antimicrobial stewardship and resistance, all of which is outlined in the NACCHO's full report appended to this document in Attachment #2. NACCHO has financially supported 35 local health department staff in obtaining their certification in infection control. NACCHO continues to work with 3 HAI demonstration sites located in Florida, Illinois, and Pennsylvania which are focused on a variety of components of HAIs, which includes conducting needs assessments on AR transmission, engaging facilities to improve their stewardship, and providing training opportunities for local health department staff and individual healthcare facilities specific to both stewardship and infection prevention associated with MDRO just to name a few activities.

National Institutes of Health (NIH)

Several of the areas NIH is pursuing in the Clinical Center currently involve environmental issues with organisms being found in drains, water, and the built hospital environment. In the 1970s and earlier, that was the focus of hospital epidemiology and there seems to be a swing back to that now. The elegant new molecular tools available to trace organisms around the hospital may be discovering some of these things much easier. This opens a new era. The Clinical Center has a new Chief Executive Officer (CEO), Dr. James K. Gilman. Dr. Gilman is a highly experienced CEO of hospitals and has brought new energy and livelihood to the Clinical Center.

Public Health Agency of Canada (PHAC)

PHAC has appointed a new Chief Public Health Officer (CPHO), Dr. Theresa Tam. Along with Health Minister, Dr. Jane Philpott, there are two women leading the charge in Canada. This is really nice to see. The previous week, PHAC reported on the first case of multi-drug-resistant multidrug-resistant *C. auris* detected in Canada. PHAC has been working with CDC and other international partners to share samples. They had not been looking for *C. auris* and do not have a national mycology laboratory, but they may be getting one. Since the last HICPAC meeting, there has been quite a bit of activity on the heater-cooler devices. PHAC published a few documents on laboratory testing and guidance for an NTM. This involves a complex relationship with regulators, care providers, and Provincial health authorities. PHAC continues to sort through issues related to that. A number of surveillance reports have been released on AR, for which the PDF links are provided in the full PHAC report appended to the end of this document in Attachment #2. PHAC is in the process of updating its "Occupational Infections Guideline" and has engaged in good communication with CDC to try to align their activities. PHAC also is updating its *C. auris* guidance, which will probably take a more gram-negative MDRO approach to recommendations. The biggest guideline that PHAC has been working on is "Infected Healthcare Workers with Bloodborne Pathogens." Public consultation will be in the fall. Dr. David Henderson of NIH has been on a number of calls with PHAC, SHEA is interested in looking at the document, and it will be shared with CDC as well. This represents about 3 years of work and it is a good guideline. In terms of other key efforts at the agency, tuberculosis (TB) is a major issue for Canada. Opioids have been a game-changer for the agency in terms of the role with the public health interface. Legalization of marijuana is coming to Canada in July 2018, which will fall to public health as well.

Society for Critical Care Medicine (SCCM)

SCCM has been working with AHA and others on the prevention of CLABSI and CAUTI. There are 12 guidelines in various stages, of which 2.5 are directly relevant to HICPAC. The Surviving Sepsis Campaign (SSC) continues to be very active. To address research gaps, the Surviving Sepsis Research Committee was formed to work on specific calls in the literature to try to catalyze research in this specific domain. One of the specific domains is related to infections. The State of New York recently presented the information published in the *New England Journal of Medicine (NEJM)* about mandatory sepsis reporting, and had a discussion with them at the WHO, which just put forth a statement on sepsis. A manuscript submitted to *Journal of Hospital Medicine (JHM)* about sepsis on the wards, showing that if a collaborative pays attention to it, sepsis rates and mortality can be markedly decreased. SCCM has numerous other activities including press releases, podcasts, and publications that are delineated in their full report appended to this document in Attachment #2.

Society for Healthcare Epidemiology of America (SHEA)

SHEA convened its annual meeting in April 2017. The theme the last several years has been "Science Guiding Prevention." Another major activity is the SHEA/CDC Training Course in

Healthcare Epidemiology, and there is now a SHEA Antibiotic Stewardship Training Course. These certainly attract a lot of people to the meeting. In May 2016, SHEA received a contract from CDC to execute the SHEA Outbreak Response Training Program (ORTP), which has several deliverables. One of the deliverables was to host three “Effective Communication” webinars, the last of which was held on July 11, 2017. These are all available for free and can be accessed through SHEA’s website. Another deliverable was to convene two in-person training workshops. The first one was in Philadelphia in June and the next one will be in Los Angeles in January. The two “DecisionSim” online modules are in development and are set to launch at the end of August 2017. An additional deliverable is the development of expert guidance, which has been assembled and is being submitted to SHEA’s board at this point, and for which comments already have been received from CDC. Finally, the ORTP contract includes a deliverable to develop toolkits.

SHEA recently received an educational grant from Merck to host Antibiotic Stewardship Research Workshops in order to explore the research and the science behind antibiotic stewardship over the next three years. The first workshop was held in November 2016, and the next workshop will be held in November 2017. These workshops include a lot of discussion regarding implementation science. SHEA also has been doing some stewardship podcasts and working in IDWeek. SHEA’s “Primer on Healthcare Epidemiology, Infection Control and Antimicrobial Stewardship” is undergoing an update. SHEA’s Guidelines Committee (GLC) is currently working on 3 guidance documents. The first one is “Duration of Contact Precautions” that is currently under final review. The second one “Infection Prevention Practices in the Anesthesia Work Area.” The recommendations have been developed for that guidance are under review by the writing panel. The third expert guidance for this year is “Initiation of Antibiotics in Long-Term Care.” The literature search is underway for this guidance. SHEA has made some commitments over the next three to four years, which are to review the older Guideline on Management of Healthcare Workers Infected with HIV, HBV, HCV; the Companion piece to the HICPAC NICU Guideline; and Infection Prevention in Long-Term Care. In addition, three compendium chapters will be assembled to update the 2008 CDC/HICPAC Guideline on Sterilization and Disinfection. In terms of legislation, SHEA has been focused on opposing the President’s FY2018 budget proposal that seeks to make drastic cuts in CDC’s top line and Center for Emerging and Zoonotic Infectious Diseases line items, to close AHRQ, et cetera.

Society of Hospital Medicine (SHM)

It has been a busy year for SHM in regard to hospital-based infection prevention stewardship. SHM’s Annual Meeting took place on Las Vegas, Nevada in May 2017 and featured several sessions addressing hospital-acquired infections, including an Infectious Diseases Bootcamp and Implementation session. SHM continues to work with HRET to identify strategies for reducing MRSA, CAUTI, *C. diff* and CLABSI in hospitals across the US. In a separate project, SHM is a partner to HRET to reduce CAUTI and CLABSI in ICUs. SHM developed the antimicrobial stewardship implementation guide and educational modules directed toward hospitalists to help them implement antimicrobial stewardship in their own hospitals. SHM continues to promote its Fight the Resistance Campaign, which began a year and a half ago, and is dedicated to promoting awareness and behavior change related to appropriate prescribing practices. This year, SHM has reached out to its membership to try to find case studies and tips for implementation to share with the rest of the membership.

US Department of Veterans Affairs (VA)

The VA indicated that the VA is doing everything that had been discussed thus far during this HICPAC meeting.

Adjourn

Dr. Diekema thanked HICPAC for the day's discussion. HICPAC stood in recess at 5:00 pm.

Friday, July 14, 2017

Welcome and Roll Call

The second day of the HICPAC meeting was called to order at 9:00 am on Friday, July 14, 2017. Drs. Diekema and Yokoe welcomed the group. COIs were declared, which remained the same as the first day of the meeting. A roll call of HICPAC members, *ex officio* members, and liaison representatives established that a quorum was present. Quorum was maintained throughout the day.

NHSN / NHSN Workgroup Update

Daniel Pollock, MD
Medical Epidemiologist
Chief, Surveillance Branch
Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention

Michael Howell, MD, MPH
Chief Quality Officer
University of Chicago Medicine
HICPAC NHSN Workgroup Co-Chair

Dr. Pollock thanked HICPAC for convening the NHSN Workgroup, noting that input from subject matter experts (SMEs), academia, public health, and healthcare facilities is enormously important for NHSN.

CDC has introduced systems for HAI surveillance as far back as the early 1980s. NHSN was launched in October 2005 after several years of development. In 2008, NHSN underwent an external review and analysis with the help of several SMEs. At that point, approximately 3000 to 4000 healthcare facilities were participating in NHSN. The external review group was helpful and successful, but it was a one-time effort. The decision was then made to launch an NHSN Steering Workgroup, which built upon the expert review. The NHSN Steering Workgroup was a larger group comprised of SMEs from a variety of disciplines and perspectives. It met three times a year from 2008 through the end of 2016.

It became clear that certain issues needed a “deeper dive,” and it was occasionally necessary to engage with outside experts in a more sustained and intense way. For example, DHQP convened a HICPAC Surveillance Workgroup that focused on revising SSI definitions and criteria, and another group was convened to help DHQP work through a revision of its CAUTI criteria. The NHSN Steering Workgroup provided a great deal of valuable input, but its members felt somewhat frustrated about the lack of continuity to their work: the group would share feedback, and in the months before meeting again, a host of other issues would have arisen. The establishment of a HICPAC NHSN Workgroup will address some of these limitations.

The NHSN Steering Workgroup covered many issues in its nine-year history, such as process issues, enrollment, the NHSN consent form, analytic issues regarding risk adjustment, the use of the standardized infection ratio (SIR) as a summary statistic, the National Quality Forum (NQF) measure proposals that DHQP has developed, the implications of public reporting,

DHQP's collaboration with CMS, and a variety of other questions. DHQP foresees a myriad of topics to address in the future.

Currently, DHQP is wrestling with the minimum precision criteria by which an SIR can be reported. In the past, DHQP stipulated that if there was less than 1 predicted infection from the denominator of an SIR, it would not be permitted to be reported within the NHSN application, reporting by others of that level of imprecision would not be allowed, and the results were not reported to CMS on behalf of the healthcare facilities that are obligated to report. This approach meant that many facilities were excluded from reporting, so DHQP has reconsidered the minimum precision criteria and is confident that it can be lowered. However, lowering the criteria carries a number of ramifications. More facilities with a lower exposure volume will have reportable measure results. That change will have consequences for the facilities that have already been reporting measure results. This issue is one of many that DHQP is grappling with and is engaging with CMS on.

When NHSN was launched in Fall 2005, it included legacy participants, predominantly from the National Nosocomial Infections Surveillance (NNIS) System. At that time, the system included approximately 300 large community hospitals and teaching hospitals. NHSN has grown exponentially since then, and continues to grow. Over 22,000 healthcare facilities are now participating in NHSN, with over 40,000 individual users. The system includes over 3000 nursing homes, but there are over 16,000 nursing homes in the US. Supporting the levels of participation that NHSN has experienced in this exponential growth has required a great deal of investment in technology, end user support, and the capacity to engage.

One of the implications of that growth, which is largely due to state mandates in 35 states to use NHSN and the CMS requirements, is that NHSN's definitions and case criteria receive more scrutiny than in years past, when participation was voluntary and confidential. In addition, a vast amount of input comes from the Expert Panel, the HICPAC NHSN Workgroup, HICPAC, and from NHSN users nearly every day. This input is of enormous value, and is important to be responsive to the types of changes that are of the highest priority.

Dr. Howell said that the HICPAC NHSN Workgroup will provide standing and ad hoc input on NHSN-related issues, including planning and development. The workgroup's input will be summarized and presented at public HICPAC meetings. He emphasized that the workgroup is an advisory group, not a decision-making group. Workgroup membership includes:

HICPAC Representation

- Michael Howell (co-Chair)
- Debbie Yokoe (co-Chair)
- Hilary Babcock
- Vickie Brown
- Lynn Janssen
- Lisa Maragakis
- Sheri Chernetsky Tejedor

External Subject Matter Experts

- Patti Grant, APIC
- Anthony Harris, University of Maryland
- Marion Kainer, CSTE
- Kathleen Rauch, Healthcare Association of New York State

- Connie Steed, NHSN User Representative
- Kaede Ota Sullivan, Temple University
- Tom Talbot, Vanderbilt University School of Medicine
- Loretta Willis, Hospital Association of New York State

CDC Technical Consultants

- Jeneita Bell
- Kathy Bridson
- Maggie Dudeck
- Jonathan Edwards
- Kent Lemoine
- Dan Pollock
- Lauren Wattenmaker

The charge to the Workgroup from HICPAC is for the HICPAC NHSN Workgroup to provide input on NHSN topics, including:

- Data access policies and practices
- Data validation
- Quality measurement priorities and methods
- Data use for HAI prevention at the facility, local, state, and national levels
- Informatics/information technology (IT) advances and surveillance improvements, including data security and IT platforms

The first Workgroup meeting was convened via teleconference on June 29, 2017. The agenda included discussions about the background of NHSN; the decision to shift the NHSN Steering Committee to a HICPAC Workgroup; the expanded mission of the workgroup; the current state of NHSN, including what is working as well as challenges from the CDC and Workgroup member perspectives; additional expertise/representation needed on the Workgroup; preliminary discussions regarding areas for initial Workgroup focus; and next steps.

There was consensus among the HICPAC NHSN Workgroup that NHSN has had tremendous impact and has led to critical improvements in HAI prevention. People trust and believe in NHSN and think of it as a fair arbiter. Several members of the Workgroup highlighted the strong collaborative relationships with important partners in the community, including healthcare facilities and state and local health departments; with other federal agencies; and with IT resources. A former HICPAC member in particular discussed the value of NHSN's responsiveness, not only as a program around definitional issues, but also to individual infection practitioners in the field who rely on responses from NHSN. There was also consensus that improvement is not only important, but also needed and possible. The Workgroup is thankful to be part of that discussion. It takes considerable insight to say, "Wow, we've grown from 300 people sitting around a table to 40,000 users, but we've got a long way to go."

The Workgroup discussion was wide-ranging. The members discussed a number of areas in which the Workgroup could help improve NHSN to help people in the real world:

Definitions have been an area of focus for a number of other expert panels, workgroups, and steering groups over time. Workgroup members discussed the tension between being "nimble" and maintaining consistency. When definitions are consistent over time, it is possible to chart improvements. There also was discussion about simplicity. One of the workgroup members

said, “The complexity of NHSN for a new hospital with a single IP is just too great.” The definitions themselves are profoundly complicated; the workgroup discussed the tradeoffs of “good enough” definitions: if a definition is 80% good and takes 5% of the work, is that a tradeoff that ought to be made?

The workgroup also discussed “leveling the playing field.” The risk adjustment in NHSN is extremely limited, and many feel that it creates direct reputational and financial penalties for caring for patients who are sicker than average, and who migrate through networks to some centers, and not others. There is a desire for improved patient-level risk adjustment, but a recognition of interpretability concerns. As the workgroup moves forward to address important issues regarding risk adjustment, it is important to realize that these issues do not translate into meaning for large factions of people working in this field. Dr. Howell asked Dr. Chopra to describe one of his recent studies, which illustrates confusion in the field regarding interpretation of metrics.

Dr. Chopra reported that this study was part of larger body of work examining why quality metrics do not consistently improve practice and performance. They surveyed 100 clinicians from across the country. Various infection outcomes and rates were described, and the clinicians were asked to compare Hospital A to Hospital B to Hospital C, rating which hospitals are doing better, and which are doing worse. Of the 100 clinicians who were sent surveys, 97 responded. The mean percentage of correct answers was 61%. Overall, doctors performed better than other respondents, but only by 68% versus 57%. When asked basic numeracy questions, the mean percentage correct was 82%. When asked about risk-adjusted numeracy, such as SIRs and comparisons, the mean percentage decreased from 82% to 70%. When respondents were asked to interpret the risk-adjusted figures, the mean decreased from 70% to 43%; that is, less than half of the people in this sample correctly used the SIR or the risk-adjusted data in a way that would meaningfully improve practice. Performance was better in the SHEA Research Network, which includes many IPs and Hospital Epidemiologists, but the results were not 100%. The highest performance was in the 80% range.

Dr. Howell said that the Workgroup identified “gaming” and manipulation of measures, whether intentional or unintended, as other areas for potential improvement for NHSN. There is a long history of well-meaning measures creating public health harm over time. The workgroup also discussed automation and learning; the lack of an inter-rater and inter-facility reliability agreement; and the possibility of creating algorithmic and electronically implementable definitions. Several members spoke to the goal of electronic definitions that do not require manual abstraction and interpretation, but members of the workgroup also raised serious concerns about data validity, given experience with Laboratory-Identified (LabID) Event Reporting. The group considered how intentional, prospective observation tools might be built into the system to detect unintended consequences with definition changes. The Workgroup will not discuss how these topics could be generalized into policy, but will rather focus on using data for HAI prevention.

Workgroup membership and effectiveness were additional topics of discussion. Diverse teams tend to generate better decisions and better advice; the workgroup suggested potential voices to consider adding to the group to expand its expertise and representation while remaining responsive to the Workgroup charge. CDC has reached out to CMS to participate, making an important link to change in practice. Other suggestions included:

- Office of the National Coordinator for Health Information Technology (ONC)
- Pharmacists from a state health department or a healthcare facility

- An additional clinical microbiologist
- Representation from the front-line IT workflow perspective
- Patient representation
- Other groups involved in large-scale quality reporting
- Large electronic health record (EHR) vendors
- Additional representation from hospital associations

In closing, Dr. Howell posed the following questions for HICPAC deliberation:

- In terms of composition, who else should be part of the Workgroup, if anyone?
- Regarding prioritization, if the Workgroup accomplished the two most important things in the next 12 months, what would they be?

Discussion Points

Setting the Stage for Discussion

Dr. Bell thanked the Workgroup for setting its initial direction. In addition to recognizing that NHSN has grown from a few hundred to tens of thousands of facilities, which is impressive, it is important to remember that none of the additional facilities that were added volunteered to participate. This change in participation also changes the gestalt of NHSN. The users are longer enthusiastic academic colleagues who want to do projects using the system; instead, a number of users probably prefer not to use the system and feel that it is a burden. Additionally, the users who produce and receive the data are not necessarily the usual cadre of hospital epidemiologists, leaders in infection control, and intensivists. A range of healthcare settings are now part of NHSN that were not previously involved, such as outpatient settings and general wards. These settings include nursing homes that have one nurse, no IPs, and vast amounts of information that is not maintained electronically. Further, the use of NHSN data has changed profoundly: the data are now linked to payment and facility reputation, and are actionable for patients. In order for NHSN to be relevant in this new context, the way data are created, data timeliness, and other aspects need to shift. The current infrastructure is different from 2005, so it is important to consider how to harvest and share data. In addition to providing input, the Workgroup can also share awareness. NHSN used to be a small system, but now more awareness and a deeper understanding of the system and its processes is needed, particularly regarding what goes into producing the data. With more informed representation across the field, the input will be better.

Dr. Cardo thanked the Co-Chairs of the HICPAC NHSN Workgroup. She emphasized that the data are for prevention and should be used locally and nationally. The focus on solutions is refreshing and an appropriate approach.

HICPAC NHSN Workgroup Composition

HICPAC:

- Encouraged the involvement of nutritionists, perhaps as a subgroup.
- Observed that many health systems have international partners and CDC has international outreach. This is important to keep in mind in terms of what the Workgroup might be able to do regarding benchmarking in international locations.

- Emphasized the importance of having ample clinical microbiology expertise on the panel, because LabID events can be considered to be objective, but different methods can lead to different results, and it can be hard to adjust for these differences. In addition, microbiology laboratory methods are quickly advancing, and representation from this field is critical.

Children's Hospitals' Solutions for Patient Safety has spent some time looking at the CLABSI definition and would be very interested in partnering in the future.

CU reminded the group that NHSN data are also used to inform the public. *Consumer Reports* magazine and the Leapfrog Group communicate to certain segments of the population. This outreach is an example of one of the ways that groups use NHSN data to communicate information about the safety of hospitals. CU strongly encouraged representation from users in that forum on the HICPAC NHSN Workgroup, as well as inclusion of some members who are not necessarily healthcare users. CU also encouraged CDC to provide more data so that those users can be more accurate in reporting results to the public. Regarding risk adjustments, it is important to realize that these events are mostly preventable, and the public views them that way. Consideration should be given to other ways to present the information, such as grouping similar hospitals together. The greater the risk adjustment, the more these events are hidden from the public. CU is very concerned about that problem.

In terms of IT, it was emphasized that the length of time a person has been performing infection prevention control impacts how they engage with and use NHSN. Those who have been in infection prevention for a long period of time are manual-oriented, whereas those who are newer to the field tend to be electronically-oriented. It is important to keep that balance in mind in terms of the composition of the HICPAC NHSN Workgroup.

ANA pointed out that in ambulatory care and outside hospital facilities, the Registered Nurse (RN) will be the front-line "point person." Including more RNs on the primary Workgroup or in subgroups will be valuable, particularly RNs with experience in the long-term care or dialysis space who can provide the end-user perspective to keep the system moving, flexible, and viable. ANA also stressed the importance of including vendors.

APIC pointed out that many IPs are RNs, MTs, and MPHs; perhaps they would be a beneficial addition.

Regarding hospital association representation at the national level, AHA measure experts would be happy to participate. AHA also has the ability to share awareness, input, and feedback.

PHAC suggested inviting HICPAC Liaison Representatives and representatives from other groups to make presentations to the Workgroup on different models or priorities. There is a great deal of this work internationally, and alignment of case definitions is beneficial. Canada's unique system incorporates agreements with teaching hospitals such that the IPs are paid to provide the data, and Canada then analyzes the data and returns the results to the sites. Through that agreement, it is possible to assess trends across the country. This system is different in that the rates are not tied to the budget: they are purely a quality assurance measure and are used to monitor public health issues.

CSTE completed LabID Event Reporting validation and were surprised at how poorly it performed compared to CAUTI. The problem appeared to lie with facilities that used clinical decision support software and did not actually validate, or that were not pulling data from the correct portions of the EHR. People were taking "shortcuts," taking data from the LabID system

and not connecting it to the ADT data or the patient registry system. While CSTE supports automation, it must be implemented properly and there must be quality assurance that the data are pulled from the right location. These issues could be addressed by a subgroup of the Workgroup.

Just as NHSN is stratified by hospital size, type, etc., AEH emphasized the importance of including representation on the Workgroup that can speak to those different settings, particularly in terms of critical access versus large medical centers. Resources are different regarding EHR capabilities and the size and scope of programs, and these matters are important for the Workgroup to remember in its deliberations.

HICPAC NHSN Workgroup 12-Month Prioritization

HICPAC suggested examining how the data are reported for improvement purposes, specifically addressing some of the issues that Dr. Chopra identified in his study. It is important for all reporting to be clear and understandable to a variety of audiences.

CU emphasized that accuracy and validation of the data are essential so that the data continue to be trusted. A consumer movement for hospitals to report data to NHSN began with a monograph that CU drafted. Many of the consumer and patient activists in attendance at HICPAC today helped to pass legislation requiring participation in their states. Legislation was passed in 30 states before it was required by the federal government. The public trusts and embraces these data. As these bills were being passed in 2003 and 2004, CDC was already developing this newer system, having perceived the need for it. The agency educated states about the system. It was clear that it would be a huge task to get states to implement the laws, but because CDC stepped up with the NHSN tool, states recognized the importance of having these collective data to provide to the entire country. This work was a true partnership and a convergence of fortunate events.

CSTE suggested creating meaningful metrics for smaller facilities, such as acute care hospitals, nursing homes, ambulatory surgical centers, that can be acted upon and used for public reporting. In addition, there should be risk adjustment for those factors that cannot be changed. It is concerning that some risk adjustment masks opportunities to make changes to areas that can be modified. Together with CDC, CSTE has a data analysis presentation toolkit, which is intended to help state health departments present their data to technical and consumer audiences. The toolkit is available on the CSTE website. CSTE is set to re-energize that committee and is taking comments on its next topics. This group is focused at the state health department and consumer levels, but CSTE can consider involving other areas and is happy to collaborate.

NIH suggested streamlining the definitions so that they are accessible and usable for facilities that may not have a Hospital Epidemiologist or other personnel who are skilled in interpreting risk.

SCCM stressed that risk adjustment is not “apples-to-apples.” Different facilities clearly take care of different patients, and it matters in multiple ways to try to achieve as close to an “apples-to-apples” comparison as possible.

Rather than having definitions “across the board” for all facilities, AEH asked the group to consider whether it would be reasonable to have definitions that are appropriate for long-term care, which does not always have the ability to test the same way other facilities do.

Dr. Howell thanked HICPAC for its input. He concluded the session by saying that when he participated in the first Patient/Family Advisory Council at his institution, one of the patients said, "At the end of a year, I would rather see you do two things and execute them well than to have talked about all of the things in the world." That advice is sound for the HICPAC NHSN Workgroup as well.

Guideline Updates: NICU Guideline

Kristina Bryant, MD
Division of Pediatric Infectious Diseases
University of Louisville School of Medicine

Dr. Bryant presented an update on the *NICU Infection Prevention Guideline*. As a reminder, the Key Questions for the *C. diff* section were revised to be more specific as follows:

Key Question A

What clinical, demographic, or other criteria have been shown to prompt diagnostic testing for *C. difficile* that results in identifying symptomatic *C. difficile*-infected NICU patients who may warrant *C. difficile*-specific infection prevention interventions?

Key Question B

What tests or sequence of tests for *C. difficile* infection perform best in detecting clinically relevant *C. difficile* infection among NICU patients?

Key Question C

What currently recommended *C. difficile*-specific, transmission-based infection prevention practices for preventing transmission of *C. difficile* in healthcare settings have been shown to decrease the risk of *C. difficile* transmission from symptomatic *C. difficile*-infected infants in NICUs to other NICU patients, their intensive care unit (ICU) caregivers, or healthcare personnel (HCP) working in ICUs?

For symptomatic *C. difficile*-infected neonates in NICUs, what special infection prevention interventions have been shown to decrease *C. difficile* transmission to other neonates in NICUs, HCP working in NICUs, or caregivers of NICU patients?

Although the questions are important, the systematic review did not find evidence to answer them. A total of 52 studies were reviewed, including eight studies that were targeted in an earlier draft. Ultimately, all of the studies were excluded for a variety of reasons. They either did not restrict enrollment or analysis to neonates, did not examine CDI, and/or did not include a comparison group without CDI.

The exercise was useful in pointing out the lack of evidence. This section will be published as a stand-alone document on the DHQP website. The document will include an introduction that highlights why CDI in the NICU is an important question, followed by a review of the methods, summary of the evidence, and the limitations of the evidence. This highlighting of the limitations of prior studies could lead to studies that are better designed to answer these questions, and that can result in evidence that can be used to draft a guideline.

As early as 2012, the group tasked with writing this guideline realized the lack of evidence not only for CDI, but also for other topics. This guideline will not be able answer all of the questions that clinicians on the frontlines have, but even in the absence of evidence, these front-line

healthcare workers have to go to work and make decisions. In 2012, there was outreach to SHEA to request what was then called an “implementation document.” This “practical guidance” document was developed by professional society partners and was intended to provide practical guidance in the absence of GRADE-quality evidence. The writing group worked with Compendium partners, including IDSA, the Pediatric Infectious Disease Society (PIDS), AAP, VON, the National Association of Neonatal Nurses (NANN), and AHA. Four writing groups were convened, one for each content area addressed in the NICU Guideline. HICPAC provided clinical questions to the groups. The format of the document is structured as a clinical question, followed by a succinct recommendation and then a brief rationale. The literature review was not redone, because that work already had been done by HICPAC. There was a plan to utilize the Compendium vetting process.

When CDC decided to redo the literature review and refine the key questions, work on this project essentially stopped. Now that they are nearing completion of the HICPAC work, SHEA is considering how best to proceed. The initial vision was to have a companion document that would include all four sections, so SHEA is actively engaged with the guidelines committee, the publication committee, and the board regarding its next steps.

At the last HICPAC meeting, HICPAC recommended expanding the scope of the guideline to include not only MRSA, but also methicillin-sensitive *Staphylococcus aureus* (MSSA). The literature search was expanded in January 2017, and 888 additional potentially relevant articles have been screened, with 136 selected for full text review and seven for data extraction. The key questions were refined to be more specific:

Original Key Question 1

What are the risk factors for MRSA colonization and infection in NICU patients?

Refined Key Question 1

- 1.1. What are the risk factors for *S. aureus* infection in NICU patients? Do these criteria differ between MRSA and MSSA? Do these criteria differ according to the presence of a MRSA or MSSA outbreak?
- 1.2. What are the risk factors for MRSA colonization in NICU patients? Do these criteria differ according to the presence of an outbreak?
- 1.3. What are the risk factors for MSSA colonization in NICU patients during, or immediately following, an outbreak?

Original Key Question 2

What are the most effective strategies to screen for MRSA colonization in NICU patients?

Refined Key Question 2

- 2.1 What are the most effective (anatomic) sampling sites and laboratory assays to screen NICU patients for MRSA colonization (who may warrant interventions)? Do these criteria differ according to the presence of a MRSA outbreak?
- 2.2 What are the most effective (anatomic) sampling sites and laboratory assays to screen NICU patients for MSSA colonization (who may warrant interventions)? Do these criteria differ according to the presence of a MSSA outbreak?

Original Key Question 3

What are the most effective measures to prevent hospital-acquired infection or colonization with MRSA?

Refined Key Question 3 (for MRSA)

3.1 What are the most effective strategies for preventing MRSA transmission from MRSA-infected infants in NICUs to other NICU patients, visitors to NICU patients, and healthcare personnel to NICU patients? Do these criteria differ according to the presence of a MRSA outbreak?

3.2 What are the most effective strategies for preventing MRSA transmission from MRSA-colonized infants in NICUs to other NICU patients, visitors to NICU patients, and healthcare personnel to NICU patients? Do these criteria differ according to the presence of a MRSA outbreak?

The evidence tables are being finalized for MRSA key questions, with 16 articles to be included for Key Question 1; four for Key Question 2; and 15-20 for Key Question 3. The writing group is beginning to review these articles. Work will then begin on the evidence tables for MSSA.

Discussion Points

HICPAC thanked Dr. Bryant for her leadership. In light of the previous day's discussion regarding the importance of creating actionable and measurable recommendations, HICPAC wondered whether there is flexibility to adjust the key questions, particularly the risk factor questions.

Dr. Bryant replied that the writing group could review this possibility. Since the key questions have been revised twice and this work has been in progress for so long, it might be a challenge to revise them again at this point in the work flow. This guideline will have two additional sections, which could focus on actionable items.

Guideline Updates: Healthcare Personnel Guideline

David T. Kuhar, MD

Medical Officer

Division of Healthcare Quality Promotion

National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

Dr. Kuhar presented an update to the *Guideline for Infection Control in Healthcare Personnel, 1998*.

The 1998 Guideline provided recommendations for reducing transmission of infections among HCP and patients in healthcare settings. It differed from the *Guideline for Isolation Precautions* in that it was aimed at occupational health providers working in healthcare settings. Although it was intended to apply to inpatient and outpatient settings, much of the discussion focused on hospital settings. It addressed three general topic areas:

- The first section addressed infrastructure and routine practices for occupational infection prevention services.
- The second section provided individual subsections and recommendations for 23 pathogens, with strategies to prevent transmission among personnel and patients that

involved the occupational health service, such as providing immunizations or managing ill and exposed personnel.

- The third section addressed special populations of HCP who might have individualized considerations for occupational infection prevention strategies, such as pregnant HCP, emergency-response personnel, etc.

The update to the 1998 Guideline has two main sections:

- Infrastructure and routine practices for occupational infection prevention services
- Epidemiology and prevention of selected infections transmitted among HCP and patients.

Information regarding special HCP populations requiring more individualized considerations will be included as a part of each pathogen subsection in the second section, rather than as a separate section.

The update is being produced segmentally, with the first section and subsections of the second section to be completed and published on the CDC/DHQP website as they are completed. Overall, the content of the guideline will refer to existing guidance when it is applicable. The intent is not to duplicate existing guidance. For example, for immunization recommendations, the guideline will refer to published ACIP recommendations. For the second section, the list of pathogens to be addressed is being updated. Most of the pathogens from the 1998 Guideline will be carried forward, as they are still relevant. The update process will involve HICPAC input and public comment. Recommended revisions to the first section, which was presented during the last HICPAC meeting, have been made and the document is currently going through CDC clearance. Once it is cleared, public comment will be sought.

The second section will begin with an introduction with a general review of isolation precautions and referrals to updated guidance. The pathogens that will be discussed in individual subsections include the following, almost all of which were included in the 1998 guideline:

- Bloodborne Pathogens: HIV, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV)
- Conjunctivitis
- Cytomegalovirus (CMV)
- Diphtheria
- Acute Gastrointestinal Infections: Norovirus, *C. diff*, others
- Hepatitis A
- Herpes Simplex
- Measles
- Meningococcal Disease
- Multidrug-Resistant Gram-Negative Bacteria
- Mumps
- Parvovirus
- Pertussis
- Poliomyelitis
- Rabies
- Rubella
- Scabies and Pediculosis
- *Staphylococcus aureus* (MSSA/MRSA)
- Streptococcus (group A)

- Tuberculosis
- Vaccinia
- Varicella
- Viral Respiratory Infections: Influenza, Respiratory Syncytial Virus (RSV), others
- Potential Agents of Bioterrorism (e.g., Anthrax)

The process for prioritizing the pathogens for update incorporates several considerations, such as high-priority information in need of a more urgent update; logical clusters, such as updating measles, mumps, and rubella due to the vaccine cluster; and practical considerations such as efficiency. The writing group is currently working on the *S. aureus* section. For some subsections, the writing group may include a CDC SME for that specific pathogen. The general outline of the content that will be addressed for each pathogen subsection is as follows (the format is similar to the 1998 guideline; not all of the elements are relevant to every pathogen):

- Background/Epidemiology: pathogen, disease manifestations, transmission in healthcare settings, incubation period, period of communicability
- Information on preventing transmission and acquisition (e.g., link to recommended isolation precautions, vaccination)
- HCP screening and diagnosis
- Management of colonized, exposed, and infected HCP (e.g., post-exposure prophylaxis, work restrictions)
- Role of Occupational Health Services in outbreaks involving HCP

Focusing on the *S. aureus* section, the following are the general topics covered in the text of the 1998 guideline:

- Background
 - Description of MSSA/MRSA
 - Nosocomial transmission
 - Incubation periods (when relevant)
- Colonization of HCP
 - Body sites of colonization
- Screening to detect colonized HCP
- Decolonization
- Work restrictions

Some pathogen subsections may not require a systematic literature review to update the topic sufficiently, for instance, when a credible source can provide rates of pathogen colonization. For other pathogens, critical questions will be identified that are not addressed by recent federal guidance or another credible source. A systematic literature review will then be conducted to address such questions. GRADE will not be used to evaluate the evidence; these questions are intended to inform updates to the text, and in some cases the recommendations, of each section. The five questions for the *S. aureus* section are:

- In healthcare settings without a concurrent MSSA/MRSA outbreak or transmission between patients, patients and HCP, or HCP to HCP:
 - Q1: For HCP with laboratory-confirmed MSSA/MRSA infection, which interventions reduce MSSA/MRSA infections or colonization among patients and/or other HCP?

- Q2: For asymptomatic HCP, does screening for MSSA/MRSA colonization lead to implementing interventions that prevent MSSA/MRSA infections or colonization among patients and/or other HCP?
- In healthcare settings with a concurrent MSSA/MRSA outbreak or transmission between patients, patients and HCP, or HCP to HCP:
 - Q3: For HCP with laboratory-confirmed MSSA/MRSA infection, which interventions reduce MSSA/MRSA infections or colonization among patients and/or other HCP?
 - Q4: For MSSA/MRSA colonized HCP, which interventions reduce MSSA/MRSA infections or colonization among patients and/or other HCP?
- Q5: For asymptomatic HCP, which anatomic sites of MSSA/MRSA colonization have the highest risk of transmission to patients and/or other HCP?

Question 5 is intended to identify sites of colonization that might differ from other populations to inform screening sites for HCP, and perhaps informing when and how work restrictions are implemented.

A systematic literature review has been conducted for the *S. aureus* section. The review included non-US literature. Approximately 4000 relevant articles were identified, of which 460 were selected for full text review, which is in progress. Once completed, the data will be evaluated and the section will be updated. The next sections the writing group plans to tackle include:

- Measles, concurrently with mumps and rubella due to the Measles, Mumps, Rubella (MMR) vaccine cluster
- Pertussis, concurrently with diphtheria due to the Tetanus, Diphtheria, and Pertussis (Tdap) vaccine cluster

Dr. Kuhar invited feedback from HICPAC on the following questions pertaining to the *S. aureus* section:

- Should any questions be modified or removed?
- Are important topics missing that should be addressed with additional questions?

Discussion Points

Healthcare Settings Without a Concurrent MSSA/MRSA Outbreak or Transmission

- Q1 seems too open-ended. An alternative to make it more specific would be to ask, “For HCP with laboratory-confirmed infection, do work restriction and decolonization reduce the risk of transmission?”

The writing group discussed the structure of this question and whether it would be better to call out in advance the interventions that are thought to have the best possibility for being found effective or not effective. However, the population and outcomes are narrow, and the question is focused in this setting on transmission between HCP and patients. The group felt it would be better to keep the narrow population and look for any helpful interventions. Even with the broader question, it is anticipated that the evidence will show a few interventions for which there are enough data to make a recommendation. If the review yields another intervention that is better, the group wants to ensure that it is captured.

- In many situations, it may not be known whether there is a concurrent MSSA/MRSA outbreak or transmission. In a facility that employs a large number of people, this could be a financial burden.

The goal of this question was to assess any role for prospective screening and prospective management of clinically infected HCP in the absence of an outbreak, compared to in an outbreak setting.

Healthcare Settings With a Concurrent MSSA/MRSA Outbreak or Transmission

- Q5 seems to be a part of Q3 and Q4.

The writing group clarified that questions arise in occupational health services regarding whether it matters where someone is colonized (i.e., axilla but not nose, nose but not on hands) in terms of transmission risk, decolonization, and follow-up. There is likely not to be a great deal of data about this issue, but it is a question of interest.

- If an HCP is colonized in an outbreak setting, the HCP will not necessarily be colonized with the same strain as the outbreak strain. Therefore, strain identity is important. HCP should not be assumed to be the source. New typing should be used, because older typing does not discriminate well between MRSA strains.
- It is important to remember and address that someone may be colonized, but may not shed unless he or she is ill.
- As with the previous overarching question about a situation without transmission occurring, this question assumes that a facility knows that transmission is occurring. Perhaps a question should be included that relates to the types of molecular epidemiology techniques that should be used to investigate whether transmission is occurring. That step seems to precede the question of what to do about transmission. This is a practical issue for microbiology departments, IPs, and occupational health.

The writing group can consider how to structure this point. There is a great deal of variability in the literature regarding how an outbreak is defined. It is not clear that this guideline should make a recommendation about the way to define a clinical outbreak and the molecular techniques for identifying an outbreak. Often, occupational health is informed of an outbreak and then tasked with managing HCP. This perspective and role is different from the infection prevention perspective. Historically, the recommendation has been framed such that the occupational health service response differs depending upon whether there is an outbreak or not. Screening HCP is really only considered in the latter setting.

- This question is important, but it may be outside the scope of this document.
- The relationship between infection prevention and occupational health services in a facility was addressed in the Guideline section about the design of a program. That section could be an opportunity to address possible ways for an outbreak to be identified. In some cases, only one IP may address all aspects of these situations.

The writing group has received feedback regarding being cognizant of smaller hospitals and smaller settings, in which there may be a separated system, or one person may make all

decisions about whether there is an outbreak and what to do about HCP. The group will further consider this issue.

Public Comment

Scott Augustine, MD
Chief Executive Officer
Augustine Temperature Management, LLC

Dr. Bell called attention to Dr. Augustine's report that was submitted to HICPAC and is included for the record. Dr. Bell clarified that while the statement indicates that Dr. William Jarvis is a CDC expert, he has not been with CDC for some time.

Public comment for the July 2017 HICPAC Meeting

Scott Augustine MD, CEO, Augustine Temperature Management LLC

CDC expert recommends Bair Hugger® recall

CDC and FDA expert Dr. William Jarvis on Bair Hugger® safety: "The data I have presented demonstrates that the Bair Hugger FAWs [forced-air warming], to a reasonable degree of medical certainty, cause or substantially contribute to SSIs in PJI [periprosthetic joint infection] patients. For this reason, it is my opinion that the use of such devices should be abandoned or used only in low risk surgeries not involving implant patients." "The Bair Hugger FAWs are very, very similar to the HCU's [Heater-Cooler Units]"

Dr. Jarvis is the chairman of the Food and Drug Administration's (FDA's) General Hospital and Personal Use Committee. He has worked in various leadership roles at the CDC in Atlanta, GA for 23 years, focusing on the investigation and prevention of infectious diseases. He received the CDC's Lifetime Scientific Achievement Award.

3M is involved in mass tort litigation alleging that Bair Hugger® patient warming causes implant infections. Videos demonstrating this phenomenon can be seen at [Hot Dog Warming](http://hotdogwarming.com/safer/) (<http://hotdogwarming.com/safer/>). The plaintiffs have retained William Jarvis MD as a scientific and medical expert. His scholarly report of his investigation can be down-loaded at [Bair Hugger Litigation Update](http://bairhuggerlitigationupdate.org/) (<http://bairhuggerlitigationupdate.org/>).

Key Findings: (The following are direct quotes, excerpted from Dr. Jarvis' report.)

*** "The Bair Hugger FAWs are very, very similar to the HCU's...In my medical opinion, the mechanism of infection with the Bair Hugger FAWs is virtually identical to that documented with the HCU's." (P. 23, emphasis added)

*** "...the excess heat produced by the Bair Hugger FAW can circulate microbial contaminants below the OR table into the "sterile" surgical field." (P.16)

*** "In summary, having applied the methodological "gold standard" approach which I used in my work for the CDC, I have come to the conclusion that given the characteristics of Bair Hugger FAWs, that they more likely than not to a medical degree of certainty are associated with SSIs in PJI patients. The data to support this conclusion include:

- 1) particulate levels are correlated with microbial burden (i.e., CFUs) and both are correlated with SSI risk;
- 2) the Bair Hugger FAWs do not have HEPA filtration and have been found to be internally contaminated with pathogenic organisms;
- 3) studies show that air can circumvent the filtration by passing around the filter;

- 4) the intake OR air is not sterile;
- 5) the intake hose, internal FAW device, exhaust or outtake hose have all been shown to commonly be contaminated at >90% levels with common skin organisms;
- 6) this contaminated air is exhausted in a blanket adjacent to the sterile surgical field;
- 7) the Bair Hugger FAW blanket has been shown to not be a “secondary filter” and has permitted soot from a burning FAW engine to exhaust soot onto a patient; and
- 8) the excess or waste heat from the Bair Hugger FAWs is released and causes convection currents under the operating table and thus would bring squames and other contaminants from the floor up and into the “sterile surgical field.”

The data I have presented demonstrates that the Bair Hugger FAWs, to a reasonable degree of medical certainty, cause or substantially contribute to SSIs in PJI [periprosthetic joint infection] patients. For this reason, it is my opinion that the use of such devices should be abandoned or used only in low risk surgeries not involving implant patients.”^(P. 25)

Conflict of interest disclosure: Dr. Augustine is the inventor of both Bair Hugger® forced-air warming and air-free HotDog® electric warming products. Dr. Augustine has a financial interest in ATM, the manufacturer of HotDog warming.

Ms. Helen Haskell
Mothers Against Medical Error (MAME)
South Carolina and Georgia

Ms. Haskell indicated that she has worked with CU on this since almost the beginning on passing infection disclosure information in the states. She shared several general comments that came to her over the past couple of days:

- She is concerned about CRE and other resistant organisms and feel that they are getting away from us in a way they hoped they would not. CDC has been very good and involved in a lot of ways in terms of how this is presented to the public and HCP on the CDC website and to HCP. She urged CDC to keep this in front of the public, because if there is not public awareness, it will not be possible to mitigate this risk.
- Diagnosis and early recognition of infections also are important. She has not seen this as a focus of CDC, but in almost every case in which there are disastrous consequences, there has been failure to recognize. That is very common in primary care and EDs. Perhaps CDC could develop tools and raise awareness about this among HCP in general and members of the public.
- In terms of NHSN, Ms. Haskell stressed the importance of consumer activism and supported the idea of the CDC having a patient advisory council of some type. This would be a major step forward.
- Caution should be used with risk adjustment in terms of being clear to the public and HCP who need to work with these data. If validation is not done outside of the reporting healthcare facility, it should be, perhaps there needs to be a more rigorous means of validation.
- Regarding HCP colonization, the health consequences for the HCP and their contacts with the community should be addressed in addition to the risk to patients. One-sixth of the economy is now working in healthcare, which is an enormous factor in terms of the public.

Dr. Kevin Kavanagh

Health Watch USA

Dr. Kavanagh commented on HCP colonization and screening. HICPAC must realize that “no outbreak” does not equate to “no transmission.” An outbreak is defined as being above a baseline. Theoretically, if a hospital has 100 infections each day every day of the year for five years, that would be their baseline and there is no outbreak. This needs to be quantitated. HCP colonization is a major problem. CDC has on its website that the general population has a 10% carrier rate of MRSA. It makes sense that an HCP in a higher risk setting is going to have a higher carrier rate than that. One of the things that was missing from this discussion was a review of the literature of what the carrier rates are in HCP. From what he could recall from scattered reports, the carrier rates are around 5%. The endemic carrier rate is important information to have before making a decision on screening of HCP. If they are colonized, they should be identified because they are taking care of sick, compromised patients who have a reduced ability to fight infection. Above all, they should be identified and cleaned of MRSA carriage, even above that of the general population. This is a very important issue. To Mr. Kavanagh, it is unconscionable to say it is an economic issue. HCP are screened annually for TB and are given influenza vaccinations, and surgeons are vaccinated against hepatitis. Because MRSA is heavily outbreak-dependent, CDC should move away from the baseline and quantitate how many infections constitute an outbreak. Healthcare safety must be treated as being of paramount importance to the safety of HCP and patients.

Mr. Christian Lillis

Co-Founder

Peggy Lillis Foundation

Mr. Lillis said it interesting to hear the history of NHSN, which he did not previously know, as well as the robust growth associated with NHSN. He also affirmed the many comments about risk adjustment, primarily because he was a fundraiser for a hospital in New York for many years. While he appreciates the importance of reputation, people who run hospitals are overly sensitive to the sense that that may be harmful to their reputation. There are now only four healthcare systems in New York that own everything. If one of them is doing a bad job, people do not have a lot of choice as to where they are going to end up anyway. This makes having these data available to patients even more important, because their choices may be limited. Patients who are poor, elderly, and geographically isolated do not have a lot of choice. Thus, the reputational harm issue is overstated and is not having the effect on patient choice that would be expected. It would be wonderful if the SIR could be translated into a rating system of some sort that makes sense. The Leapfrog Group and others are sometimes criticized for their rating systems, but as a patient advocate, trying to help people use this knowledge, it is not a useful tool for consumers and patients. Something like a restaurant guide rating restaurants A to Z might be more useful. He also agreed that HICPAC should include patients as a part of the group. Patient advocates are experts in their own right. While they may have a different set of expertise and their expertise may come from a different source and often is not expertise that they want, it feels like patient advocates are being minimized in that sense. With all due respect to the amazing job that particularly Dr. Cardo and DHQP have done to include patient advocates more over the past five years, it is important to consider expertise that may not be clinical that goes beyond just representing a voice.

Ms. Lori Nerbunne

Nurse Patient Advocate Specialist

Winchester Hospital in Massachusetts

Presenting on Behalf of CU's Safe Patient Project

Ms. Nerbunne has been involved with CU since 2004, when her mother died from a series of complications after surgery, one of which was post-surgical sepsis. She attended HICPAC four

years ago, and emphasized the progress that has been made since that time. When her mom got her infection, infections in the ICU in hospitals were just an inevitable consequence of being in a hospital. They were told that people get infections and there were no more answers. When she attended HICPAC four years ago, she also asked Dr. Bell if they could include nursing at the table. She expressed her gratitude for the inclusion of two representatives from nursing, who are the frontline caregivers who need to be included in this conversation. After listening for the past couple of days, Ms. Nerbunne prepared a list of items she wanted to ask of this group, who she sees as stewards of preventing hospital-acquired infections, with a wealth of expertise and knowledge. The list follows:

- Cost must be considered in this conversation. The emotion and physical costs are known, but there is also an incredible financial burden to patients. The last statistic she read indicated that it costs \$38,000 for one infection. Collectively, that is a part of the national burden in the healthcare system. It affects employers, employees, municipalities, teachers, bus drivers. Any kind of burden added in terms of complications adds to that total national burden. The addition of a financial analyst to HICPAC would be beneficial in terms of helping them understand what this is costing. It is costing patients a great deal. She had a patient two weeks ago who has a septic shoulder, who was distraught knowing that she is going to be out of work for at least an additional eight weeks and going home with a peripherally-inserted central catheter (PICC) line and antibiotics.
- Ms. Nerbunne's state mandates that all hospitals have Patient Family Advisory Councils (PFACs). This is spreading to other states. Patients have valuable information to share. She suggested that CDC think about developing a Patient family Advisory Council (PFAC) that works in concert with HICPAC groups. It is exciting to hear that HICPAC is going to have an NHSN Workgroup. She met with their two infection control nurses before coming to HICPAC. Their ask of HICPAC is to think about included primary care providers (PCPs). Hospitals now have Hospitalists, so patient's PCPs are distanced from a lot of this even though they are the frontline providers for testing patients for MRSA, MRSA colonization conversations, and educating patients about what to expect when they go to the hospital. Nurses say patients do not even understand that they have MRSA or are carriers when they come into the hospital. PCPs also must be included in education regarding healthcare-associated infection reduction.
- Mention was made the previous day about including healthcare communication experts for communication of recommendations, NHSN data, and other information that is communicated to patients and healthcare providers. Ms. Nerbunne's hospital involves everyone in its prevention meetings, including environmental services staff and everyone else who is a stakeholder in preventing infections. Anything that can be done to make HICPAC guidelines more literate for everybody would be great.

Summary and Work Plan

Dr. Diekema thanked HICPAC members, *ex officios*, and liaison representatives for their hard work and contributions to this productive meeting. In addition, he thanked HICPAC's CDC colleagues for facilitating HICPAC so that they can contribute to the effort to keep patients safe. In particular, he thanked Erin Stone and Kendra Cox for the amazing amount of logistical support that they continue to provide to make these meetings possible. HICPAC has a lot of work that will be ongoing between now and the next meeting. The next meeting will be

convened on November 8-9, 2017. Because of the Veteran's Day holiday, this is a Wednesday and Thursday rather than a Thursday and Friday, so everyone should plan accordingly.

Adjourn

With no additional comments or questions posed, the meeting adjourned at 11:40 am.

Certification

I hereby certify that, to the best of my knowledge and ability, the foregoing minutes of the July 13-14, 2017 meeting of the Healthcare Infection Control Practices Advisory Committee, CDC are accurate and complete.

Date

Daniel Diekema, MD
Co-Chair, Healthcare Infection Control Practices
Advisory Committee, CDC

Date

Deborah Yokoe, MD, MPH
Co-Chair, Healthcare Infection Control Practices
Advisory Committee, CDC

Attachment #1: Acronyms Used in this Document

Acronym	Expansion
AAO-HNS	American Academy of Otolaryngology-Head and Neck Surgery
AAP	American Academy of Pediatrics
ACA	(Patient Protection and) Affordable Care Act
ACIP	Advisory Committee on Immunization Practices
ACOEM	American College of Occupational and Environmental Medicine
AEH	America's Essential Hospitals
AHA®	American Hospital Association®
AHRQ	Agency for Healthcare Research and Quality
<i>AJMAJIC</i>	<i>American Journal of Infection Control</i>
AMA	American Medical Association
ANA	American Nurses Association
AORN	Association of periOperative Registered Nurses
APIC	Association of Professionals of Infection Control and Epidemiology
AR	Antibiotic Resistance
AR Lab Network	Antibiotic Resistance Laboratory Network
ARSTF	Antimicrobial Resistance Surveillance Task Force
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASM	American Society for Microbiology
ASTHO	Association of State and Territorial Health Officials
BSI	Bloodstream Infection
<i>C. auris</i>	<i>Candida auris</i>
<i>C. diff</i>	<i>Clostridium difficile</i>
CARB	Combating Antibiotic-Resistant Bacteria
CAUTI	Catheter-Associated Urinary Tract Infection
CDC	Centers for Disease Control and Prevention
CDI	<i>Clostridium difficile</i> Infection
CDPH	California Department of Public Health
CEO	Chief Executive Officer
CFU	Colony Forming Units
Chicago PROTECT	Providing Regional Organizations with TEchniques to ConTrol MDROs
CLABSI	Central Line-Associated Bloodstream Infection
CMS	Centers for Medicare and Medicaid Services
CMV	Cytomegalovirus
CORHA	Council for Outbreak Response: Healthcare-Associated Infections and Antibiotic-Resistant Pathogens
CP-CRE	Carbapenemase Producing Carbapenem-Resistant <i>Enterobacteriaceae</i>
CPHO	Chief Public Health Officer
CRE	Carbapenem-Resistant <i>Enterobacteriaceae</i>
CRPA	Cefepime-Resistant <i>Pseudomonas Aeruginosa</i>
CSTE	Council of State and Territorial Epidemiologists
CU	Consumers Union
CUSP	Comprehensive Unit-based Safety Program
DES	Discrete Event Simulations
DFO	Designated Federal Official
DHQP	Division of Healthcare Quality Promotion

Acronym	Expansion
DoD	Department of Defense
<i>E. coli</i>	<i>Escherichia coli</i>
EHR	Electronic Health Record
EIP	Emerging Infections Program
EPA	Environmental Health Protection Agency
ERIB	Epidemiology Research and Innovations Branch
FDA	(United States) Food and Drug Administration
FMT	Fecal Microbiota Transplant
GLC	Guidelines Committee
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HAI	Healthcare-Associated Infection
HBV	Hepatitis B Virus
HCP	Healthcare Personnel
HCV	Hepatitis C Virus
HCW	Healthcare Worker
HHS	(United States Department of) Health and Human Services
HICPAC	Healthcare Infection Control Practices Advisory Committee
HIIN	Hospital Improvement Innovation Networks
HPC	Heterotrophic Plate Count
HRET	Health Research & Educational Trust
HRSA	Health Resources and Services Administration
ICU	Intensive Care Unit
IDSA	Infectious Diseases Society of America
IP	Infection Preventionist
IT	Information Technology
<i>JHM</i>	<i>Journal of Hospital Medicine</i>
JHU	Johns Hopkins University
KPC	<i>Klebsiella Pneumoniae</i> Carbapenemase
LabID	Laboratory-Identified Event Reporting
LTCF	Long-Term Care Facility
MAME	Mothers Against Medical Error
MAUDE	Manufacturer and User Facility Device Experience
MBQIP	Medicare Beneficiary Quality Improvement Project
MDRO	Multidrug-Resistant Organism
MMR	Measles, Mumps, Rubella
MOU	Memorandum of Understanding
MRI	Magnetic Resonance Imaging
MRSA	Methicillin-Resistant <i>Staphylococcus aureus</i>
MSSA	Methicillin-Susceptible <i>Staphylococcus aureus</i>
MT	Microbiota Transplantation
NACCHO	National Association of County and City Health Officials
NANN	National Association of Neonatal Nurses
NCEZID	National Center for Emerging and Zoonotic Infectious Diseases
NCIRD	National Center for Immunization and Respiratory Diseases
<i>NEJM</i>	<i>New England Journal of Medicine</i>
NHS	National Health Service
NHSN	National Healthcare Safety Network
NICE Network	Nursing Infection Control Education Network

Acronym	Expansion
NICU	Neonatal Intensive Care Unit
NIH	National Institutes of Health
NNIS	National Nosocomial Infections Surveillance System
NTM	Non-Tuberculous Mycobacteria
NYU	New York University
ODE	Ordinary Differential Equation Models
ONC	Office of the National Coordinator for Health Information Technology
OR	Operating Room
ORTP	Outbreak Response Training Program (SHAE)
PAC-CARB	Presidential Advisory Council on Combating Antibiotic Resistant Bacteria
PCR	Polymerase Chain Reaction
PFAC	Patient Family Advisory Council
PHAC	Public Health Agency of Canada
PICC	Peripherally-Inserted Central Catheter
PICO(T)	Patient/Problem, Intervention, Comparison, Outcome (Type)
PIDS	Pediatric Infectious Disease Society's
PJI	Periprosthetic Joint Infection
PLF	Peggy Lillis Foundation
PPHF	Prevention and Public Health Fund
PPI	Proton Pump Inhibitors
RCT	Randomized Controlled Trial
RSV	Respiratory Syncytial Virus
SAGE	(WHO) Strategic Advisory Group of Experts
SCCM	Society of Critical Care Medicine
SDWA	Safe Water Drinking Act
S-FAR	Stakeholder Forum on Antimicrobial Resistance
SHEA	Society for Healthcare Epidemiology of America
SHEPheRD	Safe Healthcare, Epidemiology, and Prevention Research Development
SHIELD-OC	Shared Healthcare Intervention to Eliminate Life-threatening Dissemination of MDROs in Orange County
SHM	Society of Hospital Medicine
SIR	Standardized Infection Ratio
SIRS	Systemic Inflammatory Response Syndrome
SME	Subject Matter Expert
SNA	Social Network Analysis
SSC	Surviving Sepsis Campaign
SSI	Surgical Site Infection
SXSW	South by Southwest
TAP	Targeted Assessment for Prevention
TB	Tuberculosis
Tdap	Tetanus, Diphtheria, and Pertussis
THA	Total Hip Arthroplasty
TKA	Total Knee Arthroplasty
UCI	University of California Irvine
UDI	Unique Device Identification
UK DH	United Kingdom Department of Health
US	United States
VA	(United States Department of) Veterans Affairs

Acronym	Expansion
VON	Vermont Oxford Network
VRE	Vancomycin-Resistant <i>Enterococcus faecium</i>
VTE	Venous Thromboembolism
WGS	Whole Genome Sequencing
WHO	World Health Organization

Attachment #2: Liaison and Ex Officio Reports

Liaison Representative Report HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC) Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison name: Mark Russi, MD, MPH

Organization represented: American College of Occupational and Environmental Medicine

Interim activities and updates:

- At the ACOEM national meeting in Denver, CO, April, 2017, a one-day course was held to update medical center-based OEM physicians on new developments and review the provision of health, safety and wellness services for healthcare workers. ACOEM issued its Guidance for Occupational Health Services in Medical Centers in April 2017 as well. The document is intended as a practical guide for occupational medicine physicians, addressing the broad range of workplace hazards experienced by healthcare workers.

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- Guidance for Occupational Health Services in Medical Centers 4/19/2017
- Global Trends in Occupational Medicine 3/15/2017
- Defining Documentation Requirements for Coding Quality Care in Workers' Compensation 12/12/2016
- Principles for Ensuring the Safe Management of Pain Medication Prescriptions by Occupational and Environmental Medicine Physicians 11/30/2016

Position Statements:

Recent Position Statements:

- The Personal Physician's Role in Helping Patients with Medical Conditions Stay at Work or Return to Work 6/12/17
- Advancing Value-Based Medicine: Why Integrating Functional Outcomes with Clinical Measures is Critical to our Health Care Future 4/14/2017
- Workplace Lead Exposure 12/12/2016

Legislation:

- ACOEM has issued statements within the last three months urging Congress to maintain NIOSH funding, and supporting a proposed OSHA Standard addressing workplace violence

Campaigns and related activities:

- None reported.

Press activities:**Recent Press Releases:**

- High Risk of Obstructive Sleep Apnea in Commercial Drivers 6/19/2017
- William C. Bruce Named Executive Director of the American College of Occupational and Environmental Medicine 6/8/2017
- Dr. Catherine Baase Receives Highest Honor in Occupational and Environmental Medicine 5/17/2017
- Traffic-Related Air Pollution Linked to DNA Damage in Children 5/11/2017
- What's Your Company Policy on E-Cigarettes? 4/13/2017
- Surveys Provide Employers' and Employees' Views on Wellness Programs 3/30/2017
- Supportive Leadership Linked to Lower Absenteeism/Presenteeism 2/22/2017
- Data-Driven Approach May Reduce Violence to Hospital Workers 1/17/2017
- Workplace Weight Management Lowers Costs, Improves Quality of Life 11/10/2016
- Occupational Fatigue—New Insights on Causes and Consequences 10/10/2016 (insert)

Publications:

- As above

Other items of note:**Recent Public Comments:**

- ACOEM Supports Proposed OSHA Standard to Prevent Workplace Violence 4/26/2017
- Congress Urged to Maintain NIOSH Funding for FY 2018 at FY 2016 Level 4/26/2017
- ACOEM Comments on Proposal to Include Qualified VA Physicians on National Registry 1/31/2017
- ACOEM Joins Coalition Urging Congress to Address Opioid Epidemic 12/6/2016
- ACOEM Asks Congress to Support Funding for the Comprehensive Addiction and Recovery Act 12/5/2016
- ACOEM Comments on Task Report on Insulin Treated Diabetes Mellitus and CMV Drivers 11/16/2016

**Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention**

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Elaine Dekker, BSN, CIC

Organization represented: America's Essential Hospitals

Interim activities and updates:

- Member hospital (and liaison representative), UCSF, finished its Patient Safety Survey this spring, to learn more from staff how they think we are doing in providing a safe all around experience for their patients.

Guidelines and Guidance:

- None reported.

Position Statements:

- **Administration's FY2018 Budget Proposal** – [press release and statement \(https://essentialhospitals.org/general/statement-on-the-administrations-fiscal-2018-budget-proposal/\)](https://essentialhospitals.org/general/statement-on-the-administrations-fiscal-2018-budget-proposal/) (May 23) by America's Essential Hospitals' CEO & President, Bruce Siegel, MD, stating in part:
 - "The magnitude of cuts to health care programs and agencies in this budget would undermine important work to protect communities of all stripes from existing and emerging health threats, such as opioid addiction, infectious diseases, and chronic conditions. The cuts would limit research, putting lifesaving therapies farther out of reach, and drive hospitals and other providers to scale back basic and specialized services."

Legislation:

- None reported.

Campaigns and related activities:

- America's Essential Hospitals continues to be a partner organization in the U.S. Stakeholder Forum on Antimicrobial Resistance (S-FAR), convened by the Infectious Diseases Society of America (ISDA), to support the principles that antimicrobial resistance (AR) is an urgent problem and to work with stakeholders from all industries to help inform policy and create awareness.

Press activities:

- **World Hand Hygiene Day (May 5)** – America's Essential Hospitals participated in this year's World Hand Hygiene Day by calling our members' attention to CDC's Clean Hands Count campaign and new promotional video. We also engaged in social media and other communication through our website to encourage our members and the general public to engage in hand hygiene across settings.
- **Patient Safety Awareness Week (March 12-18)** – America's Essential Hospitals' staff participated in the Twitter chat hosted by CDC and National Patient Safety Foundation. The conversation was robust and provided participants with information about what patients want

and need to know to improve patient safety.

- Pushed information to members about CDC/Society for Healthcare Epidemiology of America (SHEA) Outbreak Response Training Program. Received very positive feedback from member hospitals' communication teams about Effective Communication Webinar Series, with many communication professionals registering for these events.
- America's Essential Hospitals actively promotes CDC information to our members via social media on timely topics such as antibiotic stewardship and opioid prescribing as well as continuing education opportunities such as recognizing infection risks in medical equipment. For this information and more, you can follow us on Twitter at @OurHospitals and on Facebook at www.facebook.com/essentialhospitals.

Publications:

- **Zika** – America's Essential Hospitals continues to maintain its [online Zika resource page \(https://essentialhospitals.org/zika-virus-resources-essential-hospitals/\)](https://essentialhospitals.org/zika-virus-resources-essential-hospitals/) for its member hospitals and others with an interest in this emerging health crisis. This resource page is updated regularly with new information, including materials provided by the CDC related to clinicians, infants, pregnant women, and travel. Essential hospitals provide a significant volume of public health and emergency preparedness services and stand ready to support the nation's response to Zika.

Other items of note:

- None reported.

Ex Officio Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Ex officio member name: Melissa A. Miller, MD, MS

Agency represented: Agency for Healthcare Research and Quality

Interim activities and updates:

National Action Plan for Combating Antibiotic-Resistant Bacteria (CARB)

AHRQ continues to support research and implementation projects to develop improved methods and tools to combat antibiotic resistance in all three domains:

1. Promoting antibiotic stewardship;
2. Preventing transmission of resistant bacteria; and
3. Preventing healthcare-associated infections in the first place.

These projects are combating antibiotic resistance in multiple healthcare settings: acute care hospitals, long-term care, and ambulatory care.

AHRQ has reviewed the first two rounds of applications to 2 new CARB-specific FOAs for R01 and R18 applications, in addition to our renewed HAI prevention FOAs. The CARB FOAs have stimulated research grant applications in all 3 CARB domains.

AHRQ Safety Program for Improving Antibiotic Use

The AHRQ Safety Program for Improving Antibiotic Use is funded and guided by AHRQ, and led by Johns Hopkins University and NORC at the University of Chicago. This is a 5-year nationwide project aimed at adapting CUSP for implementation of Antibiotic Stewardship in at least 250 acute care hospitals, 250 long-term care facilities, and 250 ambulatory care settings (i.e. clinics, physician's offices, and urgent care centers). We anticipate that the project will significantly increase antibiotic stewardship in these settings. This is a collaborative effort, incorporating CDC Core Elements of Antibiotic Stewardship, coordination with CDC and CMS, and likely participation by DoD. An evidence review has been completed, and a pilot period has been launched, occurring in 3 integrated delivery systems with participation of all 3 healthcare settings. The project has begun recruiting for an acute care hospital cohort which will begin in December 2017.

AHRQ Safety Program for Improving Surgical Care and Recovery

The AHRQ Safety Program for Improving Surgical Care and Recovery, a collaborative program to enhance the recovery of surgical patients, is a program funded and launched by AHRQ that is being conducted by Johns Hopkins University with partners including the American College of Surgeons. The program aims to use an adaptation of CUSP to improve patient outcomes by increasing the implementation of evidence-based enhanced recovery practices in hospitals. Enhanced recovery pathways include preoperative, intra-operative, and postoperative practices that can decrease complications, including surgical site infections, and accelerate recovery. This 5-year project aims for implementation in 750 hospitals nationwide, focusing on a variety of surgeries in a phased approach. Recruitment is currently ongoing for the first cohort of hospitals.

AHRQ Safety Program for ICUs with Persistently Elevated Rates of CLABSI/CAUTI

Initiated in September 2015, this 2.5 year project aims to reduce central-line associated bloodstream infections (CLABSI) and catheter-associated urinary tract infections (CAUTI) in intensive care units with persistently elevated rates of these infections in 4 HHS regions. This is a follow-up to AHRQ's nationwide projects of CUSP for CAUTI and CUSP for CLABSI. Implementation strategies tailored to this group are being developed, including a modified set of CUSP training resources. Thus far, over 300 ICUs have been recruited and are participating. A request for task order has been released to expand this project nationwide.

Guidelines and Guidance:

AHRQ Nursing Home Antimicrobial Stewardship Guide

AHRQ is widely disseminating its implementation guide for antibiotic stewardship in nursing homes, initially launched in October 2016. The guide is based on tools from four previous AHRQ-supported studies of stewardship in nursing homes and includes 4 sets of toolkits: 1.) how to create an Antibiotic Stewardship Program, 2.) how to determine whether to treat with antibiotics, 3.) how to choose the right antibiotic, 4.) how to engage residents and families. The guide was presented at ID Week in October and in March at the annual conference of AMDA—the Society for Post-Acute and Long-Term Care Medicine. The guide is available on the AHRQ website at [AHRQ Antimicrobial Stewardship Guide \(https://www.ahrq.gov/nhguide/index.html\)](https://www.ahrq.gov/nhguide/index.html).

AHRQ Safety Program for Long-Term Care: Preventing CAUTI and Other HAIs

AHRQ has completed this 3-year project, which applied CUSP to reduce catheter-associated urinary tract infections (CAUTI) and other HAIs in long term care facilities by adapting CUSP to this setting and by promoting broad implementation in more than 500 long-term care facilities across the United States. The project achieved an approximately 50% decrease in CAUTI rates. A toolkit developed from the project which helps long-term care (LTC) facilities reduce CAUTI and improve practices to prevent HAIs is available on the AHRQ website at [AHRQ Toolkit \(https://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/cauti-ltc/index.html\)](https://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/cauti-ltc/index.html).

AHRQ Safety Program for Mechanically Ventilated Patients

AHRQ has completed this 3-year project, which applied CUSP to increase the safety of mechanically ventilated patients by reducing ventilator-associated complications, including ventilator-associated pneumonia, through promoting use of a set of evidence-based practices in these patients. The project recruited 255 units in 200 hospitals across 34 states, Puerto Rico, and Saudi Arabia. An educational toolkit produced from the project was launched in January 2017 and is available on the AHRQ website at [AHRQ Educational Toolkit \(https://www.ahrq.gov/professionals/quality-patient-safety/hais/tools/mvp/index.html\)](https://www.ahrq.gov/professionals/quality-patient-safety/hais/tools/mvp/index.html).

AHRQ Safety Program for Ambulatory Surgery

AHRQ has completed this 4-year project, which applied CUSP to improve safety and reduce complications including surgical site infections in ambulatory surgery centers. The project recruited 665 centers in 46 states including one cohort specifically focused on endoscopy centers. An educational toolkit produced from the project was launched in May 2017 and is available on the AHRQ website at [AHRQ Educational Toolkit \(https://www.ahrq.gov/professionals/quality-patient-safety/hais/tools/ambulatory-surgery/index.html\)](https://www.ahrq.gov/professionals/quality-patient-safety/hais/tools/ambulatory-surgery/index.html).

Position Statements:

- None reported

Legislation:

- None reported

Campaigns and related activities:

- None reported

Press activities:

A press release on May 19 reported rates of catheter-associated urinary tract infections dropped by 54 percent in nursing homes that participated in the AHRQ Safety Program for Long-Term Care. The study was published in JAMA Internal Medicine.

Publications:

Selected AHRQ-funded publications:

Albrecht JS, Croft L, Morgan DJ, Roghmann MC. Perceptions of Gown and Glove Use to Prevent Methicillin-resistant Staphylococcus aureus Transmission in Nursing Homes. *J Am Med Dir Assoc.* 2017 Feb 1;18(2):158-161. PMID:27687079

Deshpande, A., Cadnum, J. L., Fertelli, D., et al. Are hospital floors an underappreciated reservoir for transmission of health care-associated pathogens? *Am J Infect Control*, 2017 45(3), 336-338. doi:10.1016/j.ajic.2016.11.005 PMID: 28254251

Mody, L., Greene, M. T., Saint, S., et al. Comparing Catheter-Associated Urinary Tract Infection Prevention Programs Between Veterans Affairs Nursing Homes and Non-Veterans Affairs Nursing Homes. *Infect Control Hosp Epidemiol*, 2017. 38(3), 287-293. PMID: 27917728

Mody, L., Greene, M. T., Meddings, J., et al. A National Implementation Project to Prevent Catheter-Associated Urinary Tract Infection in Nursing Home Residents. *JAMA Intern Med.* Epub May 2017. PMID: 28525923

Nuckols, T. K., Keeler, E., Morton, S. C., et al. Economic Evaluation of Quality Improvement Interventions for Bloodstream Infections Related to Central Catheters: A Systematic Review. *JAMA Intern Med*, 176(12), 1843-1854. PMID: 27775764

Pierce R, Lessler J, Popoola VO, Milstone AM. Methicillin-resistant Staphylococcus aureus (MRSA) acquisition risk in an endemic neonatal intensive care unit with an active surveillance culture and decolonization programme. *J Hosp Infect.* 2017 Jan;95(1):91-97. PMID:27887754

Rawat, N., Yang, T., Ali, K. J., et al. Two-State Collaborative Study of a Multifaceted Intervention to Decrease Ventilator-Associated Events. *Crit Care Med*, 45(7), 1208-1215. PMID: 28448318

Sexton DJ, Moehring RW. Implementation of Antimicrobial Stewardship Programs in Small Community Hospitals: Recognizing the Barriers and Meeting the Challenge. *Clin Infect Dis.* 2017 May 2. [Epub ahead of print] PMID:28472293

Other items of note:

- None reported

**Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention**

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Sharon A. Morgan, MSN, RN, NP-C

Organization represented: American Nurses Association (ANA)

Interim activities and updates:

- ANA and the Centers for Disease Control and Prevention (CDC) have recently partnered with 20 nursing specialty organizations to develop the **Nursing Infection Control Education Network (NICE Network)**. As part of a two year contract, the goal of the training programs developed through the NICE Network is to improve adherence to infection prevention and control practices and enhance the confidence of nurses to care for patients with highly contagious diseases, such as was experienced with Ebola.
- ANA/CDC joint project to articulate nurses' role in antibiotic stewardship. Products to include a joint white paper, and web-based resources and toolkits.
- **ANA/APIC (Association for Professionals in Infection Control and Epidemiology) Resource Center:** Following the Ebola crisis, ANA and APIC recognized gaps among healthcare professionals in emergency preparedness. Through the efforts of the ANA/APIC Working Group, key infection prevention areas were identified and resources consolidated to allow healthcare professionals quick and ready access to infection prevention strategies and evidence-based practices.
- **ANA Immunize:** web-based platform consolidating immunization resources including education, research, policy and clinician tools.

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- [NICE Network](http://www.nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/InfectionPreventionControlEducation) (<http://www.nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/InfectionPreventionControlEducation>)
- [ANA/APIC Resource Center](http://www.nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/ANA-APIC/default.aspx) (<http://www.nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/ANA-APIC/default.aspx>)
- [ANA Immunize](http://www.nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/ANA-Immunize) (<http://www.nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/ANA-Immunize>)

Position Statements:

- Immunizations (7/21/15): [ANA Immunizations Position Statement](http://www.nursingworld.org/MainMenuCategories/Policy-Advocacy/Positions-and-Resolutions/ANAPositionStatements/Position-Statements-Alphabetically/Immunizations.html) (<http://www.nursingworld.org/MainMenuCategories/Policy-Advocacy/Positions-and-Resolutions/ANAPositionStatements/Position-Statements-Alphabetically/Immunizations.html>)
- Historical list of other relevant position statements can be found at: [ANA Position Statements](http://www.nursingworld.org/MainMenuCategories/Policy-Advocacy/Positions-and-Resolutions/ANAPositionStatements) (<http://www.nursingworld.org/MainMenuCategories/Policy-Advocacy/Positions-and-Resolutions/ANAPositionStatements>)

Legislation:

- n/a

Campaigns and related activities:

- n/a

Press activities:

- n/a

Publications:

- n/a

Other items of note:

- n/a

Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Amber Wood

Organization represented: AORN

Interim activities and updates:

- Nurse Executive Leadership Seminars, Spring 2017, Preventing Surgical Site Infections, 10 locations
- AORN Global Surgical Conference & Expo 2018, March 24-28, New Orleans, LA
 - Poster abstracts due September 22, 2017
- Prep for CNOR Live Events, July-November 2017, 13 locations
- Guideline Implementation Workshops, September-November 2017, 12 locations

Guidelines and Guidance:

- AORN guidelines are available in print and through electronic access. Information on how to obtain the guidelines can be found at [the AORN website \(http://www.aorn.org/\)](http://www.aorn.org/).
- Guidelines are posted for a 30-day public comment period at [AORN Public Comments Guidelines \(https://www.aorn.org/events/public-comments\)](https://www.aorn.org/events/public-comments).
- The 2017 *Guidelines for Perioperative Practice* include 5 new evidence-rated guidelines: Information Management, Hand Hygiene, Energy Devices, Surgical Smoke Safety, & Minimally Invasive Surgery
- Guidelines in development for 2018
 - Positioning: published electronically
 - Medication Safety: electronic release 9/1/17
 - Prevention of Venous Thromboembolism: public comment 6/20-7/20/17, electronic release 11/1/17
 - Medical Device and Product Evaluation: public comment August 2017
 - Team Communication: public comment August 2017
 - High Level Disinfection: public comment September 2017
 - Safe Patient Handling and Management: public comment December 2017

Position Statements:

- Available at [AORN Position Statements \(http://www.aorn.org/guidelines/clinical-resources/position-statements\)](http://www.aorn.org/guidelines/clinical-resources/position-statements)

Legislation:

- AORN legislative priorities for 2017 are RN as circulator, preserving and protecting the Perioperative Registered Nurse's scope of practice, supporting workplace safety and patient safety initiatives, and advancing positive health care improvements.
- Rhode Island legislation requiring surgical smoke evacuation passed House and Senate.

Campaigns and related activities:

- Surgical Smoke Safety. Go Clear Award recognizes health care facilities committed to a surgical smoke-free environment for their perioperative team and patients: [AORN Go Clear Award \(http://www.aorn.org/aorn-org/education/facility-solutions/aorn-awards/aorn-go-clear-award\)](http://www.aorn.org/aorn-org/education/facility-solutions/aorn-awards/aorn-go-clear-award)

Press activities:

- Recent AORN press releases can be accessed at [the AORN website \(http://www.aorn.org/\)](http://www.aorn.org/)

Publications:

- 2017 *Guidelines for Perioperative Practice*, AORN Journal, Perioperative Job Descriptions and Competency Evaluation, Perioperative Policies and Procedures, & Ambulatory Surgery Center Resources

Other items of note: n/a

**Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention**

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative Name: Darlene Carey, MSN RN CIC NE-BC FAPIC

Organization represented: Association for Professionals in Infection Control and Epidemiology (APIC)

Interim activities and updates:

- APIC Annual Conference in Portland, OR very successful with just under 5000 attendees and over 150 education sessions.

Guidelines and Guidance:

N/A

Position Statements:

N/A

Legislation/Regulation:

- Submitted joint testimony with SHEA to the House and Senate Labor-HHS Appropriations subcommittee in support of funding for infection prevention programs.
- APIC Public Policy Committee Lobby Day on Capitol Hill to support federal funding priorities.
- Joined 13 [coalition letters](https://apic.org/Advocacy/Federal-legislation) (<https://apic.org/Advocacy/Federal-legislation>) supporting Centers for Disease Control and Prevention funding, vaccinations, and efforts to combat the Zika virus.
- Engaged nearly 1,800 individuals to send letters to their Members of Congress to protect the Prevention and Public Health Fund and oppose the President's CDC budget for FY 2018.
- Submitted [comments to CMS on the FY2018 update to the Hospital Inpatient Prospective Payment System/Long-Term Care payment system \(IPPS/LTC\) proposed rule](https://apic.org/Resource/TinyMceFileManager/Advocacy-PDFs/IPPS_FY_2018_APIC_comments_-_final_6-5-17.pdf) (https://apic.org/Resource/TinyMceFileManager/Advocacy-PDFs/IPPS_FY_2018_APIC_comments_-_final_6-5-17.pdf).
- Provided input to CMS on Interpretive Guidance for revised requirements for Long-Term Care facilities.

Campaigns and related activities:

- International Infection Prevention Week will be celebrated October 15-21, 2017. The theme is Antibiotic Resistance. APIC will be developing an online toolkit and other resources to help promote the week, which will be located on this page: [APIC site](http://consumers.site.apic.org/iipw/) (<http://consumers.site.apic.org/iipw/>)

Press activities:

- Issued press releases to promote studies in the *American Journal of Infection Control*:
 - [A quarter of nursing home residents are colonized with drug-resistant bacteria](https://apic.org/For-Media/News-Releases/Article?id=063cdb1f-1ac9-477d-a768-1428e6e1c5ee) (<https://apic.org/For-Media/News-Releases/Article?id=063cdb1f-1ac9-477d-a768-1428e6e1c5ee>)
 - [Industry and occupation affect flu vaccination coverage](https://apic.org/For-Media/News-Releases/Article?id=7eb12b9c-ecb9-43a0-ac3a-0afadba6317) (<https://apic.org/For-Media/News-Releases/Article?id=7eb12b9c-ecb9-43a0-ac3a-0afadba6317>)
 - [Hospital floors may pose a larger health risk than previously thought](https://apic.org/For-Media/News-Releases/Article?id=c2b67550-abc5-4d5a-aa25-) (<https://apic.org/For-Media/News-Releases/Article?id=c2b67550-abc5-4d5a-aa25->)

- [2ed50b54cc6c\)](#)
- [Existing reprocessing techniques prove insufficient for flexible endoscopes](#) (<https://apic.org/For-Media/News-Releases/Article?id=33d39d06-6a7a-4d54-9fac-02688ce21120>)
- Issued press releases to promote data and awards presented at APIC 2017 Annual Conference:
 - [More than a third of heater-cooler devices used in open heart surgery may be contaminated with deadly bacteria](#) (<https://apic.org/For-Media/News-Releases/Article?id=cfa1fb1b-e399-46fa-82f4-9b18e71004f3>)
 - [VHA initiative significantly reduces MRSA in Veterans living centers](#) (<https://apic.org/For-Media/News-Releases/Article?id=ca255a09-d2dc-41bc-b813-0889e43c988d>)
 - [Cleaning and sterilization techniques leave ureteroscopes contaminated](#) (<https://apic.org/For-Media/News-Releases/Article?id=6bd5bff3-6a96-46bd-9c17-fa8f2f2ddb7f>)
 - [Significant gaps in infection prevention impact long-term care residents](#) (<https://apic.org/For-Media/News-Releases/Article?id=a4a7fc0f-dab5-40f4-9e30-4d94907875b4>)
 - [APIC 2017 Film Festival winner highlights hand hygiene as infection prevention tool](#) (<https://apic.org/For-Media/News-Releases/Article?id=efb8e46d-b3cc-4b9e-8858-3484e6df7c37>)
 - [APIC honors Florida infection prevention expert with its highest award](#) (<https://apic.org/For-Media/Announcements/Article?id=4b4eb761-c269-42df-a00a-b4889961def8>)
 - [Idaho hospital executive receives APIC's Healthcare Administrator Award](#) (<https://apic.org/For-Media/Announcements/Article?id=a58b5fc3-4078-4a60-ad97-845e9236b670>)
 - [Columbia University nursing professor, health policy expert, receives APIC's Distinguished Scientist Award](#) (<https://apic.org/For-Media/Announcements/Article?id=24c51638-99e3-4668-9ee3-40ad8a81c570>)
 - [California infection control professional to be honored for distinguished service](#) (<https://apic.org/For-Media/Announcements/Article?id=9ec341e5-da54-4987-aa85-cf2ba2e301a6>)
 - [APIC honors its 2017 Heroes of Infection Prevention](#) (<https://apic.org/For-Media/Announcements/Article?id=4add7d75-4be1-45c6-bb2d-956c2f169d09>)

Publications:

- Four articles analyzing data from the MegaSurvey were published in the June 2017 issue of *AJIC*. All are open access and may be retrieved at [the AJIC Journal site](http://www.ajicjournal.org/) (<http://www.ajicjournal.org/>)
 - 1) APIC MegaSurvey: Methodology and overview
 - 2) Understanding the current state of infection preventionists through competency, role, and activity self-assessment
 - 3) Infection prevention outside of the acute care setting: Results from the MegaSurvey of infection preventionists
 - 4) Infection prevention workforce: Potential benefits to educational diversity four additional articles will be published this fall.
- In the process of developing “IP’s guide to the OR”; working with contributors from AORN; expected completion toward end of 2017.

- Two articles are being developed to help IPs better understand and use the new CDC-HICPAC guidelines on SSI prevention; will be released this fall.
- *Prevention Strategist* Spring issue included articles on: Contaminated heater-cooler devices: CDC and FDA weigh in (cover story); Emergency preparedness and CMS; The new Joint Commission survey process; *C. difficile* elimination strategies. *Prevention Strategist* Summer issue included articles on: IPs front and center (cover theme); The IP's role in sepsis care; Endoscope reprocessing; Onboarding a novice IP; *Listeria monocytogenes*; Clean and sterile storage: issues with ventilation, pressure differential, and humidity.

Other items of note:

- *Industry Perspectives* (www.industryperspectives.com) continues to grow as companies in infection prevention and control participate in this dissemination platform by providing sponsored content. APIC created *Industry Perspectives* to help supplement IP clinical knowledge with best practices and evidence-based information related to infection prevention products, solutions, and services as generated by healthcare industry.
- APIC is working with the HRET and the CDC on several grants, including on the STRIVE project; APIC is also providing IPC training, including the LTC certificate, through several state departments of health grants.

**Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention**

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Emily Lutterloh, MD, MPH

Organization represented: Association of State and Territorial Health Officials (ASTHO)

Interim activities and updates:

- ASTHO continues to build on HAI prevention efforts by providing support to state health agencies, promoting sound public health policies, and building strong partnerships. ASTHO is working in collaboration with the CDC to develop tools and collect best practices relating to the detection, investigation, control and prevention of state healthcare-associated infections. Some products of these collaborations include:
 - Communications toolkit
ASTHO developed a communication toolkit for health departments that aims to enhance communication and coordination around HAIs and antibiotic resistance prevention and control. The toolkit, which was released in late December 2016, includes tips and tools to engage various audiences such as hospitals, facility support staff, and the media. Tools in the toolkit include: key messages and talking points, tips for working with the media, how to sustain the conversation around HAIs, and a social media guide. The toolkit is available on [ASTHO's website \(http://www.astho.org/Toolkit/Enhancing-HAI-Prevention-and-Outbreak-Response/\)](http://www.astho.org/Toolkit/Enhancing-HAI-Prevention-and-Outbreak-Response/).
- In addition, as a co-lead with the Council of State and Territorial Epidemiologists (CSTE) for the **Council for Outbreak Response: Healthcare-Associated Infection and Antibiotic Resistant Pathogens (CORHA)**, ASTHO continues to provide support to Council members and working groups to develop tools and products towards achieving its mission and vision. Later this fall CORHA will launch a website, which will house tools, resources, and information about the group's membership. An all-member meeting was held on May 4-5, 2017 in Atlanta, GA and another meeting is expected to take place in the fall of 2017.

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- In collaboration with CDC, ASTHO launched the [Healthcare and Infection Control Gateway, \(http://www.astho.org/healthcare-and-infection-control/\)](http://www.astho.org/healthcare-and-infection-control/), which aims to provide guidance to state health agencies on controlling and preventing HAIs.

Legislation:

- Ongoing: Real-time state infectious disease legislative tracking on ASTHO's website, available at [ASTHO State Legislative Tracking \(http://www.astho.org/state-legislative-tracking/\)](http://www.astho.org/state-legislative-tracking/).

Campaigns and related activities:

- ASTHO will showcase selected state success stories on HAI prevention and control as part of the organization's 75th Year Anniversary campaign.

Publications:

- ASTHO's HAI Publications are available at [the ASTHO website \(http://www.astho.org/Programs/Infectious-Disease/Healthcare-Associated-Infections/\)](http://www.astho.org/Programs/Infectious-Disease/Healthcare-Associated-Infections/).

Ex Officio Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Ex officio member name: Daniel Schwartz, MD

Agency represented: CMS

Interim activities and updates:

- None reported.

Guidelines and Guidance:

- None reported.

Position Statements:

- None reported.

Legislation:

- None reported.

Campaigns and related activities:

- None reported.

Press activities:

- None reported.

Publications:

- S&C 17-09-ALL Infection Control Pilot: 2017 Update
- S&C 17-30-ALL Requirement to Reduce Legionella Risk in Healthcare Facility Water Systems to Prevent Cases and Outbreaks of Legionnaires' Disease (LD)
- S&C: 17-31-ESRD End Stage Renal Disease (ESRD) Facilities: Filling Saline Syringes at the Patient Treatment Station
- S&C: 17-32-ESRD End Stage Renal Disease (ESRD) Facilities: Cleaning the Patient Station
- S&C 17-33-ESRD Infection Control: Clarification of Hepatitis C (HCV) Screening Exception

S&C memos are posted on the [S&C Website \(http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Policy-and-Memos-to-States-and-Regions.html\)](http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Policy-and-Memos-to-States-and-Regions.html)

Other items of note:

- None reported

Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Marion Kainer

Organization represented: Council of State and Territorial Epidemiologists

Interim activities and updates:

- **CSTE annual conference** was held June 4-8, 2017. Topics discussed included: antimicrobial resistance surveillance and antibiotic stewardship; outbreak and cluster investigations of MDROs and *Candida auris*, best practices for surveillance on antimicrobial resistance via ELR, public disclosure of healthcare facility outbreaks, development of a toolkit for drug diversion in healthcare settings, submission to the NHSN AU and AR module, NHSN data validation and identification of outbreaks using NHSN data.

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- **The Council for Outbreak Response: Healthcare Associated Infections and Antibiotic Resistant Pathogens (CORHA)** met in person in May 2017. A one-pager describing the mission, vision, membership can be found at the [CORHA website \(http://corha.org/\)](http://corha.org/).
 - The Council is co-chaired by CSTE and ASTHO; CDC, NACHO, APIC and SHEA are members of the Council. FDA and CMS liaisons participated in the in person meeting in May 2017. Two workgroups have formed and have work-plans. Several work products are being finalized and will be posted on the CORHA website within the next few months
 - CORHA Workgroup A (Outbreak Detection and Reporting) will:
 1. create standard definitions for outbreaks and exposure events and thresholds for reporting;
 2. improve reporting of outbreaks and exposure events to public health;
 3. improve the use of existing surveillance systems to detect outbreaks.
 - CORHA Workgroup B (Outbreak investigation and control) will work on
 1. defining appropriate levels of response;
 2. improve response to investigation and control of outbreaks to public health;
 3. improve data management for outbreak investigation and tracking
- **Antimicrobial Resistance Surveillance Taskforce:**
 - Antimicrobial Resistance poses tremendous challenges for healthcare providers and facilities, clinical and public health laboratories, public health epidemiologists and planners, and informatics professionals. To address this challenge, we need to develop a system of surveillance that knits together current clinical, laboratory, and public health surveillance activities and infrastructure; enhances communications between surveillance systems and individuals involved in antimicrobial resistance surveillance and response; delivers real time actionable data that can be used for prevention actions at the bedside in healthcare settings; provides up-to-date information and trends data for planning; and that responds to and incorporates changes in the pathogens and resistance mechanisms and changes in surveillance methods, informatics, and testing technology.
 - CSTE addressed this challenge in position statement 13-SI-01, which led to the

- establishment of an Antimicrobial Resistance Surveillance Task Force (ARSTF) in early 2016. The ARSTF is a collaboration of the CDC, the Association of Public Health Laboratories (APHL), and CSTE. It consists of thirty-plus individuals from clinical care, public health, laboratories, and informatics. It began in 2016, and after a full year of work, developed a vision statement, strategic map and profile, and a schema of roles and responsibilities for various levels of public health agencies for the next three years, with specific objectives for this year. The objectives address infrastructure building, collaborative alignments, and several specific initiatives (such as ensuring that antimicrobial susceptibility data do not get suppressed for public health purposes).
- Guided by the strategic map and profile, the Task Force is developing working groups for the next steps of planning, collaboration, and actions to achieve its strategic objectives. The strategic profile is attached, and the other key documents which lay out the work of the Task Force to date, and over the next three years, is available on the [CSTE website \(https://cste.site-ym.com/page/ARS\)](https://cste.site-ym.com/page/ARS).
 - The Task Force wants to align and keep in communication with other planning bodies, such as HICPAC. There are various ways interested organizations and individuals could keep informed about the work of the Task Force: the Task Force email list, the Task Force's newsletter, or by checking the CSTE website. Individuals could also participate on one of the Task Force's working groups. For more information, contact Monica Huang at mhuang@cste.org or Richard Melchreit at ramrd@comcast.net.

Position Statements:

- The following position statements (among others) passed at the annual CSTE meeting in June. After final formatting, they will be posted on [the CSTE website \(http://www.cste.org/?page=PositionStatements\)](http://www.cste.org/?page=PositionStatements).
 - 17-ID-04 Public Health Reporting and National Notification of Carbapenemase Producing Carbapenem-Resistant *Enterobacteriaceae* (CP-CRE) for *E.coli*, *Klebsiella* spp. and *Enterobacter* spp.
 - 17-ID-03 Standardized Case Definition for *Candida auris* causing clinical infection and colonization in people
 - 17-ID-07 Standardized Case Definition for Extrapulmonary Nontuberculous Mycobacteria Infections

Other items of note:

- Repeal of the Affordable Care Act and associated Prevention and Public Health Fund (PPHF) would have a major effect on the resources provided by CDC to state and local health departments supporting infection control and HAI activities. Additional details on the broad impact of the Senate version of the Health Reform bill on State Health Departments can be found on [the CSTE website \(http://cste.site-ym.com/blogpost/1084057/279746/From-Bad-to-Worse-Senate-version-of-Health-Reform-Bill-could-devastate-Public-Health\)](http://cste.site-ym.com/blogpost/1084057/279746/From-Bad-to-Worse-Senate-version-of-Health-Reform-Bill-could-devastate-Public-Health).
- [National Antibiotic Resistance Surveillance Strategic Profile, 2017-2020 \(http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/pdfs/pdfs2/Strategic_Profile_for_Natio_n.pdf\)](http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/pdfs/pdfs2/Strategic_Profile_for_Natio_n.pdf)

**Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention**

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Lisa McGiffert

Organization represented: Safe Patient Project, Consumers Union, Policy and Mobilization arm of Consumer Reports

Legislation:

With patient safety activists, met with Congressional staff to defend patient safety/infection prevention provisions in the Affordable Care Act, including public reporting of infections and related pay for performance programs, public health funding that has improved training, boosted the ability of local diagnostic labs to identify superbug infections, antibiotic stewardship, and state staffing for infection surveillance.

Campaigns and related activities:

Consumers Union and patient safety activists petitioned the California Department of Public Health (CDPH) to [protect patients from hospital-acquired infections](http://consumersunion.org/research-policies/consumers-union-petitions-california-to-protect-patients-from-hospital-acquired-infections/) (<http://consumersunion.org/research-policies/consumers-union-petitions-california-to-protect-patients-from-hospital-acquired-infections/>). Our analysis found that California is failing to hold hospitals accountable for improving care when they report high patient infection rates. We called on the agency to share the infection data it collects with its state inspectors as soon as it is reported, to prioritize inspections of the worst performing hospitals if they haven't been reviewed in the past three years, and to use its enforcement authority to require hospitals to improve infection control. In its response, the CDPH agreed to share the infection data in real time and work towards seeing if improvements can be made; to use infection data in preparation for relicensing surveys; to prioritize hospitals with a pattern of high infection rates when scheduling relicensing surveys; and to develop new regulations regarding imposition of penalties for immediate jeopardy violations when hospitals' noncompliance with infection control regulations result in hospital-acquired infections. We will continue to work with the department in holding hospitals accountable for poor infection control practices that threaten patient safety.

Press activities:

- Coverage of above petition: [San Diego Tribune](http://www.sandiegouniontribune.com/news/health/sd-me-hospital-infections-20170131-story.html) (<http://www.sandiegouniontribune.com/news/health/sd-me-hospital-infections-20170131-story.html>); [Los Angeles Times](http://www.latimes.com/business/la-fi-hospital-infection-inspections-20170123-story.html) (<http://www.latimes.com/business/la-fi-hospital-infection-inspections-20170123-story.html>); [San Diego NBC7](http://www.nbcsandiego.com/news/local/Some-California-Hospitals-Went-Uninspected-by-the-State-Over-5-years-411820285.html) (<http://www.nbcsandiego.com/news/local/Some-California-Hospitals-Went-Uninspected-by-the-State-Over-5-years-411820285.html>); Politico Pro, the subscription version of Politico, by Victoria Colliver; [Sacramento Business Journal](http://www.bizjournals.com/sacramento/news/2017/01/24/local-hospitals-included-on-consumer-groups.html) (<http://www.bizjournals.com/sacramento/news/2017/01/24/local-hospitals-included-on-consumer-groups.html>); [Daily Californian](http://www.dailycal.org/2017/01/30/unsatisfactory-inspection-rate-places-alta-bates-consumers-union-report/) (<http://www.dailycal.org/2017/01/30/unsatisfactory-inspection-rate-places-alta-bates-consumers-union-report/>); [Beckers Hospital Review](http://www.beckershospitalreview.com/quality/california-hospitals-with-high-rates-of-hais-have-not-been-inspected-in-years-investigation-finds.html) (<http://www.beckershospitalreview.com/quality/california-hospitals-with-high-rates-of-hais-have-not-been-inspected-in-years-investigation-finds.html>); [San Diego Union Tribune Editorial](http://www.sandiegouniontribune.com/opinion/editorials/sd-california-hospital-acquired-infections-20170303-story.html) (<http://www.sandiegouniontribune.com/opinion/editorials/sd-california-hospital-acquired-infections-20170303-story.html>)

- [Medicare Failed To Investigate Suspicious Infection Cases From 96 Hospitals](http://khn.org/news/medicare-failed-to-investigate-suspicious-infection-cases-from-96-hospitals/) (<http://khn.org/news/medicare-failed-to-investigate-suspicious-infection-cases-from-96-hospitals/>)
- [Thousands of heart surgery patients at risk for rare infection](http://www.ksdk.com/news/local/5-on-your-side/hidden-risk-rare-infection-targets-heart-surgery-patients/432825450) (<http://www.ksdk.com/news/local/5-on-your-side/hidden-risk-rare-infection-targets-heart-surgery-patients/432825450>)
- [Here's how hospital infections can be greatly reduced](http://www.greenvilleonline.com/story/news/health/2017/06/21/heres-how-hospital-infections-can-greatly-reduced/412224001/) (<http://www.greenvilleonline.com/story/news/health/2017/06/21/heres-how-hospital-infections-can-greatly-reduced/412224001/>)
- [Bacteria infected 10 infants at UC Irvine hospital, but the public is just finding out](http://www.latimes.com/business/la-fi-uc-irvine-superbug-outbreak-20170413-story.html) (<http://www.latimes.com/business/la-fi-uc-irvine-superbug-outbreak-20170413-story.html>)

Publications:

- [Consumer Reports Hospital Safety Ratings updated April 2017](http://www.consumerreports.org/cro/2012/10/how-we-rate-hospitals/index.htm) (<http://www.consumerreports.org/cro/2012/10/how-we-rate-hospitals/index.htm>)
- [Consumer Reports How to Protect Yourself From the Candida Auris Fungal Infection – April 2017](http://www.consumerreports.org/medical-conditions/candida-auris-fungal-infection-protect-yourself/) (<http://www.consumerreports.org/medical-conditions/candida-auris-fungal-infection-protect-yourself/>)

Other items of note:

- July CDC Consumer Conversation meeting with 23 patient/consumer activists from across the US who work on health care-acquired infection and sepsis issues.
- SXSW Panel “Consumer Reports wants Patients to Track Superbugs,” with Safe Patient Project activists (Carole Moss/CA and Christian Lillis/NY) and CDC’s Michael Bell. The panel explored the possibilities of crowdsourcing reports from patients about infections, to provide a more real time picture of where infections are happening to enhance the picture we get from the current national reporting.
- Provided invited testimony to the President’s Advisory Council on Combating Antibiotic Resistant Bacteria regarding Pay for Performance programs, public reporting, outbreak notifications, and taking more enforcement actions with hospitals that have consistently high infection rates.

Ex Officio Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Ex officio member name: Paul Moore, Yvonne Chow, and Judy Trawick

Agency represented: HRSA/FORHP and HRSA/ORO

Interim activities and updates:

- HRSA/FORHP made programmatic changes to the Medicare Beneficiary Quality Improvement Project (MBQIP), a quality improvement project to help 1,340 critical access hospitals voluntarily report rural-relevant CMS measures. Starting in Fiscal Year 2018, critical access hospitals will have four years to implement an antibiotic stewardship program. FORHP is currently collaborating with CDC/Division of Healthcare Quality Promotion to support hospitals in this effort.
- HRSA/FORHP has been collaborating with CDC/Division of Healthcare Quality Promotion on a guidance document “Implementation of Hospital Antimicrobial Stewardship Core Elements in Critical Access Hospitals” to share best practices with CAHs as well as other resources and webinars to ensure CAHs receive the technical assistance support needed to implement these new requirements to MBQIP.

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- None noted.

Position Statements:

- None noted.

Legislation:

- None noted.

Campaigns and related activities:

- None noted.

Press activities:

- None noted.

Publications:

- HRSA/FORHP and CDC co-branded a guidance document “Implementation of Hospital Antimicrobial Stewardship Core Elements in Critical Access Hospitals”

Other items of note:

- None noted.

Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Stephen Weber, MD

Organization represented: Infectious Diseases Society of America

Interim activities and updates:

- **IDSA Leads Diverse Group Calling for Antimicrobial Resistance Funding.** IDSA sent a letter signed by more than 60 organizations urging congressional appropriations leaders to reject President Trump's proposed cuts to federal funding for efforts to confront antimicrobial resistance and to maintain the bipartisan commitment to this issue. (6/27/17)
- **IDSA Calls for Robust NIH Funding to Counter Infectious Disease Threats at Home and Abroad.** On June 22, National Institutes of Health Director Francis Collins testified before the Senate Labor, Health and Human Services, Education, and Related Agencies Subcommittee on Appropriations on the administration's NIH budget request for FY2018. (6/22/17)
- **IDSA Statement on the President's Fiscal Year 2018 Budget Proposal.** IDSA urged Congress to reject the short-sighted and destructive approach to research and public health evidenced in the Trump administration's proposed budget for 2018. (5/23/17)

Guidelines and Guidance:

- Healthcare-Associated Ventilatoritis and Meningitis (Clin Infect Dis 2017; 64: 34-65)
- Prevention of Healthcare-Associated Infections in Acute Care Hospitals (Update in Progress)
- *Clostridium difficile* (Update in Progress)
- IV Catheter Management (Update in Progress)
- Vancomycin – (Update in Progress)
- Link to other guidelines on website: [IDSA Practice Guidelines \(http://www.idsociety.org/IDSA_Practice_Guidelines/\)](http://www.idsociety.org/IDSA_Practice_Guidelines/)

Position Statements:

- **Faces of Antimicrobial Resistance Report** (3/7/17)

Legislation:

- **IDSA Statement on FY2017 Omnibus Funding Legislation.** IDSA expressed gratitude to Congress for passing H.R. 244, the Consolidated Appropriations Act, with its support for valuable infectious disease programs that will help protect public health in the United States and around the world. (5/5/17)
- **Advocacy 101:** IDSA held an Advocacy Webinar to help members learn how to engage members of Congress on issues that matter to the field of ID, how to plan productive meetings with your elected officials, and just how valuable federal advocacy efforts can be. (6/16/17)

Campaigns and related activities:

- New antibiotic development (10 x '20 initiative): [10 x '20 Initiative](http://www.idsociety.org/10x20/) (<http://www.idsociety.org/10x20/>)
- [Antimicrobial Resistance and Stewardship Policy](http://www.idsociety.org/AR_Policy/) (http://www.idsociety.org/AR_Policy/)
- [Infection Prevention and Control Policy](http://www.idsociety.org/Infection_Control_Policy/) (http://www.idsociety.org/Infection_Control_Policy/)

Publications:

- Anderson DJ, Jenkins TC, Evans SR, Harris AD, Weinstein RA, Tamma PD, Han JH, Banerjee R, Patel R, Zaoutis T, Lautenbach E; Stewardship and Infection Control Committee of the Antibacterial Resistance Leadership Group (ARLG). The Role of Stewardship in Addressing Antibacterial Resistance: Stewardship and Infection Control Committee of the Antibacterial Resistance Leadership Group. Clin Infect Dis. 2017; 64: S36-S40.
- Kanamori H, Rutala WA, Weber DJ. The role of patient care items as a fomite in healthcare-associated outbreaks and infection prevention. Clin Infect Dis. 2017
- Stenehjem E, Hyun DY, Septimus E, Yu KC, Meyer M, Raj D, Srinivasan A. Antibiotic Stewardship in Small Hospitals: Barriers and Potential Solutions. Clin Infect Dis. 2017
- Marra AR, Diekema DJ, Edmond MB. Mycobacterium chimaera infections associated with contaminated heater-cooler devices for cardiac surgery: Outbreak Management. Clin Infect Dis. 2017
- Kanamori H, Weber DJ, Rutala WA. Healthcare-Associated Mycobacterium chimaera Transmission and Infection Prevention Challenges: Role of Heater-Cooler Units as a Water Source in Cardiac Surgery. Clin Infect Dis. 2017 Feb 1;64(3):343-346.

Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative Name: Jacqueline Lawler, Orange County Health Department (NY)

Organization represented: National Association of County and City Health Officials (NACCHO)

Interim activities and updates:

- December 2016 – present:(ZIKA UPDATE) Maintain a modified incident command structure to support local health departments and CDC in preparing for and responding to Zika
 - NACCHO's Zika response activities have focused on promoting situational awareness by expeditiously sharing information with members, serving as voice for LHDs by sharing feedback to CDC, and promoting role of LHDs in Zika Response.
 - NACCHO participates on bi-weekly CDC partner check-in calls to share relevant updates, stay abreast of partner efforts, and identify opportunities to collaborate.
 - NACCHO recently received funding to provide technical assistance to local health departments on Zika preparedness and response – it is anticipated two regional workshops will be offered on topics identified by an advisory committee and local health department members.
- December 2016 – present: Continued working with three HAI demonstration sites. The current project year focuses on local health departments' antibiotic stewardship efforts; the three funded demonstration sites and their general activities are below. Continued funding is expected next year; however these activities may shift (with emphasis on evaluation).
 - Florida Department of Health in Orange County – Orlando, FL: Conducting a needs assessment on antimicrobial resistance transmission in the community, looking at gaps, strengths, and opportunities for improvement; developing a strategic plan to address identified gaps; conducting a cost-based analysis for HAI outbreaks; and investigating inter-facility patient movement through a social network analysis.
 - DuPage County Health Department – Wheaton, IL: Addressing handwashing and antimicrobial stewardship among the general public; engaging 1-2 long term care facilities to improve stewardship efforts; and continuing collaboration with the Illinois HAI program through local meetings and supporting the statewide Antimicrobial Stewardship Summit.
 - Philadelphia Department of Public Health – Philadelphia, PA: Sustaining a Philadelphia Antimicrobial Stewardship Collaborative to provide regional leadership and advocacy; identifying models of stewardship within long-term care facilities and opportunities for mentorship from partner community hospitals and academic medical centers, providing training opportunities for staff within the health department and healthcare facility partners specific to antimicrobial stewardship and/or infection prevention specifically associated with multi-drug resistant organisms.
- December 2016- present: NACCHO staff have attended HAI and AMR events within directly funded HAI site locations and other jurisdictions in which local health departments report embarking on similar work. One or more NACCHO staff attended the following HAI/AMR events, hosted by state and local health departments:

- Orange County, FL Strategic Planning and Networking Session on antimicrobial resistance, January 18, 2017.
 - Orange County, FL Strategic Planning Workshop to Address Antimicrobial Resistance, March 1, 2017.
 - Sumter County, FL Antimicrobial Stewardship Symposium, June 7, 2017.
 - Allegheny County, PA Antibiotic Stewardship Workshop for Acute Care Hospitals and Long-term Care Facilities June 30, 2017.
 - Illinois Summit on Antimicrobial Stewardship July 11, 2017.
- December 2016 – present: Formed an ad hoc group to explore One Health at NACCHO
 - Discussion includes the role of and opportunities presented by antimicrobial resistance and stewardship efforts internally and externally.
 - Developed a fact sheet on One Health including basic background, NACCHO's One Health activities, and local health department examples (available in NACCHO's online resource library for free).
 - Participating in monthly CDC Zoonoses and One Health Updates (ZOHU) calls.
 - Two NACCHO staff attended The Forum on Microbial Threats' "Antimicrobial Resistance: A One Health Approach" workshop June 21-21, 2017.
- January 2017– present: Re-engaged Lessons in INfection Control (LINC) Initiative demonstration sites
 - With support from the Centers for Disease Control and Prevention (CDC), 11 LINC Initiative award recipients tested new approaches to prepare for and respond to Ebola, healthcare-associated infections, and other emerging infectious diseases
 - NACCHO hosted an in-person meeting May 3-5 to convene the LINC sites and developed a toolkit (reported in the Publications section below; available in NACCHO's bookstore for free) to support local health department engagement in prevention and control of HAIs based on resources they have developed or tailored and gaps they have identified.
- January 2017: In 2016, NACCHO awarded scholarships to support 35 local health department staff in obtaining certification in infection control. In January 2017, scholarship recipients were surveyed to assess challenges and opportunities related to exam preparation and the impact of CIC certification on LHD work in infection prevention and control. The survey report will be available on NACCHO's website soon.
 - Seventy-nine percent of scholarship recipients passed the certification exam.
 - Seventy percent of respondents reported the CIC was "very impactful" on their HAI response activities, and 78% reported certification as "very impactful" on their HAI prevention activities.
 - Respondents identified the following ways CDC, State health departments, and NACCHO can support local health departments' in preventing and responding to healthcare-associated infections:
 - Provide opportunities for training and peer networking.
 - Recommend clear best practices and guidelines.
 - Bolster funding to increase staff capacity.
- January 25, 2017: Attended Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria Meeting on Prevention and Stewardship, which focused on prevention and stewardship
- March 8, 2017: Attended U.S. Stakeholder Forum in Antimicrobial Resistance (S-FAR) meeting
- May 4– 5, 2017: Attended in Council for Outbreak Response: Healthcare-Associated Infections and Antibiotic-Resistant Pathogens (CORHA) in-person meeting hosted by

ASTHO and CSTE

- One NACCHO representative and two local health department representatives from Los Angeles County Department of Public Health and Barren River District Health Department participated.
- Ongoing: One NACCHO staff and four local health department representatives participate on CORHA workgroup calls. Stephanie Black (Chicago, IL) and Hillary Hanson (Flathead County, MT) participate on Workgroup A: Detection and Reporting which aims to identify standardized approaches to detection and reporting of infectious disease outbreaks and exposure events within healthcare facilities and in various ambulatory settings. Dawn Terashita (LA County, CA) and Sri Seshadri (Barren River County, KY) participate in Workgroup B: Investigation and Control Workgroup, developed to identify consistent and coordinated approaches to investigation and control of infectious disease outbreaks and exposure events within healthcare facilities and in various ambulatory settings.
- June 14-16, 2017: Attended the Association for Professionals in Infection Control (APIC) Annual Conference
- Other National HAI/AMR meetings and briefings
- Ongoing: Participated in the following meetings, conference calls, and committees related to (1) obtaining updates on HAIs, injection safety, antimicrobial resistance, and infection control; and (2) determining how NACCHO can support national efforts to address related issues
 - Safe Injection Practices Coalition partner calls
 - CSTE HAI Standards Committee calls
 - NACCHO joined CDC's *Making Dialysis Safer for Patients Coalition* in April 2017, committing to participate in Coalition calls and webinars, use Coalition messages in appropriate member communications, and facilitate the sharing of bloodstream infection prevention experiences.
- Ongoing: Participate in monthly conference calls with ASTHO and CSTE to discuss HAI and Ebola and Other Infection Control activities
- Ongoing: Shared HAI prevention and infection control news and resources via NACCHO's regular communication channels

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- In-Progress: Updating policy statement 07-11 on Multi-Drug Resistance Organisms

Position Statements:

- January 2017: Signed on to letter urging President Trump to prioritize AMR issues.
- February 2017: Developed a comment letter to the FDA regarding use of antimicrobial drugs in food-producing animals.
- May 2017: NACCHO's Infectious Disease Prevention and Control workgroup updated policy statement 10-02 on Healthcare Associated Infections to more specifically reflect the role LHDs can play in HAI prevention and response, address local health department needs related to data access, and link to related policy statements.
- May 2017: The workgroup also updated policy statement 12-09 on Antimicrobial Use in Animals.
- May 2017: Signed-on to IDSA's AMR letter to Secretary Price (May 10) and to Chairman Walden and Ranking Member Pallone (May 24).

- June 2017: Signed on to joint letter to Secretary Perdue supporting USDA's AMR efforts.

Legislation:

- N/A

Campaigns and related activities:

- N/A

Press activities:

- March 2017: Published a blog post "Promoting Patient Safety: Overcoming Challenges at the Local Level"

Publications:

- June 2017: Developed a [Healthcare-Associated Infections: A Toolkit for Local Health Departments](http://www.mmsend47.com/link.cfm?r=1hg02avWGkHUIltazlwJsXA~~&pe=6ZJCQYC_5viVjwDde2ytZaE1xknXHko4LVmkXvFBD7JQc9sD3R7E3lmi8Zz8EM044mo6z541ygbADfvQI8PPcg~~) (http://www.mmsend47.com/link.cfm?r=1hg02avWGkHUIltazlwJsXA~~&pe=6ZJCQYC_5viVjwDde2ytZaE1xknXHko4LVmkXvFBD7JQc9sD3R7E3lmi8Zz8EM044mo6z541ygbADfvQI8PPcg~~) (available in the NACCHO bookstore and NACCHO Toolbox).

Other items of note:

- June 2017: NACCHO submitted a nomination to fill a non-voting liaison representative member position on The Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria (PACCARB), scheduled to be vacated during the 2017 calendar year. Local health departments have a unique and critical perspective and NACCHO feels strongly that they should be represented on the Council.

Ex Officio Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Ex officio member name: David K. Henderson, M.D.

Agency represented: National Institutes of Health (NIH)

Interim activities and updates:

- Work is continuing to evaluate the transmission of Vancomycin-resistant *Enterococcus faecium* (VRE) in our hospital environment using whole-genome sequencing and detailed epidemiological information. More than a fifth ultimately met criteria for decolonization. More than 2/3 remained decolonized for the duration of the study.
- The Clinical Center continues to conduct ongoing surveillance of our patients at admission and during ongoing hospitalization for carbapenemase producing organisms (CPO). Most recent studies include:
 1. a study of healthcare workers in our hospital and controls that failed to identify anyone colonized with CPOs and none who were colonized with VRE, as well;
 2. a study that used whole genome sequencing to demonstrate that an apparent instance of apparent patient-to-patient spread was actually an instance in which the two isolates were completely unrelated and
 3. investigation of environmental contamination with *blaKPC*-positive organisms, which has included the fortuitous isolation of an unusual organism carrying the *blaKPC* gene, *Leclercia adicarboxylata*.
- Following this unusual organism, we have been able to track movement around the institution and determine that it was related to contaminated housekeeping equipment. An abstract describing these investigations will be presented at ID Week in San Diego in the fall.
- The Clinical Center continues to investigate the intermittent isolation of *Sphingomonas koreensis* from our potable water supply. An abstract describing these investigations will be presented at ID Week in San Diego in the fall.
- In January of 2017, NIH appointed a new Chief Executive Officer for the Clinical Center, Dr. James K. Gilman. Dr. Gilman served for 35 years in the U.S. Army, culminating as major general of the U.S. Army Medical Research and Materiel Command in Fort Detrick, Maryland. He led several Army hospitals during his career, including Brooke Army Medical Center at Fort Sam Houston, Texas and the Walter Reed Health Care System in Washington, D.C. He also served as director of Health Policy and Services responsible for all aspects of professional activities and healthcare policy in the Office of the Surgeon General, U.S. Army Medical Command. Following his retirement from the U.S. Army in 2013 as a major general, Dr. Gilman served as executive director of Johns Hopkins Military and Veterans Institute in Baltimore, MD.

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- None noted.

Position Statements:

- None noted.

Legislation:

- None noted.

Campaigns and related activities:

- None noted.

Press activities:

- None noted.

Publications:

1. Hughes H, Conlan S, Lau A, Dekker J, Michelin A, Youn J-H, Henderson DK, Frank KM, Segre JA, Palmore TN. Detection and whole genome sequencing of carbapenemase-producing *Aeromonas hydrophila* isolated from routine perirectal surveillance culture. *J Clin Microbiol*. 2016; 54(4):1167-70.
2. Hughes H, Henderson DK. Post-exposure prophylaxis after Hepatitis C occupational exposure in the interferon-free era. *Curr Opin Infect Dis* 2016 29(4):373-80.
3. Conlan S, Park M, Deming C, Thomas PJ, Young AC, Coleman H, Sison C; NISC Comparative Sequencing Program, Weingarten RA, Lau AF, Dekker JP, Palmore TN, Frank KM, Segre JA. Plasmid Dynamics in KPC-Positive *Klebsiella pneumoniae* during long-term patient colonization. *M Bio*. 2016 Jun 28;7(3): e00742-16.al
4. Wong KK, Davey RT Jr, Hewlett AL, Kraft CS, Mehta AK, Mulligan MJ, Beck A, Dorman W, Kratochvil CJ, Lai L, Palmore TN, Rogers S, Smith PW, Suffredini AF, Wolcott M, Ströher U, Uyeki TM. Use of Postexposure Prophylaxis After Occupational Exposure to Zaire ebolavirus. *Clin Infect Dis*. 2016 Apr 26. pii: ciw256. [Epub ahead of print]
5. Chertow DS, Nath A, Suffredini AF, Danner RL, Reich DS, Bishop RJ, Childs RW, Arai AE, Palmore TN, Lane HC, Fauci AS, Davey RT. Severe Meningoencephalitis in a Case of Ebola Virus Disease: A Case Report. *Ann Intern Med*. 2016 Apr 5. doi: 10.7326/M15-3066. [Epub ahead of print]
6. Chertow DS, Palmore TN, Masur H. After the 2014-2015 Ebola Outbreak: Are We Ready If It Happens Again? *Crit Care Med*. 2016 Mar;44(3):457-9. doi: 10.1097
7. Dotson GA; NISC Comparative Sequencing Program, Dekker JP, Palmore TN, Segre JA, Conlan S. Draft Genome Sequence of a *Klebsiella pneumoniae* Carbapenemase-Positive Sequence Type 111 *Pseudomonas aeruginosa* Strain. *Genome Announc*. 2016 Feb 11;4(1). pii: e01663-15. doi: 10.1128/genomeA.01663-15.
8. Beekmann SE, Palmore TN, Polgreen PM, Bennett JE. Adequacy of Duodenoscope Reprocessing Methods as Reported by Infectious Disease Physicians. *Infect Control Hosp Epidemiol*. 2016 Feb;37(2):226-8. doi: 10.1017/ice.2015.256. Epub 2015 Oct 27
9. Munoz-Price LS, Banach DB, Bearman G, Gould JM, Leekha S, Morgan DJ, Palmore TN, Rupp ME, Weber DJ, Wiemken TL. Isolation precautions for visitors. *Infect Control Hosp Epidemiol*. 2015 Jul;36(7):747-58. doi: 10.1017/ice.2015.67. Epub 2015 Apr 10.

Other items of note: None noted.

**Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention**

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Kathy Dunn

Organization represented: Public Health Agency of Canada

Interim activities and updates:

Described on the [PHAC Website](http://www.phac-aspc.gc.ca/) (<http://www.phac-aspc.gc.ca/>).

Guidelines and Guidance:

Mycobacterium chimaera - Heater–Cooler Devices

- *Mycobacterium chimaera* infections in post–operative patients exposed to heater–cooler devices: [An overview](#) *CCDR* • May 4, 2017 • Volume 43-5 (http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/17vol43/dr-rm43-5/assets/pdf/17vol43_5-ar-05-eng.pdf)
- [Canadian Public Health Laboratory Network \(CPHLN\) Device Testing Recommendations regarding Non-Tuberculous Mycobacteria \(NTM\) Contamination in Heater-Cooler Units](https://www.canada.ca/en/public-health/services/publications/diseases-conditions/device-testing-non-tuberculous-mycobacteria-contamination-heater-cooler.html) (<https://www.canada.ca/en/public-health/services/publications/diseases-conditions/device-testing-non-tuberculous-mycobacteria-contamination-heater-cooler.html>)
- [Canadian Public Health Laboratory Network Interim Laboratory Testing Guidance For The Detection Of Non-Tuberculous Mycobacteria \(NTM\) Infections In Post Operative Patients Exposed To Heater Cooler Units](http://www.phac-aspc.gc.ca/tbpc-latb/pubs/ntm-mnt-guide/index-eng.php#cont) (<http://www.phac-aspc.gc.ca/tbpc-latb/pubs/ntm-mnt-guide/index-eng.php#cont>)

Publications:

Canadian Nosocomial Infections Surveillance System (CNISP)

- [ANTIMICROBIAL RESISTANT ORGANISM \(ARO\) SURVEILLANCE Canadian Nosocomial Infection Surveillance Program \(CNISP\) summary report for ARO data from January 1, 2011 to December 31, 2015](https://www.canada.ca/en/public-health/services/publications/science-research-data/canadian-nosocomial-infection-surveillance-program-summary-report-aro-data-2011-2015.html)

(<https://www.canada.ca/en/public-health/services/publications/science-research-data/canadian-nosocomial-infection-surveillance-program-summary-report-aro-data-2011-2015.html>)

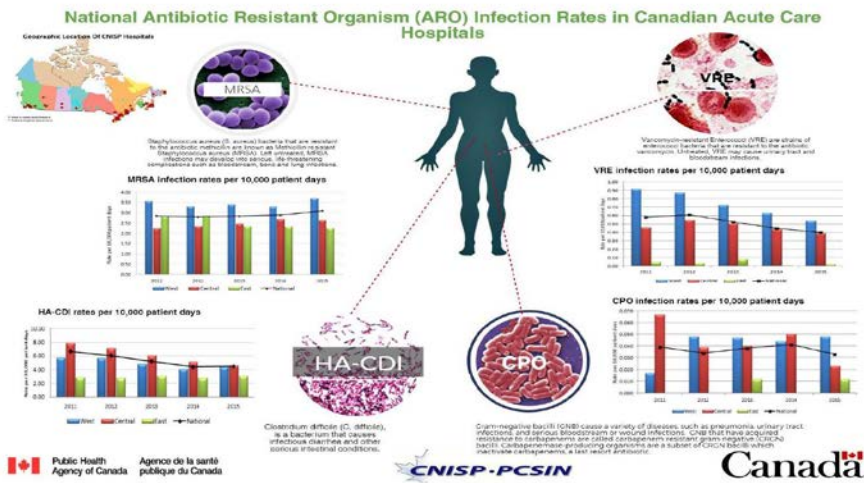


Figure 1: ARO Infection Rates in Canadian Acute Care Hospitals

- [CNISP Infographic](https://www.canada.ca/en/public-health/services/publications/science-research-data/infographic-canadian-nosocomial-infection-surveillance-program.html)
(<https://www.canada.ca/en/public-health/services/publications/science-research-data/infographic-canadian-nosocomial-infection-surveillance-program.html>)

Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Craig M. Coopersmith, MD, FCCM, FACS

Organization represented: Society of Critical Care Medicine

Interim activities and updates:

- CDC, SCCM, ANA and AWHONN hosted a webcast entitled, "Sepsis Standard Work: Improving Compliance with Early Recognition and Management of Perinatal Sepsis now available on the CDC You Tube Channel
- SCCM continues as a sub-contractor and content expert for the AHA HRET CAUTI/CLABSI ICU improvement program.

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

1. In process: Guidelines for Admission and Discharge for the Pediatric ICU and Levels of Care
2. In process: Pediatric and Neonatal Analgesia and Sedation in the ICU
3. At Journal: Guidelines for Stress Ulcer Prophylaxis in Adult Critically Ill Patients
4. At Journal: Medication Use Safety
5. In process: Recommendations for the Diagnosis and Management of Corticosteroid Insufficiency in Critically Ill Adults Patients
6. In process: Guidelines for evaluation of new fever in critically ill adult patients: update from the American College of Critical Care Medicine and the Infectious Diseases Society of America
7. In process: Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit (second edition to include sleep and mobility)
8. In process: Management of critically ill patients with liver disease.
9. Revision consideration: Guidelines for the use of an insulin infusion for the management of hyperglycemia in critically ill patients (Adult)
10. Joint at Journal: A.S.P.E.N. & SCCM: Guidelines for the provision and assessment of nutrition support therapy in pediatric critically ill patients.
11. In Process: Joint: European Society of Intensive Care Medicine & SCCM: Surviving Sepsis Campaign: International Guidelines for Sepsis and Septic Shock in Children
12. New In Process: Rapid Sequence Intubation (Adult)

Position Statements:

- None in this period

Legislation:

- None in this period

Campaigns and related activities:

- Surviving Sepsis Campaign:
 1. Research Committee continues to investigate research gaps report due in 2018.
 2. State of New York data presented on sepsis bundle implementation at WHO side meeting sepsis
 3. Manuscript submitted to Journal of Hospital Medicine on sepsis interventions on ward patients

Press activities:

- Washington Post Life Support
- CBS Radio Affiliate TX Sodium Bicarbonate Shortage
- USA Today Sodium Bicarbonate Shortage
- PBS Newshour Post Intensive Care Syndrome
- Drug Shortages Lancet
- Life Support, Defibrillators and Monitors RT Magazine
- Web MD Sepsis
- Sirius XM Radio Sepsis
- MedPage Today Sepsis
- Health Leaders Media Physician Assisted Suicide
- WERS FM Radio ICU Delirium and Alarm Fatigue

Publications: SCCM Critical Connections News Magazine:

- Ethical Dilemmas Related to Drug Shortages
Read about ethical dilemmas related to drug shortages.
- Improving Long-Term Outcomes Research for Acute Respiratory Failure Survivors
Learn about a project focused on improving long-term outcomes research for acute respiratory failure survivors.
- Life After Sepsis
Hear the story of a patient's experience in the intensive care unit and life after sepsis.
- Overcoming Barriers to Sepsis Bundle Implementation
This article discusses the sepsis bundle and overcoming barriers to its implementation.

Other items of note:**SCCM iCritical Care Podcasts**

- SCCM Pod-VCCR6 Vasopressor Selection in Septic Shock
Sean P. Kane, PharmD, BCPS, speaks with Scott T. Benken, PharmD, BCPS-AQ Cardiology about vasopressor selection in septic shock. In the episode, each vasopressor agent is discussed individually regarding its receptor profile, adverse effect profile, and the comparative clinical evidence supporting its use in this patient population. Dr. Benken is a clinical pharmacist in the medical and cardiothoracic surgery ICU at the University of Illinois Hospital & Health Sciences System in Chicago, Illinois.
- SCCM Pod-VCCR4 Common Sedatives and Paralytics for Rapid Sequence Intubation
Sean P. Kane, PharmD, BCPS, speaks with Joseph Muench, PharmD, BCPS about airway pharmacology. In the episode, the most common sedatives and paralytics for rapid sequence intubation are discussed, including concepts regarding dosing, adverse effects, onset and duration of effect, and clinical pearls. Dr. Muench (known to his listeners as "Pharmacy Joe") is the host of The Elective Rotation: A Critical Care Pharmacy Podcast and author of A Pharmacist's Guide to Inpatient Medical Emergencies. You can find the references mentioned in this episode at [Pharmacy Joe Website](#)

**Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention**

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Louise Dembry, MD, MS, MBA

Organization represented: Society for Healthcare Epidemiology of America

Interim activities and updates:

SHEA Spring 2017: Science Guiding Prevention

Under the leadership of Co-Chairs, Drs. Matthew Linam and Belinda Ostrowsky, the SHEA Spring 2017 conference was held on March 29-31, 2017 in St. Louis, MO bringing together 740 attendees.

SHEA 2017 highlights include:

- Focused scientific abstracts related to healthcare epidemiology, surveillance, implementation science and patient safety, and prevention strategies
- Poster and oral abstract awards for diverse professional fields related to healthcare epidemiology for all career levels
- Cutting-edge healthcare-associated infection prevention and antibiotic stewardship education PLUS sessions on multi-disciplinary and integrated approaches involving implementation science and prevention across the healthcare continuum
- Two Training Courses
 - SHEA/CDC Training Course in Healthcare Epidemiology
 - SHEA Antibiotic Stewardship Training Course
 - Pharmacy Credits available for this course
- Targeted Networking Breakfasts and Breaks
- Nursing credits available for the entire conference
- Continuation of the SHEA Mentorship Program
- Relaunch of the SHEA Epi Project Competition
- Women in Epi Networking Breakfast
- The First International Meet and Greet Breakfast
- 3rd Annual SHEA Education & Research Foundation Dinner

SHEA/CDC Outbreak Response Training Program (ORTP)

In May 2016, SHEA received a contract from CDC to execute the SHEA Outbreak Response Training Program (ORTP), which is designed to provide US hospital epidemiologists with the tools and training in incident management to protect patients and healthcare personnel during public health emergencies as well as non-emergent situations such as facility outbreaks. To find out more, please visit the [SHEA website \(http://ortp.shea-online.org/\)](http://ortp.shea-online.org/).

Below is the list of completed and in progress projects so far:

- 3 'Effective Communication' Webinars
 - The first webinar, "Communication during Crisis" presented by Dr. E. Yoko Furuya, was held Monday, February 6, 2017. There were 3,662 total registrants and 2,592 total webinar participants. The phone line was maxed out with 150 people calling-in as well. The webinar was recorded and can be found at: [Communication During Crisis \(http://bit.ly/2kDThM8\)](http://bit.ly/2kDThM8)
 - The second webinar, "Conflict Management" presented by Dr. Stephen Weber, was held Tuesday, May 23. There were 2,171 total registrants and 1,316 total

webinar participants. The phone line was maxed out with 150 people calling-in as well. The webinar was recorded and can be found at: [Conflict Management \(http://bit.ly/2qW0p9Z\)](http://bit.ly/2qW0p9Z)

- The third and final webinar, “Beating the Media Crush during a Crisis,” will be held on July 11, 2017 and presented by Taylor Wilson.
- 2 In-person Training Workshops
 - 163 people attended the first workshop held June 20-21, 2017 in Philadelphia, Pennsylvania at the Sonesta Hotel. The sessions from this workshop were recorded and will be made available online. As of June 2nd there were 225 people registered for the workshop; ‘no shows’ are being sent a survey to understand why they did not attend.
 - The second in person workshop will be held January 23 – 24, 2018 in Los Angeles, California at the Grant Hotel.
- 2 “DecisionSim” Online Modules
 - These modules are in development and are set to launch at the end of August 2017.
- Expert Guidance
 - This document guides US healthcare epidemiologists in incident management structures and their roles in the facility, facility-level outbreaks, emerging pathogen outbreaks, and special considerations for setting and patient population. It applies to outbreaks caused by a wide range of pathogens, and provides tables explaining incident management terminology, the role of the healthcare epidemiologist in preparedness, mitigation, response, and recovery, and internal and external stakeholders.
 - The expert guidance was reviewed by numerous subject matter experts and organizations, including APIC, AACN, ASTHO, CDC, and others. The panel incorporated comments into the document and is submitting it for SHEA GLC, Publications, and Board review and approval for publication in the fall. The final document will also be sent to reviewing organizations for consideration for endorsement.
- Tool Kits
 - 4 digital tool kits are in development to help healthcare epidemiologists operationalize the expert guidance document and content from the webinars. 2-3 members from the Expert Guidance Panel and Advisory Panel are leading the creation of the content. The tools that will be pulled already exist and will be summarized and provided to help the tool kit user act on the expert guidance recommendations.
 - Incident Management Structures and Frameworks
 - Communication, Negotiation, and Implementation
 - Outbreak Preparedness and Response
 - Emerging Pathogens

Antimicrobial Stewardship Research Workshop

SHEA recently received an educational grant from Merck Co. to host Antibiotic Stewardship Research Workshops in order to explore the research and the science behind antibiotic stewardship over the next three years. The first workshop was held November 29 – 30, 2016 at the Westin Gaslamp Quarter in San Diego. We had a turnout of **150** attendees with overall positive feedback about the workshop. The next workshop will be held at the Wyndham Grand Chicago Riverfront November 15 – 16, 2017. Registration is now open. To find out more, please visit [Antimicrobial Stewardship Research Workshop \(http://www.asresearchworkshop.org/\)](http://www.asresearchworkshop.org/) .

Antimicrobial Stewardship Podcasts

SHEA has begun work on the first of four podcast series entitled Stewardship: Practical Approaches and Applications with the theme 'ripped from the hallways.' The first podcast was on Syndromic Stewardship (Clostridium Difficile associated diarrhea (CDAD)) and the two speakers were Libby Dodds-Ashley, PharmD and Larissa Mays, MD. This podcast launched January of 2017. The next three podcast will launch this summer.

IDWeek 2017

Hilary Babcock, MD alongside the Vice Chair, Ebbing Lautenbach, MD and SHEA committee representatives: Drs. Kavita Trivedi, Tara Palmore, Arjun Srinivasan and Kris Bryant identified the sessions for Categories N & S for IDWeek. These categories will be represented with 1 Pre-Meeting Workshop, 6 MTPs, 2 Interactive Sessions, and 14 Symposia. Neil Fishman, MD was selected for the SHEA Lectureship.

Primer on Healthcare Epidemiology, Infection Control and Antimicrobial Stewardship

SHEA launched its Online Primer on June 1, 2015. This online educational course offers any Infectious Diseases practitioner or Fellow an opportunity to learn the basics of healthcare epidemiology, infection prevention and antimicrobial stewardship. Written by experts from adult and pediatric healthcare epidemiology, case-based information is presented in a dynamic and interactive learning environment intended to highlight the role of the healthcare epidemiologist. With 12 modules and topics varying from pathogen transmission, outbreak management in the healthcare setting, approach to control of bioterrorism agents, advanced occupational health management, implementing antimicrobial stewardship and the prevention and management of multidrug resistant organisms including *Clostridium difficile*, surgical site infections and device-associated infections, to name a few. This course has been very well received by Fellows and physicians in the field. 4 CME credits are available for this course. This is a product of the membership of the Society of Healthcare Epidemiology of America and is endorsed by the Infectious Diseases Society of America (IDSA) and Pediatric Infectious Diseases Society (PIDS). SHEA recently added Maintenance of Certification (MOC) points for the Primer. To date, 22 Physicians have claimed MOC and since its launch, 798 individuals have purchased this course (645 Fellows and 153 Physicians). The SHEA Education Committee is currently reviewing the content to ensure the information provided is still relevant or if any updates are needed to keep the course relevant.

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

The Guidelines Committee (GLC) is currently engaged in the following projects:

- Expert Guidance: Duration of Contact Precautions (Chairs Drs. Banach and Bearman)
 - Under final review
- Expert Guidance: Infection Prevention Practices in the Anesthesia Work Area (Chair Dr. Munoz-Price)
 - Recommendations developed and under review by the writing panel
- Expert Guidance: Initiation of Antibiotics in Long-Term Care (Chair Dr. Christopher Crnich)
 - Articles selected from literature search
 - Document being written in two phases: non-localizing conditions and syndromes

Commitments over the next three-four years:

- Literature review update: Guideline on Management of Healthcare Workers Infected with HIV, HBV, HCV
- Companion to HICPAC NICU Guideline
- Infection Prevention in LTC, 2 Expert Guidance Documents (update to 2008 SHEA/APIC guideline)
- Sterilization and Disinfection, 3 Compendium chapters (update to 2008 CDC/HICPAC guideline)

SHEA Research Network (SRN)

Open projects:

- Hospital-Onset Bacteremia/Fungemia

Completed 2016/2017:

- CLABSI Quality Metrics
- Infection Prevention Practices in the Anesthesia Work Area
- SHEA Expert Guidance: Duration of Contact Precautions in Acute Care Settings
- Legal Issues in Antibiotic Stewardship
- Activities of the World Health Organization (WHO) against antimicrobial resistance (AMR)
- Evaluating current infection prevention practices in the cardiac electrophysiology laboratory
- Knowledge and information sharing for emerging infectious diseases 2015 SHEA Epi Project: Evaluating Current Practices to Optimize Surface Disinfection
- Hand Hygiene Irritation (industry funded)
- Antimicrobial Stewardship in SRN Hospitals
- Defining Healthcare-Acquired Influenza (NOSOFI)

Position Statements:

- None

Legislation:**Legislative Agenda**

Budget and Appropriations: Federal funding for public health programs is at the top of our priority list. SHEA opposes the President's FY2018 budget proposal. Our primary focus is on opposing the drastic cuts in the CDC's top line and Center for Emerging and Zoonotic Infectious Diseases line items and with all programs falling within the Antibiotic Resistance Solutions Initiative. Our concerns lie primarily with the sustainability of the Prevention Epi Centers as well as the HAI and ELC grant programs. Additionally we are concerned with the proposal to support Antibiotic Resistance Solutions Initiative from transfers from the Prevention and Public Health Fund. If the Prevention Fund is eliminated through the repeal of the American Healthcare Act, it will be impossible to support any of the programs falling within the AR programs. We are also opposed to the closing of AHRQ; folding it and its programmatic responsibilities into NIH. We oppose the closing of the Fogarty Center for Global Health under NIH.

Regulatory Policy

LTCF Condition of Participation - Interpretive Guidance: In February, SHEA submitted comments on the draft Interpretive Guidance that will implement the long term care CoP. We don't know the time line for finalizing the interpretive guidance and it's possible we will be asked to review another version of the draft before it's final. Overall we are optimistic about the direction of the guidance.

FY2018 Inpatient Prospective Payment System: SHEA submitted comments on the FY2018 IPPS on June 13th. Of particular note is a request for stakeholder feedback on a proposal to require accrediting organizations like The Joint Commission to publish their survey reports on a web site. SHEA supports full transparency but questions the value of posting the reports as it is without guidance for consumers on how to interpret the reports. We also think that any reports that are published should be published alongside plans of action that may result from the surveys as well as findings that might be subject to an appeal due to a dispute by the hospital. Also of note is a recommendation to incorporate social risk factors in calculating risk adjustments for quality measures in the Readmissions, Value Based Purchasing, Hospital Acquired Conditions, and Inpatient Quality Reporting programs. SHEA supports this proposal.

Summary of Advocacy Activities in 2017

- *Sign-on, Joint letters (Dec – April)*. SHEA has been a party to 19 sign on letters so far. We anticipate many more to come.
- *Calls to action campaigns*. Programmatic Targets: Save AHRQ, Save the PPHF, Oppose the President's Budget Proposal. SHEA has expanded our mobilization of SHEA advocates through calls to action. As of now, over 10% of SHEA members have joined the Grassroots Network and we anticipate more to come.
- *S-FAR Hill Day*. Lynne Batshon represented SHEA at the S-FAR Hill Day earlier this year. The meetings were really good and it was a great event.
- *Public Health Fair on Capitol Hill (September)*. SHEA will have a table top at the Public Health Fair on Capitol Hill organized by the Coalition for Health Funding.
- *Rally for Medical Research (September)*. SHEA plans to attend again this year. We deem it critical this year since many of our federal programs that support research in our area of interest, particularly patient safety implementation science, are vulnerable.

2017 Objectives

- *Continue to expand grassroots mobilization*. We want to continue to expand our Grassroots Network and get more members to join. We already exceeded 10% of our total membership and we're working on setting new milestones and goals.
- *Expand opportunities for collaboration*. Looking to identify new opportunities for collaboration beyond the usual suspects, i.e. the infectious diseases and infection prevention communities. We are working more closely with patient advocacy groups.
- *Develop new member resources*. We are developing new educational resources for members to help them feel more comfortable being an advocate for the profession, and to help them advocate for their HAI programs within their institutions.

Campaigns and related activities:

- N/A

Press activities:

SHEA published the following Press Releases, mostly to promote ICHE articles, over the past few months.

- Infectious Diseases Experts Concerned with Proposed FY 2018 Budget
 - *Date Published: May 23, 2017*
- Warm Weather Increases the Incidence of Serious Surgical Site Infections
 - *Date Published: May 16, 2017*
- SHEA Awards Grant to Study Complications from Home-Based Antibiotic Therapy
 - *Date Published: March 30, 2017*
- Infectious Outbreak in Critically Ill Children Leads to Recall of Contaminated Medication
 - *Date Published: February 9, 2017*
- VA Reduces Antibiotic Use In System-wide Antimicrobial Stewardship Initiative
 - *Date Published: January 25, 2017*
- Common Viruses Prove Dangerous in Long-Term Care Facility
 - *Date Published: January 9, 2017*
- SHEA Teams Up with CDC to Develop Outbreak Training Resources
 - *Date Published: December 19, 2016*
- Infectious Diseases Experts Show Support for Policies to Improve Use of Antibiotics in the 21st Century Cures Act
 - *Date Published: November 30, 2016*

Publications:**ICHE**

ICHE's 2015 Impact Factor was 3.669. ICHE continues to see record submissions. Dr. Sue Bradley continues to serve as the Editor-in-Chief.

SHEA Spotlight

The SHEA Spotlight is our weekly advertising supported newsletter that is outsourced to Multiview. We continue to see ad growth that is not related to Journal advertising and our open rate continues to stay strong. Anyone interested in subscribing should contact kweinshel@shea-online.org.

Other items of note:

SHEA welcomed 18 International Ambassadors to the 2017 International Ambassador Program (IAP). Please visit our website at SHEA [International Ambassadors Program](http://www.shea-online.org/education/international-ambassadors-program) (<http://www.shea-online.org/education/international-ambassadors-program>) for more information.

SHEA Research

SHEA successfully re-launched the Epi Project Competition at SHEA Spring 2017. Five finalists were chosen to advance in the final competition. Sara Keller, MD, MPH, MSHP, of the Johns Hopkins School of Medicine was selected as the 2017 winner for her proposal, "Home-based outpatient parenteral antimicrobial therapy (OPAT): Learning about Central Venous Catheter complication prevention when patients are the providers."

SHEA is working on two research initiatives:

1. SRN Survey: Current practices, benefits and barriers to communication of patients' infectious disease and MDRO status during interfacility transfer. The survey has been developed and is currently pending deployment. Lead investigator: Jon Furuno, PhD, Oregon State University and Oregon Health & Science University.
2. SRN Survey: Healthcare onset bacteremia (HOB) quality outcome measure. The survey is closed and data is currently being analyzed. Lead investigator: Clare Rock, MD, MS, The Johns Hopkins University

Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative name: Valerie Vaughn, MD

Organization represented: The Society of Hospital Medicine

Interim activities and updates:

- SHM's Annual Meeting took place on Las Vegas, Nevada in May 2017 and featured several sessions addressing Hospital-acquired infections including Catheter Associated Urinary Tract Infection (CAUTI), and relevant topics including antimicrobial stewardship.
 - The Infectious Diseases Bootcamp session was attended by 210 individuals.
 - A quality improvement session entitled Preventing Common Hospital Infections: A Hospitalist's Hot-To Guide to Implementation was presented by Drs. Sanjay Saint and Valerie Vaughn.
 - A pediatric session entitled Updates in Antibiotics Determining Duration and When to Switch to PO was presented by Samir Shah.
 - A rapid-fire session entitled UTI – Challenging Cases? Length of Treatment, Fosfomycin, Fungus was presented by Dr. Jennifer Hanrahan.
- SHM is working with the Health Research and Educational Trust (HRET) to identify strategies for reducing MRSA, CAUTI, *C.Diff* and CLABSI in hospitals across the United States.
- SHM is a partner to HRET to reduce CAUTI and CLABSI in ICUs.
- SHM developed the antimicrobial stewardship implementation guide and educational modules for hospitalists regarding the implementation of antimicrobial stewardship programs in the hospital
 - The guide and modules are available on SHM's website.
- SHM continues to promote its Fight the Resistance Campaign dedicated to promoting awareness and behavior change related to antimicrobial stewardship and appropriate prescribing practices.

A call for antimicrobial stewardship case studies has been sent to all SHM membership on implementing antimicrobial stewardship programs in hospitals led by hospitalists; success stories; barriers to success; and tips on implementation

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- None at this time

Position Statements:

- None at this time

Legislation:

- None at this time

Campaigns and related activities:

SHM's Fight the Resistance Antimicrobial Stewardship campaign is ongoing. Several campaign resources may be accessed at the [Fight the Resistance Antimicrobial Stewardship](http://www.fighttheresistance.org/) campaign website (<http://www.fighttheresistance.org/>).

Press activities:

- None at this time

Publications:

- [Use of probiotics in hospitalized adults to prevent Clostridium difficile infection](https://www.the-hospitalist.org/hospitalist/article/140444/infectious-diseases/use-probiotics-hospitalized-adults-prevent) (<https://www.the-hospitalist.org/hospitalist/article/140444/infectious-diseases/use-probiotics-hospitalized-adults-prevent>)
- [Systematic review of interventions to reduce urinary tract infection in nursing home residents](http://www.journalofhospitalmedicine.com/jhospmed/article/136505/hospital-medicine/systematic-review-interventions-reduce-urinary-tract) (<http://www.journalofhospitalmedicine.com/jhospmed/article/136505/hospital-medicine/systematic-review-interventions-reduce-urinary-tract>)
- [Empiric Listeria monocytogenes antibiotic coverage for febrile infants \(age, 0-90 days\)](http://www.journalofhospitalmedicine.com/jhospmed/article/139193/hospital-medicine/empiric-listeria-monocytogenes-antibiotic-coverage-febrile) (<http://www.journalofhospitalmedicine.com/jhospmed/article/139193/hospital-medicine/empiric-listeria-monocytogenes-antibiotic-coverage-febrile>)
- [Association of inpatient antimicrobial utilization measures with antimicrobial stewardship activities and facility characteristics of Veterans Affairs medical centers](http://www.journalofhospitalmedicine.com/jhospmed/article/136502/hospital-medicine/association-inpatient-antimicrobial-utilization-measures) (<http://www.journalofhospitalmedicine.com/jhospmed/article/136502/hospital-medicine/association-inpatient-antimicrobial-utilization-measures>)

Other items of note:

- None at this time

Liaison Representative Report
HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE (HICPAC)
Centers for Disease Control and Prevention

Meeting Date: July 13-14, 2017

Meeting Location: Centers for Disease Control and Prevention, Atlanta, GA

Liaison Representative: Margaret VanAmringe, Executive Vice President for Public Policy and Government Relations

Organization represented: The Joint Commission

Interim activities and updates:

Guidelines and Guidance:

Please include products that are in progress and planned for the coming year. Include Web links if appropriate.

- *Guide to Infection Prevention for Outpatient Podiatry Settings (to be co-branded by The Joint Commission and CDC)*
- *Guide to Infection Prevention for Outpatient Orthopedic Settings (to be co-branded by The Joint Commission and CDC)*

The Joint Commission department of health services research is working on a research project funded by the CDC titled, *Adaptation and Dissemination of Outpatient Infection Prevention (ADOPT) Guidance*. This project is designed to prevent healthcare associated infections in outpatient settings by identifying gaps and inconsistencies in current CDC infection control materials for outpatient settings and by developing adapted infection prevention and control guides for two specific outpatient settings (podiatry and orthopedics). This three-year project began in September 2015 and runs through September 2018. The ADOPT Guidance team is working with 12 ambulatory-focused professional associations and 11 ambulatory health care systems on all project-related activities. Release of the adapted guides, as well as a general outpatient infection prevention customizable, fillable checklist (based on the existing *CDC Guide to Infection Prevention in Outpatient Settings: Minimum Expectations for Safe Care*) is expected in late 2017.

Link to project webpage: [Adaptation and Dissemination of Outpatient Infection Prevention \(ADOPT\) Guidance](https://www.jointcommission.org/joint_commission_cdc_collaborating_on_ambulatory_infection_prevention_project/)
(https://www.jointcommission.org/joint_commission_cdc_collaborating_on_ambulatory_infection_prevention_project/)

Position Statements:

- N/A

Legislation:

- N/A

Campaigns and related activities:

- N/A

Press activities:

- N/A

Publications:

- Smit MA, Rasinski KA, Braun BI, Kusek LL, Milstone AM, Morgan DJ, Mermel LA. Ebola Preparedness Resources for Acute-Care Hospitals in the United States: A Cross-Sectional Study of Costs, Benefits, and Challenges. Infect Control Hosp Epidemiol 2017 Apr;38(4):405-410.
- Braun BI, Longo BA, Chitavi S, Kusek L, Wagner L, van Stralen D, Burdsall DP, Vance JF, Mody L, Clancy MF, Donofrio KM, Yendro S. Identifying high reliability practices for infection prevention in long-term care, Part I: Literature review. Annals of Long-Term Care: Clinical Care and Aging. 2017;25(1):29-35. Also Part 2: Practices from the field. Annals of Long-Term Care: Clinical Care and Aging. 2017;25(2):26-35.

Other items of note:

- In response to the CDC Broad Agency Announcement (BAA) FY2017 call for proposals, the Joint Commission department of health services research submitted a proposed project titled, "Driving Improvement in Antibiotic Use in Hospitals: Exploring Use of the Standardized Antimicrobial Administration Ratio (SAAR) as a Metric for Antibiotic Stewardship Program Implementation." If funded, this 12-month project will explore use of the SAAR, as well as the annual facility survey and other metrics, as measures of effectiveness of a hospital's overall antimicrobial stewardship program.
- We continue work on the CDC BAA 2016 supported project (contract #200-2016-92276) entitled "Implementing standardized measurement of infections in nursing homes: challenges and facilitators." We have enrolled 36 nursing homes and are supporting them through the process of NHSN enrollment in the *C. difficile* Lab-Id module. This 12-month project is scheduled to conclude in September.
- The Joint Commission department of health services research is working on a collaborative research project related to respiratory protection. This project is supported through a contract with the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), National Personal Protective Laboratory (NPPTL) The project has two aims: (1) To assess the usefulness of two resources related to respiratory protection, and (2) to identify clinical situations whereby clarification regarding clinical use of respiratory protection might be needed. The team is working with an eight member Technical Advisory Panel and is current collecting data and information through the project webpage: Please visit [Respiratory Protection Research Project](http://www.jointcommission.org/respiratoryprotection) (<http://www.jointcommission.org/respiratoryprotection>) to provide feedback. Results of this project are expected in late 2017.
- Pfizer Independent Grants for Learning and Change (IGLC) and The Joint Commission have been collaborating since 2012 on projects that support antimicrobial stewardship. Projects under this collaboration are funded by Pfizer IGLC and administered by The Joint Commission. The goal was to accelerate the development and adoption of evidence-based approaches that have the capacity to prevent or contain antimicrobial resistance (AMR), and that support and promote appropriate use of antimicrobial agents. Three projects related to antimicrobial stewardship were awarded under this collaboration. Two of the three projects have been completed and the third will be completed by the end of September 2017. Findings from these research projects have been presented at national conferences and have led to development of several peer-reviewed publications.

- The Joint Commission department of health services research is continuing to work on the maintenance, update and dissemination of internet based resources for the project: *Strategies for Improving Rapid influenza testing in Ambulatory Settings (SIRAS II)*. This 2013 – 2018 project is supported through a cooperative agreement with the Centers for Disease Control and Prevention (CDC), Center for Surveillance, Epidemiology, and Laboratory Services, Division of Laboratory Systems. The project includes the development and dissemination of six educational modules on influenza preparedness and influenza pandemic preparedness in ambulatory settings and, translation of modules into Spanish language. [Strategies for Improving Rapid influenza testing in Ambulatory Settings \(SIRAS II\) Modules](http://www.jointcommission.org/topics/influenza_pandemic_preparedness.aspx) (http://www.jointcommission.org/topics/influenza_pandemic_preparedness.aspx) and related resources are updated annually and relaunched in October of the respective year. The Joint Commission uses multiple media channels to promote and disseminate the modules. Utilization data are compiled quarterly and use of e-resources tracked cumulatively.