

**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
December 1-2, 2016
Atlanta, Georgia**

Record of the Proceedings

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Healthcare Infection Control Practices Advisory Committee (HICPAC) Agenda

December 1-2, 2016

Centers for Disease Control and Prevention

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

1600 Clifton Rd., NE, Atlanta, GA

Thursday December 1, 2016

<u>Time</u>	<u>Topic</u>	<u>Purpose</u>	<u>Presider/Presenter (s)</u>
9:00	Welcome and Introductions	Information	Daniel Diekema (HICPAC Co-Chair) Deborah Yokoe (HICPAC Co-Chair) Jeff Hageman (DFO, HICPAC; CDC)
9:15	CDC Updates: Division of Healthcare Quality Promotion (DHQP)	Information	Denise Cardo (DHQP)
9:45	Antibiotic Stewardship <ul style="list-style-type: none">DHQP UpdatesHICPAC Stewardship Principles	Information Discussion	Katherine Fleming-Dutra (DHQP) Arjun Srinivasan (DHQP)
10:30	Break		
10:45	Guideline Updates <ul style="list-style-type: none">NICU GuidelineHealthcare Personnel Guideline	Information Discussion	Amanda Overholt (DHQP) David Kuhar (DHQP)
12:00	Lunch		
1:30	Update Endoscope Reprocessing Workgroup	Information Discussion	Vickie Brown (HICPAC) Lisa Maragakis (HICPAC)
2:15	Device Considerations	Information Discussion	Mike Bell (DHQP)
2:45	Response Framework for Emerging Resistance	Information Discussion	Alex Kallen (DHQP)
3:15	Break		
3:35	Council for Outbreak Response: Healthcare-Associated Infections and Antibiotic-Resistant Pathogens (CORHA)	Information Discussion	Joe Perz (DHQP) Marion Kainer (CSTE)
4:15	Public Comment		
4:30	Liaison/ Ex-officio Reports		
5:00	Adjourn		

Friday December 2, 2016

<u>Time</u>	<u>Topic</u>	<u>Purpose</u>	<u>Presider/Presenter</u>
9:00	Welcome and Roll Call	Information	Daniel Diekema (HICPAC Co-Chair) Deborah Yokoe (HICPAC Co-Chair) Jeff Hageman (DFO, HICPAC; CDC)
9:10	NTM Discussion	Information Discussion	Dan Diekema (HICPAC) Jeff Hageman (DFO, HICPAC; CDC)
9:40	BOOTS Zika Update	Information	Mary O'Neill (DHQP)
10:10	Break		
10:30	Long Term Care Updates and Guidance	Information Discussion	Nimalie Stone (DHQP)
11:30	Public Comment		
11:55	Summary and Work Plan		
12:00	Adjourn		

Attendees

List of Attendees Day 1: December 1, 2016

HICPAC Members

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

Ex Officio Members

Ms. Elizabeth Claverie-Williams, Food and Drug Administration
Dr. David Henderson, National Institutes of Health
Dr. Melissa Miller, Agency for Healthcare Research and Quality
Dr. Gary Roselle, Veteran's Administration
Dr. Daniel Schwartz, Centers for Medicare and Medicaid Services
Ms. Judy Trawick, Health Resources and Service Administration

Liaison Representatives

Dr. Elaine Dekker (America's Essential Hospitals)
Dr. Mark Russi (American College of Occupational and Environmental Medicine)
Dr. Elizabeth Wick (American College of Surgeons)
Ms. Amber Wood (Association of periOperative Registered Nurses (AORN))
Ms. Michael Anne Preas (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)
Dr. Stephen Weber (Infectious Diseases Society of America (IDSA))
Dr. Michelle Cantu (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. Mark Rupp (Society for Healthcare Epidemiology of America (SHEA))
Dr. Valerie Vaughn (Society of Hospital Medicine)
Dr. Robert Sawyer (Surgical Infection Society (SIS))

CDC Representatives

Ms. Fran Abanyie, CDC/ DHQP
Ms. Mosunmola Adeyemi, CDC/ DHQP
Ms. Denise Albina, CDC/ DHQP
Dr. Matt Arduino, CDC/ DHQP
Dr. Michael Bell, CDC/ DHQP
Ms. Shantel Benjamin, CDC/ DHQP
Dr. Chris Braden, CDC/ DHQP
Ms. Allison Brown, CDC/ DHQP
Ms. Kathy Bruss, CDC/ DHQP
Dr. Denise Cardo, CDC/DHQP
Mr. Bryan Christensen, CDC/ DHQP
Ms. Kendra Cox, CDC/ DHQP
Mr. Michael Craig, CDC/ DHQP
Ms. Mahnaz Dasti, CDC/ DHQP
Ms. Maggie Dudeck, CDC/ DHQP
Ms. Lauren Epstein, CDC/ DHQP
Dr. Anthony Fiore, CDC/ DHQP
Dr. Scott Fridkin, CDC/ DHQP
Ms. Nancy Gallagher, CDC/ DHQP
Ms. Demetria Gardner, CDC/ DHQP
Ms. Janet Glowicz, CDC/ DHQP
Mr. Jeremy Goodman, CDC/ DHQP
Dr. Julian Grass, CDC/ DHQP
Dr. Bill Greim, CDC/ DHQP
Mr. Jeff Hageman, CDC/ DHQP
Dr. Allison Laufer Halpin, CDC/ DHQP
Ms. Charalynn Harris, CDC/ DHQP
Ms. Rosa Hererra, CDC/ DHQP
Dr. Lauri Hicks, CDC/ DHQP
Ms. Carissa Holmes, CDC/ DHQP
Dr. Kathleen Irwin, CDC/ DHQP
Ms. Kelly Jackson, CDC/ DHQP
Dr. John Jernigan, CDC/DHQP
Dr. Sarah Kabbani, CDC/DHQP
Ms. Sophia Kazakova, CDC/ DHQP
Dr. Rima Khabbaz, CDC/ OID
Ms. Laura King, CDC/ DHQP
Ms. Lauren Korhonen, CDC/ DHQP
Dr. David Kuhar, CDC/ DHQP
Dr. Preeta Kutty, CDC/ DHPQ
Dr. Jason Lake, CDC/ DHQP
Dr. Cliff MacDonald, CDC/ DHQP
Ms. Leslie McDonald, CDC/ DHQP
Ms. Anita Mclees, CDC/ DHQP
Ms. Kerri Moran, CDC/DHQP
Ms. Elizabeth Mothershed, CDC/ DHQP
Ms. Lyn Nguyen, CDC/ DHQP
Dr. Judith Noble-Wang, CDC/ DHQP
Dr. Shannon Novosad, CDC/ DHQP
Ms. Kelly O'Neill, CDC/ DHQP

Ms. Amibola Ogundimu, CDC/DHQP
Ms. Amanda Overholt, CDC/ DHQP
Ms. Danielle Palms, CDC/ DHQP
Ms. Jean Patel, CDC/ DHQP
Mr. Austin Penna, CDC/ DHQP
Dr. Allison Perry, CDC/ DHQP
Dr. Joe Perz, CDC/ DHQP
Ms. Ruby Phelps, CDC/ DHQP
Ms. Kristin Rainisch, CDC/ DHQP
Mr. Ismaila Ramon, CDC/ DHQP
Ms. Meredith Reagan, CDC/ DHQP
Dr. Sujan Reddy, CDC/ DHQP
Ms. Kristin Roberts, CDC/ DHQP
Mr. Guillermo Sanchez, CDC/ DHQP
Ms. Jacqueline Sanchez, CDC/ DHQP
Dr. Isaac See, CDC/ DHQP
Ms. Lynne Sehulster, CDC/ DHQP
Ms. Srila Sen, CDC/ DHQP
Ms. Martha Sharan, CDC/ DHQP
Ms. Alicia Shugart, CDC/ DHQP
Dr. Rachel Slayton, CDC/ DHQP
Dr. Arjun Srinivasan, CDC/ DHQP
Ms. Erin Stone, CDC/ DHQP
Dr. Nimalie Stone, CDC/ DHQP
Dr. Daniel Vanderende, CDC/ DHQP
Ms. Ellen Wan, CDC/DHQP
Dr. J. Todd Weber, CDC/ DHQP
Ms. Betsy Weirich, CDC/ CSELS/ DLS
Ms. Mary Beth White-Comstock, CDC/ DHQP
Dr. Wenming Zhu, CDC/ DHQP

Members of the Public

Dr. Scott Augustine, Augustine Temperature Management
Mr. Jim Arbogast, GoJo
Ms. Lynne Batshon, Society for Healthcare Epidemiology
Ms. Nicole Bryan, CSTE
Dr. Russ Castioni, 3M
Mr. Jonathan Cooper, Orlando Health Central
Mr. Kyle Cushman, Cardinal Health
Ms. Diane Everett, University of Miami Hospital
Ms. Pamela Falk, Northside Hospital
Mr. Hudson Garrett, Pentax
Ms. Denise Graham, DPG Associates
Ms. Lori Harmon, Society for Critical Care Medicine
Dr. Stephanie Henry, Cambridge Communications
Ms. Rachel Long, BD
Ms. Caroline Miceli, Cardinal Health
Ms. Carole Moss, Nile's Project
Mr. Ty Moss, Nile's Project
Ms. Silvia Quevedo, Association of Professionals in Infection Control
Dr. Michelle Stevens, 3M

Ms. Rachel Stricof, Council of State and Territorial Epidemiologists
Ms. Lisa Tomlinson, APIC
Mr. Geoffrey Wallace, Cambridge Communications
Ms. Kathy Warye, Infection Prevention Partners
Ms. Cindy Winfrey, Pentax

List of Attendees Day 2: December 2, 2016

HICPAC Members

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

Ex Officio Members

Ms. Elizabeth Claverie-Williams, Food and Drug Administration
Dr. David Henderson, National Institutes of Health
Dr. Melissa Miller, Agency for Healthcare Research and Quality
Dr. Gary Roselle, Veteran's Administration
Dr. Daniel Schwartz, Centers for Medicare and Medicaid Services
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Ms. Lisa McGiffert (Consumers Union)
Dr. Stephen Weber (Infectious Diseases Society of America (IDSA))
Dr. Michelle Cantu (National Association of County and City Health Officials (NACCHO))
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Dr. Craig Coopersmith (Society for Critical Care Medicine (SCCM))
Dr. Mark Rupp (Society for Healthcare Epidemiology of America (SHEA))
Dr. Valerie Vaughn (Society of Hospital Medicine)
Dr. Robert Sawyer (Surgical Infection Society (SIS))

CDC Representatives

Dr. Michael Bell, CDC/ DHQP
Ms. Shantel Benjamin, CDC/ DHQP
Dr. Denise Cardo, CDC/DHQP
Mr. Bryan Christensen, CDC/ DHQP
Dr. Koo Chung, CDC/ DHQP
Ms. Kendra Cox, CDC/ DHQP
Ms. Mahnaz Dasti, CDC/ DHQP
Ms. Lauren Epstein, CDC/ DHQP
Ms. Taniece Eure, CDC/ DHQP
Dr. Scott Fridkin, CDC/ DHQP
Ms. Nancy Gallagher, CDC/ DHQP
Ms. Demetria Gardner, CDC/ DHQP
Mr. Jeff Hageman, CDC/ DHQP
Ms. Rosa Herrera, CDC/ DHQP
Dr. Lauri Hicks, CDC/ DHQP
Ms. Carissa Holmes, CDC/ DHQP
Dr. Kathleen Irwin, CDC/ DHQP
Dr. John Jernigan, CDC/DHQP
Dr. Sarah Kabbani, CDC/DHQP
Dr. David Kuhar, CDC/ DHQP
Dr. Cliff MacDonald, CDC/ DHQP
Ms. Anita Mclees, CDC/ DHQP
Ms. Elizabeth Mothershed, CDC/ DHQP
Ms. Elisabeth Mungai, CDC/ DHQP
Dr. Elizabeth O'Neill, CDC/ DHQP
Ms. Amanda Overholt, CDC/ DHQP
Dr. Joe Perz, CDC/ DHQP
Mr. Ismaila Ramon, CDC/ DHQP
Ms. Meredith Reagan, CDC/ DHQP
Dr. Sujan Reddy, CDC/ DHQP
Dr. Isaac See, CDC/ DHQP
Ms. Srila Sen, CDC/ DHQP
Dr. Rachel Slayton, CDC/ DHQP
Dr. Arjun Srinivasan, CDC/ DHQP
Ms. Erin Stone, CDC/ DHQP
Dr. Nimalie Stone, CDC/ DHQP
Ms. Kat Turner, CDC/ DHQP
Dr. J. Todd Weber, CDC/ DHQP
Ms. Mary Beth White-Comstock, CDC/ DHQP

Members of the Public

Dr. Scott Augustine, Augustine Temperature Management
Mr. Jim Arbogast, GoJo
Ms. Lynne Batshon, Society for Healthcare Epidemiology
Dr. Russ Castioni, 3M
Mr. Jonathan Cooper, Orlando Health Central
Mr. Kyle Cushman, Cardinal Health
Ms. Diane Everett, University of Miami Hospital
Ms. Pamela Falk, Northside Hospital
Mr. Hudson Garrett, PDI

Ms. Lori Harmon, Society for Critical Care Medicine
Dr. Stephanie Henry, Cambridge Communications
Ms. Caroline Miceli, Cardinal Health
Ms. Silvia Quevedo, Association of Professionals in Infection Control
Ms. Rachel Stricof, Council of State and Territorial Epidemiologists
Ms. Lisa Tomlinson, APIC
Mr. Geoffrey Wallace, Cambridge Communications
Ms. Cindy Winfrey, Pentax

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 December 1-2, 2016, in Atlanta, Georgia. The Designated Federal Official (DFO) and Chairs 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 December 1, 2016. Dr. Denise Cardo provided updates from DHQP, including the Division's responses to outbreaks and containment; state and local prevention programs; data systems; and innovation and research. Dr. Katherine Fleming-Dutra and Dr. Arjun Srinivasan updated HICPAC on progress in outpatient antibiotic stewardship and acute care antibiotic stewardship, respectively. Ms. Amanda Overholt provided an update on the Neonatal Intensive Care Unit (NICU) Guideline, including information about the topics, key questions, and progress since the July HICPAC meeting, and invited feedback from HICPAC members. Dr. David Kuhar provided an update on Section 1 of the Healthcare Personnel Guideline and invited feedback from HICPAC. HICPAC discussed and voted unanimously to provisionally approve Section 1 of the Healthcare Personnel Guideline. Ms. Vickie Brown and Dr. Lisa Maragakis provided an update from the HICPAC Endoscope Reprocessing Workgroup. HICPAC discussed and voted unanimously to provisionally approve the Future State document titled *An Urgent Need for Safer Endoscopy: Time for a Paradigm Shift*. Dr. Mike Bell introduced, and invited feedback from HICPAC regarding a new device selection algorithm. Dr. Alex Kallen described the components of a proposed response framework for emerging resistance, as well as remaining gaps and challenges. Drs. Joseph Perz and Marion Kainer provided an overview of the Council for Outbreak Response: Healthcare-Associated Infections & Antibiotic-Resistant Pathogens (CORHA).

HICPAC stood in recess from 4:40 pm on December 1 until 9:00 am on December 2. Dr. Diekema and Mr. Hageman provided a brief update on non-tuberculosis Mycobacteria (NTM) and heater-cooler units and led HICPAC in a discussion regarding ongoing opportunities and challenges. Dr. Mary O'Neill provided a brief background on Zika virus and its transmission and discussed Zika with respect to blood supply safety and CDC's role in supporting blood safety. Dr. Nimalie Stone updated HICPAC on progress in long-term care antibiotic stewardship and re-evaluating transmission-based precautions guidance for long-term care facilities (LTCFs).

HICPAC stood in recess at 11:48 am on December 2, 2016.

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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)

December 1-2, 2016
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 December 1-2, 2016 at the Tom Harkin Global Communications Center at the Centers for Disease Control and Prevention, 1600 Clifton Road NE, Atlanta, Georgia.

Thursday, December 1, 2016

Welcome and Introductions

Jeff Hageman

Division of Healthcare Quality Promotion

National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

Designated Federal Official, Healthcare Infection Control Practices Advisory Committee

Daniel J. Diekema, MD

HICPAC Co-Chair

Clinical Professor / Associate Hospital Epidemiologist

University of Iowa Carver College of Medicine

Mr. Jeff Hageman called the meeting to order at 9:05 a.m. and welcomed HICPAC members, *ex officio* members, and Liaison Representatives. He conducted a roll call, establishing that a quorum was present. Quorum was maintained throughout the day. HICPAC members disclosed the following conflicts of interest:

- Dr. Kristina Bryant has been an investigator on clinical trials funded by Pfizer.
- Dr. Sheri Chernetsky Tejedor is working on an assignment with DHQP / CDC.
- Dr. Craig Coopersmith has a small Intergovernmental Personnel Agreement (IPA) with CDC and is involved in a study with Bristol-Myers Squibb.
- Dr. Daniel Diekema has received research funding from bioMérieux.
- Dr. W. Charles Huskins has served as an advisory board member for Genentech.

- Ms. Lynn Janssen's spouse works for a biotech company that develops vaccines and immunology products.
- Dr. Lisa Maragakis receives research funding from Clorox and Versus, Inc.
- Dr. Jan Patterson has been a consultant for Pfizer Medical Education and her spouse conducts antifungal research for Astellas and Merck.

Dr. Diekema welcomed and introduced two new HICPAC members, Drs. Kristina Bryant and Vineet Chopra. Dr. Bryant is the Hospital Epidemiologist at Norton Children's Hospital and is a member of their leadership team, coordinating infection prevention and control efforts at Norton Healthcare in Louisville, Kentucky. She is a Professor of Pediatrics at the University of Louisville School of Medicine, where she directs the Kosair Charities Pediatric Infectious Diseases Fellowship Program. She is currently the Co-Chair of the Pediatric Infectious Disease Society's (PIDS) Training Programs Committee and is a former member of the PIDS Board of Directors, past Chair of the Society for Healthcare Epidemiology of America (SHEA) Guidelines Committee, and beginning in January will be the PIDS Liaison on the SHEA Board of Trustees. Her research interests include the prevention of device-associated and multidrug-resistant organism (MDRO) infections in children. She is an active participant in the National Research Collaborative (NRC) study of the epidemiology and prevention of healthcare-associated infections (HAIs) in children.

Dr. Chopra is the Assistant Professor of Medicine and a Research Scientist at the University of Michigan School of Medicine and the Ann Arbor Veteran's Administration (VA) Medical Center. A career Hospitalist, Dr. Chopra's research is dedicated to improving the safety of hospitalized patients through prevention of hospital-acquired complications, such as infections and thrombosis associated with peripherally-inserted central catheters (PICCs). He is funded by a Career Development Award from the Agency for Healthcare Research and Quality (AHRQ) and has received grant funding from the National Institute on Aging (NIA), the Blue Cross / Blue Shield of Michigan Foundation, and the American Heart Association (AHA). He is the recipient of the 2016 Conn Award for Outstanding Research by Junior Faculty and the 2016 Society of Hospital Medicine (SHM) Excellence in Research Award. He is an Associate Editor at the *American Journal of Medicine (AJM)* and the *Journal of Hospital Medicine (JHM)*.

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 greeted HICPAC and welcomed new members. She reminded the group that at the past three HICPAC meetings, she had provided DHQP updates in four primary topic areas:

- Outbreaks and Response
- State and Local Programs
- Data Systems
- Innovation and Research

During this session, she focused on innovation and research. However, she noted that the meeting would include presentations on changes in the way that DHQP is looking strategically to address the problem of HAIs and antibiotic resistance (AR). For example, DHQP’s work is not only focused on response to, and control of, an outbreak, but also on containment. She invited HICPAC to provide input during those discussions to help DHQP move forward with efforts that are critical to make a difference in healthcare, especially in terms of antimicrobial resistance.

A main focus of DHQP’s work is prevention. In addition to intramural research, the Division has three primary methods of working with extramural partners on innovation in prevention.

- The **Prevention Epicenters Program** is a unique program through which DHQP collaborates with academic investigators to conduct innovative infection control and prevention research to determine the best approaches to prevent the spread of infections in healthcare facilities. The work includes antimicrobial resistance and other important infectious threats. Further information is available about this program at the following link: [Prevention Epicenters Program](#).
- The Safe Healthcare, Epidemiology, and Prevention Research Development (SHEPheRD) funding mechanism is for research and implementation projects that focus on safe healthcare, epidemiology, and infection prevention. More information about this program is available at the following link: [SHEPheRD](#).
- DHQP’s Broad Agency Announcements (BAAs) focus on antibiotic resistance research priorities, such as the role of the microbiome and the prevention, transmission, and emergence of AR threats. More information about this mechanism is available at: [Funding Announcements](#).

The 2016-2021 SHEPheRD awards are shown in the following table:

Safe Healthcare, Epidemiology, and Prevention Research Development (SHEPheRD), 2016-2021			
Research Domain	SHEPheRD Vendors, 2016-2021		
Domain 1: HAI and Other Adverse Event Prevention, Research Protocol Development and Implementation	<ul style="list-style-type: none"> Brown University Duke University Harvard University Johns Hopkins University 	<ul style="list-style-type: none"> Rush University Medical Center University of Iowa University of Maryland University of Pennsylvania 	<ul style="list-style-type: none"> University of Utah University of Wisconsin Vanderbilt University Washington University St. Louis
Domain 2: Acute Inpatient Care Quality Improvement and Research Implementation Infrastructure	<ul style="list-style-type: none"> Duke University MDS&R Health Research Institute 	<ul style="list-style-type: none"> Premier Healthcare Solutions, Inc. 	<ul style="list-style-type: none"> University of Texas Southwestern Medical Center
Domain 3: Long Term Acute Care/Long Term Care Quality Improvement and Research Implementation Infrastructure	<ul style="list-style-type: none"> Brown University Good Samaritan Society 	<ul style="list-style-type: none"> Harzing University/Select Medical 	<ul style="list-style-type: none"> University of Utah
Domain 4: Healthcare Information Technology Development, Implementation, and Services	<ul style="list-style-type: none"> AORN Asone Deviant, Inc. 	<ul style="list-style-type: none"> Duke University Ultrama Consulting Group Leidos, Inc. 	<ul style="list-style-type: none"> Premier Healthcare Solutions, Inc. University of Utah University of Washington
Domain 5: Advanced Molecular Epidemiology and Microbial Community Analysis	<ul style="list-style-type: none"> Boo Allen Hamilton Duke University 	<ul style="list-style-type: none"> Iowa State University University of Michigan 	<ul style="list-style-type: none"> Washington University St. Louis
Domain 7: Infections/HAI and Other Adverse Healthcare Event Prevention Research	<ul style="list-style-type: none"> AET Center for Disease Dynamics, Economics & Policy 	<ul style="list-style-type: none"> Johns Hopkins University Stanford University 	<ul style="list-style-type: none"> Washington University St. Louis

No vendors under Domain 4 (Dialysis Center Quality Improvement and Research Implementation Infrastructure)
 Not shown, Domain 6 (Veterinary Healthcare Quality Improvement and Research Protocol Development and Implementation)

The SHEPheRD network is comprised of universities, medical centers, health systems, and information technology (IT) vendors. SHEPheRD has several domains. Applicants, referred to as “Vendors,” apply competitively within these domains. Vendors must be part of the SHEPheRD network. This approach is an important and efficient way to work with partners to

address questions rapidly, and it has been helpful for DHQP in the past in addressing emerging issues. To illustrate the scope of the work being conducted in the SHEPheRD network, Dr. Cardo shared examples of 2016 SHEPheRD awards focused on healthcare-associated infection (HAI)/AR innovation:

- Evaluating the impact of implementing CDC *Core Elements of Antibiotic Stewardship* in multicenter demonstration projects in hospitals, nursing homes, and outpatient settings: This project is helping DHQP not only assess the core elements, but also to be more concrete about specific efforts that are critical for hospitals, nursing homes, and outpatient settings to improve antibiotic use (AU).
- Comparing the effectiveness of evidence-based interventions to improve antimicrobial prescribing for hospitalized adults: This project is evaluating changes in prescribing.
- Regional mathematical modeling and intervention strategy that reduces HAI/AR transmission, and demonstration of region-wide impact: This study addresses prevention, controlling the spread of MDROs, and decreasing transmission.
- Preventing neonatal HAIs in low-resource settings internationally.

Broad Agency Announcement (BAA) awards are a mechanism for DHQP to work with partners that is different from the Prevention Epicenters Program and SHEPheRD. Specific projects and multicenter collaborations are funded through the Prevention Epicenters Program and SHEPheRD; for the BAA awards, DHQP poses a question, and interested groups respond to the question with brief proposals. Awards through this mechanism are short-term, typically one or two years, and they address defined questions within two domains:

- Microbiome Assessment and Intervention
- Innovations to Track and Prevent AR across Healthcare and the Community

The BAA mechanism offers a good opportunity to work with diverse partners to address specific questions, with each focusing on a specified question.

Examples of the questions DHQP is examining with partners through the BAA mechanism include:

- Microbiome Assessment and Intervention
 - Determine fecal microbiota transplant (FMT) safety and efficacy to eradicate vancomycin-resistant *Enterococcus faecium* (VRE) colonization
 - Examine patient susceptibility to multidrug-resistant (MDR) *Pseudomonas* colonization
 - Assess microbiome disruption indices (MDIs) of specific antibiotics
- Innovative Prevention
 - Assess the role of food as a source of MDR *Escherichia coli* (*E. coli*) that causes urinary tract infections (UTIs)
 - Conduct targeted antibiotic-use reduction to prevent *Clostridium difficile* (*C. difficile*) infection
 - Assess risk of acquiring carbapenem-resistant Enterobacteriaceae (CRE) from exposure to contaminated plumbing and sewage in the environment

- Tracking and Preventing HAIs and AR in Non-Acute Care
 - Understand genomics of AR origin and spread in nursing homes
 - Improve antibiotic prescribing for adult and pediatric acute respiratory infections in emergency departments (EDs) and other ambulatory care settings
 - Increase “watchful waiting” for pediatric acute otitis media (AOM)

DHQP works with multiple agencies that address the microbiome. DHQP’s focus includes with applied microbiome research to better understand how the microbiome and infections are connected, as well as to develop strategies to protect patients and decrease transmission of pathogens in healthcare. To that end, targeted questions include:

- 1) How do antibiotics disrupt a healthy microbiome?
- 2) How does a disrupted microbiome put us at risk?
- 3) How can tailoring AU protect the microbiome?

More information regarding applied microbiome research to improve public health is available through the following link: [The Microbiome & Innovations to Slow Antibiotic Resistance](#)

DHQP’s main goal is to move toward more prevention; these projects are connected to achieving that goal. Consideration must be given to increasing adherence to the practices in the HICPAC Guidelines, as well as to how people acquire MDROs in terms of patient colonization, infection control practices, the role of environmental reservoirs, and prevention of inter-facility transmission. Patient factors include not only antibiotic stewardship, but also the role of microbiome disruption, protection, and restoration.

In addition, DHQP is working with partners to address devices and procedures. Adherence to current recommendations must increase in order to prevent many of the preventable HAIs and to address AR. It is also important to focus on what is not known. Innovative approaches to address current and future gaps and opportunities include patient-level interventions, healthcare provider interventions, healthcare facility interventions, and regional interventions. These efforts represent a major opportunity for HICPAC to help DHQP identify questions that could be addressed through these funding mechanisms and partnerships. Much of this information is on the DHQP website, and an interactive map will be added in the future so that users can click on individual states to see how they are funded.

Discussion Points

HICPAC requested clarity regarding whether the groups listed under the BAA and SHEPherd mechanisms are already funded, or have competed to be eligible.

Dr. Cardo explained that all of the groups listed on the BAA are receiving awards, and each is completing a specific project in 2016-2017. The members of the SHEPherd mechanism have all been identified for each of the domains. They receive some funding to be part of the network, and the specific projects she mentioned will be funded in 2016. The members will compete for additional questions that DHQP will propose between now and 2021.

HICPAC commented on the struggle of how to address multiple patient safety issues simultaneously. For example, there are numerous issues associated with central lines, such as mechanical complications and venous thromboembolism (VTE). Some of these issues carry competing risks, which is problematic. The field of pediatrics is trying to approach this problem

from the perspective of making the central line as safe as possible for the patient, regardless of the particular complication or issue. In order to be more successful at the bedside in making all care as safe as possible, it seems that this perspective needs to be integrated more thoroughly into practice.

Though this issue is not part of the innovation component, Dr. Cardo said that that DHQP agrees that it is the way to move forward. Within CDC, DHQP is working more closely with the CDC Division responsible for preventing deep vein thrombosis (DVT), for example. These are different risks that apply to the same patient. For instance, not only is device safety important, but a patient with an abscess needs antibiotics. Consideration must be given to integrating these initiatives in a way that is easy for clinicians to understand and implement and that does not send conflicting messages. The innovation piece is specific for certain infections or pathogens, but the practices recommended have to be embedded in all good clinical practices. Working with networks, health systems, and other groups will be extremely important in order to make a difference.

NIH suggested that one way to achieve this integration is by assessing the potential unintended consequences every time an intervention is considered.

Dr. Cardo agreed that considering what is best for the patient is an important element of a recommendation, versus just implementing a recommendation. The focus must be holistic, not just centered on each infection or each outcome.

HICPAC commented on the impressive scope of the research Dr. Cardo had described. Regarding the mathematical modeling component, HICPAC asked about the direction DHQP envisions for using mathematical modeling to: 1) better understand the impact of the various interventions; and 2) to improve prevention efforts by detecting earlier signals when facilities or units are at risk in order to develop interventions before HAIs occur.

Dr. Cardo pointed out that this presentation focused only on DHQP's extramural activities. The Epidemiology Research and Innovations Branch (ERIB) within DHQP is looking at modeling, and the Division has an announcement for modeling networks so that in-house and external partners address all stages in a strategic way. She suggested holding a specific discussion about modeling the next time HICPAC meets.

Dr. Michael Bell emphasized the importance of the shift away from a reactive posture. However, the healthcare system is extremely complex, and driving toward perfect care for every patient is a big "ask." In part, accomplishing this goal will require using what is known and deciding what is truly important in terms of what has been built. For example, consideration must be given to the most important part of a bundle and how to analyze within a bundle to determine which element has the most impact. It is probably not possible to do everything for every patient, but it may not be necessary. Much of what is being done currently is in response to an existing system that was never designed to aspire to what it is being asked to do. Much of the thinking and investments are being directed toward human factors engineering and design concepts that are intended to make it harder to fail. For example, is there a way to make the central vascular catheter currently being used in children less prone to thrombotic complications? He emphasized that we should not consider these issues as "a zero sum, status quo concept." There is a tremendous need to think about what healthcare should look like in the coming decades and to start working toward that vision. Modeling is one of a range of ways to signal areas that are ripe for innovation.

The Council of State and Territorial Epidemiologists (CSTE) described an example of the implementation of clinical pathways that is truly patient-centered, following the patient from admission through discharge, and now through nursing home admission. This process takes into account competing risks and evidence bases, and bundles have been implemented as part of the standard of care. This example comes from a facility that was targeted for catheter-associated urinary tract infection (CAUTI) reduction in intensive care units (ICUs). Within 12 months, this facility reduced its number of preventable infections, going from 5th to 32nd in the state. DHQP could explore this approach further in its research projects.

Dr. Cardo agreed that DHQP could learn from other groups and encouraged others to do the same. She emphasized the importance of continuing to assess data at the state and facility levels to determine what is working, and to share that assessment broadly. DHQP expects that infection control and appropriate use of antibiotics are embedded as part of good clinical practice.

HICPAC asked about science to assess risk tradeoffs (or unintended adverse consequences of infection prevention initiatives). For example, how many pneumothoraces in mechanically-ventilated patients might occur as a result of efforts to prevent one central line infection? Or, how many future life-threatening subclavian stenoses in a patient with chronic kidney disease might occur as a result of efforts to prevent one central line infection? This question is particularly acute in pediatrics.

Dr. Cardo responded that she would not accept any trade-offs. Approaches should be considered so that adverse consequences do not occur. The needed research pertains to how to do this work in an integrated manner such that there are no complications. It will not be easy, but one aspect of this work is determining the best way to ensure that recommendations are implemented, especially if one conflicts with another. Every recommendation has pros and cons, which is why the focus should be on patient outcomes. This focus will help clinicians make the best decisions for their patients.

Antibiotic Stewardship

DHQP Updates

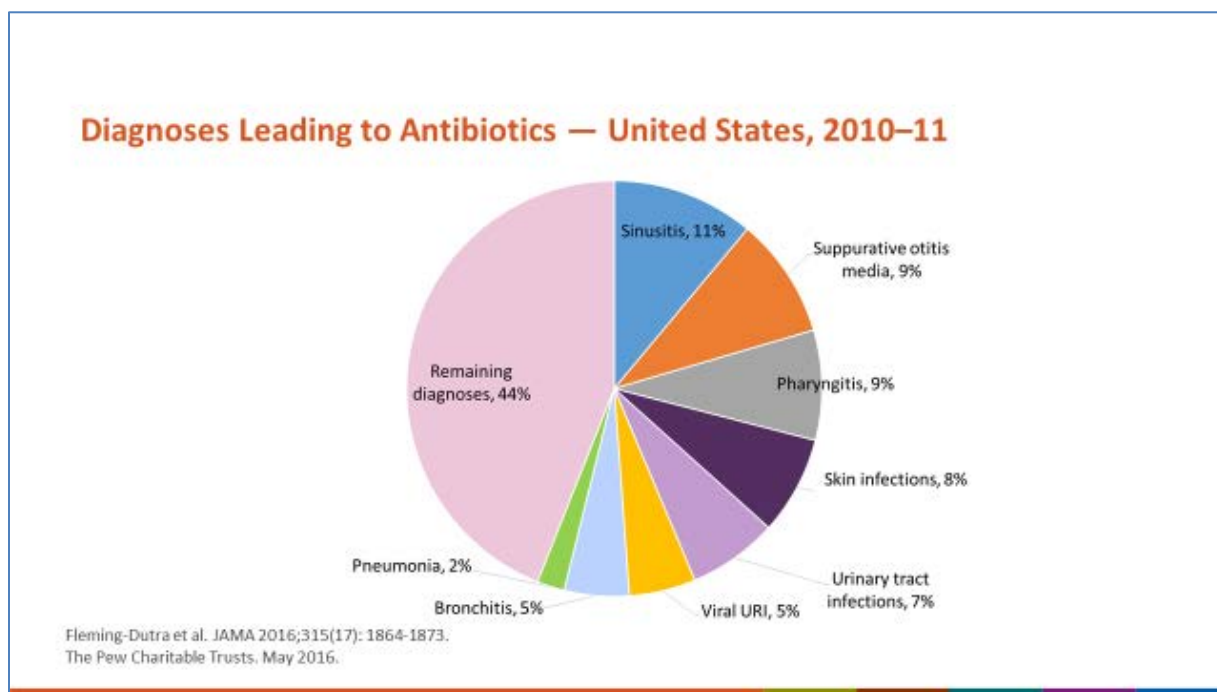
Katherine Fleming-Dutra, MD
Office of Antibiotic Stewardship
Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention

Dr. Katherine Fleming-Dutra explained that the Office of Antibiotic Stewardship addresses antibiotic stewardship across the spectrum of healthcare for humans: outpatient, acute care, and long-term care. During this session, she updated HICPAC on progress in outpatient antibiotic stewardship.

The Office of Antibiotic Stewardship's goal is for every patient to receive antibiotic treatment only if needed and, when needed, to receive the right antibiotic, at the right dose, for the right duration. To achieve that goal, DHQP would like every provider and healthcare facility to incorporate antibiotic stewardship into their practices.

Dr. Fleming-Dutra shared available data on antibiotic prescribing in outpatient settings. In collaboration with the Pew Charitable Trusts, DHQP set out to answer this question: What is the prevalence of inappropriate antibiotic prescriptions during outpatient visits in the US? This work was published in May 2016 in the *Journal of the American Medical Association (JAMA)*. A lay-friendly companion report was published by the Pew Charitable Trusts.

As a first step in this work, an assessment was made of which diagnoses lead to antibiotic prescription in the US. This chart shows the top diagnoses leading to antibiotic prescriptions in 2010-2011, in all age groups:



The number-one diagnosis associated with antibiotics in the US was sinusitis, which led to 11% of all antibiotic prescriptions. The second most common diagnosis was suppurative otitis media (or AOM), occurring primarily in children. The third was pharyngitis, accounting for 9% of all antibiotic prescriptions. It is important to note that this diagnosis is “all-cause pharyngitis.” The pie chart reveals some “easy targets” for reduction in antibiotic prescribing, notably viral upper respiratory infections (URI) and bronchitis, which should have no antibiotic prescribing. Even though they should not be included on a pie chart depicting antibiotic prescriptions, viral URI and bronchitis together lead to 10% of outpatient antibiotic prescriptions in the US. They are therefore important reduction targets.

The next step in this project was to assess diagnoses by age group and determine which antibiotics were inappropriate or unnecessary, based on national clinical practice guidelines and benchmarks. The investigators found that at least 30% of antibiotic prescriptions written in doctors’ offices and EDs are unnecessary, which equates to 47 million unnecessary antibiotic prescriptions per year. Examining the data by type of condition, it is clear that acute respiratory conditions are key drivers of unnecessary antibiotic prescribing. The investigators estimated that at least 50% of antibiotic prescriptions for acute respiratory conditions are unnecessary. Even among the “necessary” 70%, there is still a great deal of inappropriate antibiotic prescribing,

including inappropriate antibiotic selection, dosing, and duration. Therefore, the total of inappropriate antibiotic prescribing is likely much higher.

As a next step, the investigators examined the frequency at which first-line agents were prescribed for the three most common diagnoses leading to antibiotics: sinusitis, suppurative (or acute) otitis media, and pharyngitis. National clinical practice guidelines for all three conditions clearly state which antibiotics should be prescribed first-line, when antibiotics are indicated. This work was published in October 2016 in *JAMA Internal Medicine*, with a companion, lay-friendly report published by The Pew Charitable Trusts.

The investigators found that overall, the recommended first-line antibiotic agents for these three common conditions were prescribed only 52% of the time. The findings ranged from a high of 67% for pediatric otitis media for first-line and first-line alternative antibiotic prescribing, to lows of 37% for adult sinusitis and adult pharyngitis. In comparison, it was estimated that at least 80% of patients with sinusitis, AOM, and pharyngitis should be receiving first-line antibiotics, after accounting for the prevalence of drug allergies and treatment failures that may require alternative antibiotic agents. Through DHQP's collaboration with The Pew Charitable Trusts, national data have been leveraged to define the scope of unnecessary antibiotic prescribing in the outpatient setting and the scope of inappropriate antibiotic selection for common conditions.

Another way to drive improvements in AU is to benchmark antibiotic prescription rates by looking at geographic variation. The newest version of CDC's Antibiotic Resistance Patient Safety Atlas includes data on antibiotic prescriptions dispensed in US outpatient pharmacies. This interactive database can be used to look at how antibiotic prescribing varies by state. Users can click on a state to see its prescription rates as well as the rates for selected antibiotic classes over time. State prescribing rates vary markedly, with some states in 2014 having 2.5 times the prescribing rate of others. While the underlying health of the population may vary, it is unlikely that it varies enough to warrant a 2.5-fold difference in antibiotic prescription rates. DHQP hopes that this database will be a useful tool that can help state health departments, academic institutions, regional collaboratives, and others identify opportunities and track progress over time.

The Patient Safety Atlas can be used to examine whether progress has been made in improving outpatient antibiotic use. Based on the national rates of antibiotic prescriptions dispensed per 1000 population from 2011-2014 in the US by antibiotic class, the Patient Safety Atlas demonstrates a 5% decrease in overall antibiotic prescriptions dispensed in the US over that time period, which represents progress. Looking at the national data in the Patient Safety Atlas by age group, the improvements observed have been driven primarily by decreases in antibiotic prescribing to children. However, rates in adults have remained comparatively stable over this time. In fact, by 2013 and 2014, children received antibiotics at a lower rate than adults. DHQP hopes to replicate the progress in children among adult populations.

To summarize:

- There is a great deal of unnecessary antibiotic prescribing in the US, especially for acute respiratory conditions in doctors' offices and EDs.
- There is wide geographic variability in outpatient antibiotic prescriptions per 1000 population within the US.
- Progress has been made, particularly in improving pediatric antibiotic use, but there is plenty of work to be done.

DHQP is working to address what is not known and to learn about opportunities to improve AU in other settings such as dental offices, retail clinics, and urgent care centers. DHQP hopes to update HICPAC more about progress in those areas in the coming months.

CDC published the *Core Elements of Outpatient Antibiotic Stewardship* in the *Morbidity and Mortality Weekly Report (MMWR) Recommendations and Reports* on November 11, 2016. The Core Elements provide a framework for improving antibiotic prescribing in outpatient settings. They have a broad target audience, as they are intended for any outpatient clinician, clinic, or health system that is interested in improving antibiotic prescribing and use. The four Core Elements of Outpatient Antibiotic Stewardship are:

- **Commitment:** Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.
- **Action for Policy and Practice:** Implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed.
- **Tracking and Reporting:** Monitor antibiotic prescribing practices and offer regular feedback to clinicians or have clinicians assess their own AU.
- **Education and Expertise:** Provide educational resources to clinicians and patients on antibiotic prescribing and ensure access to needed expertise on antibiotic prescribing.

CDC endeavored to make this document useful and to include practical examples of how to implement the elements. One example of this effort is a commitment poster. Outpatient clinicians and clinics can fulfill the “Commitment” core element by displaying a poster indicating their commitment to prescribing antibiotics appropriately. The commitment poster is an evidence-based intervention that has been shown to reduce unnecessary antibiotic prescriptions. Dr. Fleming-Dutra showed examples of commitment posters from the Illinois Department of Public Health, a collaboration between the Get Smart Program and [Superior HealthPlan](#) with the Texas Health and Human Services Commission and Department of State Health Services, and the New York State Department of Health’s Get Smart Guarantee. CDC has a version of this commitment poster available on its website for clinicians to download. CDC is helping state health departments and clinicians across the country implement this easy, evidence-based intervention.

CDC is investing in research and collaborating with investigators to implement and innovate in outpatient antibiotic stewardship and combatting antibiotic resistance in several ways:

- CDC is implementing and evaluating the *Core Elements of Outpatient Antibiotic Stewardship* through SHEPherD with the University of Utah.
- CDC is collaborating with the University of California at Davis (UC Davis) through the BAA projects to evaluate behavioral science interventions, including audit and feedback and peer-to-peer comparisons, to reduce unnecessary antibiotic prescriptions for patients in urgent care centers and EDs.
- CDC is collaborating with Pennsylvania State University to study doctor-patient communication that can improve antibiotic prescribing during acute care visits.
- CDC is collaborating with the American Academy of Pediatrics (AAP) through a cooperative agreement to implement antibiotic stewardship in pediatric primary care

practices through AAP's Chapter Quality Network (CQN), their existing quality improvement platform.

CDC is working with its sister agency, Centers for Medicare and Medicaid Services (CMS), to improve antibiotic prescribing. For example, CDC is providing technical assistance to CMS's Quality Innovation Network-Quality Improvement Organizations (QIN-QIOs) to implement the *Core Elements of Outpatient Antibiotic Stewardship* in outpatient practices serving Medicare beneficiaries. The QIN-QIOs have a target for 80% of their recruited practices to have fully implemented the *Core Elements of Outpatient Antibiotic Stewardship* by July 2018. In addition, CDC has worked with CMS to include evidence-based quality measures on appropriate AU through the clinical practice improvement activities in the Merit-based Incentive Payment Program (MIPS). CDC is exploring opportunities to incorporate stewardship in CMS's Transforming Clinical Practice Initiative.

CDC also continues to support state health departments to implement antibiotic stewardship across the spectrum of healthcare through funding and by providing a toolkit that includes resources and examples of states that are successfully implementing stewardship. The toolkit is available on the CDC website at this link: [Antibiotic Stewardship Implementation Framework for Health Departments](#).

CDC's communications work around antibiotic stewardship has been active. Get Smart About Antibiotics Week just concluded: it is the agency's annual observance to engage stakeholders, including professional societies, advocacy groups, for-profit companies, state and local health departments, the general public, the media, and others, around antibiotic stewardship. Get Smart About Antibiotics Week is a global effort that coincides with the World Health Organizations (WHO's) World Antibiotic Awareness Week and the European Union's Antibiotic Awareness Day. This year's Get Smart About Antibiotics Week was a great success. CDC's Twitter chat used the hashtag #AntibioticResistance. There were an estimated 130 million impressions in the US and 180 million estimated impressions globally. CDC's Thunderclap, which is a coordinated social media event similar to an "online flash mob," had 372 participants and reached 5.3 million people. CDC hosted a webinar with 2549 participants on the newly released *Core Elements of Outpatient Stewardship*. Over 65 partners helped CDC promote antibiotic stewardship as part of Get Smart About Antibiotics Week.

Moving forward, CDC will continue to work toward addressing the gaps that have been identified. In terms of communications, CDC's public outreach campaign is being expanded to incorporate targeted messages based on data to improve antibiotic use. DHQP continues to produce data for action by identifying new sources of AU data in outpatient settings, particularly in retail clinics and urgent care facilities. They are developing innovative approaches to expand implementation, including working with partners and CMS-funded networks to reach outpatient settings and nursing homes. They are continuing to support state and local public health to implement stewardship and expanding partnerships to promote and implement stewardship. In Policy, DHQP is working with CMS in several ways to promote stewardship and is promoting the uptake of new *Core Elements of Outpatient Antibiotic Stewardship* in outpatient settings.

Antibiotic Stewardship In Hospitals

CAPT Arjun Srinivasan, MD
Associate Director, Healthcare Associated Infection Prevention Programs
Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

Dr. Arjun Srinivasan provided an update on hospital-related antibiotic stewardship.

For the first time, CDC has been able to produce national estimates for hospital AU. These estimates are from work that Dr. James Baggs, who works in Dr. John Jernigan's group in DHQP, had done in which he was able to use the proprietary MarketScan® data system to extrapolate national rates of AU to US hospitals. These data showed that 55.1% of all patients in US hospitals receive at least one dose of an antibiotic during their hospital stay. That finding is highly consistent with past studies. The investigators examined data over approximately a six-year period and found that overall use was 755 days of therapy (DOT) per 1000 patient days (PD), or three-fourths of all patient days in US hospitals involving at least one antibiotic agent. There was no change in that number over time from 2006-2012 [*JAMA IM* published online 9/19/16].

Dr. Baggs observed interesting differences in trends in the data. Not surprisingly, use varied between ICU and non-ICU locations. Every day in ICU basically involves an antibiotic day, with about 1092 DOT/1000. Other surveys have made similar observations. There were about 720 DOT/1000 PD outside of the ICU. The use of some individual antibiotic classes decreased impressively over this time period. For example, use of quinolones decreased by 20%. Whether that change reflects the decrease in susceptibility to fluoroquinolones, or heightened awareness of their side effects, is not known. Both of those factors are probably contributing to the change in use. Additionally, first-generation cephalosporin use decreased by 7%.

The use of many classes increased, however. Vancomycin use increased 32%, beta-lactam/inhibitor use increased 26%, and third- and fourth-generation cephalosporin use increased 12%. The largest increase was in carbapenem use, which increased 37% over this time period. Whether the increases represent the growing challenge of antibiotic resistance leading to the use of these broad spectrum antibiotics, or if the increases represent inappropriate use and opportunities to improve use, or some combination of both, this challenge must be addressed. In this analysis, use did not vary by bed size, and non-teaching hospitals had higher use than teaching hospitals. These findings have been demonstrated previously. The challenges of AU and the need to improve AU clearly are not limited to large academic hospitals: these needs exist in all US hospitals.

The annual facility survey for the National Healthcare Safety Network (NHSN) now includes questions about the implementation of *CDC's Core Elements for Hospital Antibiotic Stewardship*. These data are self-reported. Based on survey data of antibiotic stewardship programs in acute care hospitals in 2015, 48% of hospitals in the US reported that they have successfully implemented all seven of the CDC Core Elements. That number represents a modest uptick from 2014. The state with the highest rate of implementation used to be California at 58%, but is now Utah, with 77% of all hospitals reporting implementation of all seven Core Elements. California has experienced a dramatic increase in implementation as well, to 70%. There has been continued improvement toward achieving the 100% implementation goal in California, which is a very large state with many hospitals.

Important differences in implementation continue to be observed among the facility types. There is a dramatic difference between very small hospitals of 0 to 50 beds, at 31%, compared to larger hospitals of 200 beds or more, at 66%. The lowest group is critical access hospitals, at 26%. Smaller hospitals are clearly struggling to implement the Core Elements.

These data inform a great deal of the work DHQP is planning in 2017. One of the hospital stewardship priorities for 2017 is to focus on helping small hospitals implement stewardship.

The Standardized Antibiotic Administration Ratio (SAAR) measure, the risk-adjusted benchmark measure for hospital AU, remains an important part of DHQP's work in hospital stewardship. DHQP continues to strive to improve the SAAR to make it actionable for improvements. Three key questions need to be addressed for the SAAR measure.

- Does the SAAR measure help point to locations and/or agents where there are meaningful opportunities to improve AU; that is, does a high SAAR reflect an opportunity to improve AU?
- Would additional data for risk adjustment impact the SAAR measure? Currently, the ratio is risk-adjusted based only on facility-level characteristics. How much better would the risk adjustment be if patient-level risk adjustment factors were added?
- The most important question to answer for any process improvement measure is, would the SAAR values change if AU is improved?

In order to determine whether the SAAR could identify opportunities for improvement, CDC partnered with the Pew Charitable Trusts and an expert panel to develop the SAAR Assessment Tool. This tool highlights evidence-based and experience-driven opportunities to improve AU in response to a high SAAR. The tool could be used to assess opportunities for improvement in any facility, in any location, and for any agent where use is higher than expected. This tool was released during Get Smart Week and is now available on the CDC website. DHQP will learn whether, if used in conjunction with the SAAR, the tool will identify quickly and easily achievable goals that require limited effort and resources.

CDC also continues to work with Kaiser of Southern California to examine risk adjustment for SAAR. Kaiser has a robust electronic health system with extensive, granular patient-level information. They also are reporting data into the AU option of NHSN, which gives them the opportunity to see what would happen to their SAARs if they are risk-adjusted with additional patient-level data. Kaiser has done significant work to assess a range of patient-level factors, such as white blood cell count, Charlson scores, creatinines, co-morbid conditions, etc., to determine which factors constitute a good risk assessment model that uses patient-level data to adjust AU. They have found that using just two additional patient-level factors, diagnosis-related group (DRG) codes and infectious disease diagnoses, yields a good predictive model that uses the least amount of data. Most hospitals already collect this billing data.

The correlation between the CDC SAAR, adjusted only for facility-level characteristics, and Kaiser's ratio, using patient-level data, is good. It ranges from between 72% and 92% for the different SAAR categories. In the majority of instances, if the SAAR is high, the Kaiser risk-adjusted ratio is also high, and if the SAAR is low, the Kaiser ratio is also low. Adding the patient-level risk adjustment tempers the SAAR somewhat. There are examples of units where, for instance, the SAAR might be 1.8, but when the patient-level factors were added, the SAAR might be 1.3. A unit with a number of patients with sepsis diagnoses might have a very high SAAR, but the SAAR decreases somewhat when the diagnoses for sepsis are factored in.

CDC continues to partner with Kaiser of Southern California in this area. Patient-level data are not currently available in NHSN; while it would represent a transformation of the system to collect patient-level data, CDC could potentially move in this direction. The first step is to

determine whether the results from Kaiser are reproducible in other health systems. Therefore, CDC has begun an effort with Intermountain Healthcare and Washington University to determine whether they can replicate Kaiser's results. CDC also wants to know whether the SAAR responds to improvements in use, which is a very important issue to address. As Dr. Cardo mentioned, this work will be carried out under the auspices of a SHEPheRD contract with the Duke Antimicrobial Stewardship Outreach Network (DASON), which was awarded a contract to enroll a group of hospitals into the NHSN AU options to implement or expand implementation of CDC's *Core Elements for Hospital Antibiotic Stewardship*, and to assess the impact of the expanded stewardship efforts on the SAAR values. They will use the assessment tool as part of their work.

Clearly, small hospitals need more support and ideas. CDC needs to work with these facilities to help determine how they can improve their stewardship implementation. CDC has identified a number of critical access hospitals who report implementing all seven of the Core Elements. CDC is in discussions with these hospitals to understand what they have done and what has led to their success. CDC is working on an effort to collaborate with the Pew Charitable Trusts and the American Hospital Association® (AHA®) to begin gathering more information from small hospitals that are either successful or are encountering barriers in order to share the successes and create strategies to overcome the barriers.

The HICPAC *Stewardship Principles for Antibiotic Treatment Guidelines* document has been well-received. Presentations during the recent IDWeek included expressions of support for the document. It is now important to move that statement and its principles into action so that it informs guideline development related to antibiotic recommendations. CDC has engaged in initial discussions with the Infectious Diseases Society of America (IDSA) and the Society of Critical Care Medicine (SCCM). They have been helpful in thinking about next steps. CDC does not want a passive link to the HICPAC statement or to a table with the statement recommendations. The agency seeks an active approach so that principles outlined in the statement will be incorporated into the decision-making process and creation of treatment recommendations.

To that end, CDC requests additional input from HICPAC regarding implementation of the Antibiotic Stewardship Statement and additional tools, such as concrete examples, templates for consideration that might be developed, etc., to help organizations that write guidelines for antibiotic use incorporate the principles of the HICPAC Antibiotic Stewardship Statement into their processes. For example, an amendment could be added to the HICPAC Antibiotic Stewardship Statement document that includes a table of suggested antibiotic prescribing practices, with additional framing language to aid clinicians in understanding why specific antibiotics are preferred from a stewardship perspective.

Discussion Points

Mr. Hageman suggested reconvening the original Antibiotic Stewardship Workgroup and expanding it to include representation from groups that draft guidelines in order to flesh out concrete examples, which could then be an addendum to the statement. The workgroup could use an existing guideline to work through the exercise. Dr. Yokoe supported this approach.

Dr. Diekema expressed excitement about the work looking at patient-level variables for risk-adjustment of the SAAR. It was curious to him that vancomycin use increased by almost a third during a time when healthcare-associated invasive methicillin-resistant *Staphylococcus aureus* (MRSA) infections decreased by 50%.

Dr. Srinivasan thought that the increase reflected the fact that the overwhelming majority of vancomycin use is empiric. The use of vancomycin for actual treatment of MRSA infection is much smaller. MRSA has gained more attention and become more of a concern, and empiric use of vancomycin has exploded. This opportunity is important, given that vancomycin is a great target for de-escalation.

HICPAC expressed interest in how CDC is thinking about engaging urgent care centers and retail clinics, given that they are major healthcare settings where incentives are different.

Dr. Fleming-Dutra replied that CDC hopes to address those programs in different ways, in collaboration with the Pew Charitable Trust. CDC convened a meeting in September 2016, inviting leadership from the four largest retail health clinics as well as urgent care leadership from the Society for Pediatric Urgent Care (SPUC). The first goal is to gather data on what is occurring in those settings. Some progress has been made using claims data to assess prescribing in retail health and urgent care facilities. They seem to be quite different, as are their incentives. Urgent care centers operate like small businesses; they depend upon patient satisfaction and return. That approach may not be driving the best antibiotic stewardship practices, as the facilities are highly concerned about whether patients “leave happy.” By gathering data about what is occurring in those settings and engaging those provider communities in collaboration with the Pew Charitable Trusts, CDC is hopeful that stewardship can be implemented. Additionally, the BAA project with UC Davis specifically includes urgent care centers in implementing stewardship and tracking outcomes.

Dr. Yokoe thanked Drs. Fleming-Dutra and Srinivasan for their leadership on this portfolio of important activities and for the addition of patient-level data to the SAAR. She asked whether they have a sense about why improvements have been observed in outpatient pediatric antibiotic prescribing over time, and whether particular interventions have been effective.

Dr. Fleming-Dutra replied that several factors play into the improvements. The initial focus of the Get Smart program’s predecessor was improving prescribing among young children. There has been a great deal of engagement from pediatric providers over the years, and the results of that engagement are now being observed. In addition, interventions such as the pneumococcal conjugate vaccine have helped to decrease the burdens of disease and fear among pediatric providers, which were leading them to use antibiotics more than they should. The hope is to use the lessons learned from the pediatric community in the adult community.

HICPAC asked whether Kaiser used the All Patient Refined DRG (APR-DRG), which has strata for severity of illness and risk of mortality, in their model.

Dr. Srinivasan replied that Kaiser used the APR-DRG, but created six DRG categories to condense the many APR-DRG classifications. Kaiser continues to refine that methodology to determine how they might share it for use elsewhere. DRGs are available anywhere, but APR-DRG is proprietary. Kaiser has the ability to use both.

Dr. Cardo commented that while there has been some progress, overall the use of antibiotics is still bad in terms of prescribing antibiotics when they are not needed at all, or prescribing the wrong antibiotics. The most important medications in terms of adverse drug events for children are antibiotics. CDC is working with inpatient and outpatient data and with different groups, but CDC cannot do everything. This work has to be embraced by all of healthcare, and more aggressive efforts must be made in order to make major improvements.

HICPAC asked how many hospitals are contributing to the NHSN AU, noting that the ability to cite this information can motivate other hospitals to contribute.

Dr. Srinivasan replied that approximately 180 hospitals have ever submitted monthly data to the NHSN AU module, and about 100 are now actively submitting data. Some “go in and out” due to transitions in electronic health record (EHR) systems. Some large health record companies are now coming into NHSN, and CDC has heard that other large companies are on the verge of being able to report, like TheraDoc. Many of the early hospitals were TheraDoc facilities. TheraDoc underwent changes and is supposed to be available again in early 2017, so many of those hospitals as well as new ones will be able to return. Epic is now in, and one hospital has been able to use a third company called Asolva, which uses web scraping to sit on top of any data system, extract the AU data and admit/discharge/transfer (ADT) data, and submit them to NHSN. This hospital is the first to have been able to do that, and it was cost-effective for them.

Regarding Dr. Cardo’s comments and the map that Dr. Srinivasan presented of the hospitals implementing the Core Elements, Mr. Hageman asked HICPAC to indicate whether they have implemented the elements within their facilities and, if so, what barriers they have encountered; whether any of the academic centers are interacting with any of the critical access hospitals or other nearby hospitals in a regional approach to provide guidance; and what facilitated increases in the percent of Core Elements implemented. HICPAC members shared the following:

- Legislation is a good way to achieve implementation. In California, a law was passed that all hospitals had to have stewardship programs by July 1, 2016. An active HAI Advisory Committee helped lead to the legislation. In December 2013, that committee recommended a definition of stewardship that preceded the CDC definition and included basic, intermediate, and advanced levels. The basic components were codified into a law. One goal is to ensure that outpatient care and long-term care are not different. Missouri passed legislation that will require all hospitals to have a stewardship program that includes the seven Core Elements in place by 2017. Missouri law also requires all hospitals to report antimicrobial use and resistance (AUR) for 2018. Missouri is the first state to require that reporting.
- Having available guidance, and CDC maintaining transparency about it, will be helpful in changing what are now recommendations to requirements.
- Some rural critical access hospitals have contracted with academic medical centers for subject matter expertise consultation because they do not have infectious disease physicians. Infection control often is grouped in with quality, etc. These hospitals may even contract a person to review selected cases periodically with the pharmacist, and have access to the EMR. A regional approach could be considered.
- It can be beneficial to reach out to all hospitals in a system to gain leadership buy-in, to review the seven Core Elements, and to advise how they could be put into place in each facility. Access to system support and expertise are helpful, especially for hospitals that do not have on-site infectious disease physicians.

- In terms of measurement, providing information about the approach of using a vendor and determining the cost of a system would be beneficial so that individual health systems do not have to navigate this process on their own.

HICPAC asked about instances in which the addition of patient-level data in the Kaiser experiment reversed, rather than tempered, the SAAR. ICU level variability is also important. If DRGs and documented codes are used, there is concern about sepsis and effects on the SAAR. Many facilities use these codes. HICPAC wondered whether changes were observed in unit-level SAARs when patient-level data were added.

Dr. Srinivasan replied that observations have been made in unit-level SAARs, and sepsis has been an important driver in those observations. Kaiser is beginning to look at some of the diagnosis codes to hone in on how much influence the sepsis codes have and if they are a significant driver of where the differences occur. There were reversals, and there was a correlation depending on the type of SAAR, with a range of 8% to 22% high/low mismatches. That is how cutoffs and thresholds get set, and is concerning.

HICPAC pointed out that inadequate work has been done in reaching the end user, who is the patient. There continue to be complaints from providers that patients want antibiotics for themselves or their children. Physicians often find themselves “in a bind,” trying to do the right thing based on their knowledge, but it takes 15 minutes to explain to a patient why antibiotics should not be given, versus 5 seconds to write a prescription. CDC can help educate the public about the tension of those two realities.

Dr. Fleming-Dutra said they hear frequently from clinicians in the outpatient setting that their perceptions of patient demand are driving unnecessary antibiotic prescribing. Interestingly, those perceptions and the actual expectations of patients do not always align. This situation speaks to the need for interventions, including communications training. In addition to addressing this issue in the Core Elements, CDC’s communications group is working diligently to refresh the campaign, which will help the public understand that there are adverse risks and events from antibiotics, and they should be used only when needed.

Dr. Srinivasan added that exactly the same observation could be made about opioids. It takes 5 seconds to write a prescription for Vicodin® and half an hour or longer to counsel a patient about why it is not needed. The patient will complain, give a lower score, and go to another clinic. However, no one advises giving the patient the Vicodin® because of the risks of the opioid. That is a key message to translate to antibiotic prescribing.

America’s Essential Hospitals (AEH) asked whether having an antibiotic stewardship program that incorporates all of the Core Elements has been correlated to show actual antimicrobial usage change in a facility, especially in terms of who takes ownership of orders and provider factors, such as experience and training.

Dr. Srinivasan said that data specifically at the provider level are not yet available, but CDC is assessing the elements in terms of hospitals that report the elements and their AU data. The project with Duke will prospectively examine what occurs if the Core Elements are implemented or expanded, and how that change is reflected in the SAAR. The provider work is also important and is a next step.

CSTE wondered whether CDC has had an opportunity to assess data pertaining to the impact of telemedicine, which is rapidly increasing, on antimicrobial prescribing in the outpatient setting.

Dr. Fleming-Dutra responded that while CDC hopes to do this analysis in the future, they have struggled with finding data pertaining to telemedicine visits and adequately understanding what occurs in those encounters. There has been involvement with telemedicine groups, so CDC hopes to have more information to share with HICPAC in the future.

Guideline Updates

Neonatal Intensive Care Unit (NICU) Infection Prevention Guideline Update

Amanda Overholt, MPH

Guidelines Team

Division of Healthcare Quality Promotion

National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

Ms. Amanda Overholt provided an update on progress on the Neonatal Intensive Care Unit (NICU) Infection Prevention Guideline since the last HICPAC meeting. The writing group has been finalized, and the guideline will address the following topics:

- *Clostridium difficile* (*C. difficile*)
- Methicillin-Resistant *Staphylococcus aureus* (MRSA)
- Central Line Associated Bloodstream Infections (CLABSI)
- Respiratory Infections (e.g., Respiratory Syncytial Virus (RSV), Pertussis, Varicella)

The writing group reviewed the original *C. difficile* key questions and found that they were too general and did not reflect the data previously extracted into the evidence tables and draft. The group therefore refined the key questions to better reflect their real intent and to align with the abstracted data.

Key Question A

Original

- What are the most effective strategies for *C. difficile* testing in NICU patients?

Refined

- What tests or sequence of tests for *C. difficile* infection have the best performance (i.e., sensitivity, specificity, predictive value) for detecting clinically relevant *C. difficile* infection (defined by presence of free toxin, toxigenic bacteria, toxigenic culture) among NICU patients?

The refined Key Question A focuses on the test to be used rather than which infants should be tested, or the clinical characteristics that should prompt testing.

Key Question B

Original

- When should testing for *C. difficile* be performed in NICU patients?

Refined

- What clinical, demographic, or other characteristics (e.g., symptoms or symptom severity such as severe diarrhea) 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 interventions (e.g., treatment, special transmission-based precautions to supplement **usual** NICU infection prevention standards)?

The refined version of Key Question B focuses on factors that may prompt testing because it might lead to a diagnosis of *C. difficile* cases that warrant *C. difficile*-specific interventions, or risk factors for clinically relevant *C. difficile* infection.

Key Question C

Original

- What is the significance of a positive *C. difficile* test in NICU patients?

Refined

- What **currently recommended** *C. difficile*-specific transmission-based infection prevention practices for preventing *C. difficile* transmission in healthcare settings (for patients of any age) have been shown to decrease the risk of *C. difficile* transmission from symptomatic *C. difficile*-infected NICU patients to other NICU patients, healthcare personnel (HCP), or caregivers in the NICU?
- For symptomatic *C. difficile*-infected NICU patients, what **special** infection prevention interventions (e.g., reduce bed crowding) used to supplement **usual** NICU infection prevention standards have been shown to decrease *C. difficile* transmission to other NICU patients, HCP, or caregivers in the NICU?

The refined version of Key Question C focuses on its intent, which is to focus on currently-recommended *C. difficile*-specific supplemental interventions that might decrease *C. difficile* transmissions in NICUs.

The updated 2012–2016 literature search pertaining to *C. difficile* yielded approximately 82 new articles. The writing group reviewed the titles, abstracts, and/or full texts of all articles. One article met the inclusion criteria and was added to the evidence and Grading of Recommendations Assessment, Development and Evaluation (GRADE) tables, for a total of 6 articles. The writing group has reviewed the updated evidence tables and is now reviewing the GRADE tables. The next steps are to review and finalize the draft recommendations and to present them at a future HICPAC meeting.

The writing group made no changes to the key questions in the MRSA section, as they felt that the original key questions were valid and specific. The key questions in the MRSA section are:

- What are the risk factors for MRSA colonization and infection in NICU patients?
- What are the most effective strategies to screen for MRSA colonization in NICU patients?
- What are the most effective measures to prevent hospital-acquired infection or colonization with MRSA?

The 2012-2016 literature search is complete for the MRSA section. It yielded approximately 645 articles. The writing group is now reviewing the full texts of approximately 23 articles for relevant data and previously extracted data. They will then update the evidence and GRADE tables and the narrative summary.

The writing group would like HICPAC's input regarding whether the MRSA section should also include a section on Methicillin-Susceptible *Staphylococcus aureus* (MSSA). Should articles about MSSA be added and, if so, should they be searched in a systematic review and included in evidence tables, or only added opportunistically and included in the narrative summary as additional "contextual information?" Some possible advantages of including MSSA in the systematic review are:

- There is evidence that MSSA causes clinical disease in NICU patients;
- There is a higher prevalence of MSSA as opposed to MRSA in NICU patients; and
- New evidence of interventions to reduce MSSA-related disease in NICU patients is available.

Some possible disadvantages of including MSSA in the systematic review are:

- Most NICUs do not routinely screen for MSSA;
- It is difficult to identify MSSA transmission chains; and
- The addition of MSSA may greatly increase the number of papers and review burden.

Discussion Points

Dr. Diekema opened the floor for discussion on the inclusion of MSSA in the guideline. He reminded everyone that when they set out on this guideline, it was not meant to be comprehensive. Rather, it was intended to focus on the four specific topic areas, which is why MSSA was not initially included in the key questions. The following comments/suggestions were made regarding the *C. difficile* key questions and MSSA:

***C. difficile* Key Questions**

HICPAC suggested condensing the wording of the *C. difficile* key questions. They could mirror the MRSA questions, which are more focused. The *C. difficile* and MRSA key questions either should be similarly detailed, or similarly streamlined.

HICPAC noted that it appeared that different individuals reviewed the *C. difficile* key questions and the MRSA questions. Ms. Overholt said that the writing group was comprised of the same people, but they had delved more deeply into the *C. difficile* key questions and were just getting started on the MRSA key questions.

MSSA

Even if NICUs are not systemically screening for MSSA, HICPAC pointed out that many MSSA-positive patients will still be identified. The interventions for MSSA and MRSA are similar in many respects, and the burden of disease is higher for MSSA than for MRSA.

HICPAC suggested that if MSSA is going to be included, for clinical reasons, they should avoid the non-systematic, opportunistic selection of literature because the hallmark of these systematic evidence searches is reproducibility. There could be concerns if they are not specific about the criteria used to select articles. Therefore, if MSSA is included, there should be a systematic search.

SCCM pointed out that if MSSA is more prevalent, causes diseases, and has available interventions, it might suggest that NICUs should screen for MSSA, which could be of tremendous clinical importance.

HICPAC suggested approaching MSSA by discussing the problem of *Staphylococcus* in general in the NICU, and then addressing MSSA in particular.

If MSSA is included, which seems appropriate, HICPAC suggested including recommendations for prevention of transmission. Dr. Katy Irwin was aware of a few studies that have looked at MSSA interventions, including one by Dr. Aaron Milstone. If the literature review is expanded for all *Staphylococcus*, Dr. Irwin thought they might find one or two articles that might inform the development of recommendations. However, it is important to understand at the outset that there are very few MSSA-specific interventions, given that it is a new arena.

In terms of screening, HICPAC emphasized that MSSA is also normal flora. Screening will raise the question of how to prevent NICU babies from getting infections with their normal flora, which could be problematic.

From a public health perspective, NICU outbreaks typically are MRSA, MSSA, and late onset group B *Staphylococcus*. From a burden of disease perspective in public health, CSTE and the Association of Professionals of Infection Control and Epidemiology (APIC) suggested that consideration should be given to looking at *Staphylococcus aureus* and addressing MRSA and MSSA in a portion of the guideline.

APIC noted that while MSSA might not be widely thought of from the preventionist's perspective, some NICUs focus on both organisms. If there is an opportunity to investigate who is separating these organisms, it might be helpful.

HICPAC emphasized that including MSSA does not oblige them to do everything the same way for MSSA as for MRSA in terms of screening and isolation. They should be guided by the data, but also remember that the burden is significant.

The writing group discussed the issues of isolation versus standard precautions in the NICU and felt that the issues could be addressed in a manner similar to a triage, by going through *Staphylococcus aureus*, MSSA, and MRSA. Different recommendations could be culled out, but the writing group did not feel that they could solely focus on MRSA because of the burden of disease of *Staphylococcus aureus* and the negative consequences when NICUs have an MSSA outbreak.

Dr. Diekema observed that the group seemed to be coalescing around the view that MSSA should be included in the NICU Guideline.

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. David Kuhar reviewed Section 1 of a draft of the *Guideline for Infection Control in Healthcare Personnel*, which had been provided to HICPAC for review in advance of the meeting. He explained that sections of this guideline could be posted in parts as the update process moves forward. He briefly described the *Guideline for Infection Control in Hospital Personnel, 1998* and

the updated draft of Section 1, detailed the recommendations in the draft, and invited general feedback from HICPAC regarding whether the key issues are discussed effectively, whether any omissions should be addressed, and/or whether any additions or modifications are needed to the general content of the document.

The 1998 guideline provided recommendations for reducing the transmission of infections among HCP and patients. This guideline differs from the *Guideline for Isolation Precautions*, as it was aimed at occupational health providers working in healthcare facilities. While it was intended to apply to both inpatient and outpatient healthcare settings, much of the discussion focused on hospitals. The 1998 guideline consisted of three general sections. The first, which the circulated draft updates, addressed the infrastructure and routine practices of the occupational health service (OHS) for providing infection prevention services to HCP. The second provided recommendations on strategies to prevent transmission of infectious diseases among personnel and patients that involve the OHS, such as providing immunizations or managing ill and exposed personnel, including post-exposure prophylaxis (PEP) and work restrictions when necessary. The third general section addressed special populations of HCP who may require individualized considerations for occupational infection prevention, such as pregnant or emergency response personnel, as well as miscellaneous topics not addressed elsewhere.

The update is currently planned to have at least the following two sections:

Section 1: Occupational Health Services Infrastructure and Routine Practices for Occupational Infection Prevention

- Descriptive text plus hyperlinks to supplementary materials that can be updated over time (e.g., preplacement vaccines)
- Planned to be published before Section 2

Section 2: Epidemiology, Prevention and Control of Selected Infections Transmitted Among HCP and Patients

Will address special HCP populations (e.g., pregnant, immunodeficient, those who temporarily practice outside the US)

Section 1 is planned to be published before other sections. As noted earlier, the second section will provide information on the prevention of selected diseases that may be transmitted among HCP and patients. Special HCP populations who may require more individualized considerations for infection prevention will be addressed as part of each individual pathogen section rather than in a separate section of the guideline.

The updated versions of both sections of the guideline have a slightly revised organization. Section 1 has two new infrastructure elements for an occupational health service added to those discussed in the 1998 guideline:

- Leadership and management
- Assessment and reduction of risks for infection among populations of HCP

The revised Section 1 also includes a new subset of recommendations for administrators and leaders of healthcare organizations who support occupational infection prevention services for HCP. As healthcare is increasingly provided in outpatient settings, a discussion of challenges in delivering off-site occupational infection prevention services has been added. Additionally, the

list of pathogens is being revised for Section 2, though many will be carried forward from the 1998 guideline, as they are still relevant. The intent is to publish the guideline as a living document on CDC's website in order to facilitate user access and future updates. The update process will involve HICPAC input and public comment for all sections.

The writing group was reconvened to begin work on updating the 1998 guideline, focusing on Section 1 and the draft presented for discussion, in November 2015. The recommendations in Section 1 are primarily "good practice statements." These are considered to be "accepted practices" or "standards of care" based upon expert opinion, program experience, other guidelines, and the literature review. Other recommendations may be part of federal, state, and local regulatory requirements. In the Section 1 draft, the recommendations have not yet been flagged with any categories. Dr. Kuhar asked HICPAC to keep the following questions in mind as he reviewed the recommendations for each element of Section 1:

- Should any recommendations be added, omitted, rephrased, or modified?
- Do the recommendations generally apply to a broad range of healthcare settings (e.g., inpatient and outpatient) and methods of delivering occupational infection prevention services (e.g., on-site, off-site, contracted services)? If not, what changes are suggested?

He referred HICPAC to the recommendation list for Section 1, which listed each essential infrastructure element of an OHS for providing infection prevention services to HCP, along with the number of proposed recommendations for each element. Many have sub-recommendations.

- Leadership and Management: 15 Recommendations
- Interdisciplinary Communication and Collaboration: 5 Recommendations
- Assessment and Reduction of Risks for Infection among Populations of Healthcare Personnel: 6 Recommendations
- Medical Evaluations: 17 Recommendations
- Occupational Infection Prevention Education and Training Programs: 3 Recommendations
- Immunization Programs: 4 Recommendations
- Management of Potentially Infectious Exposures and Illnesses: 3 Recommendations
- Management of HCP Health Records and Information: 7 Recommendations

Dr. Kuhar discussed the recommendations for each element in two groups, first discussing the recommendations directed to administrators and leaders of healthcare organizations, and second discussing the recommendations directed to the leaders and staff of occupational health services. The overview for each section follows, and HICPAC feedback is provided within the Discussion Points section, grouped by topic.

The *Leadership and Management* section addresses the importance and role of OHS leadership in facilitating the delivery of occupational infection prevention services. Every section in the draft guideline, including this one, includes discussion of selected federal requirements that affect the delivery of occupational infection prevention services. Dr. Kuhar pointed out an error in 1.3.1, which states, "For administrators or healthcare facilities and service delivery programs," but should state, "For administrators and leaders of healthcare organizations."

The *Interdisciplinary Communication and Collaboration* section addresses the need for communication and collaboration between OHS and other services whose purview affects occupational infection prevention services, such as infection prevention, human resources - especially when work restrictions are needed - and others.

The *Assessment and Reduction of Risks for Infection among Populations of HCP* section, one of the new elements proposed in the update, addresses an OHS providing infection prevention services to HCP. It highlights a role for OHS in assessing infectious risks for HCP, identifying hazards, and implementing risk reduction plans.

The *Medical Evaluations* section addresses the settings or encounters where occupational infection prevention services are provided to HCP and issues related to the delivery of those services, the importance of health counseling, and communication regarding information obtained in medical evaluations.

The *Occupational Infection Prevention Education and Training Programs* section addresses issues related to the delivery of, and topics for, occupational infection prevention education and training of HCP. The proposed recommendations for this section are targeted to leaders and staff of OHS.

To put the *Immunization Programs* section into perspective, Dr. Kuhar explained that relevant recommendations on strategies to deliver immunizations to HCP, as well as which vaccines are recommended for HCP, are typically issued by other divisions in CDC and the Advisory Committee on Immunization Practices (ACIP). Those sources are referenced in the draft. For this section, the proposed recommendations address issues such as the development of policies, procedures, and plans to ensure HCP have evidence of immunity to vaccine-preventable diseases.

The section on *Management of Potentially Infectious Exposures and Illnesses* addresses issues related to providing these services, such as challenges associated with presenteeism, underreporting of exposures by HCP, and work restrictions. The proposed recommendations for this section are targeted to leaders and staff of OHS.

The section on *Management of HCP Health Records and Information* is intended to address maintaining confidential personnel records in a rapidly retrievable format to facilitate provision of infection prevention services.

Discussion Points

Leadership and Management

HICPAC asked where metrics of injury and exposure fit into the guideline, given that certain measures are required and leadership needs a way monitor performance. Measurement is addressed to some extent in the guideline, but perhaps the discussion should be expanded. An obvious metric would be vaccination rates.

Dr. Kuhar agreed that while the guideline touches on measurement, no bar is set on any metrics per se. He asked for suggestions for how the guideline might approach this issue. The document is intended to provide high-level, broadly applicable recommendations. Recommendations for immunization programs, particularly strategies to employ and the vaccines recommended for HCP, tend to come from other CDC divisions and ACIP. The intent in the guideline and recommendations is to refer to what already exists, not to recreate it. The

Immunization Program section appears to be “light” on recommendations because the writing group focused on the creation of policies and procedures that include standing recommendations already in place from ACIP.

The writing group noted that the final bullet that states “Oversee, and charge OH leaders to participate in performance measurement and continuous quality improvement activities aimed at improving occupational infection prevention services,” is the general statement. However, the document could be more specific about identifying key metrics for the occupational program to apply. Potential metrics might include vaccination rates, compliance with a tuberculin skin test program, and other examples. These recommendations are already lengthy, but some examples could be included.

CSTE suggested that a checklist or other tool would be helpful, particularly if these services are being contracted out, to ensure proper adherence to the recommendations. There are examples of facilities contracting services out and finding significant problems.

HICPAC pointed out that OHS seems to struggle with maintaining nursing and medical staff with formal training in occupational medicine. Perhaps the statement regarding appropriate training and experience (1.3.1, second bullet) could be strengthened by providing examples, such as Board Certification, Nurse Practitioner in Occupational Medicine, etc., to help leaders understand that some program staff must have formal training and backgrounds to provide the expertise needed for the many challenges in occupational health.

AEH added that occupational health is often responsible for infection prevention and control as well, which can be challenging. While this draft is a wonderful updated document, there are likely to be problems, so specific examples should be included. Though it may be a touchy subject, perhaps a recommendation could be made that there should be one full-time equivalent (FTE) heading this program, versus a “dual-hatted” leader. In smaller hospitals this task might be assigned to an Infection Preventionist (IP), which could be overwhelming.

Dr. Kuhar agreed with regard to the issue itself, but in the effort to make the guideline broadly applicable, they must be careful in terms of defining how many “hats” a person wears.

The writing group added that a conscious decision was made to point out the overwhelming volume of work that is involved in the program without specifying a number of FTEs that should be committed to it. For a large facility, one FTE would not be sufficient; it might be too much for a smaller facility.

AEH pointed out that Occupational Health is embedded into the *Infection Prevention Control* chapter, versus having its own chapter. That is why facilities tend to turn to IPs to manage the program. Perhaps the Joint Commission could assist with this.

SHEA agreed with including language that is more informative in terms of metrics, such as “The occupational health program periodically, and no less than yearly, reports key metrics to organizational leadership.” Examples could be included, such as the percent of employees who are compliant with vaccinations; the percent of employees who participate in the respiratory protection program; purified protein derivative (PPD) tuberculin skin testing and conversion rates; etc., that might strengthen what the program has to report on.

HICPAC indicated that one of the challenges in occupational health is the plethora of individuals included under “healthcare professional.” Absolute employees of a facility are less problematic,

but language could be included to state that the administration should provide support within its occupational health program for students, non-employees who practice in the facility, and vendors who provide services to ensure that measures are met.

The goal of the document is to have a broad appeal, but HICPAC pointed out that all audiences might not know what is meant by “safety culture.”

Dr. Kuhar replied that the document does not describe in great detail what a safety culture entails. He asked whether that explanation would be a necessary addition to support the recommendation, or if it should be removed. It was noted that a definition is provided in the document’s glossary.

HICPAC suggested drawing from the patient safety literature to apply the same rigor to staff safety and a safety culture. Measurement is important and should be reported to the highest level.

AEH asked about a plan to provide appendices such as those in the tuberculosis (TB) guideline with examples of metrics, tools, ways to consider assessment, etc.

Dr. Kuhar indicated that there are supporting tables in various sections in the draft. However, in a way, “it stands as is.” If there are tables that should be included, DHQP would like to hear about them, but it also does not rule out the possibility of developing implementation tools that are not necessarily a part of the guideline, but could support the recommendations.

Dr. Diekema noted that the language HICPAC had before them did not include the narrative that supports the recommendations.

APIC asked whether conversions, immunizations, and exposures would be part of any occupational health department’s program in a healthcare organization. If not, perhaps a recommendation should be made that those are the minimum elements that should be measured, reported, and shared with hospital leadership. Occupational health works very closely with infection prevention departments when they are separate, and that partnership is critical.

Mr. Hageman suggested that the language throughout the document could be strengthened by replacing terms such as “support” and “advocate” with stronger terms such as “ensure.”

HICPAC agreed that the language is “soft” and expressed concern that readers might not know what they are supposed to do with many of the recommendations. The fourth bullet under 1.3.2, indicating that something should be done annually, is actionable; however, language such as “collaborate with” does not explain what someone is being asked to do. Even “convening a committee” is not strong language.

Dr. Kuhar noted that it was difficult to keep the recommendations general, and it was difficult to attach measurable items to them. More importantly, the intent behind many of the recommendations is to enable occupational health services to do their job and even to ask for what they need.

The writing group added that part of the goal for that specific recommendation, as well as others, was to point out to occupational health providers the areas where they should look for - and expect - collaboration and ask to be involved, versus being expected to run and lead a

committee. They need to know their regulatory compliance representatives and be able to interact and collaborate with them. The goal was to identify the different departments and areas they need to know. Some of that information is further specified in the text; the recommendation is a summary of that point.

Regarding the actions they are asking occupational health personnel to take, HICPAC thought that inclusion of a set of target, or expected, accomplishments that occupational health should achieve in an ideal setting would help inform this document. This addition would address the operational aspect of the recommendations, in terms of putting them into practice.

The writing group pointed out that the document becomes more specific as it goes along within each of the other components. Consideration can be given to how to make it more actionable.

AEH noted that some policies and procedures must be updated annually due to federal law or the Occupational Safety and Health Administration (OSHA), such as bloodborne pathogens, while others do not require this process. Perhaps the language for 1.3.2, bullet 4, could state, "Develop and review annually, and update when necessary . . ." and the addition of "at a minimum, at least once a year" could be made to 1.3.2, bullet 8.

Dr. Irwin emphasized that some of the top-line recommendations, including in the first three elements, are linked with tables that give specific examples of areas of collaboration or leadership that could be important. It is difficult when dealing with the variety of settings ranging from, for instance, a home care setting with dispersed HCP to an acute care hospital. Each type of facility will have different priorities and service delivery issues.

HICPAC expressed concern that facilities are likely to pull the guidelines out just like the sample under review. The document is big, and people do not tend to keep the document with the recommendations. While guidelines always begin with leadership and management because nothing can be done without them, perhaps consideration should be given to reordering the document.

Dr. Irwin explained that the guideline will be an electronic document in which the recommendations will include hyperlinks to the tables that list strategies for implementation.

ACOEM commented that one of the principal challenges with this document is that the entire infrastructure for an OHS is meant to address not only infection control, but also chemical exposures, wellness, stress in the workplace, slips and falls, patient handling, etc. It is tempting to make the document an operational manual that imposes others' strategies, or to make it a "laundry list" or "cookbook." While everyone would like a formal checklist, it is a challenge given the variety of facilities.

Interdisciplinary Communication and Collaboration

No additional suggestions were proposed for this element.

Assessment and Reduction of Risks for Infection among Populations of Healthcare Personnel

HICPAC asked about the risk assessments for infection prevention that occupational health services are currently performing.

Dr. Kuhar replied that a table in the draft gives examples of several ways in which such assessments might be conducted, such as reviewing sharps injury rates, assessing OSHA 300 logs to look for trends, identifying an issue, and implementing a plan for prevention.

HICPAC suggested adding more specificity to indicate some of the topics that are in the table so that the readers see terminology that leads them to the table.

Regarding the table for risk assessment, HICPAC suggested adding population disease prevalence. As part of The Joint Commission and other assessments, facilities need to know what is occurring in the community. Building on an earlier comment regarding a minimum, perhaps the bullet under 3.3.1 could read, “Regularly review results of risk assessments, including sharps injuries among HCP, immunization rates, and illness management.” That phrasing indicates that this work needs to be done at a minimum.

Referring to the table from the full document that includes selected examples, AEH pointed out that there is an example of a risk reduction plan under “HCP illnesses management.” Of concern is that sometimes examples are interpreted as, “you must do that.” For instance, a statement is made about “Revising sick leave policies to ensure they are non-punitive and inform HCP of the changes.” Perhaps this statement should include information about collaboration, as most OHS do not have the authority to create sick leave policies. That process is usually undertaken by the Human Resources department or may be part of a union or worker’s compensation situation.

Dr. Kuhar emphasized that the intent was to provide examples, as opposed to having the examples interpreted as a requirement. The examples can be modified to make them more generally applicable.

HICPAC indicated that one of the goals for the example tables is to avoid the likelihood that an example provided in a recommendation would become a de facto requirement. This concept can be revisited to determine which items should be included in the actual recommendations as minimal efforts that must be made, and how to keep the examples codified as true examples and not recommendations.

Medical Evaluations

VA expressed concern that some of the items in 4.2.2 and 4.3.2.1 are fairly intrusive, as they address risk of acquiring disease as opposed to transmitting disease. It is not clear that it is permissible to ask an employee if he/she has X, Y, or Z or to “enable confidential communication between clinicians who perform medical evaluations.” Many of these items may cause issues with unions, privacy acts, etc. Consideration should be given to the legal and privacy implications for the employee. Will they not be hired? Will they not be permitted to do their job? For example, it would be illegal to ask a nurse prior to employment if he or she is allergic to latex and then deny employment if so.

ACOEM added that it is illegal to conduct pre-employment examinations of that nature. The placement examination occurs after an individual is hired. If a facility needs to assess whether someone is latex-allergic, under the Americans with Disabilities Act (ADA), appropriate accommodations must be made. That process occurs after the institution has committed to the individual as an employee, with the exception of drug screening, which can be performed pre-employment.

The writing group clarified that the notion of “acquiring” in the document pertains to the increased risk to HCP of acquiring something on the job due to an underlying health condition, and to enable the employer to provide a safe work environment to employees that reflects whether they have a specific risk. This section may need further legal review because there are limitations on what can be asked and what people can be asked to disclose.

ACOEM emphasized that most importantly, a medical evaluation has to be linked to the job itself. Questions cannot be asked about conditions that having nothing to do with the job, even in many cases with infectious disease acquisition or transmission.

Dr. Kuhar added that discussion within the text refers to the ADA regarding limitations to questions that can be asked of HCP. The discussion indicates that OHS providers need to be familiar with those requirements.

Regarding 4.3.2.2 pertaining to periodic medical evaluations, VA noted that while there are many vaccine-preventable diseases, not all of them relate to healthcare settings. Occupational health should not move toward the possibility of dual capacity of employees’ physicians as well as occupational health. OHS should provide only the vaccines that pertain to employees’ occupational work.

The writing group agreed and said that the statement, which follows the ACIP recommendations for HCP, was intended to make that point. Language can be added to make the point clearer.

Occupational Infection Prevention Education and Training Programs

HICPAC suggested instead of stating “no recommendation” under 5.3.1, to state “no additional recommendations to those listed below.”

HICPAC suggested adding language under the Leadership section regarding ensuring that HCP are allotted time for this education, or that leadership should support delivery of this education to HCP as needed.

Given that some of the recent infection prevention guidance has emphasized competency-based education as opposed to “read and review,” HICPAC suggested including competency-based assessments where possible and/or relevant.

Dr. Bell noted that while everyone would agree that “competency” is desirable, the challenge is that no one can really define what that is and how to measure it. The goal is to require demonstration of competency, but even some state health departments are asking what that means, and there is not a clear answer. If standard metrics and demonstrations exist, they should be included. If they still need to be devised, it might be too early for inclusion in the guideline.

Immunization Programs

The VA is aware of administrators who wish to charge for some of these immunizations, even though an employee is supposed to have them to work. It is not clear whether an institution can require a vaccine, administer it to employees, and charge them for it. It may be better for HICPAC to remain silent on this point, but it is a disincentive.

The writing group indicated that there are examples of how to increase vaccination rates that include provision and provision at no cost, but the language does not specify that facilities have to provide vaccines, or provide them at no cost.

Dr. Kuhar noted that the document *Immunization of Healthcare Personnel 2011* issued by CDC and ACIP addresses the cost coverage of some, but not all, of those vaccines.

HICPAC added that state or hospital policies require certain vaccines for people to work in healthcare facilities, unless someone has a prohibitive health condition. In addition, there are recommended, but still voluntary, vaccines. Recommended voluntary vaccine coverage can be improved, but mandatory vaccines should be 100%, with very few exceptions. Perhaps some language should be included in the document to clarify this point.

The writing group indicated that because determination by state is highly variable with respect to recommended versus mandatory vaccines and exemptions, specific recommendations were not made in the draft guideline.

HICPAC suggested including language such as “based on your state’s requirements” in order to acknowledge the variation.

The writing group will further consider the language pertaining to recommended, mandatory, and exempt.

HICPAC suggested that the item under 6.3.2, bullet 1, stating “specifies appropriate storage, handling, administration, and documentation of vaccines,” should also serve as a quality control or performance measure, especially given the trend of taking vaccines to the floor, ward, and unit.

ACOEM suggested the following revised language for 6.3.2 bullet 1: “Develop, update, and implement policies and procedures on immunizing HCP on an annual level . . .”

The writing group said that while the document remains generally neutral within the text and tables on specific vaccines as mandatory or recommended, a simple statement of fact could be made that in the literature, the most effective way to achieve and sustain high vaccination rates is through mandate or condition of employment. That statement is not controversial and could be explicitly stated in the text.

Management of Potentially Infectious Exposures and Illnesses

Instead of stating “no recommendation” under 7.3.1, HICPAC suggested adding the idea that administrators and leaders need to be aware, informed, and educated regarding infection risks and exposures that occur among their employees. They should be held accountable for that understanding and awareness.

The writing group plans to add language to that effect to the Leadership section and could consider adding language in this section as well. This section should also state that administrators and leaders should ensure the enforcement of work restriction policies, etc.

Under 7.3.2, APIC suggested a revision to the first bullet to read, “Adhere to current US Public Health Service exposure and illness management recommendations and state and local regulations.”

Management of HCP Health Records and Information

No additional suggestions were proposed for this element.

General Comments

HICPAC pointed out that the draft document contains approximately 95 separate recommendations. The development of tools to guide implementation will help increase uptake of the good work that is reflected in the guideline.

AEH expressed gratitude to the writing group for tackling such a major endeavor, because many in the field have been waiting for this document for the past few years.

On behalf of HICPAC, Dr. Diekema thanked Dr. Kuhar and the writing group for their extensive work.

Vote: Healthcare Personnel Guideline Section 1

Dr. Diekema moved to provisionally approve the draft of Section 1 of the Healthcare Personnel Guideline, with incorporation of the suggestions made during the discussion period. Dr. Howell seconded the motion. The motion carried unanimously, with no opposition and no abstentions. The disposition of the vote was as follows:

13 Favored:	Babcock, Brown, Bryant, Chopra, Diekema, Fauerbach, Howell, Huskins, Janssen, Maragakis, Patterson, Rogers, Yokoe
0 Opposed:	None
0 Abstained:	None

HICPAC Endoscope Reprocessing Workgroup

Vickie Brown, MPH, RN, CIC

HICPAC Member

Co-Chair, HICPAC Endoscopy Reprocessing Workgroup

Ms. Vickie Brown provided HICPAC with an update on the activities of the Endoscope Reprocessing Workgroup.

HICPAC formed the Endoscope Reprocessing Workgroup in response to a number of outbreaks of bacterial infection associated with improperly reprocessed endoscopes. The workgroup provided updates to HICPAC at the March and July 2016 meetings. The devices themselves are highly complex, and the cleaning and reprocessing steps are technical, with many potential risks for error. The goal of the workgroup is that healthcare facilities should have a reliable, high-quality system for endoscope reprocessing which minimizes infection risks. The Workgroup Charge is to:

- 1) Identify the elements necessary to achieve this goal, including risk assessment tools, training and competencies, measurement and management; and
- 2) Deliver these draft elements and recommendations to HICPAC for deliberation and input so that HICPAC may produce recommendations to CDC.

The workgroup has been active, with membership representing a range of areas of expertise as well as professional organizations, federal agencies, and CDC technical experts. The workgroup activities have included:

- Biweekly conference calls to identify gaps and priorities
- Conceptualizing the final product of the workgroup
- Finalizing the *Essential Elements of Flexible Endoscope Reprocessing* document
- Refining Toolkit Document examples that can be provided to users
- Creating and refining the Future State document.

The [Essential Elements of a Reprocessing Program for Flexible Endoscopes](#) was recently posted on the HICPAC website. The endoscope reprocessing toolkit sample documents consist of the following:

- Gap Analysis & Risk Assessment Tool
- Audit Tool
- Inventory & Repair Log Template
- Competency Verification Checklist
- Policy Template
- Root Cause Analysis

Ms. Brown posed the following discussion questions to HICPAC:

- Are any sample documents missing from the toolkit?
- Are any of the toolkit sample documents missing any important points?
 - a) Audit Tool
 - b) Inventory and Repair Log
 - c) Reprocessing Competency Assessment
 - d) Sample Policy
 - e) Gap Analysis and Risk Assessment
 - f) Root Cause Analysis
- Is the Future State document missing any important points?
- Are there elements in the Future State document that require further refinement?

Discussion Points

Are any sample documents missing from the toolkit?

HICPAC suggested creating a tool modeled after a Job Instruction Sheet that had some of its origins from Toyota Motor Corporation. Such a tool could be useful because a great deal of detail and intricacy is involved in reprocessing, and it is essential to ensure that the person doing the reprocessing knows what he or she is doing, and that there is an assessment of the work.

Dr. Yokoe said that these documents are intended to be living documents, so there is potential to add to and revise them.

Are any of the toolkit sample documents missing any important points?

AEH found the Audit Tool to be great, but noted some inconsistency regarding lighted magnification. Some of the documents state “as needed,” and others list it as an option. For example, in the competencies, it is listed as a line item to be done. “As needed and appropriate” could be used and made consistent throughout the documents.

Regarding the Reprocessing Competency and Assessment tool, HICPAC did not think it was clear how to fill in the data for the “verification method” column. Additional direction would be helpful.

Is the Future State document missing any important points? / Are there elements in the Future State document that require further refinement?

HICPAC supported the document and found it to be potentially very helpful, as it specifies efforts that will help to move the field forward, rather than lamenting “being stuck.”

Dr. Bell expressed his gratitude for the Workgroup’s willingness to tackle this anticipatory aspect of the issue. He found the approach to be reassuring, and the document to be helpful as a thought tool. Even prompting people to think about these possibilities is healthy for the field.

HICPAC suggested a hierarchy to the numbered points - not in terms of importance, but based on short- versus long-term goals. Some might be simpler to do and could be done soon, while others might be longer-term fixes.

Under Item 4 regarding the development of single-use, disposable endoscopes and attachments, HICPAC suggested adding language about recyclable endoscopes. A great deal of medical waste could be generated based upon this aspiration.

Given that this document could apply to other devices and situations, HICPAC suggested that the Food and Drug Administration (FDA) assessment section could further discuss the scope of oversight, perhaps by area in addition to whether the device touches the patient. For example, the fact that a heater-cooler device does not touch a patient changed the way it was evaluated as a risk, but it was situated in a high-risk setting. The section on the formal infection risk assessment of new devices could be expanded to include comments about other ways to think about the scope of the device review process.

HICPAC emphasized the need for leadership and administrators to allow adequate scheduling time so that staff are not trying to use the same scope every 10 minutes, which forces errors and inappropriate use. Dr. Yokoe responded that this important point is included in the current document.

HICPAC noted that if this document works well, the kind of thinking behind it would be applicable to other products that HICPAC discusses, and will discuss.

Using single-use bronchoscopes increases procedure time by approximately 50%; HICPAC suggested including a comment on this point. There is concern that industry could perceive that these devices need to be rushed to market, and sometimes a rush can result in “klutzy” devices that decrease safety.

HICPAC suggested including language pertaining to the cost of care for patients, or thinking about the financial “toxicity” of procedures and devices.

Ms. Brown indicated that cost was not discussed by the workgroup as they were working on the Future State document, but it can be considered. She appreciated the comment regarding single-use devices. Perhaps the wording could be revised to specify that single-use devices need to be comparable in quality to reusable devices.

VA emphasized that the endoscope is a complicated device with continuous issues. It cannot be easily cleaned, and the cleaning products are toxic. A paradigm shift is key. Other approaches could be considered to result in the decreased use of endoscopes, such as non-invasive tests, removing sensors, etc. While the Future State document could help move the field forward, it should not be assumed that the document will solve the reprocessing problems. Mistakes will still be made, and the mistakes may not be revealed until identifiable organisms are detected.

Dr. Yokoe thanked Ms. Brown and Dr. Maragakis for their leadership and all of the members of the workgroup for their hard work, recognizing that they had engaged in an amazing, collaborative effort.

Vote: An Urgent Need for Safer Endoscopy: Time for a Paradigm Shift

Dr. Diekema moved to provisionally approve the Future State document titled *An Urgent Need for Safer Endoscopy: Time for a Paradigm Shift*, with incorporation of the suggestions made during the discussion period. Dr. Janssen seconded the motion. The motion carried unanimously, with no opposition and no abstentions. The disposition of the vote was as follows:

13 Favored:	Babcock, Brown, Bryant, Chopra, Diekema, Fauerbach, Howell, Huskins, Janssen, Maragakis, Patterson, Rogers, Yokoe
0 Opposed:	None
0 Abstained:	None

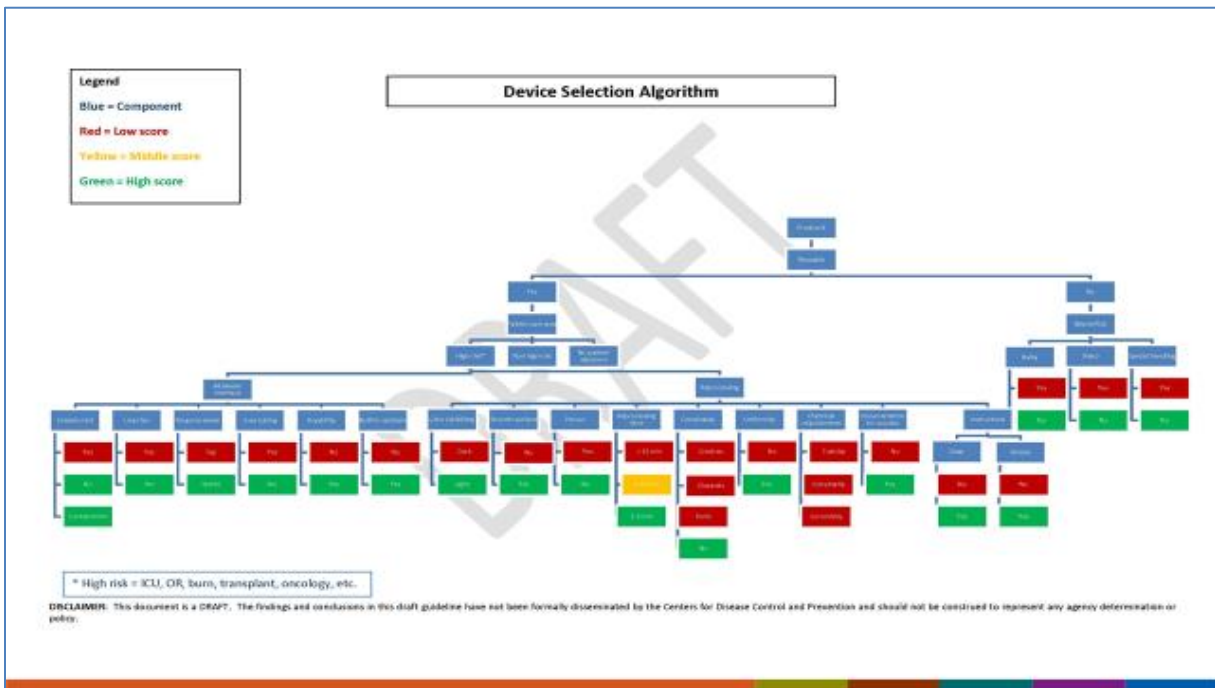
Device Considerations

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

During this session, Dr. Michael Bell reviewed a proposed device selection algorithm.

The systems for selecting and acquiring medical devices and equipment are complex. In some instances, the user selects what he or she wants. However, in many cases, someone other than the user is making those decisions and medical devices arrive at the point of use without much input from the users. Many of the problems and issues with endoscopes, heater-cooler units, and other devices with unintended consequences have their origins in design factors. In fairness, these design factors were never part of the statement of work. For instance, regarding the heater-cooler units, the design engineers were never told that the units needed to be safe from an infection prevention perspective. They were merely told that the device should perform certain functions. The same is true with endoscopes. No one ever said that they need to be easy to reprocess and it should be easy to tell if they are clean. There are opportunities to introduce infection prevention into conversations about device design and engineering.

When work began on the device selection algorithm, it quickly became clear that it is not realistic to expect to influence the engineering decisions of every product on the market at the design level. However, there is an opportunity to create a tool to stimulate attention to important factors as devices are considered, if possible. With that in mind, Dr. Bell shared this draft device selection algorithm with HICPAC:



Dr. Bell stressed that while this document is not final, it is a way to capture the various elements that need to be considered. The algorithm was conceived from the perspective of a user deciding between products - whether the user is a group purchasing organization or a materials management representative - to provide a list of things to think about when deciding between Product A versus Product B. Ultimately, when finalized, this tool would offer a way to grade products based on a safety framework. By making something derived from this chart available online, industry colleagues will have a target to aim for to make device development decisions that result in products that are easy to clean, non-porous, intuitive, consistent across other devices, etc.

The first cut in the algorithm is to determine whether a product is reusable. If it is not reusable, consideration must be given to the environmental impact of creating additional waste, and issues regarding handling of waste. For reusable products, the focus was on factors aimed at preventing cross-transmission.

There is a box for the “patient care area,” which is an attempt to address differences in products that might not be a concern in a hallway or a good public space, for instance, but would pose a hazard inside an operating theatre. The patient care area element breaks into risk depending on patient interaction, or no patient interaction. Based on earlier HICPAC conversation, the “no patient exposure” element may need to be described more clearly, since many people would say that a heater-cooler unit does not really have a patient exposure, but the devices still pose risks.

The “high risk” box includes consideration of the air/water interface, reprocessing issues, and instructions. Under the air/water interface are items related to moisture: creates mist, uses fan, requires water, uses tubing, dryability, biofilm resistance. These elements were included to stimulate thinking. First cut elements were included to stimulate thinking about items that impact reprocessing as well: color, smooth surface, porous, reprocessing time, complexity, uniformity,

chemical requirements, documentation for success. Consideration is also given to the quality of the manufacturer instructions.

Dr. Bell invited HICPAC to review the algorithm and share their thoughts about this initial list in terms of missing elements, elements that are impractical or difficult to implement, elements that should be added, etc.

Discussion Points

Feedback from HICPAC Members

The simplicity of the algorithm is commendable, and it could be useful for equipment selection and for manufacturers when developing devices.

It is not clear why certain patient areas are classified as high-risk, as the elements could be applied in any patient area. For instance, the same elements could be applied to dental equipment. Perhaps the high-risk area requires more “green,” but everything should be evaluated. It is relatively easy to identify high-risk areas in hospitals; low-risk areas are more difficult to identify. For example, immunocompromised patients are everywhere in hospitals. As there really is no low-risk area in a hospital, it would be beneficial to think of whether a device is invasive or non-invasive, whether it produces aerosol or droplets, etc., in order to help triage risk.

Consider adding a section regarding whether a device can be cleaned at all. There seems to be just as much struggle with devices that require nothing more than low-level decontamination and do not have direct contact with patients, but that healthcare personnel handle and carry as they move from patient to patient. Bar scanners and keyboards are examples of these devices.

The manufacturer’s instructions for some equipment in the environment say only, “wipe with a damp cloth.” Certain pieces of radiology equipment can be cleaned only with a germicide that has a 10-minute contact time: it is not likely that a piece of equipment can be kept wet for 10 minutes, or essentially cleaned twice. In addition to consideration of patient risk, perhaps this factor would nudge manufacturers to develop equipment on which more than one type of germicide with a short wet time can be used.

The use of “no patient exposure” is preferable to “no patient contact,” and defining this element more clearly would be helpful.

The inclusion of air/water is laudable. Air and water should receive attention, particularly after the experiences with heater-cooler units, when their emissions were not taken into account.

Maintenance is an important consideration that should be an evaluation criterion. It should be a consideration if a device is fairly easy to clean, but requires an elaborate maintenance process.

Consideration should be given to the composition of the materials in a device, such as tubing links. The materials should also be considered in terms of their cleanability, the ability of the device elements to be reprocessed effectively, and their durability.

Think about intuitive ease of use with respect to design considerations. Not only can there be harm in terms of infection, but also there can be harm when tubes are connected in a backward configuration. Compatibility or interchangeability with other devices is important to consider in order to reduce the chances of making mistakes such as using the wrong type of adaptor or

connector. Color coding and numerical coding are good examples of ways to address these issues.

In terms of instructions, reading levels have decreased and people engaged in cleaning and maintenance may not be as reading-adept, especially when working under pressure. With that in mind, instructions should be simple, clear, and illustrated. However, it also is important to incorporate the idea of understanding how much human beings fail at reprocessing. A car can tell the driver when it last got an oil change, so the idea of automated reprocessing tracking at the device level, by the device, seems like a good aspirational goal. Of note, Google considers its software to have been designed wrong if when it is tested, people do not use it the right way.

Weighing of the different elements needs to be taken into consideration and is likely to be challenging.

End users can help drive the market to some extent, and cost is a variable upon which many decisions and trade-offs are made.

Honing this algorithm down for engineers, with guidance up front, could help ensure that manufacturers are clear about expectations when a device comes to market. General design principles are considered when designing a product, but much of the design has to do with trade-offs. A great next step would be to convene engineers in to look at all of the considerations.

Feedback from Liaison Representatives

The Association of periOperative Registered Nurses (AORN) appreciates the intent to provide guidance to end users on infection prevention considerations for device selection. That intent could be clearer. Some elements of device selection appear to be missing, such as cost and maintenance. If the intent is to provide guidance to manufacturers for improving future devices, that guidance should be provided in a separate document. While it is not possible to educate every engineer, having some resource for them would be helpful. Conceptually, the algorithm makes a complicated process look simple. However, more guidance is needed with rationales to support the end users and risk assessment processes. Without those, an unintended consequence could be misinterpretation, or applying those broad categorizations to other types of devices, especially with regard to the fan element – nearly all electrical equipment have fans. More importantly, there needs to be guidance on assessing benefits and harms to patients. That element is absent from the algorithm. It that seems some devices could not achieve a high score. Some device types are likely to be all red, which is of concern in terms of the ability to clean robotic instruments, heater-cooler devices, duodenoscopes, etc. There is concern that having all of the scores in red would place the liability on the end user to choose the “lesser of the evils.” Specifically in the reprocessing section, input is needed from experts who are familiar with these processes. Reprocessing time is of particular concern to AORN. That time should be from the time decontamination begins until the item is patient-ready. This process takes hours, not minutes, so 15 minutes on the algorithm concerning because of the potential for circumventing good practices.

Dr. Bell responded that AORN’s points were very well-taken. This algorithm is a collection of elements to be considered, rather than a final product. A great deal of interpretive work is needed. CDC would never disseminate something like this for people to try to use. If an all-red device is being used, then it should be known. Much of this work does not endeavor to state whether a device is “good or bad;” rather, it is to help guide decisions regarding similar devices. He was less concerned about the cost component. If two devices are under consideration, one

of which is horribly difficult to reprocess and will be reused, and the other is 10% more expensive but is mostly “green,” a case can probably be made for the second device. He agreed that seeking input regarding reprocessing details is important. In terms of the Future State document, he wants to advocate for something that is better, versus the constant problem of “cutting corners.” The solution is not just to buy more devices or to have a larger staff for reprocessing, but to have devices that do not take as long to reprocess, if it can be done correctly. He stressed that there will be more rounds of input, especially on the interpretive issues, as this tool matures.

AEH requested clarification about whether the algorithm is meant for medical equipment devices or general-purpose use devices such as call bells, computer keyboards, etc. It is difficult to find cleaning and disinfection products easily. Manufacturers may provide 1500-page manuals to pore through to find this information. Perhaps manufacturers could be asked to provide user manual information and specifications that state more than “wipe with a damp cloth,” which is common.

Dr. Bell replied that the initial intent of the algorithm was to address devices that are used to treat patients and that carry higher risk if reprocessing is not successful. However, the algorithm may inform the consideration of general-purpose devices as well. Every surface in a healthcare facility should be easily cleanable, which is linked to human factors engineering and ergonomics. If the algorithm could evolve into a tool that rates devices on a range of, for instance, three to five stars, companies could aim to market their products as a five-star version. This algorithm may be a first step in that conversation.

Response Framework for Emerging Resistance

Alex Kallen, MD, MPH, FACP

Lead, Antimicrobial Resistance and Emerging Pathogens Team

Prevention and Response Branch

Division of Healthcare Quality Promotion

National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

Dr. Alex Kallen described a novel approach to standardizing the response to emerging MDROs.

To date, the aggressiveness of the response to some of these emerging MDROs has varied depending upon the jurisdiction and type of organism. For instance, the responses to the last 14 vancomycin-resistant *Staphylococcus aureus* (VRSA) have been vigorous, with thousands of people swabbed. There have been a number of vigorous CRE responses as well, but in general, those efforts have been less concerted, especially when the pathogen was first emerging. While it is a gross generalization, it can be said that less success has been achieved in controlling CRE than in controlling VRSA. In addition, some modeling data suggest that an early, aggressive response may be more efficient and effective - and may lead to more rapid control - than a later response.

The goal of the response framework is to develop a more well-defined and comprehensive approach to identifying and containing transmission of emerging MDROs. The following program components depict how this program was conceptualized:

- Improved detection and surveillance
- Standardized approach to response

- Rapid communication/notification
 - Local
 - National
- Standardized interventions
 - Tiered response depending on local epidemiology
 - Target resources as efficiently as possible
- Local resources and expertise to perform a timely response
 - Led by regional AR programs (Health Departments)
- Laboratory resources for response
 - Screening
 - Isolate testing (e.g., mechanism testing)
- Defining/evaluating improved interventions

While many pathogens could fit into the category of MDROs, the following are considered to be the emerging MDROs of epidemiologic importance:

- *Candida auris*
- *mcr*-producing Enterobacteriaceae
- VRSA
- Carbapenemase-producing carbapenem-resistant Enterobacteriaceae, particularly non-*Klebsiella pneumoniae* carbapenemase (KPC)
- Carbapenemase-producing *Pseudomonas* sp., primarily Verona integron–encoded metallo- β -lactamase (VIM)
- Pan-resistant isolates

Improved detection and surveillance are major areas in each of the framework components. Some inroads are being made in identifying these organisms and knowing when they are occurring, since most of them are more commonly colonizers rather than true pathogens. While there have been problems in identifying these organisms and capacity has been highly limited, a number of efforts are underway that will help expand capacity to understand and identify emerging resistance:

- CRE mechanism testing, which will be conducted in state laboratories
- Carbapenem-resistant *Pseudomonas* mechanism testing, which will be conducted in state laboratories
- Carbapenemase-producing *Acinetobacter* testing, which will be conducted in regional laboratories
- Evaluation for novel resistance of isolates with unusual phenotypes and with higher levels of resistance, which will occur within regional laboratories and CDC,
- Expanding capacity for *mcr*-1/2 detection within regional laboratories and CDC
- Expanding capacity for *Candida auris* confirmation within CDC

The large number of potential organisms makes a standardized approach to response challenging. However, when there are emerging MDROs, a number of efforts can be made in rapid communication and notification at the local and national levels. CDC is increasingly using high-level clinical alerts to draw attention to emerging MDROs and to make recommendations, when applicable. Dr. Kallen shared an example of the alert for *Candida auris* that was published in 2016:

Fungal Diseases

CDC > Fungal Diseases > Types of Fungal Diseases > Candidiasis

Clinical Alert to U.S. Healthcare Facilities

Global Emergence of Invasive Infections Caused by the Multidrug-Resistant Yeast *Candida auris*

Summary: The Centers for Disease Control and Prevention (CDC) has received reports from international healthcare facilities that *Candida auris*, an emerging multidrug-resistant (MDR) yeast, is causing invasive healthcare-associated infections with high mortality. Some strains of *C. auris* have elevated minimum inhibitory concentrations (MICs) to the three major classes of antifungals, severely limiting treatment options. *C. auris* requires specialized methods for identification and could be misidentified as another yeast when relying on traditional biochemical methods. CDC is aware of one isolate of *C. auris* that was detected in the United States in 2013 as part of ongoing surveillance. Experience outside the United States suggests that *C. auris* has high potential to cause outbreaks in healthcare facilities. Given the occurrence of *C. auris* in nine countries on four continents since 2009, CDC is alerting U.S. healthcare facilities to be on the lookout for *C. auris* in patients.

Background

Candida auris is an emerging multidrug-resistant (MDR) yeast that can cause invasive infections and is associated with high mortality. It was first described in 2009 after being isolated from external ear discharge of a patient in Japan¹. Since the 2009 report, *C. auris* infections, specifically fungemia, have been reported from South Korea², India³, South Africa⁴, and Kuwait⁵. Although published reports are not available, *C. auris* has also been identified in Colombia, Venezuela, Pakistan, and the United Kingdom.

It is unknown why *C. auris* has recently emerged in so many different locations. Molecular typing of strains performed by CDC suggests isolates are highly

Developing interim guidance for a public health response to novel or targeted MDROs has been challenging, primarily because of the number of different organisms and because responses may differ slightly. A number of pathogen-specific recommendations are already in place, which this response framework will supplement. General recommendations could be made to ensure that high-level infection control interventions are implemented and to better characterize the organism to guide future responses. This general guidance could be tied to existing pathogen-specific guidance, as well as to guidance for environmental sampling. The current available guidance includes the following:

- VRSA: http://www.cdc.gov/hai/pdfs/VRSA-Investigation-Guide-05_12_2015.pdf
- CRE: <http://www.cdc.gov/hai/organisms/cre/cre-toolkit/index.html>
- Specific Guidance for *Candida auris* is under development

Given that these responses are highly resource-intensive, standardized interventions with tiered responses based upon the local epidemiology will help target resources as efficiently as possible. As currently envisioned, organisms will be divided into three tiers, for which the level of response may vary. The tiers will include the following:

Tier 1

- Resistance mechanisms novel to the US that are not, or are only very rarely, identified in the US
- Organisms for which no current treatment options exist (pan-resistant)
- Organisms and resistance mechanisms for which experience in the US is extremely limited and a more extensive evaluation might better define the risk for transmission (VRSA, *Candida auris*)

Tier 2

- MDROs primarily found in healthcare settings, but not found regularly in the region; these organisms might be found more commonly in other areas in the US

- Examples include carbapenem-resistant Enterobacteriaceae with rare carbapenemases (e.g., New Delhi Metallo- β -lactamase), carbapenemase-producing *Pseudomonas* spp.

Tier 3

- MDROs targeted by the facility/region that are already established in the US and have been identified before in the region, but are not thought to be endemic
- Examples include carbapenem-resistant Enterobacteriaceae producing *Klebsiella pneumoniae* carbapenemase

The components of the high-level categories of the proposed guidance include:

- Initial Investigation
 - Identify healthcare/community exposures
- Infection Control Considerations
- Conducting Contact Investigation
 - Healthcare
 - Healthcare personnel
 - Household
- Environmental Sampling
- Prospective Laboratory Surveillance of Clinical Cultures

Local resources and expertise are important in carrying out timely responses. As regional AR programs led by health departments are developed, they will serve as an excellent resource to provide that expertise and to ensure that responses are done well. These entities are well-positioned to assist with communicating findings within the region; assessing the use of infection control precautions when cases are identified, especially for Tier 1 and Tier 2 organisms; facilitating the screening of contacts; ensuring that inter-facility communication is occurring at discharge; and following patients over time, especially for Tier 1 and potentially for Tier 2 organisms, to determine how long they are colonized and to ensure that infection control interventions follow them as they go from healthcare facility to healthcare facility.

Laboratory resources are important for response in terms of screening and isolate testing to identify mechanisms and patterns, which may not be part of a standard approach to determining antibiotic susceptibility in the clinical microbiology laboratory. Some new resources to assist with response include K1 and K2 funding through CDC's Epidemiology and Laboratory Capacity (ELC) mechanism to assist with building capacity and regional AR control programs. K1 is general infrastructure funding, and K2 is funding for 28 state and local health departments to build advanced capacity to address some of these MDROs. New state laboratory funding called K6 is available through ELC. K6 supports carbapenemase testing in CRE and CR-*Pseudomonas* at the state laboratories. The regional laboratories are supported by K7 funding, which will provide them with capacity to screen for some AR pathogens, particularly CRE, and capacity to look in a limited way for mobile plasmid-mediated CP production in *Acinetobacter*.

A number of gaps and challenges remain.

- It is important to gain a more complete understanding of the emerging MDROs:
 - Organisms should be detected as close to the "source" as possible.
 - More readily available methodologies are needed for identifying organisms/mechanisms of interest.
 - More widespread recognition of targeted MDROs is needed.

- Better ways to target surveillance in specific regions or facility types should be developed.
- Resources should be available to implement control measures:
 - Measures should be implemented in a standard, timely, and efficient manner; when one of these organisms emerges, the response can often seem like “reinventing the wheel.”
 - Laboratory capacity is growing, but should expand further as we move forward.
- Improved and more sustainable interventions are needed to control transmission. Defining and evaluating improved interventions will be essential, particularly because the current toolkit is relatively limited.

Discussion Points

Dr. Diekema commented on this great vision for moving forward in early AR detection and control. Due to issues with limited capacity and expertise, often by the time an actual clinical infection is detected with a newly emerging MDRO, it is likely that there already has been a great deal of spread, or there are already undetected carriers. He wondered about future capacity for a national sentinel surveillance program. With such a program, every acute care hospital and long-term acute care facility would submit a subset percentage of isolates to regional laboratories for full characterization, which has become less costly with increased progress in genome sequencing. This approach could help detect signals even before infections are detected. Numerous programs are currently collecting thousands of isolates from throughout the world. These programs are funded by industry because of FDA’s requirement for pre- and post-marketing surveillance. Perhaps there is an opportunity for public-private partnerships between public health/CDC and industry to help with early detection or to build the rapid ability to pull scores of isolates from throughout the world when a pathogen such as MCR-1 is detected to determine how far it already has spread.

Dr. Kallen replied that over the last few months, CDC has improved its ability to work with some of these private groups to get results. There are now 5 human MCR-1s, identification of three of these came from a non-CDC private surveillance system. This approach is a great way to expand this program over time. Regarding the potential for national sentinel surveillance, CDC also is thinking about ways to improve surveillance more systematically, as well as ways to model highly connected facilities that can be targeted in regions for actual surveillance, and perhaps to get colonization isolates as well.

Dr. Cardo expressed concern that facilities still “wait” when one case is seen. All information about such a situation may not be known, but convincing is still needed in order to engage in an investigation. She had asked Dr. Kallen to present to HICPAC because she believes that everyone has a critical role to play in this issue. Clinicians who see one case need to contact their health departments or CDC. CDC is willing to go to locations to help. With all of the new capabilities, everyone can be more proactive, even when the full scope of a situation is not known.

Dr. Kallen added that framework represents a “new way of doing business.” Working with health departments is fantastic; they are staffed with hardworking people, and that work is not the challenge. Sometimes the challenge lies in trying to convince some facilities to do what they need to do. CDC is interested in HICPAC’s thoughts about how to facilitate that process.

Consumers Union challenged HICPAC to think about how to engage patients and the public in this process. Where are the people who may now be colonized with CRE because they were exposed to improperly reprocessed duodenoscopes? Who is talking to them? Is anyone aware of subsequent infections, or is that a piece of the picture of spreading these organisms as they are emerging? There is a great deal of concern about public fear, but some of that fear comes from ignorance. More should be done to educate the public; it is known that hospitals are not disclosing this information readily, so it stays “underground” until it becomes a problem.

HICPAC noted that health departments could use quick reference sheets for immediate action, rather than waiting for the perfect, complete document.

Dr. Kallen replied that those resources have not been created yet because components of responses can often vary greatly. However, the goal of this new guidance is to provide a high-level framework and to use pathogen-specific guidance for pathogens that differ so significantly that they require specific direction. The response framework is currently undergoing the clearance process.

Dr. Diekema agreed that the link between state public health laboratories, and their regional expertise, and local hospitals of all sizes is critically important. There appears to be a lack of recognition that help is available, what the public health laboratory is, and how it can support a local laboratory. Hospitals often have connections with commercial laboratories, so they are not as apt to reach out to their local epidemiology contact.

AEH emphasized the importance of encouraging laboratory resource knowledge-sharing. Some hospitals send out all of their testing, while others perform some in-house testing and send out some testing. There also is a time factor. For example, a sample sent for testing to a private commercial laboratory might be turned around in three days, while results from a sample sent to a public laboratory may take longer. Hospitals may be torn because they cannot split the specimen, so they utilize the quickest laboratory.

HICPAC stressed the number of laboratory capacity issues and significant variability at the facility and state levels. HICPAC also commented on resource allocation problems for facility laboratories that are being asked to do more, though that request is not always accompanied with additional resources to support the added tasks. For example, if a single case is identified and surveillance is needed for every patient on a floor, the surveillance is not for patient care and therefore cannot be billed to the patient. The work represents a cost outlay for the laboratory. When laboratories estimate their volume of work to advocate for resources to hospital leadership, these laboratory tests are unbillable. All of the surveillance work that is not billed cannot be used to advocate for an extra FTE without additional effort to help justify the need.

Dr. Kallen acknowledged that trying to convince facilities to perform surveillance cultures while telling them that they are going to pay for it out of their infection control budget is never popular. Regional laboratories will now be available to perform screening cultures for CRE. That initiative should go on-line within the next few months. Screening cultures for *Candida auris* and other pathogens have been conducted by public health. That capacity exists at CDC and in some of the regional laboratories as well. The increasing move from phenotypes toward actual mechanisms is challenging. Fifty-four state and local laboratories will be funded to conduct mechanism testing, but they will not be able to test every isolate. They are considering ways to test as representative a sample as possible, both for CRE and *Pseudomonas* that might be

carbapenemase-producing. Dr. Kallen quipped that though he is a “huge pessimist,” he feels good about their direction.

Dr. Cardo pointed out that the health department must be involved in an investigation in order for regional laboratories to conduct screening for hospitals.

HICPAC noted that international patients represent another concern and wondered how that issue fits into this paradigm, particularly regarding the approach to containment. In some situations, a facility knows in advance that an incoming patient has an MDRO, or finds out shortly after a patient arrives.

Dr. Kallen replied that a CDC recommendation was published in 2014 about non-KPC carbapenemase screening for people hospitalized outside of the US. Most patients are not screened upon admission to the hospital, however, which is problematic. That problem has been compounded with *Candida auris* and *mcr*-producing Enterobacteriaceae. The first step is to disseminate the recommendations so that facilities are at least thinking about this issue. The second step is to determine the best time and place to take the necessary history so that it becomes integrated into the work flow. This opportunity may be when nurses are conducting their assessments, but clearly this issue needs more work. This population is high-risk; more thought must be given to ways to identify them when they first present in order to take appropriate contact precautions, etc.

Dr. Diekema pointed out that a current developing crisis in clinical microbiology is the shortage of Clinical Laboratory Scientists (CLS) at the bench, who are the front line in many laboratories. It is estimated that 20% of the microbiology CLS actively working are going to retire in the next five years, and training programs are producing over 1000 fewer CLS than are needed to fill existing positions. That pipeline needs to be improved. It is a very different profession from 20 years ago, with advances in molecular medicine and other areas. Dr. Cardo agreed that this problem is important to highlight.

Council for Outbreak Response: Healthcare-Associated Infections and Antibiotic-Resistant Pathogens (CORHA)

Joseph Perz, DrPH, MA
Team Leader, Quality Standards and Safety
Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention

Marion Kainer, MD, MPH, FRACP
Director, Healthcare Associated Infections
Antimicrobial Resistance Program
Tennessee Department Health
HICPAC Liaison Representative, Council of State and Territorial Epidemiologists

Dr. Joe Perz and Dr. Marion Kainer described progress in the forming and functioning of the Council for Outbreak Response: Healthcare-Associated Infections and Antibiotic-Resistant Pathogens (CORHA), a new outbreak council focused on HAI and AR pathogens.

Outbreak investigation and response activities are a core function of public health and are central to prevention. CORHA is modeled loosely on a successful council that CDC founded and

has supported for 10 years, which works on improving foodborne outbreak response. Healthcare outbreak response was part of the original state HAI plans and grants, but response has only recently been emphasized. CORHA is aimed at building on other investments and helping to consolidate gains that have been made in areas such as state HAI plans, programs, the AR laboratory networks, and innovation and research.

Containment is a central reason for investigating outbreaks. Outbreaks are also investigated in a systematic way because the investigations often identify issues with unsafe drugs, devices, products, practices, and lack of adherence. Outbreak investigations also inform and motivate broader HAI prevention efforts. Outbreaks can be significant motivators for change. There is a great deal of variability in capacities at the health department level as well as the facility level for detecting and responding to possible outbreaks in healthcare settings. Some hospitals may have more internal resources than others to conduct an investigation. Hospitals in general have more resources to conduct investigations than nursing homes or dialysis centers, for example. There is therefore a need to strengthen and standardize HAI response activities nationally. Dr. Matthew Crist of CDC summed this idea up during one of CORHA's first meetings when he said that "our goal [is] sooner, faster, better, smaller." That is, the goal is to detect outbreaks, adverse events (AEs), or emergence of a pathogen sooner, and to do a better job of containing them so that the impact is smaller.

Formed approximately a year ago, CORHA's mission is:

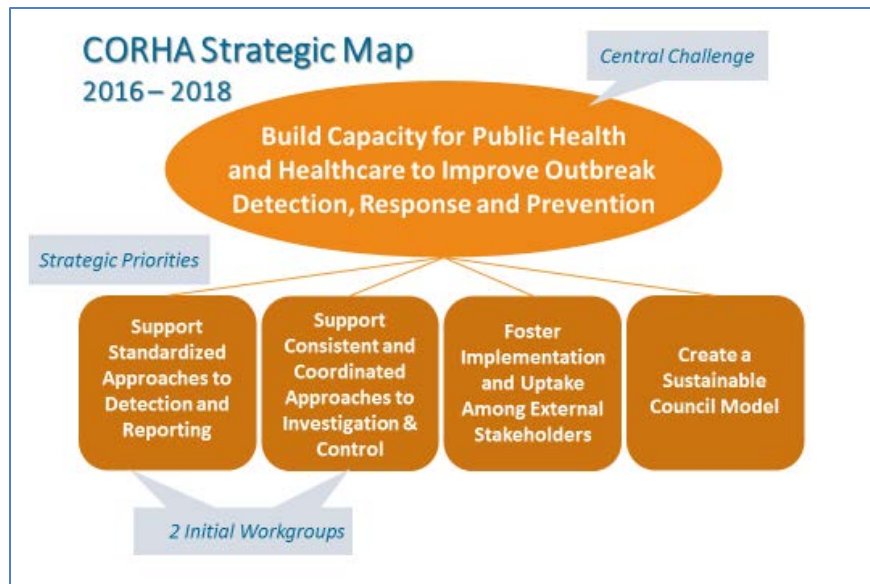
"To improve practices and policies at the local, state, and national levels for detection, investigation, control, and prevention of HAI/AR outbreaks across the healthcare continuum, including emerging infections and other risks with potential for healthcare transmission."

CORHA's vision is:

"Public healthcare collaborating effectively to protect patients and prevent harms from HAI/AR outbreaks."

In CORHA's current organizational structure, the Association of State and Territorial Health Officials (ASTHO) and CSTE act as co-chairs. Both organizations receive funding from CDC/DHQP to manage council activities. The Governance Committee is comprised of representatives from ASTHO and CSTE. Within the Governance Committee, Dr. Perz represents CDC. The Governance Committee also benefits from a National Association of County and City Health Officials (NACCHO) representative. CORHA has benefited greatly from adding the participation of APIC and SHEA and looks forward to additional member organizations and representation on workgroups in the coming years.

When CORHA met in person for the first time, they developed this strategic map:



The group will address the central challenge of building capacity for public health and healthcare to improve outbreak detection, response, and prevention. CORHA has four strategic priorities:

- 1) Support standardized approaches to detection and reporting.
- 2) Support consistent and coordinated approaches to investigation and control.
- 3) Foster implementation and uptake among external stakeholders.
- 4) Create a sustainable council model.

CORHA's initial workgroups, the Detection and Reporting Workgroup and Investigation and Control Workgroup, are based on the first two strategic priorities. The Detection and Reporting Workgroup is concentrating on three major pathways:

- Standardize outbreak and adverse event definitions and thresholds for reporting for acute care hospitals, long-term acute care hospitals, critical access hospitals, dialysis facilities, and long-term care facilities (LTCFs), with a focus on many of the pathogens Dr. Kallen mentioned in his presentation.
- Improve reporting of outbreaks and exposure events to public health for which there are significant current challenges.
- Improve the use of existing surveillance systems to detect outbreaks at the public health and facility levels.

The Investigation and Control Workgroup is concentrating on three major pathways:

- Define appropriate levels of response, which will vary depending upon the trigger and situation.
- Improve response to outbreaks, which will require more tools and capacity-building at the facility and health department levels.
- Improve data management for outbreak investigation and tracking at the public health and facility levels.

These three pathways are focused on activities that are largely complementary to the work of the Detection and Reporting Workgroup. Two activities are crosscutting and will be part of the work plans of both groups:

- Define public health, clinical, and commercial laboratory best practices to support outbreak detection and response.
- Explore legal authority to support best practices.

CORHA has contemplated and delineated useful endpoints and is interested in acquiring additional feedback:

High-level outputs related to strategic objectives:

- Best practices for improving detection of potential outbreaks using existing data sources
- Laboratory best practices to support outbreak detection and investigations
- Suggestions for improving data management for outbreak investigation and response activity tracking

Suite of event-specific reference tools:

- Threshold for reporting and investigation
- Suggestions on how to improve reporting
- Suggestions on how to improve the use of existing surveillance data for detection
- Tools for investigation
- Suggestions for standardized control measures

It is likely that tools already exist for many of the proposed endpoints and that they only need to be identified and collected.

CORHA's next steps include managing, supporting, and growing the activities of the two workgroups. Work plans and timelines for product development have been created, with a goal to create products to share in the near future. CORHA will engage additional partners and evolve into a multidisciplinary collective comprised of healthcare consumers, the medical community, health departments, professional associations, and federal agencies. Among their goals is a full suite of tools to improve outbreak response and standardize response efforts. It is important to remember that even if the best tools in the world are developed, the tools will not be helpful without sufficient staff to implement them. They are excited about the additional funding to build capacity provided to state health departments under the ELC grants, and they hope to engage those resources to utilize these tools.

Discussion Points

Dr. Cardo requested clarification regarding whether CORHA's efforts are focused on the minimum investigation standards for all states and cities. It would be beneficial, she added, to convene a group to address patient engagement and notification. This critical element should be included in the discussion of the entire program, rather than addressed as an "afterthought."

Dr. Perz clarified that minimum standards promote consistency, but there is room to highlight potential best practices and model policies and approaches. Patient protection is the main focus of this work, and communication is embedded in the plan. Communication appeared throughout the model as it was being developed; it is inherent in the approach. The third column in the

strategic map addresses how to foster implementation, which means engaging stakeholders. A first step is to identify the patient communities they are aiming to protect.

Consumers Union was glad to see that CORHA plans to engage consumer organizations. Consumers Union is happy to work with CORHA and encouraged them to engage stakeholders as soon as possible so that they will have additional public representation.

Dr. Diekema recalled the map of adoption of CDC-recommended approaches for stewardship. The adoption varies by state. He asked whether CORHA has a sense of the variation and capacity that currently exist across states and how best practices of states at the forefront might be leveraged to help others.

Dr. Perz said that CORHA has discussed leveraging other investments. A good example of this approach is the Ebola supplemental funds that were implemented through the ELC mechanism. State HAI programs received funding approximately a year and a half ago to assess capacities for outbreak detection and response. That work has helped inform the council. As expected, there is a great deal of variability; for example, there is no single approach to tracking response activities across these programs. A handful of programs could not identify a system they are using for tracking, while others use multiple systems. Invariably, some states will be in the forefront and can offer models for other states.

APIC added that fostering strong relationships between public health entities and hospitals will go a long way in assuring that outbreak investigation activities occur in a timely fashion. There certainly are entities and states that are farther along in that partnership with their hospitals, LTCFs, etc.

Dr. Perz agreed. An acute care IP or hospital epidemiologist is often best-positioned not only to detect a signal from within a facility or system, but also from the community. His experience over the years with outbreak investigations related to outpatient settings and with mechanisms such as unsafe injections has taught him that the majority of those events are identified because of a cluster of admissions to an acute care facility. Therefore, building that relationship is critical. CORHA has benefited from the ACIP and SHEA perspectives on the council.

Dr. Kainer emphasized that this concept is reflected in the central challenge of the strategic map, which is to “build capacity for public health and healthcare to improve outbreak detection, response, and prevention.” CORHA is a joint effort based on strong partnerships. Tennessee is proud of the relationship it has built with the infection prevention community. They have a low threshold for reporting potential clusters, even though they may not necessarily represent an outbreak. This approach is intended to allow for containment of pathogens more rapidly and for advocating for patient safety.

Public Comment

Dr. Scott Augustine
Chief Executive Officer
Augustine Temperature Management

Dr. Scott Augustine thanked HICPAC for the opportunity to speak. He is a physician, inventor, scientist, and entrepreneur. He commented on the investigation of heater-cooler devices and the infections that they cause, which were reported in the November 2015 and March 2016 minutes of HICPAC.

Dr. Augustine complimented HICPAC for investigating this important infection risk and emphasized that their statement that “nothing that blows air should be in an operating theatre if possible” was “spot-on.” He specifically mentioned that forced-air warming (FAW), the most common blower of air in the operating room could potentially impact infection risk. He urged HICPAC to investigate proven contamination of the sterile surgical field caused by FAW and the increased risk of infection proven during implant surgery. He invented FAW over 30 years ago; he also invented a possible replacement, electric conductive warming, which generates no waste air and no waste heat. FAW became the standard of care during the 15 years that he ran that company. He is proud of the improved surgical outcomes that FAW has provided for many patients; however, he is also concerned about possible complications that it is causing during implant surgery.

In full disclosure, Dr. Augustine reported that he is the Founder, Chief Executive Officer (CEO), and part owner of a company that makes an electric conductive warming system and acknowledged that he could not possibly have a greater conflict of interest in this matter. However, the science is good, and most of it is independent of him and his company. About five years after he left the forced-air company, he and his team serendipitously discovered that the 40 cubic feet per minute of air from a FAW unit is not simply waste air; more importantly, it is 1000 watts of waste heat. During their research on the waste heat, it became abundantly clear that the heat does exactly what one might expect from the law of physics - it rises each and every time. They showed that the waste heat from FAW contaminates the sterile surgical field primarily by two mechanisms:

- First, heat trapped under the surgical drape is forced by the next 40 cubic feet per minute of air to escape from under the surgical table, where it eventually flows under the lower edge of the surgical drape near the floor. In this location, the waste heat warms the contaminated air that is normally resident near the floor, and together they form into convection currents that rise along the side of the table and end up in the sterile surgical field. The warm convection currents easily penetrate the downward ventilation airflow of the operating room.
- The second mechanism of contamination is the waste heat that radiates through the surgical drape at the ether screen, where it warms the air in the flow boundary layer on the surgical side of the ether screen. The warm air begins to rotate and forms a vortex, which is identical to a tornado. Like a tornado, the vortex of warm air literally sucks up contaminants from the floor and puts them into the sterile field. Legg and his colleagues published a study showing that the vortex powered by the waste heat during FAW caused 2000 times more contaminated particles in the air of the sterile field than with electric conductive warming. That is 200,000% more contaminants.

Seven other studies have been published by various investigators documenting sterile field contamination by waste heat in FAW. Two studies show that nearly all forced-air blowers are contaminated internally and that a variety of organisms are growing on their inner airflow surfaces. These organisms are then aerosolized by the high-velocity air flow out of the hose and into the operating room. Forced air blowers are a perfect example of reusable equipment that cannot be cleaned: it is impossible to clean the internal air flow surfaces.

It is Dr. Augustine’s belief that it has been proven that the waste heat and air from FAW cause airborne contamination of the sterile surgical field. As HICPAC noted in its heater-cooler discussion, implanted foreign materials such as heart valves and prosthetic joints are especially susceptible to infection. Because organisms can form biofilm coatings in the presence of

implanted materials, a single airborne bacterium can infect an implant. Logically, a proven increase in airborne contamination must also increase the risk of implant infections. A few years ago, McGovern and his colleagues reported that when their hospital switched from forced-air to electric conductive warming, their hip and knee implant infection rate decreased by 74%. Admittedly, this was a retrospective study. Nonetheless, it is an outcome study, and a 74% decrease in deep infections in nearly 1500 patients is dramatic. Dr. Augustine stressed that there are zero outcome studies showing FAW infection safety in orthopedic surgery. This week, he submitted a study for publication reporting on the experience of three additional hospitals comparing knee and hip implant infections. A comparison of infection rates during their last year of FAW to their first year of electric conductive warming showed an aggregate 78% decrease in deep infections. The 78% reduction of implant infections in more than 2000 patients in three hospitals correlates well with McGovern's 74% reduction finding.

Dr. Augustine expressed confidence that further research will continue to corroborate these results. Considering that there are roughly 20,000 hip and knee implant infections per year in the US alone, not to mention all of the other types of implants that most likely share the same etiology of infection, this is a public health crisis. Dr. Augustine was pleased to report that there appears to be a very easy solution: discontinuing FAW during implant surgery, especially orthopedic implants. The current data, though limited, suggest that three-fourths of those 20,000 hip and knee infections may be preventable simply by discontinuing the use of FAW. He urged HICPAC to investigate this matter and take a stand on this important issue. The references for these studies and video demonstrations can be found at this link: [HotDog® Patient Warming System](#). In conclusion, Dr. Augustine again thanked HICPAC for the opportunity to speak.

**Ms. Carole Moss
Chief Financial Officer
Nile's Project**

Ms. Carole Moss thanked HICPAC for the opportunity and indicated that she was speaking during this session on behalf of the public, which she has done for 10 years since her son died after acquiring an infection at the top children's hospital in California. He acquired MRSA and then died because two children's hospitals did not act quickly enough to see that he had sepsis, and they did not have an antibiotic stewardship program in place to give him what he needed.

Ms. Moss was also present as a voting member of the California HAI Advisory Committee, on which she has served for nine years. She reported the "great news" that it is known how to prevent many of the infections that HICPAC members are working on. A California law was enacted and named after her son: Nile's Law. This law requires patient MRSA screening, and that every hospital in California reports its MRSA rates. Those data are collected quarterly from every hospital and are also included on the NHSN reporting schedule. They are so thankful for all of CDC's efforts with NHSN and gathering data, and focusing on where hospitals are having problems with these infections.

Ms. Moss stressed that infections continue due to lack of accountability in California, and probably in other states as well. Speaking on behalf of the public, she implored HICPAC to think about who they are: father, mother, grandmother. These reports come to California every quarter, and they see which hospitals are having problems with *C. difficile* and MRSA. In the State of California, those data stay right there, in infection prevention. The data never go to licensing and certification, where the information could be acted upon and the problems could be solved. This is a cultural problem that needs to end now. It is not okay that hospitals are harming patients and states are not acting on it. This has been confirmed because she, her

husband, and others have presented the data to the head of the Department of Health. However, no one has acted upon the data. The federal government is giving California millions of dollars and everyone at CDC and on HICPAC are working hard to find the answers, but the answer is simple. The answer is that HAI Program Liaison Infection Preventionists wait for hospitals to invite them to come and help them: in California, these public health agency liaisons cannot go to hospitals that have problems unless they are invited. There is a “by appointment only” culture that has to end. If it does not, everything HICPAC, CDC, Nile’s Law, the public, and this great new project, CORHA, does is meaningless. There must be accountability. Ms. Moss reiterated that she represents the public and emphasized that they will not stop until there is safety in hospitals and a requirement for every hospital to follow the CDC guidelines as a mandate to do business in the US.

Ms. Kathy Warye
Chief Executive Officer
Infection Prevention Partners

Ms. Kathy Warye thanked HICPAC for the opportunity to address them during this session. She emphasized that Ms. Moss’s comments were far more important than what she was about to share. She is a consultant who works primarily with early-stage medical device and diagnostics companies to help them better understand the infection prevention landscape. She does a fair amount of work with research and development (R&D) committees. Regarding the Future State document, *An Urgent Need for Safer Endoscopy: Time for a Paradigm Shift*, she said that documents like this one are important, as they potentially could give direction to corporate R&D committees about areas of true unmet need where they should be investing. In that context, Ms. Warye offered a comment and suggestion on Bullet #3, promoting engineering solutions. This bullet speaks to a specific group of improvements that could be important. Incremental improvements can do a great deal to improve patient safety. She encouraged them to broaden the statement so that it also encourages investment in truly novel, paradigm-shifting solutions. She could guarantee that a document like this would go to an R&D committee, because people like her will get it there. It could be used to support or deny an investment. While incremental improvement is important, it is also important to encourage what is far more difficult for a company to approve: a major investment in something that is truly novel. With that in mind, Ms. Warye encouraged HICPAC to broaden that statement to encourage groundbreaking types of technologies to come forward.

Liaison / Ex-Officio Reports

American College of Occupational and Environmental Medicine (ACOEM)

In 2017, ACOEM will publish an update of the guidance document addressing medical center occupational health. Another ACOEM document, which is in the clearance process, is a *Position Statement on the Responsibilities of the Occupational and Environmental Medicine Provider in the Treatment and Prevention of Climate Change-Related Health Problems*. This document deals with direct and indirect effects issues, including changes in allergens, air pollution, effects of displaced populations on climate change, etc.

American College of Surgeons (ACS)

Work continues to bring all registries onto a single platform to facilitate automation of data collection and synergy between various programs. These registries will be on a common platform to make data entry more efficient. ACS is excited to partner with Johns Hopkins and AHRQ on the Comprehensive Unit-based Safety Program (CUSP) for Enhanced Recovery After Surgery (ERAS), which began in October 2017. The goal is to disseminate clinical pathways

with best evidence for pain management, mobility, patient engagement, and harm prevention in five procedures over the next five years: colorectal, bariatrics, joint replacement, gynecology, and emergency general surgery. Surgical site infection (SSI) and CAUTI are two outcomes that are anticipated to be impacted. In conjunction with the Surgical Infection Society (SIS), SSI guidelines will be published in the *Journal of the American College of Surgeons (JACS)*.

America's Essential Hospitals (AEH)

AEH has been focused on outreach, with antimicrobial resistance being a common theme of many of their activities. AEH participated in this year's Get Smart Week through social media. A Social Media Director was hired to help elevate social media outreach to the public and healthcare facility members, who created Twitter and Facebook accounts. AEH also has been helping share information about Zika virus and surgical heater-cooler devices to create a single place to find information, given that much has been occurring in both of those areas.

Agency for Healthcare Research and Quality (AHRQ)

AHRQ continues to support research and implementation projects to develop improved methods and tools to Combating Antibiotic-Resistant Bacteria (CARB) in three domains: 1) promoting antibiotic stewardship; 2) preventing transmission of resistant bacteria; and 3) preventing HAIs in the first place. AHRQ is doing this work in various healthcare settings, including acute care hospitals, LTCFs, and ambulatory care. AHRQ released its implementation guide for antibiotic stewardship in nursing homes. The guide is based on tools from four previous AHRQ-supported studies and is divided into four modules: 1) creating an Antibiotic Stewardship Program; 2) determining whether to treat with antibiotics, 3) choosing the right antibiotic; and 4) engaging residents and families. The guide was released and discussed at IDWeek in October 2015, and AHRQ is now widely disseminating it. The guide also is available on the AHRQ website.

AHRQ released two new CARB-specific Funding Opportunity Announcements (FOAs) for R01 and R18 applications, in addition to renewing its HAI prevention FOAs. The CARB FOAs are intended to stimulate additional research in all three CARB domains. The first wave of applications to the new FOAs should be received soon. The AHRQ Safety Program for Antibiotic Stewardship was kicked off in September 2016. It is a CUSP project to adapt CUSP to the concept of antibiotic stewardship. The CUSP for Antibiotic Stewardship was awarded to Johns Hopkins University. It is a five-year project with the intent to adapt CUSP for implementation of Antibiotic Stewardship in at least 250 acute care hospitals, 250 LTCFs, and 250 ambulatory care settings. The AHRQ Safety Program for ERAS project also was awarded to Johns Hopkins and was kicked off in October 2016. This five-year project aims to use an adaptation of CUSP to improve patient outcomes by increasing the implementation of ERAS practices in hospitals. ERAS is a constellation of preoperative, intra-operative, and postoperative practices to decrease complications, including SSIs. This project will be implemented in 750 hospitals nationwide. The AHRQ Safety Program for Long-Term Care: Preventing CAUTI and Other HAIs was recently completed. This three-year project showed a significant decrease in CAUTI and LTCFs. The final results and an educational toolkit will be widely available in early 2017.

Association of periOperative Registered Nurses (AORN)

AORN has been busy focusing on surgical attire and maintains the position that hair should be completely covered in the operating room, based on benefits and harms assessment to the patient. AORN conducted a systematic review on the topic of humidity to find evidence to support humidity ranges. While they found some literature in the environment, they were unfortunately unable to find relevant literature in the healthcare setting. Temperature and humidity parameters in the AORN *Guideline for a Safe Environment of Care, Part 2* will be

revised to reflect the changes in the ANSI/ASHRAE/ASHE Standard 170-2013 and their Addendum H. AORN is in the process of completing their guidelines for 2017. Of note, hand hygiene, surgical smoke safety, and minimally invasive surgery will be included in the new guideline. Before AORN's next meeting, the guidelines for positioning and medication safety will be open for public comment.

Association of Professionals of Infection Control and Epidemiology (APIC)

APIC has been busy, with much of its activities centered on work that has been discussed throughout this HICPAC meeting. More detailed information is included in the ACIP Liaison Report submitted to HICPAC.

Association of State and Territorial Health Officials (ASTHO)

In Fall 2016, ASTHO finalized a suite of communications tools related to HAI/AR. These tools will be publically launched in mid-December 2016. ASTHO continues its support of CORHA and has formed workgroups focusing on detection, reporting, investigation, and control. The workgroups are developing a project timeline and desired outputs. An in-person CORHA meeting was convened on November 17-18, 2016, in Arlington, Virginia. The meeting included discussions regarding operationalizing the CORHA strategic plan and advancing workgroup activities. In addition, there is ongoing legislative HAI legislative tracking on ASTHO's website.

Centers for Medicare and Medicaid Services (CMS)

CMS submitted a written report with links to relevant documents. First, CMS reissued an old Survey and Certification memoranda (S&C memo) titled *Infection Control Breaches*. It was first issued some years ago in response to a number of outbreaks related to injection safety issues. It was updated because of issues with outbreaks from endoscopes, endoscopy, and sterilization problems. The purpose of the memo is to try to identify breaches before they lead to outbreaks by furthering communication between surveyors and state health departments. CMS wanted to ensure that if surveyors notice infection control breaches on surveys, they contact the state health department to investigate. Surveyors do not conduct those types of investigations, but CMS wanted to ensure that the investigations take place. The memo includes a link so that the accrediting organization surveyors can click to determine the appropriate state health department contact. CMS is not saying that surveyors must contact the state health department, but if they see serious breaches in cleaning and disinfection of endoscopes or sterilization procedures, they should contact the state health department. The memo can continue to be updated as new potential problems arise.

CMS is conducting an infection control pilot to try to improve infection control assessments. The pilot is testing new tools and survey processes for infection control. This work is taking place because of a new Long-Term Care (LTC) Conditions of Participation (CoP) and a proposed new Hospital Infection Control CoP. Last year, CMS developed a new surveyor Infection Control Worksheet for LTCFs. It was pilot-tested in 10 surveys last year. Since then, the Hospital Infection Control Worksheet has been revised. Other areas will be considered on both of these worksheets. Antibiotic stewardship is now required for LTCFs and is proposed for hospitals, so there will be new questions in that area.

Another area pertains to how to assess infection prevention during transitions of care. CMS convened a Technical Expert Panel (TEP) in October 2016 to determine what a survey should look for. The panel developed nine questions which are on both worksheets. To test infection prevention during transition of care, the pilot, beginning in December 2016, will include a hospital survey and an LTCF survey immediately afterward, where those two facilities are admitting patients back and forth. This work is currently "inside surveying" to finalize the

worksheets and processes; however, with the release of this memo approximately two weeks ago, CMS also released the draft worksheets. They want these resources to be public documents, but there is no commitment to use the worksheets, and they will be revised again in the future. They represent the clearest indication of what CMS's expectations may be, and they are creating transparency now so that facilities can understand the general thinking at CMS. CMS is open to feedback and suggestions on the worksheets, which were developed with the help of CDC and comments from other stakeholders.

Council of State and Territorial Epidemiologists (CSTE)

In addition to CORHA, one of CSTE's major activities is the CDC-CSTE Antimicrobial Resistance Surveillance Taskforce. The core planning group has been meeting one to three hours per week. An in-person meeting of the Taskforce is planned for mid-March 2017, for which invitations are currently being sent. CSTE is in the process of drafting position statements, six of which are of particular relevance to HICPAC: 1) Prioritizing CAUTI Surveillance Utilizing NHSN to Maximize Prevention Efforts; 2) Recommendations for the Selection and Implementation of SSI Reporting in NHSN; 3) Making CRE Nationally Notifiable; 4) Standardized Case Definitions for *Candida auris*; 5) Standardized Case Definition for extrapulmonary Non-tuberculous *Mycobacteriae*; and 6) Standardized Case Definition of Drug Diversion Events Involving Injectable Medications.

Consumers Union (CU)

CU has done a great deal of work since the last HICPAC meeting with consumers and patient advocates, providing important input in many areas. One of the activities CU performs regularly is to encourage people like Carole Moss to be present where discussions are being held. Nile's Project often gets CU "in the room" as well. CU staff testified at an FDA hearing on off-label marketing of drugs and medical devices, which is pertinent to AU. Several CU staff attended and testified at the September 2016 CARB meeting. They spoke regarding the 21st Century Cure legislation, which is anticipated to result in more dangerous, un-vetted drugs on the market, including antibiotics. CU staff met with US Department of Health and Human Services (HHS) staff in DC about antibiotic resistance and death certificate documentation of "superbug" infections. They held meetings and discussions about accountability and using HAI data to make more low-performing hospitals improve. Carole Moss headed a workgroup, the California Advisory Committee, which adopted recommended standards for environmental cleaning in hospitals, following CDC guidelines. A Safe Patient Project (SPP) activist, Rae Greulich, was featured in a [Reuters](#) article about her husband's battle with numerous HAIs and the cost of his care. Finally, *Consumer Reports (CR)* magazine has been busy this quarter with regard to infection-related articles, including an article on sepsis in August 2016 and an article on infections connected with heater-cooler devices, which was prompted by discussions during the last HICPAC meeting, in November 2016. It will be featured again in January 2017. The CR Health Rating Center published updated hospital infection ratings in November 2016, special reports on *C. difficile* infections in September 2016, and CLABSI progress over the past five years in November 2016, highlighting teaching hospitals that have improved over time and those that have not. A great deal of social media outreach has shown changes over time graphically, including an interactive map for consumers to look quickly at scores of teaching hospitals in their area. This approach is an important step that CU would like for the federal government to do more of as well.

Food and Drug Administration (FDA)

FDA is actively working with the manufacturers of surgical gowns and isolation gowns. Manufacturers that make Level 3 and 4 claims must gain clearance for those gowns. They are not allowed to market those gowns any longer without 510(k) clearance. FDA also continues to

work actively with manufacturers of endoscopes as well as the re-processors of those endoscopes for revalidation testing.

Infectious Diseases Society of America (IDSA)

IDSA and numerous partner organizations successfully convened IDWeek 2016 in New Orleans, Louisiana, from October 26-30, 2016. The IDWeek 2016 theme, "Advancing Science, Improving Care," was flagged in IDSA's report on advocacy regarding implementation at the national level, with its continued participation in the work of the Presidential Advisory Council on Combating Antibiotic Resistant Bacteria (PACCARB), and in the United Nation's (UN) General Assembly's declaration to fight antimicrobial resistance. In terms of influencing practice, IDSA will release a number of guidelines related to HAIs over the next several months. IDSA continues its advocacy related to legislation in the US. Regarding the dissemination of new knowledge, a breadth of important research has been published in IDSA journals, including work on new interventions to prevent antimicrobial-resistant infections, new drug development, antimicrobial resistance among healthy individuals to severely ill cancer patients, etc. Further details regarding IDSA activities can be found in the IDSA Liaison Report provided to HICPAC.

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 established and launched Lessons in INfection Control (LINC) Initiative demonstration sites earlier this year. The infrastructure and lessons learned from NACCHO's HAI prevention project clearly positioned NACCHO to support local health departments in their work toward that goal with local health facilities and other local stakeholders. With the support of CDC, 11 LINC Initiative award recipients were identified to improve healthcare and community infection control and to enhance coordination for preparing for, and responding to, Ebola, HAIs, and other emerging infectious diseases through strengthened local public health organizational and administrative capacity, expertise, and partnerships with key stakeholders. The LINC Initiative supports local health departments to work in collaboration with hospitals, long-term care facilities (LTCFs), and other healthcare settings to identify and address needs and opportunities.

In addition, NACCHO awarded scholarships to support 35 local health department staff in obtaining Certification in Infection Control. Anecdotally, local health department staff have indicated that having this credential has increased their subject matter expertise and enabled them to engage with healthcare facilities more meaningfully. NACCHO continues to receive scholarship recipients' feedback on the certification process to further inform future project activities supporting local health departments in infection prevention and control, and is currently developing an assessment to understand the impact of obtaining Certification in Infection Control on local health departments.

NACCHO is well into another year of its HAI demonstration site project and is currently supporting three local health departments in sustaining and expanding their efforts in infection control and prevention: 1) DuPage County Health Department in Wheaton, Illinois; 2) Philadelphia Department of Public Health in Philadelphia, Pennsylvania; and 3) Florida Department of Health, Orange County, in Orlando, Florida. This demonstration project was initiated to further explore the role of local health departments in HAI prevention and control. The Florida Department of Health, Orange County, is currently conducting a needs assessment in collaboration with local healthcare partners, NACCHO, and CDC, of local stakeholders regarding the implementation of a coordinated approach to regional antibiotic resistance

prevention. Orange County will subsequently host a meeting to develop a strategic action plan with local stakeholders based on the needs identified during the assessment. This work is particularly exciting because of the partnerships that Orange County has cultivated with major healthcare champions in exploring collaborations to prevent HAIs, strengthening healthcare infection control, addressing AR, and improving antimicrobial stewardship. As the emphasis of the AR Solutions Initiative is largely focused on state HAI partnership programs, the work in Orange County is an important opportunity to demonstrate the role of local health departments and could potentially serve as a baseline that could expand statewide and beyond in future years.

Finally, NACCHO's HAI Prevention Project has led to the development of multiple resources for local health departments. NACCHO recently released its HAI guidance document for local health departments and other partners interested in working with local health departments on HAI prevention. NACCHO also recently released an antibiotic resistance and antimicrobial stewardship fact sheet, a policy statement, and multiple blog posts. Additional activities and updates can be found in the NACCHO Liaison Report submitted to HICPAC, which highlights other key collaborations, position statements, and outreach activities in which NACCHO is involved.

National Institutes of Health (NIH)

NIH is becoming increasingly uncomfortable with the presence of organisms in the healthcare environment about which very little can be done. Environmental contamination may have played a more prominent role than initially suspected in an outbreak of KPC-producing organisms. After the outbreak was terminated, a marker organism was found with the identical gene by sequence in seven hospital drains in various locations. The origin of the organism is unknown. One patient was colonized with the organism, but it remains unclear how it was transmitted from one drain to the others. It is an unusual organism; having it with a KPC gene provided a marker to seek it in other places. It also was found on two mop buckets, so it is postulated that perhaps the housekeepers were carrying the organism on dirty mops. While the "pendulum has swung" back and forth throughout the years in terms of the importance of the environment, there is a clear sense that the environment is going to become more important in the continued search for these types of organisms.

Public Health Agency of Canada (PHAC)

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

Society for Critical Care Medicine (SCCM)

The 4th edition of the International Surviving Sepsis Campaign (SSC) Adult Guidelines will be presented during the 46th Annual SCCM Congress in Honolulu, Hawaii, in January 2017. SCCM has realized that despite the hope for gold standards for sepsis management, tremendous gaps in knowledge remain. Therefore, SCCM formed a Sepsis Research Committee, co-chaired by Dr. Craig Coopersmith. The committee welcomes input from HICPAC regarding the development of a research agenda. Pediatric sepsis has been separated from adult sepsis, with the understanding that children are not "small adults." Children deserve their own guideline rather than being addressed in a few pages at the end of the adult guideline. The SSC has convened a panel, separate from SCCM, to lead and develop a guideline for pediatric sepsis. SCCM has been working with WHO on maternal and fetal sepsis, one of the largest causes of death worldwide. A multinational study will be published at the end of the year, in addition to new definitions for maternal sepsis related to the new SEPSIS-3 definitions published earlier in the year. SCCM has partnered with CDC to communicate that sepsis is truly a medical

emergency; and sepsis is frequently preventable, if diagnosed early enough. SCCM expressed gratitude to Dr. Cardo and all of the CDC partners in the room for having a reach well beyond what SCCM ever could have done alone.

Society for Healthcare Epidemiology of America (SHEA)

SHEA has partnered with CDC to develop an Outbreak Response Training Program (ORTP). This program will be robust and will include in-person meetings, webinars, online modules, podcasts, expert guidance documents, and toolkits. SHEA also kicked off its Antimicrobial Stewardship Research Workshops, which are planned for the next several years. The first of these workshops was convened recently in San Diego. In addition, SHEA is developing Antimicrobial Stewardship Podcasts and is proud of its online Primer on Healthcare Epidemiology, Infection Control and Antimicrobial Stewardship course, in which over 600 individuals have participated. The SHEA Guidelines Committee (GLC) is currently engaged in the following projects: 1) *Expert Guidance: Duration of Contact Precautions*; 2) *Expert Guidance: Infection Prevention Practices in the Anesthesia Work Area*; and 3) *Expert Guidance: Initiation of Antibiotics in Long-Term Care*. SHEA has also been busy on the advocacy front. Their activities are tied to advocating for improved funding for public health and antimicrobial stewardship programs. The SHEA Research Methodology Group published a series of papers in the past year, all of which are detailed in SHEA's Liaison Report submitted to HICPAC.

Society of Hospital Medicine (SHM)

SHM has been working on several large national projects to reduce HAIs this year, including the States Targeting Reduction in Infections Via Engagement (STRIVE) program, being conducted jointly with the Health Research & Educational Trust (HRET) to identify strategies for reducing MRSA, CAUTI, *C. difficile*, and CLABSI in several hundred US hospitals. SHM has another partnership with HRET to reduce CAUTI and CLABSI in ICUs with persistently elevated rates, which currently includes over 177 active units. SHM also continues to promote its Fight the Resistance Campaign, which is dedicated to promoting awareness and behavior change related to antimicrobial stewardship and appropriate prescribing practices. Later in December, SHM will deploy a follow-up survey to all members about antimicrobial stewardship. A baseline survey was disseminated in August 2015; the follow-up survey will help measure the impact of the Fight the Resistance campaign. In August, SHM signed a joint letter in strong support of a proposed rule to require hospitals and critical access hospitals to develop and maintain antibiotic stewardship programs. SHM also participated in a workgroup to review and provide comments to CMS on the antibiotics available for use under the SEP-1 Sepsis and Septic Shock Management Bundle. SHM featured this year's Get Smart Week in its news magazine, [The Hospitalist](#), which reaches over 25,000 hospitalists across the nation. SHM members have contributed many peer-authored publications of interest to HICPAC, including studies to reduce CAUTI, CLABSI, inappropriate Peripherally-Inserted Central Catheter (PICC) use, and *C. difficile*. SHM also has specific publications on how to engage hospitals in antibiotic stewardship. Further details can be found in SHM's Liaison Report submitted to HICPAC.

Surgical Infection Society (SIS)

SIS has been involved in a number of activities over the last three months, many of which have focused on partnering with other groups regarding guidelines and other efforts. One effort already mentioned was SIS's work with ACS, which will be published soon. Another effort is the publication of a manuscript in conjunction with the World Society of Emergency Surgery (WSES) regarding antimicrobial stewardship and surgeons' role. Many members of SIS worked in close collaboration with a group called Oasis Global, which was founded by Joseph Solomkin of the SIS. Oasis Global's emphasis is the reduction of surgical infections in low- and middle-income countries. Dr. Solomkin contributed to the CDC *Guidelines for the Prevention of Surgical*

Site Infections. Oasis Global worked with WHO to develop the WHO [Global Guidelines for the Prevention of Surgical Site Infections](#), which was published early in November 2016 on the WHO website. This document is interesting and worth analyzing. Most of the suggestions in the document are applicable to high-income countries as well. Several follow-up manuscripts will be released, including information regarding how to implement many of these suggestions in high-, middle-, and low-income countries, because resources differ among them. One manuscript will compare the differences between the CDC and WHO guidelines and highlight the differences in how the guidelines were developed.

Veteran's Administration (VA)

The built environment is becoming increasingly exciting. The VA has been working on this issue for some time. A major emphasis regarding the environment will be water, including all elements of how water is processed and handled in public water systems, local water systems, and small-component water systems in hospitals.

Adjourn

Dr. Diekema thanked HICPAC for the day's discussion. HICPAC stood in recess at 4:40 pm.

Friday, December 2, 2016

Welcome and Roll Call

The second day of the HICPAC meeting was called to order at 9:00 am on Friday, December 2, 2016. Dr. Diekema and Mr. Hageman welcomed the group. A roll call of HICPAC members, *ex officio* members, and Liaison Representatives established that a quorum was present. Quorum was maintained throughout the day.

Non-Tuberculous Mycobacteria (NTM) Discussion

Jeff Hageman

**Division of Healthcare Quality and Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention
Designated Federal Official, HICPAC**

Daniel J. Diekema, MD

**Clinical Professor / Associate Hospital Epidemiologist
University of Iowa Carver College of Medicine
HICPAC Co-Chair**

Mr. Hageman explained that during this session, a brief update would be provided on some of the activities at CDC and beyond pertaining to non-tuberculous Mycobacteria (NTM) and heater-cooler units that have occurred since the last HICPAC meeting. The session would also serve as an opportunity for HICPAC members and liaisons to share their ongoing challenges, which can inform the prioritization of CDC's future work.

Several reports and webinars have been released since July 2016.

- In August 2016, CDC hosted a webinar was released with many experts, including Dr. Diekema, to provide updates on the various aspects of heater-cooler units.
- CDC released an *MMWR* in October 2016 with a whole genome sequencing comparison of isolates from cases across the US and further emphasized the point-source contamination related to the specific device.
- At the same time, CDC released a Health Alert Network (HAN) notification and a series of patient tools.
- In conjunction with those, FDA released a Safety Alert in October 2016.
- In November 2016, Rami Sommerstein published a review article in *Infection Control & Hospital Epidemiology (ICHE)* that provided an overview of the clinical and epidemiologic aspects of the current outbreak, offered interim suggestions, and highlighted ongoing challenges.

A great deal of outreach has been conducted with hospital associations and clinical societies. In the last several months, outreach has also focused on patients. CDC engaged in calls with various hospital associations. There also were FDA/CDC stakeholder calls and a variety of other webinars and hospital surveys. To reach clinicians, CDC engaged in calls with over 20 professional societies, including surgical societies, surgical specialty societies, and broader clinical societies, prior to the *MMWR* release. These calls were held to encourage outreach to their memberships and to offer opportunities to hear from those societies regarding questions

and ongoing challenges that CDC can address. The tools for patients include FAQs, a YouTube video explaining the risks and issues, and sample letters that patients can take to their providers to highlight this issue. All of this information can be found on CDC's [Heater-Cooler website](#).

Despite significant work in outreach and communication, opportunities and challenges remain regarding the need for targeted outreach efforts. For example, questions have arisen from the field of pediatrics. Hospital surveys have been conducted to measure awareness and uptake of CDC and FDA recommendations. As awareness has increased, CDC has received many questions related to managing cases once they have been identified. There has been discussion on guidance to aid clinical management. Similar to when CDC and the states worked on the meningitis outbreaks, CDC has been considering the need to set up a clinical consultation group to provide guidance to treating physicians. Because of the ongoing need to track heater-cooler NTM infections, the development of a case registry is being discussed. Much of the information collected can aid in future treatment decision-making if information can be obtained on ongoing cases. A great deal of discussion has focused on making extrapulmonary NTMs reportable and nationally notifiable. Currently, extrapulmonary NTMs are reportable in few states. Many needs, concerns, and questions remain at the facility level in terms of what to do with existing devices. Many presentations and discussions at various meetings have addressed what facilities should consider, the variety of ways that the devices are being retrofitted, and how to ensure that unintended adverse events are not being created.

Dr. Diekema added that significant work has been done in this area since the last HICPAC meeting, and there has been a notable increase in awareness. The CDC resources are extremely valuable. Many hospitals are struggling with how to adhere to the recent FDA Alert, particularly with respect to how to mitigate or eliminate risk from existing units, given that this device represents the majority of the market. Institutions are concerned about making investments in alternatives now if the coming months will bring a more widely available solution, modification, or fix that will decrease the risk from these devices.

Dr. Diekema opened the floor for discussion and suggestions from HICPAC members, *ex officios*, and Liaison Representatives regarding opportunities and challenges in the areas of outreach, managing and tracking identified cases, facility considerations, and guidance.

Discussion Points

Outreach

HICPAC thanked CDC and FDA for collaborating on the notification, as it was beneficial for those who were trying to motivate their facilities to engage in notification and outreach. However, it was somewhat challenging from a public relations perspective to have the notification "hit" the associations, hospitals, and the press on the same day. This timing did not allow hospitals time to prepare. While it was known that support materials were forthcoming, the toolkits and other materials were not necessarily ready at the time of the alerts and media releases, making the planning process more difficult.

Dr. Diekema's group at Iowa was acknowledged for serving as a major resource as one of the first and most visible responders across the country.

Dr. Cardo asked for input regarding the best way to inform hospitals before releasing alerts. CDC spoke with professional organizations and hospital associations, but perhaps more can be done to help those groups expand their role. CDC wants to assess all possible channels that can engage people. While CDC engaged in many outreach efforts, it would be helpful to hear

how the efforts were acted upon from organizations and associations. It is one thing for CDC or DHQP to communicate ideas and information, but it is another for the organizations and societies to tell their members what is expected, how to participate in the process, and how they should engage when they have access to information. CDC did a pre-embargo, but it is important to know how the agency can do better.

Dr. Bell emphasized that CDC wants to ensure that people are not caught unaware, so the agency does extensive outreach to hospital associations, leadership, professional societies, etc. If those efforts are not reaching the people they should, then the system has a problem. Other channels can be added, but CDC may need to rethink its outreach process with partners so that there is due diligence to take the next step.

SHEA agreed that using professional societies to “get the word out” is important. SHEA has an active presence that includes a web presence, listserv, mailing list, etc., which reaches most infection control professionals in major hospitals. In conjunction with IDSA or ACIP, SHEA could serve as a link to front-line practitioners.

HICPAC suggested that targeted outreach would be helpful. While the pediatric infectious disease community is well aware of this issue, front-line pediatricians may not be. It would be beneficial to frame information for front-line pediatricians in the event any of their patients received a letter.

APIC pointed out that academic hospitals have an advantage, but community locations where large volumes of cardiac procedures are conducted are somewhat disadvantaged. Having more resources in front of them, and earlier, would make preparation easier. One of the greatest challenges is identifying all of the cases that received a bypass with a heater-cooler unit and ensuring that notifications are released in a timely manner. A lack of sufficient lead time put pressure on laboratories and infection prevention to find cases and send letters out as quickly as possible. Mitigating that pressure in the future would be helpful. APIC also found that primary care providers did not know what to do with the letters and vague symptoms described, so the patients were sent back to the facilities.

IDSA added that having a sense that “something” was coming was helpful to some degree, and good communication efforts were made from CDC to the professional societies, but there are issues associated with getting that information out, and in an actionable form. From the standpoint of the professional societies, end users, and experts, precision would have been helpful. When news is forthcoming, professional societies receive a pre-embargo notice stating what the information will look like before it hits the press and the public. It would be valuable to develop a pattern in which recipients receive pre-warning with specific actions so that they are able to put a standard operating plan in motion. Perhaps a discussion about what went out, and when, is warranted. This release was a major step forward from the past, but there is still an opportunity to continue to improve.

Consumers Union pointed out that professional groups are not talking to patients. Therefore, a concerted outreach effort should be directed to patients through patient support groups comprised of heart, lung, or transplant patients; American Heart Association; American Lung Association; etc. to make people aware that if they get an infection, they need to be checked. Consumers Union agrees that primary care providers are not sufficiently aware, though they will likely see the patients first. Consumers Union is happy to assist with broad outreach. Many patients were aware because Consumers Union wrote about the issue in *Consumer Reports*.

Information will appear in the January 2017 issue as well. Continued social media information also will be beneficial.

AEH emphasized the critical nature of getting the letter into the hands of patients so they can take it with them when they go to their primary care provider, who may be in a different state from where the procedure was conducted. While good information is available, it is difficult to find all of it because there are so many different avenues for getting it. The best CDC response was related to Ebola. One website provided links to all appropriate areas, including images of personal protective equipment (PPE). The site was a coordinated and consolidated location where infection preventionists could get everything they needed.

CSTE expressed gratitude for the many CDC resources, which they have found to be extremely beneficial.

Iowa found their perfusionist group to be incredibly helpful, and they have a network of professional societies and training programs. They could potentially play a role in future outreach.

Case Identification, Management, Guidance, and Tracking

HICPAC described a healthcare system's experience doing a lookback. The system found no cases in its facilities. Using the timeline recommendation from the toolkit and looking at procedures that probably involved one of the heater-cooler machines at four of its facilities from 2012 forward, approximately 8000 patients were identified for notification. Of those, 4000 were from the system's major facility. This number of patients was large to manage in terms of notification, setting up systems to handle their calls through a centralized call center location, staffing the call center, deciding the appropriate clinical level of the people answering the calls, providing scripts and information for the call center responders, and preparing facility-specific plans to see patients who do not have, or do not wish to see, a primary care provider. Variable responses have been received from the surgeons. Some of them do not feel that they are a good person for the patient to see with this problem, even if guidance is provided. Other surgeons feel a great deal of ownership of their patients and want them to present to them first if they have an issue. Letters were sent to patients instructing them to contact the call center where screening is done, and a request was made for information about who they plan to see so that the doctor letter can be sent to that practitioner in advance of the visit. The doctor letter also was sent to all primary care providers who could be identified through each facility, such as outpatient medical groups, credential verification offices, etc. A flow chart was provided with the doctor letter based on information Iowa shared about how to evaluate the patient, what to do, and next steps.

One of the challenges with pediatric patients is how to interpret the symptoms that were described, which are non-specific even in adults, and much less so for a non-verbal child. One possibility would be to connect with pediatric infectious disease societies to gather broader input about this issue.

Another relevant issue is that a relatively large sample of blood needs to be collected in a mycobacterial culture from a symptomatic child to ensure that there is adequate sensitivity. Obviously, drawing large amounts of blood from children poses issues. While it can be done, guidance in this area would be valuable.

Infection preventionists often face resistance, particularly from their surgical colleagues, when they try to approach these problems. An example was described of one facility's approach. There was immediate concern and reaction to resolve the problem, such that a special meeting was called with cardiologists in order to discuss cases that could be postponed until a decision could be made about what unit could be run safely and how risks could be mitigated for the remaining units. Different departments took ownership of different pieces of the problem. For example, the public relations group developed the letters and scripts. The perfusionists pulled all of the records to identify which patients had been on which machines. Working through this problem as a team helped them be successful without draining the resources of any one group. It was still challenging, but was possible and doable. Letters were sent to approximately 1600 people. A special no-charge clinic was set up for anyone calling the hotline who felt they had symptoms and wanted to be seen. Because the hospital market is competitive, the facility tried to coordinate with other hospitals to send letters all at once; unfortunately, that effort was not successful.

The California Department of Public Health (CDPH) heard of a suspect case in August and was quickly able to identify the 134 hospitals in California that perform open chest procedures, as they report SSI data through NHSN. CDPH's Distributed Liaison Infection Prevention staff contacted each of the hospitals by phone, and 87 hospitals that used the implicated device were identified. Consultation meetings were held with each of those hospitals to review the current FDA and CDC guidance and patient identification protocol; provide an infection control checklist based on the Sorin operating manual so that infection preventionists or perfusionists were taking the right steps; and inform hospitals to report to FDA if they experienced difficulty complying. Disinfection is a 35-step procedure. A webinar was conducted for clinicians from the affected hospitals, and an all-facilities letter was sent to all of the hospitals. That letter was updated with the new October guidance when it was published. CDC information has been incredibly helpful. There has been pushback regarding the patient identification protocol, because some hospitals have looked through their microbiology data, not identified NTM, and therefore feel that they do not have patients at risk. CDPH has suggested developing an alert for their EHR. CDC is encouraged to help build understanding of alternative approaches to identify patients. For example, pathology reviews can be conducted. Specific guidance should be provided to facilities about what kind of cultures should be performed and what else should be done when a patient presents. CDC should consider prospective surveillance as well.

CSTE suggested providing more detailed guidance regarding how to identify cases, including which ICD-9/10 codes to look for. Tennessee has two potential cases, once of which is a difficult diagnostic conundrum in which imaging is suggestive of infection, but there are no other symptoms. Having an idea of how to evaluate a challenging patient would be helpful in terms of the positive and negative predictive value of some of the inflammatory markers, the value of different types of imaging, the positive and negative predictive value of taking cultures, etc. While the answers may not yet be known, CSTE encouraged capturing that type of information so that clinicians have better guidance available when they see those patients and can avoid unnecessary invasive procedures.

PHAC emphasized that this issue is international. Canada has two cases that were identified by blood cultures, and the patients did not present in any way that would have led to the assumption that NTM infection was the problem. Canada is also interested in hearing others' solutions.

SHEA and PHAC expressed interest in having a sense of the case count or number of institutions that have reported cases, and the actual number of cases that have been identified, compared to the number of patients notified.

In terms of clinical advice, HICPAC recalled that CDC was helpful in convening an expert panel of clinicians to respond to questions about the fungal meningitis outbreak. It could be worthwhile to have a registry and clinical panel to respond to questions for NTM as well.

Facility Consideration/Guidance

Dr. Bell asked for suggestions regarding how CDC can make the solutions that are being implemented and tested to contain/direct the outflow from HCUs available to the community on an ad hoc basis. Perhaps even something as simple as photographs of solutions could be made available. He emphasized that it will be necessary to accommodate potential pushback in terms of facilities' concerns over patient privacy etc., and whether an anonymized approach could be taken that would calm any concerns.

There was support among the group for sharing images of solutions, with the caveat that it is important to build context and understanding regarding the principles and the "why" behind the solutions.

Different and creative fixes are being developed to manage these machines. They cannot all be replaced, and the backlog of acquiring them from other manufacturers is significant. Personnel who set the physical layout of operating rooms, but cannot move the machines out of operating rooms, are looking for approaches to exhaust capture and direction. There has been interest in using tubes to direct exhaust. One facility's clinical engineers have developed a creative plan to capture exhaust and direct it through the smoke evacuators that are used in some surgical procedures to protect people against HPV exposure. Testing is underway to assess this approach.

SHEA has an active research network and a large knowledge base, which could help them serve as a resource in field-testing some of the proposed solutions.

Regarding engineering solutions and risk mitigation when the existing equipment continues to be used, HICPAC stressed the importance of tracking patents to ensure that the applied solutions have worked. Some of the solutions are labor-intensive, which makes them prone to other problems. They could learn by collecting information about best practices and potential problems through existing surveillance systems.

When CDPH asked hospitals if they had the 3T heater-cooler device, many replied that they did not. However, when CDPH followed up to ask the type of equipment to catalogue the device, 50% of the facilities that said they did not have the device actually did.

CSTE pointed out that guidance regarding mitigation when a replacement device cannot be acquired is important. There may be legal issues associated with such guidance, but it would be helpful to hear from people who have carefully considered the pros, cons, and unintended consequences. Having a clearinghouse for this information would be extraordinarily useful.

PHAC stressed that some sites are known to have contaminated machines, but there are no good solutions to the problem. Most of their market is comprised of Soren and Maquet heater-cooler units. Acute cases are linked to different hospitals. PHAC created interim guidance that addresses where to focus efforts, because the recommendations from Soren have the potential

to shut down the public health laboratory network if all sites begin doing sampling of every machine, as well as environmental sampling. Some sites have been told that there is an 18-month waitlist to return equipment for deep disinfection.

SHEA noted that there are some well-described SSI infection problems related to air flow and stressed that it is critical for any solutions not to create more problems by altering equipment to change airflow or capture exhaust.

Dr. Yokoe mentioned that the investigation has identified vulnerabilities that are common to all heater-cooler devices. It is important not to lose sight of those findings and the need for innovative technology.

Dr. Diekema summarized that HICPAC had heard several persuasive arguments for interim guidance for a variety of areas, including clinical management, evaluating exposed patients, ongoing surveillance registry establishment, and a solution clearinghouse.

BOOTS Zika Update

Mary O'Neill, MD

The Leading Niche[®], Contractor

Blood Safety Zika Response Team

Division of Vector-Borne Diseases

National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

During this session, Dr. O'Neill focused on the impacts and challenges of blood transfusions and emerging infectious diseases. In the US, over 12 million blood products are transfused annually. It is critical to ensure that blood products provided to patients are free of infection, effective, and safe. With each emerging infectious disease, CDC works with FDA, blood centers, and local health departments to determine the epidemiology of transmission. The epidemiologic data supports FDA in providing guidance to the blood centers.

Zika virus is spread to humans primarily through the bite of an infected *Aedes aegypti* or *Aedes albopictus* mosquito. Many people infected with Zika virus will not have symptoms, or will have only mild symptoms. Zika virus infection during pregnancy can cause microcephaly and other severe brain defects. Before 2015, Zika outbreaks occurred in Africa, Southeast Asia, and the Pacific Islands. Currently, outbreaks are occurring in many countries and territories around the world.

Zika virus was first recognized in Uganda in the Zika forest in 1947. There were sporadic cases in Africa and Southeast Asia until 2007 when it spread to Yap Island, where there was an explosive outbreak: over three months, 75% of the population became infected. The virus was then detected in French Polynesia in 2013 where, in five months, approximately 30,000 people were suspected to have Zika virus. The virus then completed its transverse around the globe to present in 2015 in the Americas.

In addition to mosquito bites, Zika virus can be spread from a pregnant woman to her fetus, through sex with an infected person, through laboratory exposure, and through blood transfusion. There have been no reports of infants getting Zika through breastfeeding.

The *Aedes* mosquito species is efficient at spreading Zika and also transmits Dengue and Chikungunya viruses. The mosquitoes lay eggs in water-holding containers, live in and around households, and are unusual in that they bite during the day as well as at night.

Clinical illness from Zika virus is usually mild. The most common symptoms are rash (maculopapular; often pruritic), fever (usually low-grade), arthritis or arthralgia, and non-purulent conjunctivitis. Other symptoms include muscle pain and headache. Symptoms generally last from several days to a week. Severe disease is uncommon, and fatalities are rare.

Congenital Zika syndrome is a recently-recognized pattern of congenital anomalies associated with Zika virus infection during pregnancy that includes microcephaly, intracranial calcifications, and other brain anomalies, eye anomalies, clubfoot, and hypertonias that leads to severe contractures. Infant microcephaly was initially identified in Brazil by astute physicians. As it became apparent that more congenital anomalies were associated with Zika virus, it was termed Congenital Zika syndrome.

As of November 2016, active Zika virus is now found in 58 countries. Person-to-person transmission of Zika has been determined in 12 countries, including one known case in the US. Microcephaly is demonstrated in 28 countries, and 19 countries have documented Guillain-Barré Syndrome (GBS), which is known to be associated with Zika. There have been over 2000 cases of microcephaly, the majority of which have occurred in Brazil.

Most Zika cases in the US are among persons (N=4310) returning to the US after travel to active transmission areas. Of the total US cases reported, 185 have been locally-acquired, mosquito-borne cases. One case was laboratory-acquired, and 36 cases were sexually transmitted. There have been 13 cases of GBS. A total of 33,133 locally-acquired Zika cases have been reported in the US territories, with 126 travel-associated cases and 48 GBS cases.

Proven modes of person-to-person transmission of Zika include male-to-female sexual contact among symptomatic and asymptomatic males; female-to-male transmission by a symptomatic female; and male-to-male transmission by a symptomatic male. Intrauterine and intrapartum transmission has been proven to occur from a viremic mother to a newborn. There have been probable cases due to blood transfusions, as well as possible cases transmitted through breast milk and organ and tissue transplantation.

Most Zika infections - approximately 80% - are estimated to be asymptomatic, which raises a major issue for blood centers. Blood donors are asked many questions when they present to donate blood, including whether they are feeling well. With asymptomatic Zika, they may feel well, but still harbor the virus. In French Polynesia, 2.8% of asymptomatic blood donors tested positive for Zika virus. It is important to note that when transfusion transmission of Zika is suspected in a patient in an area that is epidemic, it must be confirmed whether it came from the blood donor, or from the environment. Donors are asked to call the blood center following donation if they experience any change in their health, and the blood center will do the appropriate follow-up.

Two probable transfusion transmission cases have been reported from Brazil. In these two probable cases, the donors called within three days of leaving the blood center to say they had virus-like symptoms. The first blood donor tested positive for Zika. The recipient of the first donor's platelets was a 54-year-old female liver transplant recipient. The sample collected from her the day after transfusion was positive for Zika, but she was asymptomatic.

The second donor donated two units of platelets and was found to be Zika positive. One recipient of that donor's platelets was a 14-year-old female who had undergone a bone transplant for acute myeloid leukemia (AML). Samples collected as far out as days 23 and 51 were positive for Zika RNA. She had not mounted an immune response to Zika, probably because she was immunosuppressed. The second recipient was a 54-year-old female with myelofibrosis. A sample collected after transfusion was Zika positive. She was asymptomatic. When molecular testing was conducted on the donors and recipient patients, they were similar. It is assumed the patients were infected with Zika from the donors.

The first locally-acquired case of Zika was identified in Puerto Rico in December 2015. FDA issued guidance in February 2016 for the blood collection industry to reduce the risk for Zika blood transmission in Puerto Rico and the US. For areas with active transmission of Zika, the guidance included:

- Import whole blood and blood components from areas of the US without active transmission,
- Use an FDA-approved pathogen reduction technology (PRT) for platelets and plasma, or
- Collect blood locally and test donations when an FDA-licensed test is available.

The guidance for areas without active transmission of Zika was to educate donors and ask them to self-defer for 28 days if at risk for Zika, or to question donors regarding risks for Zika (symptoms, infection, diagnosis, travel, sexual contact with a man at risk for Zika) and, if positive, to defer for 28 days.

FDA is the regulatory agency for blood collection and tissue recovery centers. All blood collectors in the US are registered and licensed with the FDA. FDA's role in the Zika virus outbreak includes issuing guidance documents to reduce the risk of transfusion transmission of Zika virus. While CDC does not have a regulatory role in blood safety, the agency has a critical role in collecting epidemiologic data on disease transmission, promoting interventions to prevent transmission from donor to recipient, and investigating possible cases of transfusion-transmitted disease. CDC works primarily with other Federal agencies and health departments to achieve these goals. NHSN operates the Hemovigilance Module, which tracks adverse events associated with transfusion. CDC's activities are coordinated through the Office of Blood, Organ, and Other Tissue Safety (BOOTS) within DHQP. FDA writes guidance based on CDC's findings regarding the epidemiology of transmission.

In response to Zika in Puerto Rico, all blood components were imported from the mainland US from March 5, 2016, through April 14, 2016. Blood collections resumed on April 2, 2016, with donor screening using nucleic acid testing (NAT) from Roche Molecular Systems, Inc., under an Investigational New Drug (IND) application. Ongoing donor follow-up studies supported by CDC focus on demographic distribution, development of symptoms, length of viremia, and the presence of virus in other compartments (e.g., whole blood, urine, saliva, semen). This work is extremely important because it is now known that Zika can attach to red blood cells and remains in the blood for up to 58 days; however, it is not known if it is infectious. In addition, work through CDC and the Departments of Health has shown that semen can be infectious for over 180 days. CDC's work in Puerto Rico allowed for the calculation of prevalence and incidence through modeling to gauge the scope and intensity of the outbreak. A manuscript has been submitted to a peer-reviewed journal regarding this modeling.

Following the outbreak in Puerto Rico, blood centers in the US were initially unclear about what practices to implement to prevent bloodborne spread of Zika. Although there was no FDA-

licensed test for Zika virus, testing for Zika became available through two separate IND applications for blood collected in Puerto Rico and mainland US. The tests became available on April 3, 2016, from Roche Molecular Systems, Inc., and on June 20, 2016, from Hologic, Inc./Grifols. Blood centers in the US in areas anticipating active transmission began screening donors in late May 2016. CDC collaborates with state and local health departments when there is a positive screen for Zika virus to investigate the source of transmission and determine whether a cluster of activity is occurring.

Initial FDA guidance specified that CDC would define areas of active transmission where interventions such as screening or PRT needed to be applied. Once cases of local transmission of Zika were detected in South Florida, data were reviewed closely by CDC to define the areas of local transmission. For Florida, that determination was made on the county level. As blood screening became more widespread in Florida, more blood donors were confirmed positive for Zika. Although most were exposed due to travel outside the US or from sexual exposure to travelers, some were exposed through local transmission. Thus, these blood donor investigations have been useful in public health response.

FDA issued another guidance for industry in August 2016. This issuance was unprecedented in the blood industry because the guidance was based on a test that was made available under an IND application rather than a licensed test. This guidance indicated that all donations should be tested with an IND Individual Donor NAT (ID-NAT) test for Zika, or a licensed test when available, and should be implemented by November 18, 2016; or PRT should be implemented using an FDA-licensed device for platelets or plasma and, if an FDA licensed device becomes available, for whole blood or red blood cells. This direction was a major challenge for the blood centers, as they had to acquire equipment and train staff to begin testing. Testing occurs throughout the US, not just in the high-risk areas in the Southern US. Donor history screening was not required, since all donations would be tested for Zika; however, the guidance states that if a donor gives a history of recent Zika infection or has a positive test for Zika, he or she should be deferred from donating for 120 days.

PRT is a new technology that has recently been approved in the US for platelets and plasma. PRT inactivates pathogens present in whole blood or blood components using chemicals with or without ultraviolet light to inactivate DNA and RNA. PRT for red blood cells, if effective, could be a long-term solution to mitigating emerging infectious disease threats, either in conjunction with, or possibly to replace, laboratory screening. As noted, FDA has approved the technology for platelets and plasma, but not for red blood cells. The majority of blood components are transfused as red blood cells. PRT is believed to be the “technology of the future” and, if approved, it could change the response of the blood industry to emerging infectious diseases. The FDA guidance in August was the first time PRT was permitted to be used in lieu of a test. The hope is that in the future, if there is another emerging infectious disease and PRT is approved for red cells and all blood products, PRT can be implemented without conducting testing. Safety and efficacy trials are planned in Puerto Rico for red blood cells treated with PRT using the NHSN Hemovigilance Module to monitor adverse events related to transfusions. CDC staff currently are in Puerto Rico, training hospitals on the Hemovigilance Module.

FDA provided guidance for human cells, tissues, and cellular- and tissue-based products (HCT/Ps) in March 2016. The guidance was based on the perceived potential for transmission of Zika by HCT/Ps recovered from living donors (corneas, bone, skin, heart valves, hematopoietic stem/progenitor cells from cord blood or peripheral blood, reproductive tissues such as semen and oocytes, gestational tissues). Less evidence exists for transmission by processed HCT/Ps from non-heart-beating donors. The Health Resources and Services

Administration (HRSA), rather than FDA, has oversight for solid organs. Zika RNA has been detected in the organs of a deceased individual; however, there is no information as to whether the virus could be infectious if the organs were transplanted. Recipients may be severely immunocompromised, but it is unclear how the outcome might be affected.

The recommendation for living donors of HCT/Ps is that donors with following risks are ineligible:

- Medical diagnosis of Zika infection in the past six months;
- Residence in, or travel to, an area with active Zika transmission within the past six months; or
- Sex within the past six months with a male who is known to have either of the first two risk factors.

The recommendation for non-heart-beating donors of HCT/Ps is that people with a medical diagnosis of Zika infection in the past six months are ineligible.

In conclusion, CDC's role in helping the blood industry ensure the safety of the blood supply is critical. Investigation of positive blood donors helps to determine how individuals are infected and where local transmission may be occurring, as well as to estimate infection in the general population. Follow-up of positive donors in Puerto Rico will better describe the course of Zika infection, including its duration and the nature of transmissibility through transfusion. PRT evaluation may accelerate approval for its use in whole blood and red blood cells, which would be an intervention for all emerging infectious disease threats to blood safety, and also may increase participation in the NHSN Hemovigilance Module.

Discussion Points

CSTE asked about the spectrum of PRT and whether it would also inactivate Babesia.

Dr. O'Neill responded that Babesia resides within the red blood cell. There is an outbreak of Babesia in the Northeast and the Midwest. PRT is effective against Babesia, but further studies are required to ensure that PRT is efficacious for red cell products and to gain FDA licensure; however, PRT is licensed for platelets and may be approved for use in lieu of Babesia testing. Babesia testing or PRT for platelet products will be necessary, as red cell contaminants are present in platelets and could contain Babesia.

Dr. Bell added that it is known that PRT allows platelets to be successfully and safely used. Those data are not yet available for red blood cells, so the work in Puerto Rico is important. If PRT can be shown to allow the red blood cells to be used successfully, that finding will represent a first step. A secondary issue pertains to whether intracellular pathogens could be addressed. However, that question cannot be asked until it can be confirmed that PRT is a successful technique.

CMS has regulatory oversight over transplant programs and organ procurement organizations. It is not clear whether there will be recommendations for testing of donors. It can be difficult for organ procurement organizations to determine whether a potential donor has had an infection in the last six months. CMS is concerned about Zika and organ donation and transplantation, especially because the recipients are immunosuppressed. CMS asked whether CDC is working with HRSA and/or FDA on recommendations for testing.

Dr. O'Neill responded that Federal agencies, including CDC, are looking at these issues actively, as many people share these concerns.

Long-Term Care Updates and Guidance

Nimalie D. Stone, MD, MSMD, MS
Medical Epidemiologist for LTC
Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention

Dr. Stone reminded HICPAC that she had provided the committee with an update in June 2013. At that time, CDC had released the LTCF infection reporting component for nursing homes and other long-term care settings within the NHSN system in September 2012. That component was coupled with updated surveillance definitions in October 2012, which had been revised in a joint collaboration of CDC and SHEA. In April 2013, HHS released a chapter on LTC as part of their *National Action Plan to Prevent Healthcare-Associated Infections in LTCF*. HHS identified NHSN enrollment as a key priority area for this setting.

Since then, quite a few other policies and initiatives have been driving infection prevention and stewardship in the nursing home environment. In February 2014, the Office of the Inspector General released a report on adverse events and harms in individuals coming directly from hospitals for skilled nursing care. In that post-acute population, one in five individuals experienced serious harm or adverse events within the first month of their care. When the causes of harm were further assessed, infections accounted for 26% of adverse events and were a major driver of re-hospitalization and cost.

That finding caught the attention of the LTC community, which began to examine how infection-related harms were being tracked and addressed in this environment. Numerous proposals have focused attention on combating antibiotic resistance and implementing antibiotic stewardship in healthcare. The call to action for implementing antibiotic stewardship programs and activities across all healthcare settings, including LTCFs, was one of the exciting pieces of the *National Action Plan for Combating Antibiotic Resistant Bacteria*. Specific directives were issued for defining and improving antibiotic stewardship in the nursing home environment. That effort was reinforced when in July 2015, CMS proposed new federal regulations for LTCFs, including updated infection prevention program requirements and antibiotic stewardship activities. The timeliness of that interest in stewardship in nursing homes set the stage for CDC's September 2015 release of the *Core Elements of Antibiotic Stewardship for Nursing Homes*. That resource helped the industry understand the framework for implementing stewardship in this setting. In October 2016, the CMS regulatory requirements for LTCFs were finalized, and much of the proposed language was retained.

The final CMS regulatory requirements for nursing homes highlight several new aspects of infection prevention and control programs, including antibiotic stewardship and use, and new training and education expectations for individuals overseeing infection prevention and control (IPC) programs as well as front-line staff. DHQP has been working under this backdrop over the last few years. Dr. Stone highlighted DHQP's core work and key projects that illustrate their efforts to continue defining opportunities through research and innovation in implementing stewardship and infection prevention and control, promoting infection surveillance and reporting capacity, defining and promoting antibiotic stewardship activities in nursing homes, and making infection prevention programs in these settings stronger.

One project that has informed several aspects of DHQP's program is a nursing home point prevalence survey pilot (NHPS) of a single-day look at infections and AU in a small number of nursing homes (N=9) across four Emerging Infections Program (EIP) sites: Connecticut, Minnesota, New Mexico, and New York. The goal of the project was to assess the feasibility of implementing a prevalence survey methodology in a nursing home. DHQP learned much from the experience. A great deal of adaptation was required to determine whether it could be done in nursing homes. Almost 1300 residents were included in the survey, approximately 15% of whom reflected the post-acute, short-stay population. Overall, the HAI prevalence in these facilities was about 5%, and the AU prevalence was about 12%. In terms of the risk factors compared within the groups for both HAI prevalence and AU, the post-acute, short-stay population had a much higher prevalence of both infection and AU. There was a strong correlation with that population and device use. Device use also had a risk for HAI and AU. These data are consistent with other work, especially in the VA system, which assessed the prevalence of infections in their population and found that the burden of infections was much greater in individuals with indwelling medical devices.

Currently, there is NHSN reporting capability for gastrointestinal (GI) infections, specifically *C. difficile*, and UTIs in nursing homes. However, many other infections occur in these facilities for which there is no surveillance infrastructure for capture. That information is critically important to informing future expansion of NHSN reporting. Also important to note is that the proportion of UTIs that actually meet symptom-based criteria is fairly low, but a tremendous amount of AU is driven by UTI. The prevalence survey data identified that 165 antimicrobials were administered, with an overall AU prevalence of 11.7%. Over one-third of the antibiotics administered were for UTI, which coincides with data that UTI is a large contributor of antimicrobial prescribing. Approximately one-quarter (23%) of AU was for prophylaxis, primarily for respiratory and UTI. Appropriateness of AU for UTI treatment indication ranged from 15% to 45%, depending upon the criteria applied. There are potential opportunities in terms of stewardship, which is another way that this preliminary pilot work has informed the strategic directions in antibiotic stewardship programs as well.

These findings have been critical in informing DHQP's next steps to expand this prevalence survey to a much larger cohort of approximately 200 nursing homes in 2017. The objectives are to:

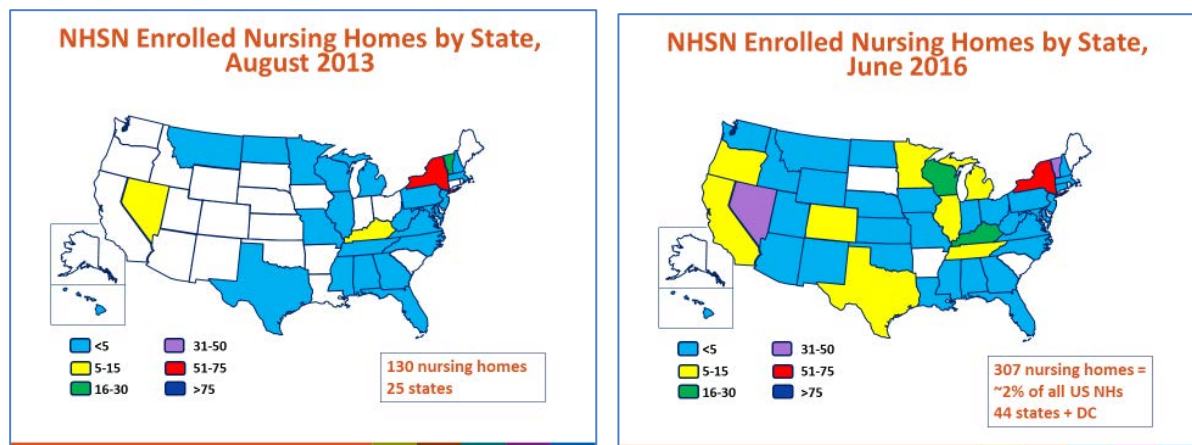
- Estimate HAI prevalence and describe the indications for AU
- Determine the distribution of HAI infection by type and by pathogen
- Describe the quality of antimicrobial drug prescribing in selected clinical circumstances

The findings will be used to:

- Estimate the national HAI/AU burden to define prevention opportunities
- Inform future expansion of HAI and AU surveillance for the NHSN Long-Term Care Facility Component
- Evaluate the uptake and impact of CDC's *Core Elements of Antibiotic Stewardship for Nursing Homes*

The NHSN Long-term Care Facility Component was released in September 2012. As mentioned earlier, the main reporting options for nursing homes are UTIs and laboratory-identified antibiotic resistant bacteria and *C. difficile*. A process measure is imbedded within the UTI event report to

evaluate AU in this indication. The following maps illustrate the landscape of nursing homes enrolled in NHSN by state in August 2013 compared to June 2016:



There were some early adopters with state- or local-level efforts to engage nursing homes in NHSN reporting, but no national-scale efforts. From the early years of assessing NHSN adoption, DHQP learned that that HAI programs engaging nursing homes directly in this activity were critically important in starting these conversations and helping to enroll providers. Hospitals were another source of support for nursing homes in that they provided NHSN support for their affiliated healthcare partners.

A fairly large proportion of hospital-affiliated nursing homes were among the early adopters. While the changes were fairly modest, they are believed to have been the result of awareness of policies and incentives for NHSN reporting in post-acute and LTC settings. A few position statements, including the 2013 HHS HAI Action Plan and a 2015 CSTE position statement, discussed the role of NHSN for tracking and preventing infections. There has been growing awareness in several CMS quality reporting programs that incorporate NHSN in other post-acute care settings, including long-term acute care hospitals and inpatient rehabilitation facilities. Skilled nursing facilities (SNF) are part of that post-acute care spectrum. Nevada became the first state to require NHSN reporting for SNFs. Informal conversations were occurring in certain states as well. For example, Wisconsin surveyors were starting to inquire about NHSN use during review of infection surveillance programs.

Many lessons were learned about the challenges with NHSN reporting and sustaining that reporting. There are tremendous barriers to voluntary reporting into NHSN, one of the most significant of which is staff turnover. There are also issues with limited time, resources, and competing priorities. There are numerous limitations with regard to IT infrastructure and computer skills. Facilities may not maximize the benefit of NHSN data due to inadequate data analysis and interpretation capacity. NHSN is a sophisticated surveillance system trying to be adopted by a workforce that does not have many of the resources that have been invested in other healthcare environments. For that reason and others, external partners and their programs have been important for success early on. The collaboratives have provided a forum for sharing experiences and overcoming obstacles as a group, keeping facilities engaged, and providing resources to translate NHSN data into meaningful prevention actions.

Given what DHQP has learned about the role of external partners in driving NHSN use for nursing homes, they are thrilled to be part of a large-scale project that CMS QIN-QIO programs

implemented in 2016, the *C. difficile*-focused reporting and reduction project. The goal was to engage a cohort of nursing homes in NHSN and enroll them in for sustained reporting on *C. difficile* for the duration of this project, and to bring antibiotic stewardship and *C. difficile* prevention education to those facilities. A goal was set to recruit 15% (~2300) nursing homes into NHSN. There was so much interest when the QIN-QIO programs recruited, the participation goal was far exceeded, with enrollment interest from 2999 facilities. Dr. Stone emphasized that it has been a “labor of love” for their team to help facilities and the QIN-QIO programs bring content and training to these settings. In the short period of time that this project has been underway, since November 30, 2016, 1677 nursing homes have been enrolled. That reflects 11% of all of the eligible nursing homes in the US, which is a modest number. However, the HHS plan set a five-year enrollment goal of 5% of eligible nursing homes. To be able to double that goal in much less time is an incredible attribute to the investments being made by CMS and CDC.

Nursing homes will receive support to implement and sustain *C. difficile* reporting over the course of the project. This effort will generate a national baseline of nursing home-onset *C. difficile* infection incidence and inform the feasibility of large-scale NHSN reporting by nursing homes. Participating facilities also will receive training and support on *C. difficile* reporting and prevention activities, including analysis and interpretation of *C. difficile* event data, training in LTC communication, and implementation of antibiotic stewardship and *C. difficile* prevention. One of the fundamental education pieces that will be provided to nursing home providers through this QIN-QIO program will be the CDC [Core Elements of Antibiotic Stewardship](#) released in September 2015 which used the same seven elements outlined in the acute care Core Elements released in 2014 and adapted practical strategies for applying the core elements in nursing homes. It has been incredibly well-received and broadly disseminated by key nursing home partner organizations.

Ongoing implementation and promotion of nursing home antibiotic stewardship includes evaluating the feasibility of the *Core Elements of Antibiotic Stewardship* in a network of nursing homes within a SHEPherD program award to Brown University. The University of Colorado is being funded to develop a UTI management clinical decision support app adapted for nursing home workflow. DHQP is partnering with the Pew Charitable Trusts to convene nursing home stakeholders to discuss sources and methods for measuring AU. DHQP also is providing technical support and promotion of antibiotic stewardship implementation efforts developed by state and federal partners, including AHRQ’s recently released *Nursing Home Antimicrobial Stewardship Guide*, which offers many practical tools that are tied to the Core Elements in terms of taking specific actions, creating a team that is accountable for stewardship, and describing concrete resources for how facilities can put those practices into place. Several state partners have released and developed educational content on implementation of stewardship. DHQP highlights those resources on its website as well so that efforts are not duplicated.

CDC is also working with state health departments. The state HAI programs received support during the Ebola supplemental ELC grant. One of those elements of that work was to bring infection prevention assessment and support activities for Ebola preparation and beyond to hospitals, LTCFs, dialysis centers, and outpatient centers. This work focused on developing a structured approach to infection prevention assessments and on helping to close gaps in CDC’s core infection control assessment and response (ICAR) activities in healthcare. Much has been learned from the LTC infection control assessment work from state and local HAI program partners. Based on the work, CDC created a domain-based assessment tool and looked across the domains of policies and procedures, staff training and education, auditing and monitoring adherence to policies, providing feedback on staff adherence, and availability of supplies. As of

the end of October 2016, 469 LTC assessments have been completed, of which 86% have been in nursing homes. This work is exciting in that it has created new relationships between health departments and providers, created better understanding of the challenges and barriers for nursing home IPC programs, and illustrated how health departments can serve to close gaps through resources and education. Some of the common discoveries and themes are:

- Staff overseeing IPC programs lack training and dedicated time
- Routine auditing of staff adherence to policies and procedures is not in place
- Feedback on adherence is not available
- Minimal antibiotic stewardship activities are in place

Dr. Stone described issues specific to the implementation in nursing homes of existing HICPAC guidance on transmission-based precautions. The current CMS Infection Control Program interpretive guidance (F441) quotes language from the CDC/HICPAC 2007 *Guideline for Isolation Precautions* stating that, “In nursing homes, it is appropriate to individualize decisions regarding resident placement (shared or private), balancing infection risks with the need for more than one occupant in a room, the presence of risk factors that increase the likelihood of transmission, and the potential for adverse psychological impact on the infected or colonized resident.” The guidelines recognize that other factors must be accounted for in the application of traditional strategies in nursing homes. That need was also acknowledged in the previous year’s CDC/HICPAC *MDRO Management* guidelines, which take a tiered approach. There is little certainty about how to best implement these recommendations in LTC settings.

The guidance is nuanced such that the language is highly flexible. The guidelines acknowledge that they were not necessarily written to address healthcare settings outside of hospitals, and that there is flexibility in how these strategies could be adapted. This vagary has led to several challenges. For example, there are issues associated with detection. Many facilities do not even know the full burden of resistance coming in and out of their buildings. From the acute care hospital experience, it is known that clinical cultures tend to underestimate the true prevalence of MDROs. In nursing homes, prevalence survey data show that MDRO carriage can be as high as 40% to 50%. That is, one out of two people in these facilities have one or more resistant organisms, but the MDROs are not recognized because there of a lack of active surveillance. The lack of private rooms and challenges associated with moving residents when they become infected or colonized also impacts the ability to contain and prevent transmission. There is concern about how transmission-based precautions can have negative impacts on residents in terms of stigmatization.

As a result of these and other factors, the approach to initiating and maintaining effective transmission-based precautions in actual practice is inconsistent. Several groups recently have contacted CDC to point out that although there will be more scrutiny and attention directed toward infection prevention practices in survey practice, they do not feel like they have concrete advice for what facilities should be doing.

Some interesting paradigms for resident-centered, risk-factor based approach to precautions have been published in the last few years. For example, Lona Mody’s group in Michigan published a *Conceptual Model for Reducing Infections and Antimicrobial Resistance in Skilled Nursing Facilities: Focusing on Residents with Indwelling Devices*. This model proposes gown and glove use during care of all high-risk residents regardless of MDRO status. Other groups have talked employing precautions preemptively when transmissible infections are suspected, rather than waiting for a diagnosis and then initiating precautions.

A more recent study from Maryland examined the transmission of resistant organisms during high-risk care activities. The investigators evaluated approximately 950 different interactions between HCP and residents colonized with MRSA using cultures of gowns and gloves to mimic transmission to hands and clothing. HCP were followed as they carried out a variety of activities with residents colonized with MRSA. After the interactions, the gowns and gloves were cultured to determine whether there was contamination. The investigators found that many interactions between caregivers and nursing home residents resulted in fairly high proportions of contamination, mostly of gloves, but also in a notable amount of gowns and clothes. The interactions included activities that may not have been thought of as high-risk, such as changing bedsheets or helping a patient get out of bed and dress. Certain risk factors increased the risk of transmission, such as the presence of chronic wounds.

These types of models raise questions regarding whether there should be a shift in transmission-based precautions and gown and glove use, moving away from using an organism as the trigger for precaution initiation and toward basing the decision to initiate on the type of care, or the type of person being cared for. There are pros and cons to a resident-centered approach to transmission-based precautions. The pros include:

- No longer needing to rely on identification of specific pathogens;
- Care planning that is based on resident needs; and
- Enabling early implementation of appropriate PPE based on new risks or changing care needs.

This approach would also reduce stigmatization because it would not be specific to particular individuals, but instead would be standard practice for everyone. The cons of the approach are:

- It represents a paradigm shift for facility staff, residents, families, and visitors and would require education; and
- The approach could radically increase gown and glove use and associated costs of care.

Regarding guidance, Dr. Stone posed the following question for HICPAC discussion: *Should implementation guidance for transmission-based precautions be tailored for nursing homes/LTCFs? Issues to address may include:*

- How to define risk factors or care activities which warrant targeted precautions
- When to shift from targeted precautions to full transmission-based precautions for serious or emerging pathogens, even among “low-risk” residents
- Whether there are opportunities for syndrome-based implementation of transmission-based precautions, prior to pathogen detection
- How to simplify messaging to front-line staff for how and when to implement transmission-based precautions

Discussion Points

Updates

Even if these facilities use NHSN, there has to be a surveillance system that often is not definition-based. HICPAC asked whether any thought had been given to making simplistic modifications to NHSN so that they can produce data in a broader way.

Dr. Stone replied that surveillance practices for nursing homes have never been defined well. In acute care, a longstanding message has been to target surveillance activities such that they are focused on the highest-risk preventable opportunities in order to allocate resources appropriately. That practice has not been in place in nursing homes. In the CMS interpretive guidance of surveillance requirements, the language is broad enough to allow providers to use either a house-wide or targeted infection surveillance approach. Shifting to a targeted surveillance method would allow facilities not to have a log of every event. Most nursing homes have not embraced that approach, and state surveyors may not be aware that it is acceptable. However, based on the CMS guidance, if a facility is able to explain its targeted infection surveillance strategy and show how it is focused on the most preventable or highest-risk events for the resident population, it would be a legitimate surveillance strategy. CDC is trying to provide education about basic surveillance practice to nursing homes. If the NHSN reporting infrastructure could be expanded to a few more events, it would allow facilities to shift wholesale away from line lists and logbooks to NHSN for their surveillance data collection. RTI and skin and soft tissue infections, especially related to wounds, would be high-priority events for NHSN expansion.

HICPAC raised the issue of children, noting that innovative work has come out of Columbia University looking at infections in pediatric LTCFs. While the pediatric population is a small proportion of the total LTC population, the Columbia University investigators have identified unique needs and challenges regarding children.

Dr. Stone responded that outbreak detection and response is a major area for pediatric LTC. It is true for all nursing homes, not just pediatric care, that there is a delay in recognition. That delay, coupled with lack of access to diagnostic testing, can allow these events to become large before the signal is detected and control strategies are implemented. Another aspect of CDC's work is determining how to provide outbreak resource education in the LTC setting. It is not clear whether NHSN could be a conduit, especially for smaller and more residential LTCFs, such as pediatric LTCFs. The infrastructure for conducting ongoing infection surveillance may not be as sophisticated, but outbreak detection and reporting are useful and important. There may be avenues that could meet the needs of pediatric and adult LTC.

HICPAC noted that occasionally, patients are transferred to LTCFs on an IV course of therapy. However, that course of treatment may be truncated at the LTCF without communication back to the transferring facility. There is concern about the unintended consequences of holding LTCFs to criteria or metrics that judge them strictly on antibiotic administration and use when some patients are sent to the facilities explicitly to receive antibiotic administration.

Dr. Stone responded that 50% of antibiotics administered in the short-stay, post-acute population are initiated in the hospital, and the other 50% are started in the nursing home. The first part of stewardship should be to assess the indication and duration of therapy. Additionally, better communication is needed between acute care providers and LTC providers when individuals on antibiotic therapy are being transferred in order to ensure that the courses of therapy are completed appropriately, that there is safe monitoring of the drugs while they are being delivered, and that there are no secondary complications related to lines or exposure/resistance. The use of antibiotics and the risks of transmission of resistant organisms at care transition points are areas of focus for CMS and CDC to determine the best practices for care transition management. Conversely, there is concern that some of the initiatives to prevent readmissions may actually increase AU because providers will try to do everything in their power not to have to send someone back to the acute care hospital.

Re-Evaluating Guidance

HICPAC noted that there could be unintended consequences associated with restricting a patient's movement.

Dr. Stone replied that the current adaptation of transmission-based precautions often focuses on using gowns and gloves for certain care activities or in room care, if they are used at all. Many individuals in nursing homes would not be under any kind of precautions at all, and rarely would someone's movement be restricted. From a social and functional wellness perspective, movement restriction would not be feasible.

Dr. Diekema noted that if the guidance is readdressed, it would fall within HICPAC's purview to examine the existing literature. He asked Dr. Stone about the literature base that could inform HICPAC in making a more directed recommendation that would help with the variation of practice.

Dr. Stone responded that exciting work examining MDRO transmission and prevention has been published only in the last year or two, such as the work done by Dr. Roghmann in Maryland. Dr. Mody conducted a cluster randomized study that looked at a large, comprehensive infection prevention program targeting high-risk residents with indwelling medical devices. The study showed that MDRO prevalence was reduced by about 25% in nursing homes that had preemptive barrier precautions for patients, and that carried out education efforts. Research experiences and evidence are now focused on MDROs in nursing homes that were not available even just a few years ago. This availability could signal an opportunity for changing the paradigm and approach to how these organisms are managed. Investments also are being made to examine the epidemiology of resident hands as a source for MRDO transmission and as a source of environmental contamination. Because of continuing uncertainty and variation in practice, there is harm in waiting for the "perfect" body of evidence.

HICPAC emphasized the distortion of what is believed on the acute care hospital side in terms of transferring a patient with a vascular catheter with two weeks of antibiotics, versus the reality of what can happen in the LTC setting, with limitations associated with staff ratios, the type of care necessary, and resources, among others. With that backdrop, the approach of targeting patients with medical devices make sense. A universal PPE approach can send the wrong message and is a sensitive issue, given factors in the LTC setting such as visiting family members entering the environment. This conversation should involve stakeholders to help think about feasibility "in the real world."

Dr. Yokoe asked about ways in which HICPAC members can help CDC to implement guidance pertaining to issues for which there may not be a robust evidence base, and for which the formal HICPAC guideline revision process may not be appropriate.

Dr. Stone agreed with the concerns about conducting a formal guideline revision process, particularly given the lack of, or limited, evidence. Separating LTC from the larger healthcare infection practice guidance would not be prudent. She agreed that any effort should incorporate the right stakeholders. Their involvement will be critical to implementing practical approaches. She suggested that there may be a model or mechanism for reviewing the issues and implementation gaps and releasing a statement or guidance document with references.

Dr. Diekema supported this excellent suggestion. Working with partners and societies such as SHEA, APIC, and others might be an appropriate way to address these needs without having to build a foundation with the current literature.

Mr. Hageman emphasized the importance of also articulating what they do not want to be changed.

HICPAC asked about the percentage of prevention programs funded by CDC that address LTC issues, given that these programs may serve as a resource to understand what is occurring nationally.

Dr. Stone said that the ICAR work is probably the largest effort across the country in terms of health departments engaging in LTC settings. Over 30 health department programs participate in assessment work in LTC settings. This work has built knowledge bases and awareness of the unique environment represented by nursing homes. The HAI programs are critical for helping with implementation of the core infection prevention practices. There is little evidence to cite to guide nursing homes on what to do.

CSTE emphasized that state health departments are likely to provide enormous support, but agreed that good implementation resources are not available, and implementation guidance is needed. Specific guidance for containment would be beneficial. A CSTE Position Statement passed earlier in the year specifically asked for the creation of such guidance.

The HAI Committee at CDPH worked with licensing to develop *Enhanced Standard Precautions* specifically for LTCFs. CDPH is revising the document now, as they have learned that the precautions are not always appropriate in all situations. The revised document will be released soon, and review of it by groups such as HICPAC can only make it stronger.

To increase this type of collaboration, HICPAC suggested adding a HICPAC liaison organization so that the Committee could have representation from the LTC perspective. It was noted that the American Health Care Association (AHCA) is represented on HICPAC, but was not present for this meeting.

Mr. Hageman added that the Endoscope Reprocessing Workgroup included a number of key stakeholders that are not represented on HICPAC. Having these discussions through the workgroup enabled CDC to bring in other partner societies and experts.

SHEA's LTC Committee is intensely interested in these topics. While they may not have anything on the docket currently that directly addresses isolation procedures, the committee would likely be interested in being involved with CDC in this endeavor. SHEA is working on one of the guidances pertaining to duration of contact precautions and will make sure that the writing group is aware of the importance of addressing both acute and long-term care.

NACCHO has demonstration projects underway with local health departments to identify ways to work with state health departments and LTCFs. They will continue to explore these areas in 2017 through demonstration work.

Dr. Diekema indicated that there would be further discussion regarding the context in which HICPAC can move this issue forward, particularly in terms of whether a workgroup is required, or whether other avenues should be pursued.

Public Comment

Mr. Jonathan Cooper

**Director, Environmental Services & Safety
Chair of the EOC
Orlando Health Central**

Regarding cleanliness in the healthcare environment and reduction of bioburden on surfaces, Mr. Cooper encouraged HICPAC to offer additional clear guidelines, resource recommendations, and best practice recommendations with regard to the products and processes that will offer the best possible outcomes for disinfection of the patient environment. Across the facility cleaning spectrum, many products and technologies are utilized for disinfection, with varying success. Regarding the progressive work that DHQP is engaged in with the SHEPherD and funding innovative programs, Mr. Cooper asked that DHQP consider developing a criteria category for facility environmental teams to encourage innovation projects. Much “great work” is being done across the country, and facility environmental teams want to assist with the strategies and interventions to prevent HAIs.

Summary and Work Plan

Dr. Diekema thanked HICPAC members, *ex officios*, and Liaison Representatives for their hard work and contributions to this productive meeting. There is a full agenda for the work plan going forward, including the following:

- Continuing work on the NICU and HCP guidelines
- Reconvening the Antimicrobial Stewardship Workgroup to provide implementation guidance on to how to incorporate the HICPAC *Stewardship Principles for Antibiotic Treatment Guidelines* into ongoing guideline development
- Developing charges for two new workgroups, one that will focus on guideline development, specifically on setting priorities and approaches to future guideline development, and another that will focus on HAI metrics
- Coordinating activities regarding the *Mycobacterium chimaera* situation, with a request for HICPAC members, *ex officios*, and Liaison Representatives to send their ideas, suggestions, and comments to Mr. Hageman and Ms. Erin Stone

Adjourn

With no additional comments or questions posed, the meeting adjourned at 11:48 am.

Certification

I hereby certify that, to the best of my knowledge and ability, the foregoing minutes of the December 1-2, 2016 meeting of the Healthcare Infection Control Practices Advisory Committee, CDC are accurate and complete.

Date

Daniel J. Diekema, MD, MS
Deborah Yokoe, MD, MPH
Co-Chairs, Healthcare Infection Control
Practices Advisory Committee, CDC

Attachment #1: Acronyms Used in this Document

Acronym	Expansion
AAP	American Academy of Pediatrics
AHCA	American Health Care Association
ACOEM	American College of Occupational and Environmental Medicine
ACIP	Advisory Committee on Immunization Practices
ACS	American College of Surgeons
ADA	Americans with Disabilities Act
ADT	Admit/Discharge/Transfer
AEH	America's Essential Hospitals
AHA	American Heart Association
AHA®	American Hospital Association®
AHRQ	Agency for Healthcare Research and Quality
AJM	<i>American Journal of Medicine</i>
APR-DRG	All Patient Refined DRG
AMR	Antimicrobial Resistance
AML	Acute Myeloid Leukemia
AOM	Acute Otitis Media
AORN	Association of periOperative Registered Nurses
APIC	Association of Professionals of Infection Control and Epidemiology
AR	Antibiotic Resistance
ASTHO	Association of State and Territorial Health Officials
AU	Antibiotic Use
AUR	Antimicrobial Use and Resistance
BAA	Broad Agency Announcement
BOOTS	(Office of) Blood, Organ, and Other Tissue Safety
<i>C. difficile</i>	<i>Clostridium difficile</i>
CARB	(National Strategy/Action Plan for) Combating Antibiotic-Resistant Bacteria
CAUTI	Catheter-Associated Urinary Tract Infection
CDC	Centers for Disease Control and Prevention
CDPH	California Department of Public Health
CEO	Chief Executive Officer
CLABSI	Central Line-Associated Bloodstream Infection
CLS	Clinical Laboratory Scientist
CMS	Centers for Medicare and Medicaid Services
CoP	Conditions of Participation
CORHA	Council for Outbreak Response: Healthcare-Associated Infections and Antibiotic-Resistant Pathogens
CQN	Chapter Quality Network
CRE	Carbapenem-Resistant <i>Enterobacteriaceae</i>
CSTE	Council of State and Territorial Epidemiologists
CU	Consumers Union
CUSP	Comprehensive Unit-based Safety Program
DASON	Duke Antimicrobial Stewardship Outreach Network
DFO	Designated Federal Official
DHQP	Division of Healthcare Quality Promotion
DOT	Days of Therapy
DRG	Diagnosis-Related Group

Acronym	Expansion
DVBD	Division of Vector-Borne Diseases
DVT	Deep Vein Thrombosis
<i>E. coli</i>	<i>Escherichia coli</i>
EHR	Electronic Health Record
EIP	Emerging Infections Program
ELC	Epidemiology and Laboratory Capacity
ERAS	Enhanced Recovery After Surgery
FAW	Forced-Air Warming
FDA	(United States) Food and Drug Administration
FMT	Fecal Microbiota Transplant
FTE	Full-Time Equivalent
GBS	Guillain-Barré Syndrome
GI	Gastrointestinal
GLC	Guidelines Committee
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HAI	Healthcare-Associated Infection
HAN	Health Alert Network
HCP	Healthcare Personnel
HCT/Ps	Human Cells, Tissues, and Cellular and Tissue-Based Products
HHS	(United States Department of) Health and Human Services
HICPAC	Healthcare Infection Control Practices Advisory Committee
HRET	Health Research & Educational Trust
HRSA	Health Resources and Services Administration
ICAR	Infection Control Assessment and Response
ICD	International Classification of Diseases
ICU	Intensive Care Unit
ID-NAT	Individual Donor NAT
IDSA	Infectious Diseases Society of America
IND	Investigational New Drug
IP	Infection Preventionist
IPA	Intergovernmental Personnel Agreement
IPC	Infection Prevention and Control
IT	Information Technology
JACS	<i>Journal of the American College of Surgeons</i>
JAMA	<i>Journal of the American Medical Association</i>
KPC	<i>Klebsiella Pneumoniae</i> Carbapenemase
JHM	Journal of Hospital Medicine
LINC	Lessons in INfection Control
LTC	Long-Term Care
LTCF	Long-Term Care Facility
MDIs	Microbiome Disruption Indices
MDR	Multidrug-Resistant
MDRO	Multidrug-Resistant Organism
MIPS	Merit-based Incentive Payment Program
MMWR	<i>Morbidity and Mortality Weekly Report</i>
MRSA	Methicillin-Resistant <i>Staphylococcus aureus</i>
MSSA	Methicillin-Susceptible <i>Staphylococcus aureus</i>
NAT	Nucleic Acid Testing

Acronym	Expansion
NACCHO	National Association of County and City Health Officials
NCEZID	National Center for Emerging and Zoonotic Infectious Diseases
NHPS	Nursing Home Point Prevalence Survey Pilot
NHSN	National Healthcare Safety Network
NIA	National Institute on Aging
NICU	Neonatal Intensive Care Unit
NIH	National Institutes of Health
NRC	National Research Collaborative
NTM	Non-Tuberculous Mycobacteria
OSHA	Occupational Safety and Health Administration
PCR	Polymerase Chain Reaction
PACCARB	Presidential Advisory Council on Combating Antibiotic Resistant Bacteria
PD	Patient Days
PEP	Post-Exposure Prophylaxis
PHAC	Public Health Agency of Canada
PICC	Peripherally-Inserted Central Catheter
PIDS	Pediatric Infectious Disease Society
PPD	Purified Protein Derivative
PPE	Personal Protective Equipment
PRT	Pathogen Reduction Technology
QIN-QIOs	Quality Innovation Network-Quality Improvement Organizations
R&D	Research and Development
RSV	Respiratory Syncytial Virus
S&C Memo	Survey and Certification Memoranda
SAAR	Standardized Antibiotic Administration Ratio
SCCM	Society of Critical Care Medicine
SHEA	Society for Healthcare Epidemiology of America
SHEPheRD	Safe Healthcare, Epidemiology, and Prevention Research Development
SHM	Society of Hospital Medicine
SIS	Surgical Infection Society
SNF	Skilled Nursing Facilities
SPUC	Society for Pediatric Urgent Care
SSI	Surgical Site Infection
STRIVE	States Targeting Reduction in Infections via Engagement
TB	Tuberculosis
TEP	Technical Expert Panel
UC Davis	University of California, Davis
UN	United Nations
URI	Upper Respiratory Infection
US	United States
UTI	Urinary Tract Infection
VA	(United States Department of) Veterans Affairs
VRE	Vancomycin-Resistant <i>Enterococcus faecium</i>
VRSA	vancomycin-resistant <i>Staphylococcus aureus</i>
VTE	Venous Thromboembolism
WHO	World Health Organization
WSES	World Society of Emergency Surgery

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: December 1-2, 2016

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

Liaison Representative name: Mark Russi, MD, MPH

Organization represented: American College of Occupational and Environmental Medicine (ACOEM)

Interim activities and updates:

- Forthcoming newly revised ACOEM guidance document addressing medical center occupational health was presented at ACOEM national conference, along with several lectures addressing subject areas in which practice changes have occurred since the previous edition. Presentations over the five-day period covered a broad array of topics in the general field of occupational and environmental medicine.
- Update of medical center guidance document submitted for ACOEM approval October, 2016.
- A draft ACOEM Position Statement on the Responsibilities of the Occupational and Environmental Medicine Provider in the Treatment and Prevention of Climate Change-Related Health Problems will be discussed at ACOEM's Council on Scientific Affairs meeting, December 2016.

Guidelines and Guidance:

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

- ACOEM and AAOHN (American Association of Occupational Health Nurses) published in the April issue of JOEM joint guidance for employers on the impact of marijuana in the workplace.
- ACOEM published JOEM a guidance statement addressing employee wellness programs and the EEOC regulations.
- ACOEM published in the same issue of JOEM a guidance statement on reproductive hazards in the workplace.
- Publication of the ACOEM Medical Center Occupational Health Guidance Document is expected in 2017.

Position Statements:

- A position statement addressing lead exposure in the general environment and workplace, calling for more stringent standards, is in final stages of review.
- Recently published position statements have addressed pertussis vaccination and use of drug formularies in Workers' Compensation systems.

Legislation:

- Members of Congress have requested that the U.S. DOL reinstitute oversight of State Workers' Compensation programs. ACOEM has formally offered to be of assistance during the process.

Campaigns and related activities:

- None reported.

Press activities:

- Press releases from September 2016 to the present have addressed impact of wellness and weight reduction programs in the workplace, correlations between overweight and obesity and higher Workers' Compensation costs, and workplace consequences of fatigue and sleep deprivation.

Publications:

- As above.

Other items of note:

Public Comments:

- ACOEM Comments on Task Report on Insulin Treated Diabetes Mellitus and CMV Drivers 11/16/2016
- ACOEM Joins Coalition Urging Change to CBO Scoring Rules for Disease Prevention Programs 8/30/2016
- Congress Urged to Preserve FY 2017 Funding for NIOSH Total Worker Health Program 8/30/2016
- ACOEM Supports Preventive Health Savings Act 8/25/2016
- ACOEM Joins Coalition in Opposing Funding Cuts for CDC's Office on Smoking and Health 7/25/2016
- ACOEM Urges OSA Screening of Asymptomatic Adults in Safety-Sensitive Jobs 7/13/2016

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

Meeting Date: December 1-2, 2016

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

Liaison Representative: Elizabeth Wick

Organization represented: American College of Surgeons (ACS)

Interim activities and updates:

- Registries: Efforts underway to bring all registries onto a single platform to facilitate automation of data collection and synergy between programs (NSQIP, TQIP, MBSAQIP, SSR, CoC, NABSP). Small pilot to establish the feasibility of using machine learning to automate 5 HAI-related outcomes
- CUSP for ERAS: Partnership between ACS, Johns Hopkins and AHRQ to disseminate clinical pathways with best evidence for pain management, mobility, patient engagement, harm prevention in colorectal, bariatrics, joint replacement, gynecology and emergency general surgery

Guidelines and Guidance:

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

- SSI guidelines to be published in Journal of American College of Surgeons (collaboration with Surgery Infection Society)

Position Statements:

- None reported

Legislation:

- None reported

Campaigns and related activities:

- None reported

Press activities:

- None reported

Publications:

- None reported

Other items of note:

- None reported

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Elaine Dekker, BSN, CIC

Organization represented: America's Essential Hospitals (AEH)

Interim activities and updates:

- None reported.

Guidelines and Guidance:

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

- None reported.

Position Statements:

- None reported.

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:

- Surgical Heater-Cooler Devices Possible Contamination:
 - In October, America's Essential Hospitals and other hospital associations hosted a call with hospital quality experts from the CDC and the Food and Drug Administration.
 - Members of America's Essential Hospitals can access a recording of the call on its website.
 - Members also were provided sample talking points to assist with media inquiries.
 - Notified members of CDC's Morbidity and Mortality Weekly Report and toolkit for providers, to assist hospitals in their notification of patients at risk of developing an infection from these devices.
- Get Smart About Antibiotics Week:
 - America's Essential Hospitals participated in this year's Get Smart Week by calling our members' attention to CDC's partner toolkit.
 - We also engaged in social media and other communication through our website to encourage our members and the general public to engage in antibiotic stewardship in both inpatient and outpatient settings.
- America's Essential Hospitals actively promotes CDC information to our members via social media on timely topics such as outbreaks and antibiotic stewardship. 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](#) 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.
- Antibiotic Resistance Blog Post:
 - Staff at America’s Essential Hospitals [wrote about the rise of antibiotic resistance to become the largest risk to global health](#) facing us today.
 - The online publication referenced the recent September United Nations General Assembly signing of a declaration on antibiotic resistance—elevating antibiotic resistance to the same level of urgency and threat as HIV/AIDS, non-communicable diseases like obesity and diabetes, and Ebola.
 - The article also highlighted the work of essential hospitals—University of Alabama at Birmingham and University of Chicago Medical Center—in their efforts to develop robust antimicrobial stewardship programs and educate the public beyond the four walls of the hospital.

Other items of note:

- National Quality Forum’s (NQF) Infectious Disease Standing Committee: America’s Essential Hospitals has nominated an infection control expert from its member hospital—Parkland Health & Hospital in Texas—for NQF standing committee, tasked with identifying and recommending endorsement of new performance measures for accountability and quality in topics such as, HIV/AIDS, hepatitis, and sepsis.

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

Meeting Date: December 1-2, 2016

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 (AHRQ)

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 three domains. These projects are combating antibiotic resistance in multiple healthcare settings: acute care hospitals, long-term care, and ambulatory care.
 1. Promoting antibiotic stewardship
 2. Preventing transmission of resistant bacteria
 3. Preventing healthcare-associated infections in the first place.
 - AHRQ completed the launch of the implementation guide for antibiotic stewardship in nursing homes. The guide is based on tools from four previous AHRQ-supported studies of stewardship in nursing homes and includes 4 sets of toolkits. The guide was presented at ID Week in October. AHRQ is widely disseminating the guide, which is also available on the AHRQ website.
 1. Create an Antibiotic Stewardship Program
 2. Determine whether to treat with antibiotics
 3. Choose the right antibiotic
 4. Engage residents and families
 - AHRQ has released 2 new CARB-specific FOAs for R01 and R18 applications, in addition to renewing our HAI prevention FOAs. The CARB FOAs are intended stimulate research grant applications in all 3 CARB domains. The first round of applications to the new FOAs will be received in early 2017.
 - On October 13, AHRQ, CDC, CMS, and OASH met with HHS leadership to discuss progress on the Agency Priority Goal effort to accelerate the implementation of antibiotic stewardship programs in hospitals.
- AHRQ Safety Program for Antibiotic Stewardship
 - AHRQ has awarded The Comprehensive Unit-based Safety Program (CUSP) for Antibiotic Stewardship to Johns Hopkins University, and held a kickoff meeting September 16. This will be a 5-year project aimed at adapting CUSP for implementation of Antibiotic Stewardship in 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 will be a collaborative effort, incorporating CDC Core Elements of Antibiotic Stewardship, coordination with CDC and CMS, and possible participation by VA and DoD.
- AHRQ Safety Program for Enhanced Recovery After Surgery
 - AHRQ awarded a task order contract for CUSP for enhanced recovery after surgery (ERAS) to Johns Hopkins University, and held a kickoff meeting October 13. The project aims to use an adaptation of CUSP to improve patient outcomes by increasing the

- implementation of ERAS practices in hospitals.
- ERAS is a constellation of 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.
- 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. 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.
- AHRQ Safety Program for Long-Term Care: Preventing CAUTI and Other HAIs
 - AHRQ 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 through State-based or regional consortia/collaborative efforts.
 - More than 500 long-term care facilities across the United States participated. The project achieved a significant decrease in CAUTI rates.
 - Results and an educational toolkit will be widely available in early 2017.
- AHRQ Safety Program for Mechanically Ventilated Patients
 - AHRQ 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 will be widely available in early 2017.
- AHRQ Safety Program for Ambulatory Surgery
 - AHRQ 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 will be widely available in early 2017.

Guidelines and Guidance:

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

- None reported

Position Statements:

- None reported

Legislation:

- None reported

Campaigns and related activities:

- None reported

Press activities:

- None reported

Publications:

- Jackson SS, Leekha S, Pineles L, Magder LS, Thom KA, Wang Y, Harris AD (2016). Improving Risk Adjustment Above Current Centers for Disease Control and Prevention Methodology Using Electronically Available Comorbid Conditions. *Infect Control Hosp Epidemiol.* Oct;37(10):1173-8. doi: 10.1017/ice.2016.140.

Other items of note:

- None reported

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Amber Wood

Organization represented: Association for periOperative Registered Nurses (AORN)

Interim activities and updates:

- Hot Topics: Humidity
 - Lack of relevant evidence found in systematic literature search
 - Temperature and humidity parameters in AORN Guideline for a Safe Environment of Care, Part 2 will be revised to reflect revisions in addendum h to ANSI/ASHRAE/ASHE Standard 170-2013, Ventilation of Health Care Facilities.
- Upcoming Events
 - AORN Global Surgical Conference & Expo 2017, April 1-5, Boston

Guidelines and Guidance:

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

- AORN guidelines are available in print and through electronic access. Information on how to obtain the guidelines can be found at [the AORN website](#).
- 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, Medication Safety, Prevention of DVT, Team Communication, Safe Patient Handling

Position Statements:

- Available at [AORN Position Statements](#)

Legislation:

- The AORN legislative priorities for 2016 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.

Campaigns and related activities:

- Sharps Safety Campaign

Press activities:

- Recent AORN press releases can be accessed at [the AORN website](#).

Publications:

- 2016 Guidelines for Perioperative Practice, AORN Journal, 2016 Perioperative Job Descriptions and Competency Evaluation, Perioperative Policies and Procedures, & Ambulatory Surgery Center Resources

Other items of note:

- Go Clear Award (recognizes health care facilities committed to a surgical smoke-free

environment for their perioperative team and patients) [AORN Go Clear Award](#)

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Michael Anne Preas

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

Interim activities and updates:

- None reported

Guidelines and Guidance:

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

- None reported

Position Statements:

- None reported

Legislation:

- Submitted [comments to CMS on Hospital/CAH Changes to Promote Innovation, Flexibility, and Improvement in Patient Care](#).
- Submitted [comments to CMS on End-Stage Renal Disease Prospective Payment System](#).
- Submitted [comments to CMS on Home Health Prospective Payment System](#).
- Submitted [comments to CMS on Hospital Outpatient/Ambulatory Surgical Center Prospective Payment System](#).
- Submitted [comments to HHS on Update of Quarantine Regulations for Control of Communicable Diseases](#).
- Submitted [comments to FDA on Coordinated Development of Antimicrobial Drugs and Antimicrobial Susceptibility Test Devices, draft guidance for industry](#).

Campaigns and related activities:

- Celebrated International Infection Prevention Week, October 16-22. The 2016 theme, "Break the Chain of Infection," was chosen to illustrate ways in which the public and healthcare professionals can interrupt the chain of infection in healthcare settings and in the community. Components included:
 - "Break the Chain" [infographic](#) for healthcare professionals
 - New [web copy for consumers](#) on how to break the chain
 - Numerous shareables: Polls, quizzes, podcasts, online pledges, e-cards
 - Promotional toolkit with sample articles, press releases, and posts
 - Twitter chat with the American Hospital Association, CDC, and 70 other organizations. More than 1,500 tweets using the IIPW hashtags were generated by almost 700 unique authors. CDC, American Association of Nurse Practitioners, and AHA tweeted the most number of times, in addition to APIC.
 - Thunderclap campaign that reached more than a million on social media.
 - Co-promotion of webinar with CDC on Preventing the Next Avoidable Catastrophe in Low and Middle Resource Countries with Dr. Benjamin Parks.
- Celebrated Get Smart about Antibiotics Week, November 14-20. Highlighted events in

eNews, participated in Twitter chat, and promoted heavily on social media.

Press activities:

- Issued press releases to support [IIPW](#), and 3 studies in AJIC:
 - October 2016: [Parents cite lack of need for not getting flu shot](#). Also filmed and posted brief video featuring Susan Dolan, and created infographic to help encourage story pick up.
 - November 2016: [Social media proves effective tool for antimicrobial stewardship](#).
 - December 2016: [Study suggests handwashing compliance in child care facilities is insufficient](#). Also developed infographic, consumer alert, and web copy to enhance story pick up.

Publications:

- The fall issue of *Prevention Strategist* featured articles on the intersection between sepsis and antimicrobial stewardship, engaging patients in hand hygiene, MCR-1, *Candida auris*, *C. diff* outbreak in the PICU (case study), and engaging millennials in infection prevention.
- The winter issue of *Prevention Strategist* will include articles on engaging nurses in antibiotic stewardship, how to prepare for emergencies, *Burkholderia cepacia* infections, pseudo-outbreaks, 2016 Heroes of Infection Prevention, APIC's LTC 'Certificate of Training' program, and making use of frequency tables and distributions.
- The following Consumer Alerts have been published since July 1:
 - *Candida auris*
 - Hepatitis
 - Zika
 - How to be a good (and healthy) roommate
 - Differences between allergies and the flu
 - Infection prevention in child care

Other items of note:

- On December 5, 2016, APIC is launching *Industry Perspectives*, a website dedicated to supplementing IP's clinical knowledge with best practices and evidence-based information relation infection prevention products, solutions, and services through content provided by industry in infection prevention and control.

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

Meeting Date: December 1-2, 2016

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 is working in collaboration with CDC to develop tools and collect best practices for state HAI prevention.
- In Fall 2016, ASTHO finalized a suite of communications tools related to HAI/AR. The purpose of these tools is to help health officials and their staff raise awareness of and, as appropriate, take action regarding HAI/AR, proven prevention strategies, and the value of public health in addressing these issues. The tools will be publically launched in mid-December 2016.
- ASTHO's Infectious Disease Policy Committee met in September 2016 to discuss strategic priorities for the upcoming year. During this meeting, the Committee reaffirmed their commitment to advancing HAI and AR prevention and response activities.
- ASTHO also continues its support of the Council for Outbreak Response: Healthcare-Associated Infection and Antibiotic Resistant Pathogens (CORHA). Workgroups focusing on detection, reporting, investigation, and control have been formed and are working to develop a project timeline and desired outputs. An in-person CORHA meeting convened on November 17-18 in Arlington, VA. The meeting provided an opportunity for CORHA members to discuss council business, continue operationalizing the strategic map, and advance workgroup activities.

Guidelines and Guidance:

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

- None reported

Position Statements:

- None reported

Legislation:

- Ongoing: Real-time state HAI legislative tracking on ASTHO's website, available at [ASTHO State Legislative Tracking](#)

Campaigns and related activities:

- Ongoing: ASTHO provides information to health officials on pertinent HAI issues through conference calls (All S/THO Call) and the *State Public Health Weekly* newsletter.

Press activities:

- None reported

Publications:

- ASTHO's HAI Publications are available [here](#)

Other items of note:

- None reported

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

Meeting Date: December 1-2, 2016

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

Ex officio member name: Daniel Schwartz, MD

Agency represented: Centers for Medicare and Medicaid Services (CMS)

Interim activities and updates:

- Infection Control Pilot and public release of draft LTC and Hospital surveyor infection control worksheets
- S&C memos are posted on the [S&C website](#)

Guidelines and Guidance:

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

- None reported

Position Statements:

- Infection Control Breaches S&C Memo 2017 Update
- S&C memos are posted on the S&C website: [S&C Memos](#)

Legislation:

- None reported

Campaigns and related activities:

- None reported

Press activities:

- Medicare Learning Network message about AHRQ Antibiotic Stewardship Guide
- Google: CMS MLN Connects Provider eNews Nov 10, 2016

Publications:

- None reported

Other items of note:

- The new Long Term Care Conditions of Participation were released and will have a three-year phase-in period.
- [CMS Long-Term Care Conditions of Participation](#)

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Marion Kainer

Organization represented: Council of State and Territorial Epidemiologists (CSTE)

Interim activities and updates:

- Next annual conference will be in Boise, Idaho. Dates: June 4-8, 2017.
- See: [2017 CSTE Conference](#)
- Abstracts are currently being accepted - close January 4, 2017

Guidelines and Guidance:

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

- The core group members of the CDC-CSTE Antimicrobial Resistance Surveillance Taskforce (v 2.0) in response to CSTE PS 13-SI-01: "[Recommendations for strengthening public health surveillance of antimicrobial resistance in the United States](#)" continues to meet regularly since December 2015.
 - It has been on a fact finding mission, with regular 1-3 hour conference calls per week.
 - Core planning group members include Gus Birkhead, CSTE consultant (former deputy state epidemiologist, NY State), Dan Pollock (CDC/DHQP, Wes Kennemore (consultant), Dawn Sievert (consultant), Michael Iademarco (CDC/CSELS), Allison Brown (CDC/DHQP/ARLN), Jeff Engel (CSTE) and Marion Kainer (TN DOH).
 - The core planning group presented an update at the CSTE annual conference. It is tackling specific issues:
 1. Defining challenges of ELR and NHSN reporting for CRE
 2. Addressing selective reporting of antibiotic susceptibility data
 3. Describing the roles, responsibilities and core capacities needed at the federal, state and local levels.
 - The core planning group continues to engage additional SMEs and other groups as appropriate (e.g., CLIAC for selective reporting, CSTE subcommittee for ELR/HL7). Invitations are currently being sent out to designate and invite taskforce members; an in-person meeting of the Taskforce is planned for Mid-March 2017.
 - The goal will be to have a strategic roadmap that will identify roles, responsibilities, capacities; gaps and resource needs; as well as prioritization of issues and an implementation timeline. Under consideration is a "3-legged stool" for AR surveillance: isolate submission, NHSN and ELR reporting.
- The Council for Outbreak Response: Healthcare Associated Infections and Antibiotic Resistant Pathogens (CORHA) met in November 2016. A one-pager describing the mission, vision, membership can be found here: [CORHA Mission One-Pager](#) The Council is co-chaired by CSTE and ASTHO; CDC, NACHO, APIC and SHEA are members of the Council and participated in the in-person meeting in June and November. Two workgroups have formed and have work-plans.
 - 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

Position Statements:

Position statements currently being worked on to be considered by CSTE membership at the annual meeting in June 2017 include:

- Prioritizing Catheter-Associated Urinary Tract Infections (CAUTI) Surveillance utilizing the National Healthcare Safety Network (NHSN) to maximize prevention efforts.
- Recommendations for the Selection and Implementation of Surgical Site Infection Reporting in the National Healthcare Safety Network
- Making CRE nationally notifiable
- Standardized case definitions for *Candida auris*
- Standardized case definition for extrapulmonary Non-tuberculous *Mycobacteriae*
- Standardized case definition of drug diversion events involving injectable medications

Legislation:

- None reported

Campaigns and related activities:

- None reported

Press activities:

- None reported

Publications:

- None reported

Other items of note:

- The seven (7) regional laboratories participating as part of the Antibiotic Resistance Laboratory Network) have been selected. Additional information can be found at: [Antibiotic Resistance Laboratory Network](#)

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Lisa McGiffert, Director, Safe Patient Project (SPP)

Organization represented: Consumers Union (CU), the policy and mobilization arm of Consumer Reports (CR)

Interim activities and updates:

- None reported

Guidelines and Guidance:

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

- None reported

Position Statements:

- CR staff and SPP activists testified at FDA hearing on off-label promotion of drug and medical devices, which could also involve antibiotic use. We oppose such promotion of products that have not been vetted for certain conditions and conducted a national survey (to be published in Feb 2017 magazine) that found the overwhelming majority of consumers share our concerns.
- CU staff and SPP activists attended and testified before the September 2016 meeting of the President's Council on Combatting Antibiotic Resistant Bacteria. Testimony recommended using CMS authority to require indications on prescriptions; access to Medicare pharmacy data on antibiotic prescriptions by government agencies and researchers; payment policies to shape antibiotic prescribing.

Legislation:

- CU sent a letter to Congress opposing the renegotiated 21st Century Cures legislation, which passed the US House this week. Our objections include:
 - Shifting to less rigorous vetting by FDA of drugs (e.g., shorter and smaller clinical trials, surrogate endpoints instead of measures of patient function and outcome, and reliance upon qualified data summaries) could cause harm to patients, lead to increased costs, and provide no tangible improvement in treatment.
 - The bill's new antibiotic approval pathway fails to define the limited population to which the pathway applies.
 - Specify that an approved antibiotic is tested against the specific organism which it purports to treat.
 - Require that the antibiotic be better than the current standard of care for the specific, limited purpose.
 - Speeding through approvals for drugs and medical devices without an adequate post-market surveillance system fails to prioritize patient safety and leaves the FDA unable to detect problems quickly.

Campaigns and related activities:

- CU staff and SPP activists met with USHHS staff regarding antibiotic resistance issues, stewardship programs (measure whether appropriate antibiotic prescribing is improving) and

hospital accountability for high infection rates (inspectors should analyze hospital-acquired infection data before inspections and identify and require action plans of hospitals with infection control problems).

- Also discussed death certificate concerns:
 - The need to document when death is associated with superbug and other infections;
 - That HHS has never adopted a model law drafted in 2011;
 - The Handbook on death certificates has not been updated since 2003.

Press activities:

- SPP activist, Rae Greulich, was featured in a [Reuters](#) article about her husband's battle with numerous hospital-acquired infections and the cost of his care.

Publications:

- CR published articles on [Sepsis](#) (August) and [infections connected to heater-cooler devices](#) (November and January 2017 magazine).
- CR Health Rating Center published updated hospital infection ratings in November and special reports on [C. difficile infections](#) (September) and [CLABSI](#) progress over the past five years (November and January 2017), highlighting teaching hospitals that have improved over time and those that have not. Social media outreach that graphically showed changes over time; included interactive map for consumers to look quickly at scores of teaching hospitals in their area.

Other items of note:

- We participated in several infection related social media events: Get Smart about Antibiotics Week and APIC's Infection Prevention Week, including a twitter chat and thunderclap campaign.

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Stephen Weber, MD

Organization represented: Infectious Diseases Society of America (IDSA)

Interim activities and updates:

- IDSA, together with partner organizations, successfully convened IDWeek 2016 in New Orleans, LA.
 - Held from October 26-30, IDWeek 2016 embraced the theme: “Advancing Science, Improving Care” for thousands of attendees, presenters and exhibitors.
- The United Nations General Assembly declared a commitment to fight antimicrobial resistance (AMR) by developing a strategy to prevent infections, protect existing drugs through stewardship, expand surveillance, and encourage the research and development of new antimicrobials, diagnostics and vaccines—adopting many of IDSA’s key recommendations.
 - Prior to the General Assembly meeting, IDSA was among a select group invited to present to the UN to help shape the organization’s consideration of this important issue.
 - In advance of the UN meeting, IDSA circulated a public petition in support of coordinated global action to address AMR, which was signed by more than 2,000 people across the world.
 - On the eve of the General Assembly, IDSA co-hosted along with the Center for Disease Dynamics, Economics and Policy (CDDEP) a Forum on Sustainable Access to Effective Antibiotics.
- The Presidential Advisory Council on Combating Antibiotic Resistant Bacteria (PACCARB) held a public meeting (PDF) also in September focused on antibiotic stewardship and infection prevention.
 - The PACCARB will consider recommendations regarding prioritizing resources to combat antibiotic resistance.
 - IDSA staff provided public comments at the meeting and multiple IDSA leaders serve on the Council.
- IDSA held a meeting with the Director of the Food and Drug Administration’s (FDA) Center for Drug Evaluation and Research (CDER) to discuss next steps for advancing policies to make it more feasible to conduct clinical trials for new antibiotics that address unmet medical needs.
- The FDA will hold a meeting of the Microbiology Devices Panel of the Medical Devices Advisory Committee, to discuss and make recommendations regarding risk classification of tests for transplant-associated opportunistic viral infections. IDSA has asserted that in many instances, these laboratory-developed tests have become the standard of care.

Guidelines and Guidance:

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

- **Guidelines in development related to infection prevention and antimicrobial stewardship:**
 - Outpatient Parenteral Antibiotic Therapy (Update; Spring 2017)
 - Healthcare-Associated Ventilator-Associated Pneumonia and Meningitis (New; Spring 2017)

- *Clostridium difficile* (Update; Spring 2017) - *Joint w/SHEA*
- Seasonal Influenza in Adults and Children (Update; Spring 2017)
- IV Catheter Management (Update; Summer 2017)
- Vancomycin – (Update) *Joint w/ASHP/SIDP/PIDS*
- **Published**
 - Hospital-acquired, ventilator-acquired pneumonia (CID 2016; 63: 1-51) – *Joint w/ATS*
 - Link to other guidelines on website: [IDSA Practice Guidelines](#)

Position Statements:

- Discriminatory Laws and Policies Affecting Lesbian, Gay, Bisexual and Transgender Individuals and the HIV and STD Epidemics (Joint with HIVMA and PIDS; October 2016)

Legislation:

- IDSA co-hosted a congressional briefing in September with the Antimicrobials Working Group (AWG), a coalition of small pharmaceutical companies, to educate congressional staff about the need for new antibiotics, economic incentives, and feasible regulatory policies.
- IDSA provided a statement to the Senate Health, Education, Labor and Pensions Committee about the importance of infectious disease laboratory-developed tests in clinical care and public health and the potential impact that new regulations could have on innovation and patient access to testing.
- Interested members and partners are directed to the [IDSA/HIVMA Action Center](#) in order to engage in outreach to legislators on items of critical importance to the issues of infection prevention and antimicrobial stewardship.

Campaigns and related activities:

- Key areas of IDSA focus related to infection prevention and control remain:
 - New antibiotic development (10 x 20 initiative): [10x20 Initiative](#)
 - Antimicrobial resistance and stewardship: [IDSA AR Policy](#)
 - Infection prevention and control: [IDSA Infection Control Policy](#)

Press activities:

- Selected news releases from: [IDSA News Releases](#)
 - Nurses Scrubs Often Contaminated with Bad Bugs (10/27/16)
 - Regular dental Visits May Help Prevent Pneumonia, Study Shows (10/27/16)
 - IDSA Statement on Passage of Continuing Resolution and Zika Funding (9/29/16)
 - Infectious Diseases Experts Stress Importance of Testing and Prevention in Response to Confirmed Local Transmission of Zika Virus (7/29/16)

Publications:

- Selected publications from IDSA journals:
 - Sciarretta K, Røttingen JA, Opalska A, Van Hengel AJ, Larsen J. Economic Incentives for Antibacterial Drug Development: Literature Review and Considerations From the Transatlantic Task Force on Antimicrobial Resistance. *Clin Infect Dis.* 2016 Dec 1;63(11):1470-1474.
 - Sung AD, Sung JA, Thomas S, Hyslop T, Gasparetto C, Long G, Rizzieri D, Sullivan KM, Corbet K, Broadwater G, Chao NJ, Horwitz ME. Universal Mask Usage for Reduction of Respiratory Viral Infections After Stem Cell Transplant: A Prospective Trial. *Clin Infect Dis.* 2016 Oct 15;63(8):999-1006.
 - Goto M, O'Shea AM, Livorsi DJ, McDanel JS, Jones MM, Richardson KK, Beck BF,

Alexander B, Evans ME, Roselle GA, Kralovic SM, Perencevich EN. The Effect of a Nationwide Infection Control Program Expansion on Hospital-Onset Gram-Negative Rod Bacteremia in 130 Veterans Health Administration Medical Centers: An Interrupted Time-Series Analysis. *Clin Infect Dis*. 2016 Sep 1;63(5):642-50.

- Aitken SL, Tarrand JJ, Deshpande LM, Tverdek FP, Jones AL, Shelburne SA, Prince RA, Bhatti MM, Rolston KV, Jones RN, Castanheira M, Chemaly RF. High Rates of Nonsusceptibility to Ceftazidime-avibactam and Identification of New Delhi Metallo- β -lactamase Production in Enterobacteriaceae Bloodstream Infections at a Major Cancer Center. *Clin Infect Dis*. 2016 Oct 1;63(7):954-8.
- Karanika S, Karantanos T, Arvanitis M, Grigoras C, Mylonakis E. Fecal Colonization With Extended-spectrum Beta-lactamase-Producing Enterobacteriaceae and Risk Factors Among Healthy Individuals: A Systematic Review and Metaanalysis. *Clin Infect Dis*. 2016 Aug 1;63(3):310-8.

Other items of note:

- None reported

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Michelle Cantu

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

Interim activities and updates:

- January 2016 – present: Activated 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 conveying the critical work of LHDs to federal agencies and the public, providing targeted support to LHDs on vector control and surveillance and maternal and child health, ensuring local participation in national calls and input on CDC guidance, and assessing the impact of the redirection of Public Health Emergency Preparedness (PHEP) funds on LHDs.
- March 2016 – present: Launched Lessons in Infection Control (LINC) Initiative demonstration sites
 - With support from the Centers for Disease Control and Prevention (CDC), 11 LINC Initiative award recipients will test new approaches to prepare for and respond to Ebola, healthcare-associated infections, and other emerging infectious diseases
 - The LINC Initiative supports local health departments in improving healthcare and community infection control practices by working with hospitals, long-term care facilities, and other healthcare settings to identify and address needs and opportunities
- May 2016: Awarded scholarships to support 35 local health department staff in obtaining certification in infection control
 - Scholarship recipients were reimbursed up to \$2,500 for exam fees and study materials (including books and/or training courses)
 - Scholarship recipients will be expected to provide feedback on the certification process and demonstrated impact of certification to NACCHO to inform future project activities supporting local health departments in infection prevention and control
 - An assessment is in development to understand the impact of obtaining Certification in Infection Control on local health departments
- July 2016 – present: Started new fiscal year of multiyear HAI demonstration site project. The current project year focuses on local health departments’ antibiotic stewardship efforts; the three funded demonstration sites and their general activities are:
 - 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 for how to address identified gaps; conducting a cost-based analysis for HAI outbreaks; investigating inter-facility patient movement; and participating in state-driven efforts to get HAI resistance data into ESSENCE system
 - DuPage County Health Department – Wheaton, IL: Addressing handwashing and antimicrobial stewardship among the general public; 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: Addressing *C. difficile* and CRE in long-term care facilities; and increasing long-term care facility collaboration in the form of face-to-face meetings about AMR and stewardship activities

- September 2016: Participated in Council for Outbreak Response: Healthcare-Associated Infections and Antibiotic-Resistant Pathogens (CORHA) call 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
- October 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
 - Staff are currently conducting a field assessment to understand local health departments' work on One Health
- September 2016 – present: Partnering with Strengthening Health Systems Through Interprofessional Education (SHINE) staff at NACCHO to discuss opportunities to connect the work of Informatics-Training in Place Program (I-TIPP) antimicrobial resistance fellows and HAI demonstration sites
 - The September monthly webinar for I-TIPP fellows focused on antibiotic resistance and public health practice
 - The October HAI demonstration site call focused on potential opportunities for exchange and collaboration between the HAI demonstration sites and I-TIPP fellows
- September 2016: Attended briefing on the State of Antibiotic Innovation in a Post-GAIN World, which examined GAIN's impact on the life-sciences industry and discussed possible next steps to spur further scientific innovation
- September 2016: Attended Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria Meeting on Prevention and Stewardship, which focused on prevention and stewardship
- September 2016: Attended U.S. Stakeholder Forum in Antimicrobial Resistance (S-FAR) meeting
 - The meeting provided an overview of S-FAR past, ongoing, and future activities; featured a key note presentation on the CARB National Action Plan and UN AMR activities and a presentation on Stewardship in Action; and included moderated strategic discussions on appropriations, advancing CARB with a new administration and Congress, incentives, and the need for metrics in agricultural antibiotic use
- September 2016: Attended the Healthcare Leadership Council briefing on Efforts to Combat Antibiotic Resistance
- September 2016: Attended the Philadelphia Community Antimicrobial Stewardship Collaborative meeting
 - The meeting included presentations on the state of gram-negative resistance in the U.S. and the social and behavioral determinants of antibiotic prescribing; and featured roundtable discussions on antibiotic stewardship experiences
- October 2016: Attended Pew Charitable Trusts' event on Obstacles to Successful Implementation of Antibiotic Stewardship and Paths to Overcoming Them, which brought together international experts on antibiotic stewardship to discuss implementation challenges in human healthcare and animal agriculture and outline strategies to overcome them
- November 2016: Conducted a call with CMS to discuss piloting of infection control assessment among long-term care facilities and hospitals and possible opportunities for collaboration
- November 2016: Supported Get Smart Week by promoting resources from CDC's Get Smart program, participating in the Thunderclap campaign, and attending the Core Elements of Outpatient Antibiotic Stewardship webinar
- November 2016: Attended the two-day Council for Outbreak Response: Healthcare-

Associated Infections and Antibiotic-Resistant Pathogens (CORHA) meeting in Washington, D.C. hosted by ASTHO and CSTE

- Three NACCHO representatives and two local health department representatives from Los Angeles County Department of Public Health and Barren River District Health Department attended
- 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
- Ongoing: Participated in 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.

- July 2016: Released an HAI guidance document for local health departments to engage in HAI prevention activities – it is based on experiences and input from the local health departments participating in NACCHO's HAI prevention demonstration project, corresponding state health departments, and a DHQP representative; learn more and access the guidance document at [NACCHO HAI Guidance Document](#).

Position Statements:

- August 2016: Submitted a comment letter on CMS Hospital and Critical Access Hospital (CAH) Changes To Promote Innovation, Flexibility, and Improvement in Patient Care
 - The comment letter offered recommendations and comments pertaining to the areas of healthcare-associated infections (HAIs), infection prevention and control, antibiotic stewardship programs, and non-discrimination
- August 2016: Signed onto IDSA public petition supporting UN activity on antimicrobial resistance

Legislation:

- N/A

Campaigns and related activities:

- N/A

Press activities:

- July 2016: Published blog post, "Roundtable Report: Local Health Department Roles and Activities to Improve Infection Control, Preparedness and Response to Infectious Disease Threats"
- August 2016: Published blog post, "The PATH to Combatting Antimicrobial Resistance"
- August 2016: Published blog post, "CDC Releases Vital Signs Fact Sheets on Sepsis Prevention and Recognition"
- October 2016: Published blog post, "Infection Prevention and Healthcare Quality Training in a Criminal Justice Healthcare Setting: The Work of El Paso County Public Health"
- November 2016: Published three-part blog post series, "Antimicrobial Resistance & Global

Health Security”

Publications:

- N/A

Other items of note:

- N/A

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

Meeting Date: December 1-2, 2016

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 further our understanding of the nosocomial epidemiology of Multi-Drug Resistant Organisms in the NIH Clinical Center. At the recent SHEA-IDSA meeting we described three years' experience with a surveillance program for Carbapenemase-Producing Organisms (CPOs). We processed in excess of 22,000 perirectal swabs over 37 months; this highly resource intensive technique detected 20 instances of CPO colonization that, if unrecognized, could have served as reservoirs for nosocomial transmission. Whereas only 0.16% of patients sampled on admission were found to be colonized with CPO, patients meeting CDC high-risk criteria were 37 times more likely to be colonized on admission. Whole genome sequencing demonstrated no relatedness among any of the 20 CPO isolates. Quality control checks of one sample of surveillance swabs revealed growth of skin flora only in 23.9% and no growth whatsoever in 4.9%, likely indicating less-than-optimal sampling techniques. Whereas swabs are meant to be collected by nursing staff, we suspect that patient self-collection may be a factor, especially for those with totally negative cultures. During this period, we detected no infections with CPOs and no patient to patient spread.
- In addition, in a second project we conducted a controlled study of 400 healthcare personnel who have contact with patients or culture specimens and 400 nonclinical controls to evaluate the prevalence of MDRO carriage among these individuals. The study was conducted between November 2013 and February 2015. Participants submitted two self-collected perirectal swabs and a questionnaire. Swabs were processed for multidrug-resistant Gram-negative bacteria and vancomycin-resistant enterococci (VRE). Questionnaires explored occupational and personal risk factors for MDRO carriage. Extended spectrum beta-lactamase (ESBL)-producing organisms were recovered from 26 subjects (3.4%), and one carbapenemase-producing organism (CPO) was recovered from one subject, a nonclinical employee. Only one participant, a nonclinical employee, was positive for a carbapenemase-producing organism, (*E. cloacae*). The CPO isolate was initially detected by CarbaNP (a rapid test that directly detects Carbapenem hydrolysis by Carbapenemase-producing bacteria), but the isolate was negative by PCR for carbapenemases *bla*_{KPC} and *bla*_{NDM-1}. Whole genome sequencing identified a chromosomally encoded imipenemase/non-metallo-carbapenemase-A, which has been identified in patient specimens and in bacteria inhabiting natural settings such as rivers. No VRE were detected. Although 68.9% of healthcare personnel reported caring for MDRO-colonized patients, the rate of detected MDRO carriage among healthcare personnel was 4.0%, not significantly higher than controls (3.2%).
- We are continuing our pursuit of environmental contamination with CPOs. Most recently we have identified several CPO isolates in housekeeping drains. In one instance an unusual closely related isolates were found in five drains located throughout the hospital. We are continuing to investigate this unusual finding.

Guidelines and Guidance:

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

- None reported

Position Statements:

- None reported

Legislation:

- None reported

Campaigns and related activities:

- None reported

Press activities:

- None reported

Publications:

- Vetter P, Dayer J-A, Schibler M, Allegranzi B, Brown D, Calmy A, Christie D, Eremin S, Hagon O, Henderson DK, Iten A, Kelley E, Marais F, Ndoye B, Pugin J, Robert-Nicoud H, Sterk E, Tapper M, Siegrist C-A, Kaiser L, Pittet D. The 2014-2015 Ebola outbreak in West Africa: Hands On. *Antimicrob Resist Infect Control* 2016. (5):1-17. DOI 10.1186/s13756-016-0112-9.
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Other items of note:

- None reported

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Kathy Dunn

Organization represented: Public Health Agency of Canada (PHAC)

Interim activities and updates:

- None reported

Guidelines and Guidance:

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

- Guidelines in Development:
 - *Guideline on the Prevention of Transmission of Bloodborne Viruses from Infected Healthcare Workers*
 - *Infection Prevention and Control Guideline for Personal Services*
 - *Prevention of Occupational Infections in Healthcare Settings (update)*
 - *Canadian Pandemic Preparedness Influenza Plan (update)*
 - *Canadian Public Health Laboratory Network: Interim Laboratory Guidance (NTM)*

Position Statements:

- [Health Canada](#)

Legislation:

- None noted

Campaigns and related activities:

- [The Chief Public Health Officer's Report on the State of Public Health in Canada 2016: A Focus on Family Violence in Canada](#)
- [Influenza Awareness](#)

Press activities:

- [Health Canada News](#)

Publications:

- Health Canada Notice: Risk of Nontuberculous Mycobacteria Infections (October 21, 2016) [Health Canada Notice](#)
- [Canadian Nosocomial Infections Surveillance Program \(CNISP\) ARO Summary Report](#)
- Canada Communicable Disease Report (CCDR) The Canada Communicable Disease Report (CCDR) is a bilingual online, scientific peer-reviewed journal published monthly by the Public Health Agency of Canada (PHAC). The focus of the November issue is Antimicrobial Resistance (AMR) *CCDR: Volume 42-11, November 3, 2016* [Canada Communicable Disease Report Volume 42-11](#)
 - AMR Surveillance:
 - [Canada Communicable Disease Report Volume 42-11](#)
 - [Antimicrobial Resistance Surveillance Data Requirements for Priority Organisms](#)
 - AMR Stewardship:

- [Canada Communicable Disease Report Volume 42-11](#)
- [Antimicrobial Stewardship](#)

Other items of note:

- None reported

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

Meeting Date: December 1-2, 2016

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 (SCCM)

Interim activities and updates:

- Representatives from the Surviving Sepsis Campaign (SSC) were invited to attend a meeting at the World Health Organization to discuss focus on maternal and fetal sepsis in under resourced nations. The two day meeting explored a point prevalence study to be conducted in September, 2017 in approximately 50 nations, a new definition for maternal sepsis based on the European Society of Intensive Care Medicine and Society of Critical Care Medicine definition published in JAMA (now 1,410,000 views), and basic education materials that will be targeted at the public and policy makers. SSC provided expertise based on the 2013 International Multicenter Prevalence Study on Sepsis (IMPreSS).
- The SSC has identified an international panel of pediatric and neonatal experts to lead in the development and publication of a separate guideline for pediatric sepsis. Heretofore, pediatrics was included as a section in the adult guideline. The task force is scheduled to hold a meeting at the SCCM Congress in 2017 in Hawaii. The last update to, *Clinical Practice Parameters for hemodynamic support of pediatric and neonatal septic shock* is currently under review at *Critical Care Medicine*.
- ACEP, SCCM, SHM and IDSA formed a workgroup to evaluate and formulate modifications to the antibiotics tables associated with the CMS SEP-1 measures. On 10/12/16 a letter was subsequently forwarded to CMS on behalf of the joint societies highlighting concerns related to unintended consequences and malalignment with stewardship efforts currently underway. Included in the letter were recommendations for appropriate empiric treatment for sepsis and an invitation for further dialogue.
- The international Surviving Sepsis Campaign adult guidelines are being readied for publication. This is the 4th edition. The guidelines will be presented at the Society of Critical Care Medicine's 46th annual SCCM Congress in Honolulu, Hawaii.

Guidelines and Guidance:

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

- Guidelines for Admission and Discharge for the Pediatric ICU and Levels of Care
- Pediatric and Neonatal Analgesia and Sedation in the ICU (Pediatric PAD guideline)
- Joint: American Society of Hospital-System Pharmacists & SCCM: At Journal Guidelines for Stress Ulcer Prophylaxis in Adult Critically Ill Patients
- Medication Use Safety (under internal review)
- At Journal Parameters for Hemodynamic Support of Newborn and Pediatric Septic Shock
- Recommendations for the Diagnosis and Management of Corticosteroid Insufficiency in Critically Ill Adults Patients: Consensus Statements for International Task force by the ACCM – Revision 2013
- Guidelines for evaluation of new fever in critically ill adult patients: 2008 update from the American College of Critical Care Medicine and the Infectious Diseases Society of America
- To be published January 2017 revision/update: Clinical practice guidelines for support of the family in the patient-centered intensive care unit: American College of Critical Care Medicine

Task Force 2004-2005

- (Revised Title) Guidelines for Family Centered Care in Neonatal, Pediatric and Adult Intensive
- 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)
- Management of critically ill patients with liver disease.
- Revision consideration: Guidelines for the use of an insulin infusion for the management of hyperglycemia in critically ill patients
- Joint: American Thoracic Society & SCCM: Mechanical Ventilation in Adults with Acute Respiratory Distress Syndrome
- Joint: A.S.P.E.N. & SCCM: Guidelines for the provision and assessment of nutrition support therapy in pediatric critically ill patients.
- Joint: European Society of Intensive Care Medicine & SCCM: Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2016

Position Statements:

- None reported

Legislation:

- None reported

Campaigns and related activities:

- SCCM via the Surviving Sepsis Campaign partnered with the CDC on a number of sepsis awareness activities to include review and input on materials, blog post, webcasts and support via SCCM communications channels.

Press activities:

- None reported

Publications:

- None reported

Other items of note:

- [SCCM Pod-328 Long-Term Quality of Life Among Survivors of Severe Sepsis: Analyses of Two International Trials](#)
 - Ludwig Lin, MD, speaks with Sachin Yende, MD, MS, about his article, “Long-Term Quality of Life Among Survivors of Severe Sepsis: Analyses of Two International Trials,” published in Critical Care Medicine. Dr. Yende is Vice President of Critical Care at VA Pittsburgh. He also serves as Associate Professor of Critical Care Medicine and Translational Sciences and Director of the Clinical Epidemiology Program at the University of Pittsburgh’s CRISMA Center in Pittsburgh, Pennsylvania. In this article, Dr. Yende and coauthors describe the quality of life among sepsis survivors. Crit Care Med. 2016; 44(8):1461-1467. Released: 9/15/16
- [SCCM Pod-327 Does Simulation Improve Recognition and Management of Pediatric Septic Shock?](#)
 - Margaret Parker, MD, MCCM, speaks with Mark C. Dugan, MD, about the article, “Does Simulation Improve Recognition and Management of Pediatric Septic Shock, and If One Simulation Is Good, Is More Simulation Better?” published in the July 2016 issue of Pediatric Critical Care Medicine. Dr. Dugan works as an Attending Pediatric Intensivist at the Children’s Hospital of Nevada at the University Medical Center and as a Clinical

Assistant Professor in the Department of Pediatrics at the University of Nevada School of Medicine in Las Vegas, Nevada. In this article, Dr. Dugan and coauthors explore whether or not simulation can be used to assist resident trainees in identifying and performing well at the recognition and management of a critically ill child. *Pediatr Crit Care Med.* 2016; 17(7):605-614. Released: 9/1/16

- [SCCM Pod-326 Surviving Sepsis Campaign: Creating Spread for Quality Improvement](#)
 - Ludwig Lin, MD, speaks with Jane Taylor, Ed.D, about quality improvement science and her contributions to the Surviving Sepsis Campaign. Dr. Taylor is Improvement Advisor to various institutions including the Institute for Healthcare Improvement and SCCM. View additional video resources at [SCCM Video Resources](#). Released: 8/25/16

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Mark Rupp, MD

Organization represented: Society for Healthcare Epidemiology of America (SHEA)

Interim activities and updates:

- SHEA announced the Election Results for the 2017 SHEA Board of Trustees with terms beginning in January 1, 2017. Please join us in congratulating the following individuals:
 - Vice President: Hilary M. Babcock, MD, MPH, Washington University School of Medicine
 - Secretary: Grace Lee, MD, Harvard Pilgrim Health Center
 - Councilors (2): Daniel Morgan, MD, University of Maryland School of Medicine; David Weber, MD, MPH, MHA, University of North Carolina at Chapel Hill
- SHEA Spring 2017: Science Guiding Prevention
 - Under the leadership of Co-Chairs, Drs. Matthew Linam and Belinda Ostrowsky, the SHEA Spring 2017 conference will be held on March 29-31, 2017 in St. Louis, MO. 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 Credit will be available for this course
 - Targeted Networking Breakfasts and Breaks
 - Nursing credit will be available for the entire conference
 - Continuation of the SHEA Mentorship Program
 - Relaunch of the SHEA Epi Project Competition
 - The Women in Epi Networking Breakfast
 - 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 necessary to effectively lead in order to protect patients and healthcare workers during public health emergencies as well as non-emergent situations such as facility outbreaks. The implementation of infection control practices requires coordination and communication in both day-to-day as well as during public health emergencies like Ebola. This program is designed to train US hospital epidemiologists who oversee infection control programs to have the skills, abilities, and tools available to implement infection control practices and respond to infectious threats. To ensure achievement of program objectives and alignment between projects' educational content, SHEA created the following expert panels: Advisory, Expert Guidance, and Education. Below are the lists of deliverables through May 2018.

- Needs Assessment
- 3 Effective Communication Webinars
- 2 In-person Training Workshops
- 2 “DecisionSim” Online Modules
- Audio Cast Recordings of in-person Workshop
- Expert Guidance: Preparedness and Response to Infectious Disease Outbreaks
- Tool Kits based on the expert guidance and webinars
- 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 Workshop dates for 2016 are November 29 – 30. We currently have 134 registrants this first workshop in San Diego. In 2017, the Workshop will be held in Chicago, Illinois with the date still being determined. In 2018, the final workshop will be November 13 -14 in Baltimore, Maryland at the Royal Sonesta Harbor Court. To find out more, please visit [Antimicrobial Stewardship Resource Workshop](#).
- ACCME Reaccreditation: This Fall, SHEA began work on its reaccreditation with the ACCME. Audited files and self-study are due to the ACCME by July 2017. We will be notified of their decision in March 2018.
- Antimicrobial Stewardship Podcasts: SHEA has begun work on their first of four podcast series entitled Stewardship: Practical Approaches and Applications with the theme ‘ripped from the hallways’. The first podcast will be on Syndromic Stewardship (Clostridium Difficile associated diarrhea (CDAD) and the two speakers will be Libby Dodds-Ashley, PharmD and Larissa Mays, MD. This podcast will launch by the end of 2016. The remaining three podcast will be launched throughout 2017.
- 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 have begun work on their session submissions for IDWeek 2017. The entire planning group will meet in December to solidify the agenda for next year.
- 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, 9 Physicians has claimed MOC and since its launch, 614 individuals have purchased this course (489 Fellows and 125 Physicians).

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)
 - Draft under review
 - Expert Guidance: Infection Prevention Practices in the Anesthesia Work Area (Chair Dr. Munoz-Price)
 - Article exclusions identified; surveys being conducted
 - Expert Guidance: Initiation of Antibiotics in Long-Term Care (Chair Dr. Christopher Crnich)
 - PICO-style questions and search terms being finalized
 - 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 guideline)
- Recent guidelines comments:
 - IDSA Infectious Diarrhea Guideline
 - AORN Hand Hygiene Guidelines
 - Pet Partners Infection Prevention Course
 - ASGE Reprocessing Endoscopes Guideline
 - ATS/IDSA HAP/VAP Guidelines
 - IDSA/SHEA Implementing Antibiotic Stewardship Programs
 - Consumer Reports Choosing Wisely: “Antibiotic treatment in the hospital: Sometimes it can be stopped”
- SHEA Research Network (SRN)
 - Open projects:
 - CLABSI Quality Metrics
 - In queue:
 - Infection Prevention Practices in the Anesthesia Work Area
 - Completed 2016:
 - 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 (NOSOFlu)

Position Statements:

- None reported

Legislation:

- SHEA collaborates with multiple organizations and multiple coalitions to advocate for public

health funding. November 2016, the following activities have been accomplished:

- Sign on letters to members of Congress in support of full funding for Labor-HHS Appropriations agencies as part of a continuing resolution.
- S-FAR Hill Day to support public health funding; SHEA led a group of advocates for the event.
- SHEA-led joint Outside Witness Testimony submitted jointly with APIC to the House and Senate for funding requests of public health programs.
- APIC-led sign on letter in support of funding for the CDC's NHSN to the House and Senate.
- Several March of Dimes-led coalition sign on letter in support of an emergency supplemental funding to combat the Zika virus in the U.S. and Puerto Rico.
- Contaminated Heater-Cooler Units: SHEA continues to explore a policy initiative in support of additional funding for FDA to improve surveillance of medical devices that could potentially expose patients to infections due to inherent design flaws.
- Medicare Condition of Participation – Antibiotic Stewardship, Infection Control: SHEA submitted comments in response to CMS' proposed revision the hospital and critical access hospitals' Medicare Conditions for Participation. SHEA collaborated with IDSA on the provisions related to antibiotic stewardship in addition to submitting a stand-alone letter on the infection control provisions of the proposal.
- Revised Requirements for LTCFs Participating in Medicare: CMS released final rules for LTCFs facilities participating in Medicare and Medicaid, including revisions to infection control requirements and a new requirement for antibiotic stewardship programs. An analysis of the final requirements was developed and distributed to SHEA members.
- HHS/CDC Communicable Diseases Proposed Rule: SHEA submitted comments in response to the proposed rule, "Control of Communicable Diseases," published by HHS. The proposal intends to clarify HHS/CDC's authority to implement non-invasive public health screenings at U.S. ports of entry and other U.S. locations and adds appeal provisions for persons served with a Federal public health order (e.g., quarantine) with due process. Some key sections of the proposal include:
 - Apprehension and Detention of Persons With Quarantinable Communicable Diseases
 - Public Health Prevention Measures To Detect Communicable Disease
 - Medical Examinations
 - Requirements Relating to Issuance of a Federal Order for Quarantine, Isolation, or Conditional Release
 - Mandatory Reassessment of a Federal Order for Quarantine, Isolation, or Conditional Release
 - Medical Review of a Federal Order for Quarantine, Isolation, or Conditional Release
 - SHEA's messaging was closely aligned with previous public statements issued during the 2014 Ebola virus outbreak. The language strongly opposed mandatory quarantine for healthcare workers following a response to public health emergency, but supported many of the recommendations put forward by HHS.
- Expansion of the SHEA Grassroots Network: SHEA will reboot our grassroots efforts to promote the value of AHRQ and the need for robust, sustained funding for investigator-initiated research. This campaign is one of the core elements of SHEA's evergreen grassroots program and will be driven by SHEA members who have been affiliated with programs funded or supported by AHRQ.

Campaigns and related activities:

- SHEA would like to congratulate the following individuals who were recognized with SHEA Career awards during IDWeek 2016:

- SHEA Lectureship - Daniel J. Sexton, MD, FIDSA, FSHEA
- SHEA Senior Scholarship Award - Ebbing Lautenbach, MD, MPH, MSCE
- SHEA Mentor Scholar Award - Richard Platt, MD, MSc, FIDSA, FSHEA
- SHEA Mid-Career Scholarship Award - Erik R. Dubberke, MD, MSPH, FIDSA, FSHEA
- SHEA Pediatric Scholarship Award - Nalini Singh, MD, MPH
- SHEA Barry Farr Award - Jesse T. Jacob, MD
- SHEA William Jarvis Award - Cristina Bellini, MD
- SHEA International Scholarship Award - Nordiah Jalil, MD, MSc
- SHEA Advanced Practice Infection Preventionist Award - Mary Alexander Oden

Press activities:

- SHEA published the following Press Releases, mostly to promote ICHE articles, over the past few months:
 - Complete Sanitation of Robotic Surgical Instruments Virtually Impossible, Date Published: October 31, 2016
 - UV Light Disinfection Significantly Reduces Clostridium difficile Incidence, Date Published: October 06, 2016
 - SHEA Comments on UN Meeting on Antimicrobial Resistance, Date Published: September 21, 2016
 - Hospital Hot Water System Promotes the Growth of Legionella pneumophila, Date Published: September 20, 2016
 - Pets and Children are a Potential Source of C. difficile in the Community, Date Published: August 29, 2016
 - Household MRSA Controlled through Treatment Compliance, Patient Education, Date Published: July 28, 2016

Publications:

- ICHE: ICHE's 2015 Impact Factor was 3.669. Specifically ICHE placed 22/127 in the public, environmental and occupational health category and 13/83 in the infectious diseases category. ICHE continues to see record submissions. Dr. Sue Bradley has been contracted to serve as the Editor-in-Chief for 5 more years starting in 2017.
- 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. If you are interested in subscribing, please contact kweinshel@shea-online.org.

Other items of note:

- The 2017 International Ambassadors Program, IAP has now launched. Response to the International Ambassadors Program has been noteworthy since its inception in 2009. With over 425 applicants from around the world who have sought a place in this elite group. SHEA has welcomed seventy-nine Ambassadors representing thirty-seven countries: Argentina, Bangladesh, Barbados, Brazil, Chile, China, Colombia, Egypt, Ethiopia, Ecuador, Ghana, Greece, Hungary, India, Ireland, Israel, Jamaica, Japan, Kenya, Korea, Lebanon, Malaysia, Mexico, Moldova, Morocco, Namibia, Nepal, Nigeria, Pakistan, Papua New Guinea, Philippines, Singapore, South Africa, Sudan, Thailand, Togo, and Vietnam Please visit our website at [SHEA 2017 International Ambassadors Program](#) for more information.
- SHEA Research: SHEA's Research Committee published in 2016 a series of white papers on the topic of research methods in healthcare epidemiology and antimicrobial stewardship. The papers were published a multiple issues of ICHE and can be cited as follows:

- Morgan, D.J., Safdar, N., Milstone, A.M. and Anderson, D.J. (2016) ‘Research Methods in Healthcare Epidemiology and Antimicrobial Stewardship’, *Infection Control & Hospital Epidemiology*, 37(6), pp. 627–628. doi: 10.1017/ice.2016.91.
- Anderson, D.J., Juthani-Mehta, M. and Morgan, D.J. (2016) ‘Research Methods in Healthcare Epidemiology and Antimicrobial Stewardship: Randomized Controlled Trials’, *Infection Control & Hospital Epidemiology*, 37(6), pp. 629–634. doi: 10.1017/ice.2016.93.
- Schweizer, M.L., Braun, B.I. and Milstone, A.M. (2016) ‘Research Methods in Healthcare Epidemiology and Antimicrobial Stewardship—Quasi-Experimental Designs’, *Infection Control & Hospital Epidemiology*, 37(10), pp. 1135–1140. doi: 10.1017/ice.2016.117.
- Snyder, G.M., Young, H., Varman, M., Milstone, A.M., Harris, A.D. and Munoz-Price, S. (2016) ‘Research Methods in Healthcare Epidemiology and Antimicrobial Stewardship—Observational Studies’, *Infection Control & Hospital Epidemiology*, 37(10), pp. 1141–1146. doi: 10.1017/ice.2016.118.
- Barnes, S.L., Kasaie, P., Anderson, D.J. and Rubin, M. (2016) ‘Research Methods in Healthcare Epidemiology and Antimicrobial Stewardship—Mathematical Modeling’, *Infection Control & Hospital Epidemiology*, 37(11), pp. 1265–1271. doi: 10.1017/ice.2016.160.
- Safdar, N., Abbo, L.M., Knobloch, M.J. and Seo, S.K. (2016) ‘Research Methods in Healthcare Epidemiology: Survey and Qualitative Research’, *Infection Control & Hospital Epidemiology*, 37(11), pp. 1272–1277. doi: 10.1017/ice.2016.171.
- Drees, M., Gerber, J.S., Morgan, D.J. and Lee, G.M. (2016) ‘Research Methods in Healthcare Epidemiology and Antimicrobial Stewardship: Use of Administrative and Surveillance Databases’, *Infection Control & Hospital Epidemiology*, 37(11), pp. 1278–1287. doi: 10.1017/ice.2016.189.
- A paper based on an international research survey manuscript, “Status of the Prevention of Multidrug-Resistant Organisms in International Settings: A Survey of the Society for Healthcare Epidemiology of America Research Network,” was published in ICHE in November.
 - Safdar, N., Sengupta, S., Musuuza, J.S., Juthani-Mehta, M., Drees, M., Abbo, L.M., Milstone, A.M., Furuno, J.P., Varman, M., Anderson, D.J., Morgan, D.J., Miller, L.G. and Snyder, G.M. (2016) ‘Status of the Prevention of Multidrug-Resistant Organisms in International Settings: A Survey of the Society for Healthcare Epidemiology of America Research Network’, *Infection Control & Hospital Epidemiology*, , pp. 1–8. doi: 10.1017/ice.2016.242.
- The committee is currently developing two new concepts for research in 2017.

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Valerie Vaughn, MD

Organization represented: The Society of Hospital Medicine (SHM)

Interim activities and updates:

- SHM is working with HRET as a partner in the States Targeting Reduction in Infections via Engagement (STRIVE) program to identify strategies for reducing MRSA, CAUTI, C.Diff and CLABSI in several hundred United States hospitals
- SHM is a partner to HRET to reduce CAUTI and CLABSI in ICUs with persistently high rates.
 - There are 177 active units enrolled in cohort 1.
- SHM developed an antimicrobial stewardship implementation guide to support implementation of antimicrobial stewardship programs in the hospital
 - Supplemental modules are currently in production and will be completed by January 2017
- SHM continues to promote its Fight the Resistance Campaign dedicated to promoting awareness and behavior change related to antimicrobial stewardship and appropriate prescribing practices
 - SHM will deploy a follow-up survey to all members on antimicrobial stewardship in December 2016; the baseline survey was disseminated in August 2015 and we are measuring the impact of SHM's Fight the Resistance campaign

Guidelines and Guidance:

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

- None reported

Position Statements:

- None reported

Legislation:

- In August, SHM signed a joint letter in strong support of a proposed rule to require hospitals and critical access hospitals to develop and maintain antibiotic stewardship programs. The letter can be viewed [here](#).
- Throughout the year, SHM was on a workgroup with IDSA, ACEP, and SCCM to review and provide comments to CMS on the antibiotics available for use under the SEP-1 Sepsis and Septic Shock Management Bundle measure. This workgroup sent a letter to CMS on October 12 recommending changes to the antibiotic tables under this measure. The letter can be viewed [here](#).

Campaigns and related activities:

- SHM's Fight the Resistance Antimicrobial Stewardship campaign is ongoing. Several campaign resources may be accessed here: [Fight the Resistance](#).

Press activities:

- 2016 Get Smart Week November 14-20 – featured in [The Hospitalist](#) and on the [CDC](#) website

Publications:

- [A Program to Prevent Catheter-Associated Urinary Tract Infection in Acute Care](#)
- [Quality Improvement Interventions for Bloodstream Infections Related to Central Catheters](#)
- [Variation in prevalence and patterns of peripherally inserted central catheter use in adults hospitalized with pneumonia](#)
- [Engaging hospitalists in antimicrobial stewardship: Lessons from a multihospital collaborative](#)
- [White blood cells, immune status, and antimicrobial stewardship](#)
- [Colistin Resistance Reinforces Antibiotic Stewardship Efforts](#)
- [Analysis of Morbidity and Mortality Outcomes in Postoperative Clostridium difficile Infection in the Veterans Health Administration](#)

Other items of note:

- None reported

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Robert G. Sawyer, MD

Organization represented: Surgical Infection Society (SIS)

Interim activities and updates:

- The new electronic journal *Surgical Infections: Case Reports* has been launched by Mary Ann Liebert as a companion journal to *Surgical Infections*, the official journal of the SIS. To date, close to 50 case reports have been published and indexed.
- The SIS was very active in many educational sessions at the October American College of Surgeons meeting. Topics presented by SIS members included the surgical management of CDAD, peritonitis, and an entire session dedicated to necrotizing soft tissue infections.
- Many members of the SIS worked in close collaboration with Oasis Global (founded by Joseph Solomkin of the SIS, <http://www.oasis.global/>) and the World Health Organization to formulate and post evidence-based guidelines for the prevention of surgical site infection in low- and middle-income countries. The guidelines can be found [here](#). Evidence can be found the Lancet Infectious Diseases:
 - New WHO recommendations on preoperative measures for surgical site infection prevention: an evidence-based global perspective. Allegranzi B, Bischoff P, de Jonge S, Kubilay NZ, Zayed B, Gomes SM, Abbas M, Atema JJ, Gans S, van Rijen M, Boermeester MA, Egger M, Kluytmans J, Pittet D, Solomkin JS; WHO Guidelines Development Group. *Lancet Infect Dis*. 2016 Nov 1. pii: S1473-3099(16)30398-X. doi: 10.1016/S1473-3099(16)30398-X.
- The SIS is in the midst of launching a YouTube Channel. Stay tuned!

Guidelines and Guidance:

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

- Guidelines in process: The members of the Guidelines and Therapeutics Committee are conducting the following systematic reviews:
 - Antibiotics for facial trauma
 - December 2015: manuscript submitted to *Surgical Infections*
 - Revision of 2010 Guidelines for the management of intra-abdominal infections
 - August 2015 Review literature
 - November 2015 Complete analysis
 - March 2016 Submit manuscript
 - July 2016 Manuscript under review
 - Scheduled for publication January 2017
 - Guidelines for the management of acute appendicitis
 - May 2016 Review literature
 - August 2016 Complete analysis
 - January 2017 Submit manuscript
 - Guidelines for the management of the open abdomen
 - Spring 2016 Review literature
 - Summer 2016 Complete analysis
 - Fall 2016 Submitted manuscript

- Guidelines for the management of necrotizing soft tissue infections
 - April 2016 Review literature
 - July 2016 Complete analysis
 - October 2016 Submitted manuscript

Position Statements:

- None reported

Legislation:

- None reported

Campaigns and related activities:

- The SIS participated in the recent CDC's Get Smart About Antibiotics Week. Surgical Infections published a manuscript in conjunction with the World Society of Emergency Surgery, Sartelli M, Duane TM, Catena F, et al, Antimicrobial stewardship: A call to action for surgeons. Surg Infect (Larchmt) 2016 Nov 9. In addition, multiple links were placed on the SIS website to encourage these important efforts.

Press activities:

- None reported

Publications:

- Reviews:
 - Incidence and Risk Factors for Infection When Teicoplanin Is Included for Prophylaxis in Patients with Hip Fracture, Aina Capdevila, Margarita Navarro, Guillem Bori, Eduard Tornero, Pilar Camacho, Jordi Bosch, Sebastián García, Josep Mensa, Alex Soriano, Surgical Infections. Jul 2016, 17(4): 381-384.
 - Current Murine Models of Sepsis, Anthony J. Lewis, Christopher W. Seymour, Matthew R. Rosengart, Surgical Infections. Jul 2016, 17(4): 385-393.
 - Extra-Pulmonary Tuberculosis and Its Surgical Treatment, Donald E. Fry, Surgical Infections. Jul 2016, 17(4): 394-401.
 - Necrotizing Soft Tissue Infections: A Review, Brian G. Harbrecht, Nick A. Nash, Surgical Infections. Oct 2016, 17(5): 503-509.
 - Proportion of Surgical Site Infections Occurring after Hospital Discharge: A Systematic Review, Erik Woelber, Emily J. Schrick, Bradford D. Gessner, Heather L. Evans, Surgical Infections. Oct 2016, 17(5): 510-519.
 - Topical Antimicrobials and the Open Surgical Wound, Donald E. Fry, Surgical Infections. Oct 2016, 17(5): 520-524.)

Other items of note:

- The SIS and CDC continue to collaborate in the field of remote image capture in the diagnosis of surgical site infections and overall parameters associated with Patient Generated Health Data (PGHD). A group including Heather Evans from the University of Washington, Liza Wick (American College of Surgeons liaison to HICPAC) and Robert Sawyer met with Joe Sharma and Dan Pollock from the CDC met at the American College of Surgeons Meeting in October to discuss next steps on how to address this rapidly emerging field.

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

Meeting Date: December 1-2, 2016

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

Liaison Representative name: Margaret VanAmringe MHA

Organization represented: The Joint Commission (TJC)

Interim activities and updates:

- None reported

Guidelines and Guidance:

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

- None reported

Position Statements:

- None reported

Legislation:

- None reported

Campaigns and related activities:

- None reported

Press activities:

- None reported

Publications:

- The Joint Commission updated and revised CAUTI national patient safety goals in The Joint Commission's R3 Report.
- The Center for Transforming Healthcare, Joint Commission Resources will release in January 2017 Infection Prevention and Control Workbook (3rd ed.) to be utilized in all types of health care settings.
- In *The Hospitalist*, October 13, 2016 publication, The Joint Commission's New Standard for Antimicrobial Stewardship was announced.

Other items of note:

- None reported