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
(HICPAC)

Meeting Summary Report
June 5 and 6, 2013
Atlanta, Georgia

Table of Contents

ATTACHMENT 1: Agenda

Wednesday, June 5, 2013

Time	Topic	Presider/Presenter
9:00	**Welcome and Introductions** Administrative issues: Meeting logistics & Conflicts of interest declarations	Neil Fishman (HICPAC Chair) Jeff Hageman (CDC)
9:30	Draft Guideline for the Prevention of Surgical Site Infections	Sandra Berrios-Torres (CDC)
10:30	**Break**	
10:45	Draft Guideline for the Prevention of Surgical Site Infections (Cont'd)	
12:00	**Lunch**	
1:30	Update on DHQP's Activities: Long-term Care Facilities	Nimalie Stone (CDC)
2:00	Updating NHSN Definitions for Catheter-Associated Urinary Tract Infections	Carolyn Gould (CDC) Katherine Allen-Bridson (CDC)
3:00	Break	
3:20	Core Infection Prevention and Control Practices	Deborah Yokoe (HICPAC)
4:00	Public Comment	
4:15	**Liaison/ Ex-officio Reports**	
5:00	**Adjourn**	

Thursday, June 6, 2013

Time	Topic	Presider/Presenter
9:00	CDC's Emerging Infection Program Surveillance Update --Invasive MRSA --*Clostridium difficile*	Fernanda Lessa (CDC)
9:30	Draft Guideline for Infection Prevention in Healthcare Personnel	David Kuhar (CDC)
10:00	**Break**	
10:30	Update on the MERS Outbreak and on H7N9	Michael Bell (CDC)
10:45	Guideline Development Activities	Neil Fishman (HICPAC)
11:30	Public Comment	
11:45	Summary and Wrap-Up	
12:00	**Adjourn**	

ATTACHMENT 2: List of Participants

(Note: the Designated Federal Official opened the floor for introductions on June 5 and 6, 2013, and confirmed the presence of a quorum.)

DAY 1: JUNE 5, 2013

HICPAC MEMBERS PRESENT:
Dr. Neil Fishman, Chair
Dr. Dale Bratzler
Dr. Daniel Diekema
Dr. Alexis Elward
Dr. Mary Hayden
Dr. Susan Huang
Dr. Stephen Ostroff
Dr. Selwyn Rogers
Dr. Tom Talbot
Dr. Michael Tapper
Dr. Deborah Yokoe

DESIGNATED FEDERAL OFFICIAL:
Mr. Jeffrey Hageman, Deputy Chief, Prevention and Response Branch, DHQP

EX OFFICIO MEMBERS PRESENT:
Dr. David Henderson, National Institutes of Health
Dr. Stephen Kralovic, Veterans Administration
Dr. Sheila Murphey, Food and Drug Administration
Dr. Daniel Schwartz, Centers for Medicare and Medicaid Services

LIAISON MEMBERS PRESENT:
Ms. Michael Anne Preas, Association of Professionals of Infection Control and Epidemiology, Inc.
Ms. Kathleen Dunn, Public Health Agency of Canada
Dr. Scott Flanders, Society of Hospital Medicine
Dr. Michael Howell, Society of Critical Care Medicine
Dr. Charles Huskins, Infectious Disease Society of America
Dr. Marion Kainer, Council of State and Territorial Epidemiologists
Dr. Lilly Kan, National Association of County and City Health Officials
Dr. Emily Lutterloh, Association of State and Territorial Health Officials
Ms. Lisa McGiffert, Consumers Union
Dr. Silvia Munoz-Price, National Association of Public Hospitals and Health Systems
Dr. Mark Rupp, Society for Healthcare Epidemiology of America
Dr. Mark Russi, American College of Occupational and Environmental Medicine
Dr. Robert Sawyer, Surgical Infection Society
Ms. Donna Tiberi, Healthcare Facilities Accreditation Program
Ms. Margaret VanAmringe, The Joint Commission
Ms. Amber Wood, Association of periOperative Registered Nurses

CDC REPRESENTATIVES PRESENT:
Ms. Katherine Allen-Bridson, Nurse Consultant, DHQP
Dr. Kate Arnold, DHQP
Dr. Beth Bell, Center Director, NCEZID
Dr. Michael Bell , DHQP Acting Director
Dr. Elise Beltman, ADES/DHQP
Dr. Ramona Bennett, Public Health Analyst, DHQP

Dr. Sandra Berrios-Torres, DHQP
Dr. Amy Collins, DPID
Dr. Christi Cosby, Systems Analyst, DHQP
Dr. Scott Fridkin, Medial Officer and Deputy Chief, Surveillance Branch, DHQP
Dr. Carolyn Gould, Medical Officer, DHQP
Dr. Rita Helfand, DHQP
Dr. Rachel Koissy, Health Scientist, DHQP
Dr. Cliff McDonald, Senior Advisor for Science, DHQP
Dr. Joe Perz, DHQP
Dr. Isaac See, DHQP
Dr. Joe Sharma, Assistant Professor, DHQP
Dr. Elizabeth Skillen, ADP/DHQP
Ms. Erin Stone, Committee Management Specialist
Dr. Nimalie Stone, Medical Epidemiologist, DHQP
Ms. Abbigail Tumpey, Associate Director for Communications Science, DHQP
Dr. Michelle Wilson, Senior Public Health Analyst, DHQP
Dr. Sarah Yi, Health Scientist, DHQP

MEMBERS OF THE PUBLIC PRESENT:
Mr. Greg Jackson, Smith & Nephew, Advanced Wound Management Division

DAY 2: JUNE 6, 2013

HICPAC MEMBERS PRESENT:
Dr. Neil Fishman, Chair
Dr. Dale Bratzler
Dr. Daniel Diekema
Dr. Alexis Elward
Dr. Mary Hayden
Dr. Susan Huang
Dr. Stephen Ostroff
Dr. Selwyn Rogers
Dr. Tom Talbot
Dr. Michael Tapper
Dr. Deborah Yokoe

DESIGNATED FEDERAL OFFICIAL:
Mr. Jeffrey Hageman, Deputy Chief, Prevention and Response Branch, DHQP

EX OFFICIO MEMBERS PRESENT:
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CDC REPRESENTATIVES PRESENT:
Dr. Michael Bell , DHQP Acting Director
Dr. Elise Beltman, ADES/DHQP
Dr. Jessica Cohen, Surveillance Officer, DHQP
Dr. Amy Collins, DPID
Dr. Scott Fridkin, Medial Officer and Deputy Chief, Surveillance Branch, DHQP
Dr. Nicole Gualandi, Surveillance Officer, DHQP
Dr. Fernanda Lessa, DHQP
Dr. Shelley Magrill, Medical Officer, DHQP
Dr. Cliff McDonald, Senior Advisor for Science, DHQP
Dr. Elizabeth Mothershed, DHQP Policy Division
Ms. Abbigail Tumpey, Associate Director for Communications Science, DHQP

MEMBERS OF THE PUBLIC PRESENT:
Mr. Greg Jackson, Smith & Nephew, Advanced Wound Management Division
Dr. Nancy Hailpern, Director for Regulatory Affairs, APIC
Dr. Jane Kirk, Clinical Director, GOJO Industries
Dr. Daniel Owczarski, Healthcare Director, DISCERN
Dr. Rhonda Taller, Principal Consultant, Siemens

ATTACHMENT 3 : Glossary of Acronyms

AACD	American Association of Clinical Directors
AAP	American Academy of Pediatrics
ABUTI	asymptomatic bacteremic UTI
ACA	(Patient Protection and) Affordable Care Act
ACIP	Advisory Committee on Immunization Practices
ACOEM	American College of Occupational and Environmental Medicine
ACOG	American Congress of Obstetricians and Gynecologists
ADE	adverse drug event
AHA	American Hospital Association
AHCA	American Health Care Association
AHRQ	Agency for Healthcare Research and Quality
anti-TNFs	anti-tumor necrosis factors
AORN	Association of periOperative Registered Nurses
APIC	Association of Professionals of Infection Control and Epidemiology, Inc.
AR	antibiotic resistance
ASHP	American Society of Health-System Pharmacists
BARDA	Biomedical Advanced Research and Development Authority
BMI	Body Mass Index
BSI	bloodstream infection
C. diff	*Clostridium difficile*
CABG	coronary artery bypass graft
CAUTI	catheter-associated urinary tract infection
CBER	Center for Biologics Evaluation and Research
CDC	Centers for Disease Control and Prevention
CDI	*Clostridium difficile* infection
CHG	chlorhexidine gluconate
CIC	certification in infection prevention and control
CLABSI	central-line-associated bloodstream infections
CMS	Centers for Medicare and Medicaid Services

CPT codes	Current Procedural Terminology
CRE	carbapenem-resistant *Enterobacteriaceae* (examples: *Klebsiella* and *E. coli*)
CSTE	Council of State and Territorial Epidemiologists
DHQP	Division of Healthcare Quality Promotion
DMARDs	disease-modifying anti-rheumatic drugs
DVT	deep venous thrombosis
EIN	Emerging Infection Network
FDA	U.S. Food and Drug Administration
GRADE	Grading of Recommendations, Assessment, Development and Evaluation
HACO	healthcare-associated community-onset
HAI	healthcare-associated infection
HCP	healthcare personnel
HCW	healthcare worker
HEN	healthcare engagement network
HFAP	Healthcare Facilities Accreditation Program
HHS	U.S. Department of Health and Human Services
HICPAC	Healthcare Infection Control Practices Advisory Committee
HIVMA	HIV Medicine Association
HRSA	Health Resources and Services Administration
ICU	Intensive care unit
IDSA	Infectious Disease Society of America
IHI	Institute for Healthcare Improvement
IRB	Institutional Review Board
ITFAR	Interagency Task Force for Antibiotic Resistance
IVAC	infection-related ventilator-associated complication
LPAD	Limited Population Antibacterial Drug Approval Mechanism
LTCF	long-term care facility

MBI-LCBI	mucosal barrier injury laboratory-confirmed bloodstream infection
MDRO	multi-drug resistant organism
MDS	Minimum Data Set (coding)
MERS	Middle East Respiratory Syndrome coronavirus
MRSA	methicillin-resistant *Staphylococcus aureus*
MSSA	methicillin-sensitive *Staphylococcus aureus*
NAAT	nucleic acid amplification test
NACCHO	National Association of County and City Health Officials
NAPH	National Association of Public Hospitals and Health Systems
NCEZID	National Center for Emerging and Zoonotic Infectious Diseases
NHSN	National Healthcare Safety Network
NICU	neonatal intensive care unit
NIH	National Institutes of Health
NQF	National Quality Forum
OMB	Office of Management and Budget
PAMPTA	Preservation of Antibiotics for Medical Treatment
PATOS	present at time of surgery
PCR	polymerase chain reaction
PI	povidone iodine
PIDS	Pediatric Infectious Disease Society
PJI	prosthetic joint infection
RCT	randomized controlled trial
RSV	respiratory syncytial virus
SARS	severe acute respiratory syndrome
SHEA	Society for Healthcare Epidemiology of America
SICU	surgical intensive care unit
SIR	Standardized Infection Ratio
SSI	surgical site infections
SUTI	symptomatic UTI
TPN	total parenteral nutrition
UDI	unique device identifier

USP	United States Pharmacopeia
UTI	urinary tract infection
VAC	ventilator-associated complication
VAE	ventilator-associated event
VAP	ventilator-associated pneumonia
VTE	venous thromboembolism

EXECUTIVE SUMMARY

The Division of Healthcare Quality Promotion (DHQP), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS) convened a meeting of the Healthcare Infection Control Practices Advisory Committee (HICPAC) on June 5-6, 2013, in Atlanta, Georgia.

The Designated Federal Official and Chair confirmed the presence of a quorum with voting members and ex officio members for HICPAC to conduct its business on both days of the meeting. The HICPAC voting members disclosed their conflicts of interest for the public record.

HICPAC heard a detailed presentation on updates to CDC's draft guideline for prevention of surgical site infections. Since the March HICPAC meeting, the writing group discussed the input received at that meeting and revised several recommendations based upon that input. Additionally the writing group continued to work on new sections and presented those for HICPAC input. HICPAC made additional comments and suggestions for the writing group to consider.

The next step for the draft guidelines will be to review for the writing group to finalize the draft based on HICPAC input and submit the draft to CDC clearance. Following CDC clearance the draft guideline will be posted in the Federal Register for public comments. Following this comment period, public comments will be reviewed and publicly responded to and the writing group will propose changes based on the comments at a subsequent HICPAC meeting to receive additional expert input from HICPAC. HICPAC will ultimately vote to agree or disagree with the draft guideline. Following the HICPAC meeting, CDC will finalize the guideline based on the input received at the meeting and submit it to CDC clearance where it will be reviewed and pending review, adopted as a final CDC guideline.

CDC presented an update on its work relating to healthcare-associated infection prevention in long-term care facilities.

CDC is considering changes to the NHSN definitions of CAUTIs. HICPAC provided input into the pros and cons of different approaches to definition, and most members favored a simple approach.

The group next discussed the proposed Core Infection Prevention and Control Practices document, which is intended to compile existing infection control practices across CDC guidelines which apply in a broad range of settings.

HICPAC's liaison and ex officio members submitted written reports and provided additional details during the meeting on recently completed, ongoing and upcoming activities of their

organizations and agencies. The verbal and written reports highlighted organizational and agency position statements, new or pending legislation, campaigns and related activities, press activities, publications, and other items of note.

CDC presented an outline of the findings of its Emerging Infections Program nationwide surveillance of invasive MRSA and *C. difficile* infection.

CDC presented an outline of the proposed new guideline for infection prevention in healthcare personnel. HICPAC discussed which diseases CDC should prioritize for updating.

Lastly, HICPAC discussed advising CDC on creating process for informing updates to existing guidelines. The possibility of creating a task-specific workgroup or assigning specific members to guidance review was discussed. Work on this process is still in the preliminary stages, and HICPAC will receive further reports from CDC in the future.

The Chair called for public comments at all times noted on the published agenda.

Minutes of the Meeting

The Division of Healthcare Quality Promotion (DHQP), National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS) convened a meeting of the Healthcare Infection Control Practices Advisory Committee (HICPAC). The proceedings were held on June 5-6, 2013, at the Tom Harkin Global Communication Center (Building 19), Centers for Disease Control and Prevention, 1600 Clifton Road NE, Atlanta, Georgia.

Opening Session: June 5, 2013

Introductions and Conflict of Interest Declarations

Jeffrey Hageman, MHS
Deputy Chief, Prevention and Response, DHQP
Designated Federal Official, HICPAC

The Designated Federal Official, Mr. Hageman, opened the floor for introductions of HICPAC voting members, ex officio members, and liaison representatives who were in attendance. Voting members were asked to publicly disclose any new conflicts of interest.

- Dr. Elward received research support from Sage Products, Inc. to study the efficacy of daily bathing with chlorhexidine to prevent bloodstream infections in pediatric ICU patients.
- Dr. Talbot received reimbursement as a faculty member for an IHI program on hand hygiene.
- Dr. Bratzler received consultant funding through his university to do grant reviews for Medline Industries.

Draft Guideline for the Prevention of Surgical Site Infections

Sandra Berrios-Torres, MD,
Medical Officer, Prevention and Response Branch, DHQP

HICPAC has heard several previous presentations on the draft guideline for the prevention of surgical site infections (SSIs). Dr. Berrios-Torres presented the guideline's draft recommendations, some of which have been revised in response to HICPAC's input or new evidence. Recommendations on the new topics of preoperative bathing and biofilm were also presented.

Guideline methodology
Evidence grading: Evidence is given an initial grade based on what type of evidence it is: that is, a randomized controlled trial (RCT) gets an initial high grade, an observational study gets an initial low grade, and any other evidence, such as expert opinion, gets an initial very low grade. Other criteria are then used to adjust the grade. Study quality limitations, inconsistency, indirectness, imprecision, or risk of publication bias decrease the grade, while strength of association, evidence of a dose-response gradient, or inclusion of unmeasured confounders increasing the magnitude of effect increase the GRADE.

An overall quality grade of high, moderate, low or very low is then arrived at.
A **high** grade indicates that further research is *very unlikely to change* confidence in the estimate of effect.
A **moderate** grade indicates that further research is *likely* to impact confidence in the estimate of effect and *may change* the estimate.
A **low** grade indicates that further research is *very likely* to impact confidence in the estimate of effect and is *likely to change* the estimate.
A **very low** grade indicates *any* estimate of effect.

Three key inputs are used when CDC formulates recommendations. First, its values and preferences are used to determine the critical outcomes; second, the overall GRADE of evidence concerning critical outcomes; and third, the net benefits, net harms or tradeoffs which result from weighing the critical outcomes.

The resulting recommendations vary in direction (for or against) and strength (strong or weak). Recommendations fall into one of the following categories:

Category IA: A strong recommendation supported by high to moderate quality evidence suggesting net clinical benefits or harms.
Category IB: A strong recommendation supported by low quality evidence suggesting net clinical benefits or harms, or an accepted practice supported by low to very low quality evidence (e.g., aseptic technique).
Category IC: A strong recommendation required by state or federal regulation.
Category II: A weak recommendation supported by any quality evidence suggesting a tradeoff between clinical benefits and harms.
No Recommendation: Indicates an unresolved issue for which there is low to very low quality evidence or no evidence with uncertain tradeoffs between benefits and harms.

Achievements since March:
The writing group has completed its evidence and GRADE tables and narrative summaries.

In the core section, the following topics have been updated:

- Antimicrobial prophylaxis (parenteral and topical)
- Glycemic control
- Normothermia
- Oxygenation
- Skin preparation

In the arthroplasty section, the exhaust suit recommendation was updated, and there are new recommendations for transfusion, immunosuppressive therapy, anticoagulation, and antimicrobial prophylaxis in presence of a drain.

DRAFT SSI PREVENTION GUIDELINES: CORE SECTION

This section was reviewed by HICPAC in more detail at their March 2013 meeting. Changes made to the recommendations since then are underlined.

Q1: Antimicrobial prophylaxis (AMP) – parenteral
Q1A. Timing
Revised recommendation: Q1A. Administer by the intravenous route a single dose of the prophylactic antimicrobial agent. For most prophylactic agents, administration should be within 60 minutes prior to surgical incision. Administer vancomycin and fluoroquinolones within 60-120 minutes prior to surgical incision. (**Category IB**).

Q1A.1 Timing in Cesarean section
Draft recommendation: Q1A.1 Administer the appropriate single dose parenteral prophylactic antimicrobial agent within 60 minutes prior to skin incision in all cesarean sections. (**Category IA**).

HICPAC Discussion: **Q1A**
The narrative summary for Q1A seems to say that there is no data to support the guideline on antimicrobial prophylaxis timing and SSI risk. In fact, there are studies, but no RCTs. The wording should be clarified to avoid giving the impression that this recommendation has

absolutely no data to support it. Dr. Berrios-Torres explained that the 1999 guideline did not give any guidance on timing, but current clinical practice, which does specify AMP timing, motivated this recommendation.

Should the guideline specify when the antibiotic infusion should be completed to establish appropriate prophylaxis? If patients are administrated AMP only 10-15 minutes before incision as in some ambulatory surgery cases, only about 25% of the drug may be infused by the time of the initial incision; and the initial skin incision may be one of the critical points when antibiotics ought to be present.

However, it is not proven that the key AMP level is that at time of incision; it may be at the end of the procedure when the wound is closed. Even less than a full therapeutic dose of antibiotics can be beneficial.

It was discussed that there is not much data on this question. Members cited a paper suggesting that the lowest SSI rates were associated with AMP infusions started 16-59 minutes before incision, and a paper which looked at tissue levels of vancomycin in adult CABG patients.

Users will come to this guideline expecting answers for all their questions; the guideline should acknowledge the existence of questions that can't currently be answered because of lack of high-quality evidence.

HICPAC suggested that the issue of optimal time of antibiotic infusion should be listed as an unresolved issue with a recommendation for further study. Particularly in an ambulatory surgery setting, and when vancomycin is used, there is an operational need to determine the acceptable parameters for infusion timing.

Q1B. Weight-based dosing

Revised recommendation: In obese and morbidly obese patients, dose the prophylactic antimicrobial agent based on the patient's weight where pharmacokinetic data support it (e.g., cefazolin, vancomycin, and aminoglycosides.)

Q1C. Intraoperative redosing

Revised recommendations: Q1C. Maintain therapeutic levels of the prophylactic antimicrobial agent in serum and tissues throughout the operation based on individual agent pharmacokinetics. (**Category IB**).

> Q1C.1. Redose intraoperatively when the procedure duration exceeds the half-life of the antimicrobial agent, or when there is excessive blood loss, (i.e., >1500 ml) or in cases of extensive burns. (**Category IB**).
>
> Q1C.2. Redose at intervals 1-2 times the prophylactic antimicrobial agent half-life, measured starting at the beginning of the single preoperative dose. (**Category IB**).
>
> Q1C.3. No recommendation can be made regarding use of weight-based dosing when redosing obese and morbidly obese patients. (**No recommendation/unresolved issue.)**

HICPAC Discussion: Q1C

Dr. Berrios-Torres asked HICPAC to consider whether redosing should be recommended only for short-acting agents, and whether the level of blood loss that is "excessive" should be specified. The 1500 ml number comes from clinical practice guidelines, but there is no evidence to support it.

HICPAC suggested that the reference to the half-life of the agent eliminates the need to specify that redosing should be done with shorter half-lived agents.

HICPAC asked if there is any data about the need to redose during cardiopulmonary bypass surgery? Other society guidelines say that vancomycin may be considered but its usefulness is not well established, while aminoglycosides are not indicated and may be harmful during bypass. There is some data on vancomycin levels pre-, during, and post-bypass.

HICPAC discussed the pros and cons of specifying 1500ml for excessive blood loss.

It was suggested that the 1500 ml number should be removed from the recommendation itself and discussed in the narrative summary, and it should be changed to "> 1500 ml or >25% of blood volume" to accommodate pediatric patients.

HICPAC asked for patients with excessive blood loss or extensive burns, what time should redosing be done? The existing guidance is not specific on the time.

HICPAC stated that it seems inconsistent to define "excessive blood loss" but not "extensive burns." Dr. Berrios-Torres said that "extensive burns" was not defined in clinical practice guidelines. The reference to extensive burns was included because extensive burns are associated with excessive blood loss, so maybe the reference to burns should be omitted, since burns alone may not warrant redosing.

Q1D. Postoperative duration (defined as time AMP was continued after the skin incision was closed in the operating room)
Revised recommendation: Q1D. In clean and clean-contaminated procedures, do not administer additional prophylactic antimicrobial agent doses after the surgical incision is closed in the operating room. (**Category IA**).

> Q1D.1. In cardiac procedures, discontinue prophylactic antimicrobial agent ≤24 hours after the surgical incision is closed in the operating room. (**Category II**).

Q2: Antimicrobial/antiseptic prophylaxis (AMP) – non-parenteral

Q2A. Irrigation--antimicrobial/antiseptic

> Q2A.1. Antiseptic irrigation: no recommendation was presented in March. After the March discussion, it was found that electrochemically activated solutions (ECAS) are not FDA-approved for wound irrigation, so they have been excluded from the recommendations.
>
> **Revised recommendation option 1:** Use of aqueous iodophor irrigation prior to wound closure is not necessary for prevention of surgical site infection (**Category II**).
>
> **Revised recommendation option 2:** Do not use aqueous iodophor prior to wound closure for prevention of surgical site infection. (**Category IB**).

HICPAC Discussion: Q2A.1

Dr. Berrios-Torres asked for comment on the phrasing and evidence category of the two possible recommendations. She added that the surgical subject matter experts in the writing group favored the "do not use" terminology.

HICPAC asked if there is any data on adverse effects to support the strong "do not use", even when two RCTs showed a benefit of aqueous iodophor? Dr. Berrios-Torres said there is not much evidence of adverse effects, although one study suggests a higher risk of wound dehiscence, and another shows temporarily elevated iodine levels. The two RCTs which showed a benefit studied the same surgeon and ~80% of SSIs were MRSA-positive, showing that this population had issues with antimicrobial resistance, not necessarily reflective of spine procedures done in other settings. The Category IB is a strong recommendation against use, whereas the Category II is a weak recommendation against use, which is reflected in the phrasing.

HICPAC responded stating that when you change the question being asked, the quality of the evidence can appear different. Since evidence from spine procedures seems to be leading to uncertainty here, perhaps the first recommendation should apply only to spine procedures, while for other procedures, the "do not use" recommendation should be used.

This points to a larger issue with how to judge RCT evidence of a significant benefit or harm, when the standard of care to which an intervention is compared is not the current American standard of care. Evidence from small RCTs presents a similar issue. Unless there is very strong evidence to pull out one surgical specialty for a recommendation, it might be preferable to use a general Category II recommendation, and explain the issues around the recommendation in the narrative summary.

Q2.A.2. Antimicrobial irrigation: instead of "further research is needed," the phrase "no recommendation can be made" was used.

Revised recommendation: Q2.A.2. No recommendation can be made regarding the safety and effectiveness of intraoperative antimicrobial irrigation and surgical site infection. (**No recommendation/unresolved issue.**)

Q.2.A.3. No recommendation can be made regarding the safety and effectiveness of soaking prosthetic devices in antimicrobial or antiseptic solutions prior to surgical implantation and surgical site infection. (**No recommendation/unresolved issue.**)

Q2B. Topical agents--antimicrobial/antiseptic

Q2.B.1. Topical antimicrobial agents

Revised recommendation: Q2B.1 Do not use topical antimicrobial agents (i.e., ointments, solutions, powders) prior to or following wound closure for the prevention of surgical site infection. (**Category IA**).

Q2.B.2. Topical antiseptic agents

Revised recommendation: Do not use additional topical antiseptic agents (i.e., ointments, solutions, powders) after performing antiseptic skin preparation and prior to wound closure for the prevention of surgical site infection. (**Category IB**).

Q2.B.3. Autologous platelet rich plasma

Draft recommendation: Do not use autologous platelet rich plasma for the prevention of surgical site infection. (**Category IA**).

HICPAC Discussion: Q2B

HICPAC asked if there was there any data found on use of vancomycin powder? This strong Category IA recommendation risks stymieing research into its possible benefits. Dr. Berrios-Torres said there was no RCT data on vancomycin powder. Since ampicillin is rarely used today, the recommendation does not specify agents. The risk of antimicrobial resistance presented by these agents along with the lack of evidence for benefit warrants a strong recommendation against their use; in general, recommendations have to be based on the evidence that exists now, not potential future evidence.

Members debated what kind of evidence justifies a Category IA "do not use" recommendation. Does a Category IA require strong evidence of a net clinical harm, or is strong evidence of no net clinical benefit sufficient? If strong evidence of net clinical harm is needed, then recommendation Q2.B.3 should be downgraded to Category II.

HICPAC suggested that Recommendation Q2.B.2 should be a Category II in either case, because the evidence of no net clinical benefit is not strong enough.

Q2D. Antimicrobial dressings

Revised recommendation: No recommendation can be made regarding the safety and effectiveness of antimicrobial dressings applied to surgical wounds following primary closure in the operating room. (**No recommendation/unresolved issue.**)

Dr. Berrios-Torres noted that the existing studies on antimicrobial dressings address the use of dressings in chronic wounds or other postoperative care; there are no RCTs on the issue of wounds closed in the operating room.

Q3: Glycemic control

Q3A. Perioperative glycemic control: blood glucose target level was changed to <200 mg/dL, compared to <180 mg/dL in March.

Revised recommendation: Implement perioperative glycemic control and use blood glucose target levels <200 mg/dL in diabetic and non-diabetic surgical patients. (**Category IA**).

Q3A.1. Blood glucose target levels in specific populations

Revised recommendation: No recommendation can be made regarding the safety and effectiveness of lower or narrower blood glucose target levels and surgical site infection in specific patient populations and postoperative settings. (**No recommendation/unresolved issue.**)

HICPAC Discussion: Q3

HICPAC suggested the narrative summary should explain why glycemic control is recommended in non-diabetic patients; for instance, some patients come in with undiagnosed diabetes.

Q3B. Hemoglobin A1C levels

Revised recommendation: No recommendation can be made regarding hemoglobin A1C levels and surgical site infection in diabetic and non-diabetic patients. (**No recommendation/unresolved issue**.)

Q4. Maintenance of normothermia

Draft recommendation: Maintain perioperative normothermia. (**Category IA**).

Q5. Strategies for maintaining normothermia

Revised recommendation: No recommendation can be made regarding the safety and effectiveness of strategies to achieve and maintain normothermia, determining the lower limit of normothermia, optimal timing and duration, and surgical site infection. (**No recommendation/unresolved issue**).

Q8. Skin preparation

New topic: Q8A. Preoperative antiseptic bathing/showering

New draft recommendation: Require patients to shower or bathe (full body, including scalp) on at least the night before the operative day (**Category IB.)**

> **New topic:** Q8A.1 Specific body cleansing products
>
> **New draft recommendation:** No recommendation can be made regarding the safety and effectiveness of specific body cleansing products, the optimal timing or number of product applications. (**No recommendation/unresolved issue**.)

A Cochran review of six RCTs showed no benefit from preoperative bathing with 4% chlorhexidine gluconate (CHG) solution compared to placebo.

HICPAC Discussion: Q8A

HICPAC noted the studies looked at bathing with CHG solution, not with CHG washcloths; some have suggested that the washcloths allow a more standardized application. This issue could be included in the narrative summary or the upcoming SHEA Compendium.

HICPAC suggested the recommendations should separate out safety and effectiveness; although no recommendation can be made on effectiveness, thousands of patients have used CHG solution and its safety seems clear. Either the word "safety" should be struck from Q8A.1 or a separate recommendation should be made regarding safety.

With regard to potential safety concerns for pediatric populations, the NICU guideline writing group did not find clear evidence that chlorhexidine is harmful, except for extremely pre-term patients, for whom one RCT showed a higher incidence of skin reactions. There is some concern in the pediatric community that the safety of chlorhexidine has not been fully assessed for its potential long-term neurological impact, especially for infants and pre-term infants. However, the research that has been done on pediatric patients looks at daily chlorhexidine bathing, not preoperative bathing.

HICPAC noted that the 1999 guideline's phrase "require patients to shower with an antiseptic agent" has been changed to remove the reference to an antiseptic agent. The narrative summary should explain why that change was made; there is no evidence that using an antiseptic agent is a bad thing.

Q8B. Intraoperative skin preparation

Vaginal preparation in additional to abdominal skin prep was excluded because it was considered too procedure-specific.

Draft recommendation: Perform intraoperative skin preparation with an appropriate antiseptic agent (**Category IA**).

Q8B.1.a CHG-alcohol vs. aqueous iodophor

Revised recommendation: Use chlorhexidine gluconate-alcohol in preference of aqueous iodophor skin preparation, unless contraindicated (**Category IA**).

Q8B.1.b CHG-alcohol vs. iodophor-alcohol

Revised recommendation: No recommendation can be made regarding the safety and effectiveness of chlorhexidine gluconate-alcohol as compared to iodophor-alcohol skin preparation (**No recommendation/unresolved issue**.)

HICPAC Discussion: Q8B

HICPAC suggested that perhaps the narrative summary should include a comment on the use of chlorhexidine on the scalp for neurosurgery. But the "unless contraindicated" phrase might cover that.

It was noted perioperative nurses often struggle when patients have a contraindication for chlorhexidine prep, but also an allergy to aqueous iodophor. Is there any data that would guide nurses in that situation? Dr. Berrios-Torres replied that the studies found in the literature review only looked at CHG or iodophor.

Q8C Antimicrobial sealants

Draft recommendation: Do not use antimicrobial skin sealant following skin preparation and prior to skin incision for the prevention of surgical site infection. (**Category IA**).

Q8D. Plastic adhesive drapes

Draft recommendation: Do not use plastic adhesive drapes (with or without antimicrobial properties) for the sole purpose of preventing surgical site infection. (**Category IA**).

DRAFT SSI PREVENTION GUIDELINES: ARTHROPLASTY SECTION

One goal of having a specialty- and procedure-specific section was to see if it was possible for recommendations to address high-volume, high-risk procedures.

Over a million arthroplasties are performed annually in the U.S., and SSI risk is relatively high. SSIs related to arthroplasties are estimated to cost billions of dollars. However, it has been difficult to find high-level evidence that is specific to arthroplasty. Very little RCT data is available, so all of the topics in this section are supported only by observational studies. The

evidence for these topics was discussed in detail in the March HICPAC meeting, but recommendations had not been formulated at that time.

Q17 Blood transfusion and risk of SSI: high quality evidence suggested transfusion increased SSI risk.
Q17A. Specific blood products and risk of SSI: low quality evidence suggested allogeneic blood increased SSI risk; moderate quality evidence suggested autologous or autologous plus additional allogeneic blood did not increase SSI risk
Q17B. Operative severity and risk of SSI: moderate quality evidence suggested revision arthroplasties increased the risk of transfusion. Very low quality evidence suggested the effect was limited to revision total hip arthroplasty.
Q17C. Volume of transfused blood product and risk of SSI: the search revealed no data on transfusion volume and SSI.
Q17D. Safety and effectiveness of withholding transfusion: existing guidance recommends not withholding blood products to prevent SSI.

New draft recommendation: Q17 No recommendation can be made regarding blood transfusion products, their perioperative management, and surgical site infections in patients undergoing prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue**.)

Several questions remain open:

- Could the increased risk of infection seen with allogeneic transfusion be a surrogate for a wound that was at risk before the transfusion, because of an unexpected high blood loss with associated decreased volume, decreased oxygen tension, and vasoconstriction?
- Could autologous transfusion be associated with no increased risk because of a lower threshold for transfusing patients with their own blood?
- Should we be taking more of a multidisciplinary approach to blood management? What could be the role of preoperative optimization, better planning for anticipated blood loss, standards for who gets autologous transfusion, or intraoperative cell saver/postoperative techniques?

Q18 Immunosuppressive therapy and risk of SSI: very low quality evidence suggested biologic agents increased SSI risk.
Q18A Length of time used preoperatively: low quality evidence suggested disease duration increased SSI risk.
Q18B Dose: very low quality evidence was indeterminate for systemic corticosteroid dose and its impact on SSI. The search did not identify studies that evaluated differences in biologic agent or DMARD doses and their impact on the risk of SSI in arthroplasty patients.

For Question 18, the findings address non-modifiable risk factors and do not allow for a recommendation.

Q19 Strategies for managing perioperative use of immunosuppressive therapy
Q19A Dose
Q19B Discontinuation
New draft recommendation: Q19 No recommendation can be made regarding the perioperative management of systemic corticosteroid and other immunosuppressive therapy including dosing, discontinuation, and surgical site infection in patients undergoing prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue.**)
Q20 Optimal postoperative duration of AMP
Q20B Duration of AMP in patients on immunosuppressive therapy
New draft recommendation: No recommendation can be made regarding the safety and effectiveness of postoperative antimicrobial agent duration in prosthetic joint arthroplasty patients on systemic immunosuppressive therapy and surgical site infection. (**No recommendation/unresolved issue.**)

HICPAC Discussion: Q17-20

HICPAC asked how difficult is it to distinguish SSIs from simple non-healing of a wound? Dr. Berrios-Torres said that some studies did distinguish between SSI and wound healing disturbance. The main problem with the DMARD studies cited in Q19B was that the doses of methotrexate used might now be considered subtherapeutic.

HICPAC responded that the narrative summary could describe not only why the evidence is insufficient, but also where the field might go in order to answer some of these important questions.

For Q20, HICPAC suggested the phrasing should capture the precise question being addressed, which is whether such patients should be on AMP for longer than is currently recommended. For instance, "no recommendation can be made regarding the safety and effectiveness of extending the duration of postoperative antimicrobial agent use..." Otherwise, the recommendation sounds like it might contradict Q1-2 in the core section.

Q21 Intra-articular corticosteroid injection and risk of SSI
Q21A Length of time used preoperatively and risk of SSI
Q21B Dose and risk of SSI
New draft recommendation: Q21 No recommendation can be made regarding the safety and effectiveness of intra-articular corticosteroid injection agent, dose or the length of time since administration prior to prosthetic joint arthroplasty procedures and surgical site infection. (**No recommendation/unresolved issue.**)
Q22 Strategies for managing their use
New draft recommendation: No recommendation can be made regarding perioperative management of intra-articular corticosteroid injections, agent, dose, discontinuation, and surgical site infection in patients prior to prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue.**)

HICPAC Discussion: Q21-22

HICPAC cited Studies for Q21 show mildly significant increased SSI risk; does that justify a Category IB recommendation to avoid intra-articular corticosteroid injection prior to prosthetic joint arthroplasty procedures if possible? Dr. Berrios-Torres stated that the lack of data on time before surgery or dosing would make a recommendation less than useful. This issue can be addressed in the narrative summary.

Q23 Perioperative anticoagulation for venous thromboembolism (VTE) prophylaxis and risk of SSI
Q23A Risk by VTE prophylaxis agent
Q23B Optimal timing and duration to reduce risk of SSI
Q23C Safety and effectiveness of altering VTE prophylaxis
New draft recommendation: No recommendation can be made regarding perioperative management of VTE prophylaxis agent, dose, discontinuation, and surgical site infection in prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue.**)

HICPAC Discussion: Q23
The language here ("and surgical site infection") is preferable to the phrase "for the sole purpose of preventing SSI," in cases such as this where other important outcomes exist.

Q26 Orthopaedic exhaust suit
New draft recommendation: No recommendation can be made regarding the safety and effectiveness of orthopaedic exhaust suits, the healthcare personnel who should wear them and surgical site infection in prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue.**)
Q27K AMP duration in presence of a drain
New draft recommendation: No recommendation can be made regarding the safety and effectiveness of AMP duration in the presence of a drain and surgical site infection in prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue.**)

HICPAC Discussion: Q26-27
HICPAC noted the three observational studies cited under Q26 have large sample sizes, but are still graded as very low quality evidence. Could that justify a Category II recommendation? Dr. Berrios-Torres said that the observational studies had problems; one did not look specifically at SSI; evidence from another study showed a very low SSI rate; and in the third study, the definition of deep SSI versus prosthetic joint infection is unclear. Follow-up periods and results also varied.

In a case like this, where bigger studies are graded very low quality, as well as when smaller studies are graded as high quality, the narrative summary should spell out the reasoning behind those decisions.

In Q1D, the guideline recommends not prolonging AMP beyond incision closure based on evidence from 19 RCTs, some of which looked at orthopaedic surgery and, most likely, use of drains. So why does the guideline now say that AMP duration in the presence of a drain is an

unresolved issue? HICAPC countered that this risks undermining the strength of the core guidance. Core topics should not be addressed in specialty sections, unless there are compelling clinical reasons to pull them out. Q27K should be removed completely, since the topic is already addressed in the core section. Then the narrative summary could point to the evidence adduced for Q1D.

New topic: Q35-38 Biofilm

A prosthetic implant creates the risk of biofilm formation, which was only partially addressed in the previous guideline. Initially, the writing group sought to address the following questions:
Q35 What are the most effective strategies for diagnosis of prosthetic joint infection (PJI)?
Q36 How effective are some future/evolving diagnostic techniques?
Q37 What are the most effective strategies to identify biofilm formation?

However, it was decided that the guideline was meant to focus on prevention, not diagnosis, and the data found on those three questions will be outlined in the narrative summary. The question of prevention then remained.

Q38 What are the most effective strategies for preventing biofilm formation?
Q38A Cement modifications (i.e., antimicrobials, nanoparticle loading)
A meta-analysis of two RCTs compared antimicrobial-loaded cement to plain cement. Moderate quality evidence showed a reduction in deep SSI for patients with antimicrobial-loaded cement; however, there were several limitations to these studies. Moreover, antimicrobial-loaded cement is not FDA-approved for use in primary arthroplasties.
New draft recommendation: No recommendation can be made regarding the safety and effectiveness of antimicrobial-loaded cement, prevention of biofilm formation and surgical site infection in prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue**.)
Q38B Prosthesis modifications
The search did not reveal in vivo data evaluating the impact of prosthesis modifications on the risk of biofilm formation or SSI in arthroplasty procedures.
New draft recommendation: No recommendation can be made regarding the safety and effectiveness of prosthesis modifications (i.e., antimicrobial coating, galvanic couples, “printing” technologies, nanotechnology) in prevention of biofilm formation and surgical site infection in prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue**.)
Q38C Vaccines
The search did not reveal in vivo data that evaluated the impact of vaccines on the risk of biofilm formation or SSI in arthroplasty procedures.
New draft recommendation: No recommendation can be made regarding the safety and effectiveness of vaccines in prevention of biofilm formation and surgical site infection in prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue**.)
Q38D Other (i.e., rip inhibitors--signal-based biofilm control agents)
The search did not reveal in vivo data that evaluated the impact of other biofilm control agents on the risk of biofilm formation or SSI in arthroplasty procedures.

New draft recommendation: No recommendation can be made regarding the safety and effectiveness of biofilm control agents (i.e., signal-based rip inhibitors) and surgical site infection in prosthetic joint arthroplasty procedures. (**No recommendation/unresolved issue**.)

HICPAC Discussion: Q38

HICPAC asked if the literature search identified Scandinavian registry studies on the benefit of cement? Dr. Berrios-Torres stated that every individual study other than the two cited above compared antimicrobial-loaded cement with no prophylaxis at all, which limits their value. Those studies were not included in the guideline formulation. Then HICPAC stated the narrative summary should identify why such studies were not included.

The narrative summary could refer back to guidelines addressing outcomes other than SSI, so that users can judge what they should be doing from several perspectives, especially with regard to VTE prophylaxis. Dr. Berrios-Torres said that the summaries indeed refer to other guidance, as long as it fits the inclusion criteria.

HICPAC asked was the possibility of adding another topic with regards to intravascular volume replacement during surgery discussed? This could be a modifiable variable which could affect rates of SSI. Dr. Berrios-Torres said that the reference to "adequate volume replacement" in Q6 was intended to address this issue. The literature on volume replacement does not look at SSI specifically as an outcome.

Should the guidance then make it clear that there are no studies on SSI and adequate volume replacement? Dr. Berrios-Torres said that, when doing volume replacement, the emphasis is not on SSI as an outcome of interest. Therefore, it would not be appropriate to add a question on that topic. Another member noted there is a growing awareness that adequate intravascular volume replacement can help improve tissue perfusion and therefore reduce SSI risk; one study on this topic is about to start.

HICPAC noted Category IB and Category II recommendations come from very similar places, but are viewed very differently by the hospitals who implement them. There is a strong pressure to implement anything in Category I, so the group should be careful that each Category IB really deserves that strength.

Update on DHQP's Activities: Long-term Care Facilities

Nimalie D. Stone, MD, MS
Ambulatory and Long-term Care Team, Prevention and Response Branch

Dr. Stone outlined DHQP's work with long-term care facilities (LTCFs), which involves developing surveillance infrastructure, promoting prevention efforts, expanding the evidence base through research, and providing technical expertise for response efforts.

Recent accomplishments include:

- A joint SHEA/CDC position paper addressing Surveillance Definitions of Infections in Long-term Care Facilities
- A new NHSN long-term care facility component
- CDC is working with many states on HAI prevention projects

The LTCF component of HHS's National Action Plan to Prevent HAIs is now ready, pending final approval. The plan prioritizes increasing NHSN enrollment for skilled nursing facilities and nursing homes, which will ultimately allow tracking of UTIs and *C. difficile* infections in NHSN; resident and healthcare personnel vaccination is another priority.

Advancing Excellence, a campaign run by nursing home facility stakeholders, is working to improve healthcare quality in nursing homes. Its three campaign goals are:

- Reducing hospitalizations and rehospitalizations
- Safe prevention and management of infections
- Improving medication use, in particular reducing inappropriate use of antipsychotics

CDC led a working group which identified strategies for implementing the infection prevention goal in Advancing Excellence. CDC is also providing resources to help facilities with this goal.

Gaps and resource needs for LTCF infection prevention include a need for guidance on the basics of surveillance and data analysis, practical guidance on implementation of precautions in nursing home environments, and educational tools to raise awareness and understanding of infection prevention among nursing home staff, residents, and residents' families.

HICPAC Discussion: LTCFs

Dr. Stone asked for the committee's input on other potential gaps or opportunities in the area of LTCFs.

How can the number of LTCFs that collect NHSN surveillance data be increased? Dr. Michael Bell replied that CDC wants to ensure that the data will be collected properly and in a useful form. Not all facilities have trained staff who can properly utilize the data. One of the reasons for focusing on *C. difficile* infection and antimicrobial stewardship is that these efforts don't require as much specialized capability.

Is there a way to stratify among the approximately 17,000 American nursing homes and focus on those who serve higher-risk populations, such as patients on ventilators? These facilities might bear a disproportionate share of infections and antibiotic resistance issues. Data in MDS could allow examination of the distribution of length of stay in a facility, for example. Perhaps a broad survey of nursing homes could be done to stratify.

Staffing stability is extremely important; high turnover rates could jeopardize any consistent infection prevention program. When the director of nursing changes every two months, it's very hard to maintain a consistent infection prevention program. Guidance documents should therefore be tailored to LTCF needs, with simple training procedures.

The complexity of this area is far greater than with hospitals alone. Guidance should be provided both on core, broadly applicable infection prevention strategies, and stratified guidance for specific needs. The CRE toolkit's specific guidance for long-term care was helpful.

HICPAC advised CDC to consider reaching out to hospitalists; about a third of hospitalists also care for patients in LTCFs, and as a group, they are particularly interested in care transitions.

Given the paucity of surveillance systems and access to microbiology labs in LTCFs, one ought to start with a simple, easily diagnosable problem, such as *C. difficile* or asymptomatic bacteriuria. Acute care setting providers should be encouraged to provide feedback to long-term care facilities, who may not know that they are the source of an HAI problem.

APIC is in the process of updating its long-term care implementation guide.

Pneumococcal vaccination requirements may raise questions about which vaccine to use; MDS 3.0 doesn't address all the complexities.

NACCHO has been working to understand the role of local health departments in HAI prevention; it is following four local health organizations which have received support to engage with LTCFs on infection prevention efforts.

HICPAC also commented that transitions of care and the loss of patient data that sometimes accompanies them are an important issue. It seems important to standardize the basic information that facilities ought to exchange at the time of patient transfer.

However, patients may leave in the middle of the night, and the person doing the transfer may not be familiar with the individual in question or with MDRO issues. The focus should be not just on care transitions, but on persistence of data throughout the continuum of care.

Updating NHSN Definitions for Catheter-Associated Urinary Tract Infections

Katherine Allen-Bridson, BSN, MScPH, CIC
Nurse Consultant, DHQP
Carolyn Gould, MD, MSCR
Medical Officer, DHQP

Ms. Allen-Bridson gave an overview of UTI surveillance in NHSN. Since 2012, there has been a large increase in UTI reporting, driven by increased CMS requirements for CAUTI reporting.

In January 2013, some NHSN definitions were changed in response to user requests.

- A patient must have been in the hospital >2 days at the time of infection in order for the infection to be identified as an HAI
- A device must have been in place >2 days at the time of infection in order for the infection to be associated with the device use
- Date of infection was changed from date of first element of the criteria to date of the last element
- The maximum time between 2 elements of an infection criterion considered related was defined as 1 day

DHQP has also reviewed recent user concerns with some CAUTI experts. Additionally efforts are underway to explore lab practice for urine culture, urinalysis and reporting methods. The results could inform further modification of the definitions.

Dr. Gould gave the second part of the presentation. She noted that NHSN definitions should be credible, sensitive and specific (leaning towards specificity), objective, easy to capture, should impose a minimal burden, and should be appropriate for current laboratory protocols. The experts commented on 10 questions.

1. Should inclusion of yeasts as urinary pathogens continue?
    - *Candida* is a rare cause of UTI
    - Treatment of candiduria is not associated with clinical benefit
    - Can encourage inappropriate antifungal prescribing
    - Lack of credibility
    - Some labs do not quantitatively report yeast

Dr. Gould discussed the pros and cons of removing yeast from the definition versus retaining it. If it is retained, the definition could require additional criteria (such as limiting to populations at highest risk), recommend removing or replacing catheters that have been in place more than 2 weeks before a culture, or allow exclusion of the *Candida* UTI if a repeat urine culture after catheter change is negative.

2. Should urine cultures with > 2 organisms continue to be excluded?
    - Current criteria potentially exclude clinically significant UTIs
    - Variation in lab protocols leads to lack of uniformity

Dr. Gould discussed the pros and cons of continuing to exclude such cultures. If they were included, inclusion criteria could be:

- if at least one organism is present at at least 100,000 CFU/mL
- if lab recognizes the culture as acceptable
- recommend removing or replacing catheters that have been in place more than 2 weeks prior to culture

3. Should quantitative culture categories be modified from ≥100,000 CFU/ml for SUTI 1 and ≥1000 and < 100,000 CFU/ml for SUTI 2?
    - Lab variation in quantitative reporting of urine cultures
    - Lower colony counts may be less specific for true infection

Dr. Gould discussed options for modifying the quantitative culture categories: they could be modified based on the most common lab protocols; the lower colony count definition could be removed; or one category could be used with an overall lower threshold. Another option would be to maintain the categories as they are.

4. Should clinical criteria be modified for special populations?

- CAUTI may be underreported in patients who are elderly, on ventilators, immunosuppressed, or who have spinal cord injury or a depressed level of consciousness.

The clinical criteria could be maintained, or they could be modified by developing specific criteria for different populations; by developing a single expanded set of criteria; or by retaining a single set of criteria but excluding certain populations.

5. In the presence of fever, should a UTI be reported if criteria are met, even if another cause is identified?
    - CAUTIs are most often identified solely on the basis of fever and a positive urine culture
    - Surveillance protocols mean a UTI must be reported even if another possible source of fever is present
    - Variable adherence to reporting rules even after NHSN's newsletter clarification in 2012 means the playing field is not level

The current UTI reporting criteria could be maintained, or modified in one of three ways: by allowing adjudication, developing specific criteria to allow not reporting a UTI, or by not reporting the UTI if the fever resolves without therapy for the UTI.

6. Should 2 day rule for urinary catheter continue?
    - Would not pick up potential UTIs developing within the first 2 days (presumably due to poor insertion practices)

Dr. Gould outlined the pros and cons of removing or maintaining the 2 day rule.

7. Should urinalysis continue to be included in UTI definitions?
    - Up to 70% of catheterized patients with bacteriuria have accompanying pyuria
    - Variability in lab reporting methods of pyuria
    - 2009 IDSA guideline indicates pyuria does not help differentiate catheter-associated bacteriuria from CAUTI

Dr. Gould discussed the possibilities of removing urinalysis from the definitions, maintaining it as it is, or refining the urinalysis parameters or using lack of pyuria to exclude a UTI. The panel decided that removing urinalysis from CAUTI definitions would be preferable.

8. Should patients with other urinary devices continue to be included in CAUTI surveillance?
    - Patients with nephrostomy tubes, stents, etc., are likely to be at higher risk for UTI than those with catheters alone
    - Difficult to determine source of infection

Dr. Gould discussed the pros and cons of excluding these patients from surveillance versus continuing to include them. The panel decided that they should continue to be included.

9. Should new CAUTI metrics be adopted?

- Current catheter-day CAUTI rate may not reflect facility quality improvement measures
- Patient-day rate may be more appropriate to account for reductions in catheter use

10. Should antimicrobial treatment be added (back) to UTI definitions?
    - Capturing the relatively few symptomatic UTIs by the NHSN definition does not account for the large number of clinically diagnosed UTIs
    - Should facilities be held accountable when they are diagnosing and treating more UTIs than they are reporting?
    - There might be value to capturing *inappropriate* use of antibiotics

Dr. Gould discussed the pros and cons of incorporating antimicrobial treatment into the definitions.

Based on these discussions, three general approaches to revising the definitions were developed:

Approach 1 would set a goal of developing the most specific possible SUTI surveillance definition. It would exclude yeast as a urinary pathogen, exclude urinalysis and low colony counts, and continue to exclude urine cultures with >2 organisms present, with no other changes made. This is the simplest approach and is likely to result in the greatest reduction of reported UTIs.

Approach 2 would set the goal of improving specificity, with varying degrees of sensitivity.
- Approach 2A would exclude urinalysis, exclude cultures with >2 organisms, and exclude low colony counts.
- Approach 2B would exclude urinalysis, include cultures with >2 organisms, and exclude low colony counts.
- Approach 2C would exclude urinalysis, include cultures with >2 organisms, and include low colony counts.

Approach 3 would set the goal of more accurately capturing clinically diagnosed UTIs. It would incorporate antimicrobial treatment regardless of its appropriateness, include yeast, low colony counts, and cultures with >2 organisms. It would allow for exclusion of UTIs diagnosed by fever alone if not treated, and could possibly expand the clinical criteria. This would be a complete definition overhaul and a potential opportunity to make major inroads on facilities' attention to stewardship, but would require the most work.

HICPAC Discussion: CAUTI Proposed NHSN Definition Changes

General Comments

There are pros and cons to all the changes; HICPAC advised CDC to focus on definition simplicity when able to so that a person won't need a Ph.D. to follow the definitions. Make all the changes as once, because piecemeal or stepped changes make it hard to discern changes in trends.

50% of working hours of infection preventionists are spent in front of the computer; more complex definitions mean more computer time, which limits the time infection preventionists can spend actually resolving infection problems. Not all hospitals have the resources to implement the newest information technology. An infection preventionist's time is a fixed resource. It should be possible to estimate the difference in cost on a national basis between Approaches 1 and 3; that money might be better spent on prevention, not tracking.

Most labs don't hold urine culture plates more than 24 hours, which means labs which hold them longer will necessarily see higher rates of yeast. Working up more cultures with more than 2 pathogens would increase turnaround times. If the majority of cultures with more than 2 pathogens are not significant, then this could have a negative impact on patient care because patients could get inappropriate antibiotic treatment while the lab finalizes its work, or because cultures are not analyzed in a timely fashion.

It may be hard to determine whether antibiotic courses are appropriate, because antibiotic treatment for UTIs can work so quickly.

Consider excluding an event if the urinalysis shows no pyuria, in the interests of clinical credibility.

Distinguishing between colonization and true infection remains a challenge, which means distinguishing between appropriate and inappropriate antimicrobial use is difficult.

The inclusion of cultures with more than 2 organisms could harm the definitions' clinical credibility and thus harm adherence rates, because the majority of those organisms will be contaminants.

The ultimate goal here is to prevent bad things from happening to real people. Adherence might improve if users of the definitions were confident they were measuring actual bad things, not, for instance, yeast with no pyuria.

The urologic community can be very helpful in discussing the impact of these definition changes.

<u>Comments on Approach 1</u>:
Six HICPAC members spoke in favor of Approach 1.

Approach 1 would best allow for broadly applicable definitions across facilities and would serve the goal of identifying the majority of preventable UTIs.

Implementation would be the easiest with Approach 1. Does Approach 3 really add enough value to compensate for the cost it would impose on healthcare institutions' resources?

In the real world, with incredible variability in lab practices, Approach 1 is the only way to get to a level playing field quickly with a simple definition amenable to electronic reporting.

Including treatment in the definition, as in Approach 3, would require determining whether the intent of the treatment was specifically for a UTI.

Approach 1 is responsive to those who will inevitably bypass the definitions and adjudicate because it's easier and less frustrating, especially when it comes to fever, antibiotic use, and yeast. Many hospitals won't report yeast no matter what the guidance says.

Comments on Approach 3:
Two members spoke in favor of Approach 3.

Too much focus on specificity risks creating the opportunity for underreporting. In particular, CAUTI rates are significantly underreported, and Approach 3 could capture treatment. Modeling the approach after the IVAC definition is a good idea. Approach 3 could also help drive antimicrobial stewardship. If necessary, a little specificity should be sacrificed to get consistent and ideally electronic data reporting.

Patients who receive a treatment course for asymptomatic bacteriuria have suffered complications. Surveillance should focus on impact on patients; Approach 3 would have the largest impact on patient care.

Is it possible to streamline Approach 3, or perhaps use the simplicity of Approach 1 while capturing antimicrobial treatment? Perhaps a simple second question on antibiotic use could be added to Approach 1.

Approach 3 means asking infection preventionists to adjudicate the reason an antimicrobial was used, when they should not be asked to make that clinical judgment. Reporting the intent of an antimicrobial also would be less amenable to electronic reporting. There are better ways to measure antimicrobial use and encourage stewardship.

Being unable to determine why antibiotics were given risks a loss of specificity, but capturing the important issue of antibiotic overuse might be worth it. This strategy would not capture patients who did not meet the criteria for a UTI but were still treated.

Core Infection Prevention and Control Practices

Deborah Yokoe
HICPAC member

The proposed core infection prevention document was inspired by discussion at the March 2013 HICPAC meeting about the need to pull out and emphasize infection prevention practices that appear across CDC's guidelines which apply across specialties and across procedures, rather than recommending them in each subsequent guideline and assessing the evidence for them in every separate practice area, where it is likely that the validating studies do not exist in all areas (e.g., hand hygiene).

The goal of the document is to articulate the existing infection prevention core practices that are foundational to the targeted CDC guidelines. The targeted guidelines could then refer back to the core practices document whenever relevant. The document could also provide standardized language for discussing core practices across all guidelines and other CDC documents.

A working group on the document has begun its work by pulling together an initial list of core practices.

- Hand hygiene
- Safe injection practices
- Standard precautions
- Training and education of healthcare personnel
- Patient and family education
- Environmental cleaning and disinfection
- Administrative support
- Monitoring and feedback of performance measures

A review of existing guidelines revealed that varied language is used and core practice recommendations are assigned various grades in different guidelines. Not all core practices are included in all guidelines. Patient placement and isolation practices and occupational health-related practices such as immunization of healthcare personnel were identified as possible additions to the list of core practices.

The working group will provide a summary table of its findings to the full committee. HICPAC input will be requested on both the content and the format of the document.

HICPAC Discussion: Core Infection Prevention Practices Document

The document could be useful internationally, where core practices may be less well-known.

Consider waste management as a core practice.

The document should not be too simplistic; even on well-studied topics, there may be gray zones where not everything is known.

The questions of "should we do X" and "how should we do X" ought to be distinguished. Although it doesn't make sense to revisit the "should we" over and over, recommendations on "how" might belong in targeted guidelines.

Public Comment Period 1

Greg Jackson, Advanced Wound Management Division, Smith & Nephew
He asked the SSI writing group to consider the evidence available which demonstrates that antimicrobial barrier dressings are effective when added to existing infection prevention efforts.

These dressings are effective, widely available, reduce the need for unnecessary dressing changes, and provide sustained antimicrobial activity to protect discharged or transferred patients. Moreover, the dressings promote good allocation of healthcare resources; each patient should receive the stratified level of postoperative care that he or she needs.

More recent data should be reviewed. Mr. Jackson cited a study by Krieger et al. entitled "The use of silver nylon in preventing surgical site infections following colon and rectal surgery,"

which was published in 2011 in Diseases of the Colon & Rectum, and an oral presentation by Sharkey entitled "Reducing the Incidence of PPI: A Multimodal Evidence-Based Approach," presented at the Musculoskeletal Infection Society Meeting in August 2012.

Based on this and previous evidence, HICPAC should revise the draft recommendations in SSI prevention guidelines by removing the recommendation for sterile gauze and replacing it with a recommendation for antimicrobial barrier dressings.

Liaison and Ex Officio Reports

Dr. Fishman asked members to summarize their more detailed written reports.

NIH: Dr. Henderson's report discussed lessons learned from a CRE problem at the Clinical Center, and NIH's response to endemic vancomycin-resistant *Enterococci.*

FDA: Dr. Murphey provided a written report and added more recent information orally. The Secretary of HHS has signed a second Emergency Use Authorization which addresses the Middle East Respiratory Syndrome coronavirus agent and clears for emergency use a CDC diagnostic kit. An outbreak of hepatitis A caused by a frozen berry mix, salmonella outbreaks related to Krinos brand tahini, and a salmonella outbreak associated with guests in Holiday Inn restaurants are currently under FDA and CDC investigation.

CMS: Dr. Schwartz said that CMS has had multiple discussions with other organizations on infection prevention efforts, and the issue continues to be a priority for CMS.

APIC: Ms. Preas said that APIC recently released its implementation guide for emergency services, which is available free on the APIC website.

IDSA: Dr. Huskins stated that IDSA has been active in advocating funding for HHS, working on antimicrobial development, and addressing issues related to antimicrobial use in animal husbandry and drug shortages.

NACCHO: As previously mentioned, NACCHO has been working with local health organizations on infection prevention and surveillance. NACCHO and several other public health organizations have discussed how to better coordinate their efforts and pool their resources. One priority is updating outdated IDSA state antimicrobial fact sheets. Through the Alliance for Injection Safety, NACCHO met with Deputy Assistant Secretary Don Wright to discuss how to better increase visibility of injection safety in the HHS Action Plan.

SHEA: Dr. Rupp stated that the Ronald McDonald House guideline is near completion and should be released in fall 2013. SHEA's white paper on essential infrastructure is also in progress. Expert guidance papers on healthcare worker attire and pet therapy should be released later in the year. The Compendium implementation document is scheduled for release early in 2014. Antimicrobial stewardship is another big concern for SHEA, which is working with CMS and the National Quality Forum on the issue.

CSTE: Dr. Kainer noted that the CSTE meeting is next week, and a number of topics relevant to HAI prevention will be discussed then. She offered the committee a document on HIPAA and

facility-to-facility or provider-to-provider communication. This document was prepared by CDC and the HHS Office of Civil Rights and is intended to break down any misconceptions people may have about the ability of healthcare providers to communicate about potential HAIs or MDROs. The gist of it is that HIPAA is not a barrier to such communication.

Society for Hospital Medicine: Dr. Flanders noted that SHM is working with HRET on the 50-state CAUTI prevention project, in which hospitalists working with APIC and SHEA experts help improvement teams across the country implement best practices for CAUTI prevention in hospitals. SHM also hosted the I-ACT Conference at the American Hospital Association, intended to teach best practices and care improvement techniques.

ASTHO: Dr. Lutterloh said that ASTHO has two evaluation projects to try to identify promising practices for HAI prevention. One is a project studying how the presence or absence of HAI laws can affect HAI prevention programs. The second project looks to understand the impact of HAI prevention collaborations.

Surgical Infection Society: Dr. Sawyer noted that the Society uses a broad definition of surgical infection; at its recent annual meeting, one of the best papers analyzed the risk of pneumonia after aspiration when trauma patients are intubated in the field. The prevention of surgical site infections is a problem which unifies all surgeons but is not always approached in the same way based on available resources. There is a growing impetus in the Society to link with other societies throughout the world with similar interests.

Society of Critical Care Medicine: Dr. Howell stated that the Society of Critical Care Medicine, with its partners, recently gave out an award for outstanding achievement and leadership in eliminating hospital-associated infections. The Society has ongoing investment in deployment of a guideline around sedation, analgesia and delirium management, which is a clear contributor to hospital-associated infections.

ACOEM: Dr. Russi said that ACOEM has released several recent guidance documents, including guidance on tuberculosis and pertussis prevention; guidelines on influenza prevention and general medical center occupational health are being updated.

NAPH: Dr. Munoz-Price said that NAPH's annual meeting will take place in June, and its hand hygiene initiative will begin in July.

Consumers Union: Ms. McGiffert said that Consumers Union succeeded in preventing a legislative attempt in Washington State to end reporting of surgical infections related to hip and knee replacements and cardiac surgery. Trader Joe's responded to Consumer Union regarding its campaign to discourage the store from selling meat with antibiotics by saying that the meat sold is in response to consumer preference. The campaign continues.

Public Health Agency of Canada: Ms. Dunn said that the agency recently released a public health notice for MERS and for H7N9, with embedded interim guidance for acute care facilities. The agency has been working with Accreditation Canada to get core infection control practices into accreditation as well, to build consistency in practice. Antimicrobial resistance and tuberculosis are two of the agency's areas of focus. With the new routine practices document, a

risk assessment approach is used, based on critical thinking and judgment at the point of care. The agency developed a set of well-received educational assessment tools, now being used in Estonia by the WHO. The most popular tool is the diarrhea algorithm for *C. difficile.*

AORN: Ms. Wood stated that AORN will have three recommended practices available for public comment this summer, on the topics of environmental cleaning in the perioperative setting, packaging systems for sterilization, and traffic patterns in the perioperative areas.

The Joint Commission: Ms. VanAmringe said that two studies will be completed shortly, one looking at effectiveness of pre-operative algorithms for antibiotic use for SSIs, specifically for Gram positive organisms. The second study looks at the effect of different influenza programs for residents in LTCFs, including the effect of race/ethnicity on influenza vaccination rates for residents. The Joint Commission is looking at how to bring high reliability principles to long-term care facilities, with safe injection practices as one example.

ACIP: Dr. Elward said that ACIP will meet in two weeks. A brief statement on prevention and control of influenza has been released; the recommendation is still for vaccination of people at least 6 months of age, with changes to reflect the newly available types of vaccines.

Recess

With no further discussion or business brought before HICPAC, Dr. Fishman recessed the meeting at 4:28 p.m.

Opening Session: June 6, 2013

Jeffrey Hageman, MHS
CDC/NCEZID/DHQP
Deputy Chief, Prevention and Response
HICPAC Designated Federal Official

The Designated Federal Official, Mr. Jeff Hageman, opened the floor for introductions of HICPAC voting members, ex officio members, and liaison representatives who were in attendance.
Voting members were asked to publicly disclose any new conflicts of interest:

- Dr. Hayden stated that PDI provides a product for her research project.

Mr. Hageman confirmed that the voting members and ex officio members in attendance constituted a quorum sufficient for HICPAC to conduct its business. He called the meeting to order at 9:05 a.m.

CDC's Emerging Infections Program Surveillance Update: Surveillance for Invasive MRSA and *C. difficile* Infection (CDI)

Fernanda C. Lessa, MD, MPH

Dr. Lessa described the Emerging Infections Program (EIP), which is a network involving CDC and 10 state health departments, along with collaborators in local health departments, universities, healthcare facilities, and other government agencies. EIP's work includes:

- Active population-based surveillance for emerging infectious diseases
- Applied epidemiology and laboratory research
- Developing and implementing pilot prevention and intervention projects
- Maintaining flexible response; for instance, during the 2009 influenza pandemic, EIP monitored for vaccine-related adverse events by conducting surveillance of Guillain-Barré syndrome.

Ten states host 10 EIP sites; all sites conduct Active Bacterial Core surveillance, as well as foodborne disease surveillance, influenza surveillance, and an HAI community interface. Some states also do HPV and hepatitis surveillance.

MRSA surveillance in the EIP, housed under Active Bacterial Core Surveillance, began in 2005. MRSA cases are identified through microbiology review. The program's goals are to evaluate changes in national incidence estimates of invasive MRSA, identify at-risk populations, and describe molecular characteristics of the strains.

Overall, national MRSA rates are going down; as of 2011, community-associated incidence exceeds rates of hospital-onset infections.

- Healthcare-associated community-onset (HACO) infections, defined as infections that have an onset in the community or within 3 days after hospital admission in a patient with established healthcare risk factors, represent about 61% of all MRSA infections
- Of HACO infections, 79% were found to occur among patients who had been hospitalized in the prior year
- About 80% of invasive MRSA infections were bloodstream infections
- The rate of MRSA infection in dialysis patients is almost 300 times higher than in patients with no dialysis
- Most community-associated MRSA cases are caused by USA300
- Most HACO and hospital-onset MRSA cases are caused by USA100 or USA300

Future EIP activities include a case-control study to identify modifiable risk factors for post-discharge invasive MRSA infection. Geocoding of community-associated invasive MRSA will start in fall 2013; the program will examine potential disparities in incidence by community socioeconomic status.

C. difficile infection (CDI) surveillance under the EIP, housed under the HAI community interface, began in 2010. The goals of this program are to determine the incidence of CDI, characterize the molecular strains involved, describe the epidemiology of community-associated CDI and generate hypotheses for future research.

32% of CDI cases were found to be community-associated, 26% were nursing-home-onset, 23% were hospital-onset, and 19% were community-onset healthcare-facility-associated. Of community-associated cases, 82% of patients had at least one outpatient healthcare exposure in the 12 weeks prior to symptom onset.

Dr. Lessa explained that NHSN only captures cases that are present at hospital admission or have hospital onset; EIP captures a wider group, including non-hospital onset cases. This allows better national estimates of the burden of CDI. National estimates should also account for the population characteristics and type of diagnostic assays which influence incidence.

Usage of the NAAT test (nucleic acid amplification test), white race, female gender, and greater age are associated with higher community-associated CDI incidence. Adjusting incidence for these factors reveals that, of the participating states, Georgia had the highest rate of community-associated CDI incidence, and California had the lowest. All states' rates were higher than those reported from Canada, Sweden and the UK, although those results predate the widespread use of NAAT.

Healthcare-associated CDI incidence was associated with greater age and increased number of inpatient-days by hospital. Usage of NAAT was not found to be significantly associated with increased incidence, perhaps because of the adjustment for inpatient-days; and as usage of NAAT increases, it may become less necessary to adjust for its use. After adjusting for these

factors, it was found that, of the participating sites, the highest rate of healthcare-associated CDI incidence was in Colorado, and the lowest rate was in California.

On a national level, preliminary data shows an estimated 483,000 *C. difficile* infections in the U.S. About two-thirds of these are healthcare-associated, and one-third are community-associated.

22% of community-associated CDI cases were caused by the NAP1 strain, while 35% of healthcare-associated CDI cases were caused by that strain. However, there is high variety in both types, and about a third of cases were caused by unnamed strains with no NAP type.

Future EIP activities on CDI include development of a risk index to predict future CDI cases and a co-infection study in which CDI-positive stools will be tested for enteric viruses. A case-control study to identify risk factors for community-associated CDI is planned for summer 2014; it will quantify the magnitude of association between exposure sources and development of the disease, and will identify exposures other than antibiotics which may perturb the gut microbiome. Could food be disturbing the microbiome and predisposing patients to infection?

HICPAC Discussion: EIP Surveillance

HICPAC asked to what degree are declines in invasive MRSA spread across the different sites? In Pennsylvania, MRSA rates are declining only as fast as overall HAI rates. Dr. Lessa replied that rates are going down across the majority of sites, although in some sites the decrease is not significant.

Patients who need to see a surgeon for their CDI tend to be old and sick and have high mortality. Is there any data on rates of colectomy among these patients? Casual observation suggests that 3 or 4 years ago there was a spike in colectomies performed on CDI patients, but now the rate is down. Dr. Lessa said that the rate of colectomy was found to be only about 2%. The rate of colectomy may be low among CDI patients overall because of the large number of less severe infections.

HICPAC suggested the case-control study should use previous operation as a risk factor, especially in intra-abdominal operations.

HICPAC suggested that CDC should consider testing density is a potential risk factor. Dr. Lessa agreed, and added that the EIP has found that a laboratory transition to a more sensitive test leads to a lesser volume of tests.

Studying differential incidence rates of community-onset MRSA should be useful.

Only a small part of hospital-acquired MRSA is being captured. What is the direction of future research? Dr. Lessa said that the EIP will compare patients with HACO invasive MRSA to a

control group of patients who were hospitalized but did not develop MRSA as of 12 weeks after discharge. The two groups will be interviewed on their experiences in an attempt to identify risk factors for HACO MRSA.

Draft Guideline for Infection Prevention in Healthcare Personnel

David T. Kuhar, MD
Medical Epidemiologist, Prevention and Response Branch

Dr. Kuhar presented DHQP's continuing work on an update to the 1998 guideline for infection prevention in healthcare personnel. In response to user surveys, the updated guideline will be similar in format to the previous one. The goal is to provide recommendations for reducing the transmission of infections from patients to HCP and vice versa, directed at occupational health and infection prevention and control departments. Rather than duplicating recommendations in other guidelines, references to other guidelines will be provided.

CDC is working on drafting Section I: Baseline infrastructure and routine practices, which will be reviewed by an external expert group and HICPAC.

With regard to Section II, the 1998 guideline addressed a large number of specific diseases.

HICPAC Discussion: HCP Infection Prevention Guideline

Dr. Kuhar asked for HICPAC feedback on the diseases which should be prioritized.

Should severe acute respiratory illness be on the list of priorities, as a marker for possible H7N9 or MERS coronavirus infection? Dr. Michael Bell replied that the HCP guideline might not be the place to discuss it; the guideline will be based on evidence, and there may not be enough evidence on H7N9 or MERS.

It may be appropriate to address influenza measures in circumstances where the usual control measures are not available due to vaccine shortages.

In the pediatric world, respiratory and GI viral infections are a common and challenging problem. Several members stated that respiratory viruses such as norovirus, influenza, and RSV should be another priority area. Non-vaccine interventions such as masking should be included too.

The group should consider how to manage HCP who were exposed in the community to pertussis.

Much better diagnostic procedures for respiratory viruses are now available, which can be a conundrum, particularly with an immunosuppressed patient population.

HICPAC suggested that occupational health issues with MRSA should be considered.

Other documents may provide guidance on best practices for diagnosing pertussis in general patient populations, which could also be applicable to HCP.

HICPAC suggested for each of the questions, that an initial search of the literature should be conducted to see if there is evidence or new evidence to support including it in the guideline, or whether a recommendation would be merely expert opinion, which might be better left to other organizations to address. More general studies which are not specific to healthcare workers can also be used.

Paid sick leave policy continues to be a challenging problem. Including sick leave policy in this guideline as an infection control concern might highlight the importance of the issue. Hospital support staff may be subcontracted and not given paid sick leave, which means workers may need to come to work ill in order to keep their jobs or pay their bills. And even when paid sick leave is available, workers may have used it all up or be reluctant to sacrifice vacation time.

One of the most frequent questions from healthcare personnel has to do with perceived risks of multidrug-resistant Gram negative bacteria. The group should consider addressing the group of *C. difficile* plus multidrug-resistant organisms as a whole, in order to set healthcare workers' minds at rest.

There is guidance on Hepatitis C treatment in the general population that might address the question of treating acute disease versus waiting.

What about organizing the guideline according to actions to be taken rather than a more academic approach organized by organism? There could be sections for post-exposure prophylaxis, work exclusions, decolonization, and screening. An electronic search by organism type could still be done.

The downside to this approach would be that, in the field, sometimes the organism is what is first known. Literature review is also easier when a distinct review is done for each pathogen.

The guideline could be organized by action in the text, with a separate table indexing organisms; however, this would be more labor-intensive. Syndromic and pathogen-specific approaches are both needed to guide real world decisions. And in emergency situations where HCP are at risk, just the presenting symptoms and not the syndrome or the pathogen may be known.

A more global approach may help the potential end users of this document, who may be less sophisticated in diagnosis and management of infections.

With regard to hepatitis C, maybe the guideline could just refer to the fact that research on hepatitis C is rapidly changing, rather than trying to keep up with the latest findings.

The consensus of the committee was that respiratory viruses, GI viruses, and multidrug-resistant Gram negative bacteria should be added to the priorities.

Update on H7N9 and MERS Outbreaks

Michael Bell, MD
Acting Director, DHQP

Dr. Bell outlined the progress of the investigation into the recent H7N9 and Middle East Respiratory Syndrome (MERS) coronavirus outbreaks.

CDC is taking the issue seriously and trying to ensure MERS does not become another SARS. Recommendations will stay the same as for SARS until more information on pathogenesis and risk factors are available.

HICPAC Discussion: H7N9 and MERS

Is there proven person-to-person transmission? Dr. Bell stated the observed cases have come in clusters in healthcare settings or among family members, not one-off cases. The exported clusters were among close family members.

Is there a zoonotic reservoir or source? Dr. Bell said that we do not know.

Canada has interim guidance on MERS consistent with that for SARS. Dr. Allison McGeer, a Canadian infectious disease epidemiologist, was invited to the Middle East to study MERS. Dr. McGeer believes that, even when surveillance data is published, it may not be rigorous enough to be conclusive. Transmission of the infection was contained when proper infection control measures were in place. International collaboration and advance planning are working well.

Guideline Development Activities

Neil Fishman,
HICPAC Chair

Dr. Fishman discussed the possibility of advising CDC on a formalized process for assessing whether guidelines need to be updated. There are currently 16 CDC/HICPAC guidelines, dating from 1998 to 2011. The challenge is to cover a rapidly accelerating knowledge base, built on varying levels of evidence, with CDC's limited resources.

A literature review revealed 14 articles dealing with the guideline updating process. However, the literature was generally not helpful. No organization has a standardized, rigorous process for updating guidelines. One article, a survey of international guideline groups, found that 50% of organizations had no review process at all.

Organizations have different policies on who should decide when an update is required. A JAMA paper by Shekelle et al. surveyed 17 AHRQ clinical practice guidelines and found that 50% were outdated in 5.8 years. The paper recommended reassessing guidelines for validity every 3

years. The paper also recommended only limited literature searches and recommended that subject matter experts should determine when update is needed.

Dr. Fishman suggested several questions which could be asked to determine whether an update is required:

- Have there been changes in available interventions or have new interventions been developed?
- Has new evidence altered the relationship between benefits and harms of existing interventions?
- Has there been a change in assessment of outcomes, i.e., whether outcomes are judged as important or not?
- Have new outcomes evolved, or has the value placed on outcomes shifted?
- Is there evidence that current performance is optimal? I.e., is the guidance still needed?
- Has there been a change in available resources that would impact the ability to adhere to guidelines?

HICPAC Discussion: Updating Guidelines

A living guideline is very helpful for infection preventionists, giving them an opportunity to operationalize important changes in the science. Perhaps a living document with a 3-year review would work.

A algorithm such as the one in the Shekelle paper could help systematize the review process.

The specificity of some guidelines might make a 3-year review too frequent. There is always more literature to consider, but updates that change practice should be the priority. A greater than 3-year timespan might be appropriate for updates that are done solely to cover more literature.

Consider forming a HICPAC task-oriented workgroup tasked with revisiting all the guidelines at least once a year.

Or, rather than having a smaller group to keep track of all the guidelines, individual guidelines could be assigned to a group of three or so members, so that guideline review is divided equally among HICPAC members.

AORN has used a combination of these practices, using primarily a time-based review every 5 years. Amendments are made as needed when landmark research changes the recommendations.

The Canadian Public Health Agency has a 3-year review goal, but has fallen short of this goal due to lack of resources and infrastructure.

The Surgical Infection Society has a target of every 3 to 5 years has been suggested, but the process relies on volunteers to step forward and identify significant changes in treatment practices.

Dr. Fishman concluded that CDC work will continue on the guideline review process.

Public Comment Period 2

There was no public comment at this time.

Summary and Wrap-Up

Neil Fishman, HICPAC Chair

On the SSI guideline update, the writing group will review and incorporate HICPAC input and produce a final draft for member review. Then, the draft will be published in the Federal Register for public comment. Both positive and negative comments are encouraged. Commenters are also encouraged to submit relevant new literature for possible incorporation in the guidelines.

During the SSI discussion, some shortcomings in the current methodology were discussed, and CDC will be working toward resolving those.

In the discussion of NHSN CAUTI definitions, the group overall favored the more simplified of the approaches proposed by CDC. Dr. Gould will keep the committee informed of the continuing work.

HICPAC will receive an update on the proposed core infection prevention and control practices document at the next meeting.

At previous meetings, although not this one, the HICPAC heard presentations on the guideline for infection prevention in NICUs. HICPAC input was incorporated into the document and it was recently returned from external expert review. The next steps will be to distribute the final draft for HICPAC member review and to publish it in the federal register for public comment.

Closing Session

With no further discussion or business brought before HICPAC, Dr. Fishman adjourned the meeting at 11:52 a.m. on June 6, 2013.

I hereby certify that, to the best of my knowledge, the foregoing minutes of the proceedings are accurate and complete.

_____ Date

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Neil O. Fishman, MD,
Chair, Healthcare Infection Control
Practices Advisory Committee