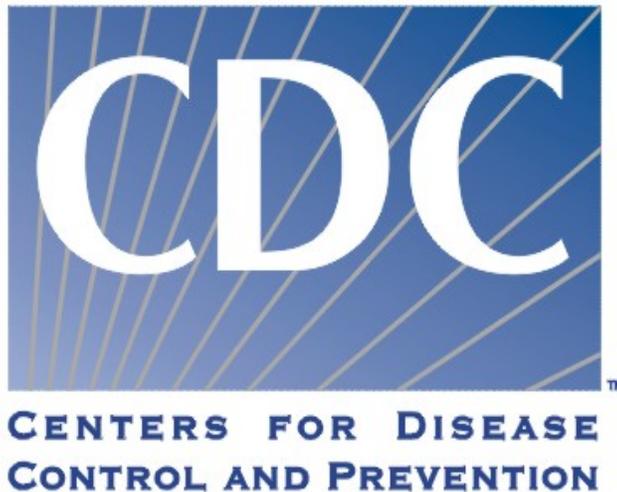


**DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
National Center for Preparedness, Detection, and
Control of Infectious Diseases
Division of Healthcare Quality Promotion**



**Healthcare Infection Control Practices Advisory Committee
June 15-16, 2009
Atlanta, Georgia**

Record of the Proceedings

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ATTACHMENT 1

List of Participants

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Ms. Nancy Bjerke (Association of
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Ms. Rachel Stricof (Advisory Council for
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Lisa Rios
Abbigail Tumpsey

Wendy Vance
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**Guest Presenters and
Members of the Public**

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Health Administration)
Jennifer Bright (Society for
(Healthcare Epidemiology of America)
Mark Catlin (Service Employees
International Union)
Katherine Cox (American Federation of
State, County and Municipal
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William Kojola (American Federal of Labor-
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Jaime Ritter (Bard Medical)
Craig Umscheid (University of
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EXECUTIVE SUMMARY

The Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) Division of Healthcare Quality Promotion (DHQP) convened a meeting of the Healthcare Infection Control Practices Advisory Committee (HICPAC) on June 15-16, 2009 in Atlanta, GA. None of the HICPAC voting members declared any new conflicts of interest for the record that were pertinent to the published agenda.

DHQP leadership presented updates on recent activities conducted by the Prevention and Response Branch and the Clinical and Environmental Microbiology Branch, and CDC's plan to allocate \$40 million in American Recovery and Reinvestment Act funding to state health departments to implement the HHS Action Plan to prevent healthcare-associated infections (HAIs).

The HICPAC Novel H1N1 Influenza Infection Control Workgroup highlighted key outcomes from its June 8, 2009 conference call, including reviews of the existing literature and guidelines on influenza transmission in healthcare settings as well as disparate views on this issue within the infection control community. HICPAC agreed that the workgroup's next steps would be to convene a follow-up conference call within the next two weeks to formulate recommendations based on the extensive input provided during the meeting by HICPAC, union representatives and CDC. The workgroup would present its recommendations to HICPAC during a conference call on July 23, 2009 for consideration and a formal vote.

CDC presented changes that were made to the recommendations on measles, mumps and rubella (MMR) vaccination for healthcare personnel (HCP) in response to input by HICPAC and the Advisory Committee on Immunization Practices (ACIP). CDC proposed revised language for MMR vaccination for routine circumstances and outbreaks and eliminated the requirement for documentation of physician diagnosed measles or mumps. **HICPAC unanimously adopted** the recommendations for MMR vaccination of HCP as revised.

ACIP's rationale to expand the current pneumovax (PPV) guidance to include critical infrastructure personnel targeted for pre-pandemic influenza was presented. A mathematical model, economic analysis and other data to support the expanded guidance were summarized in depth. HICPAC's position on the expanded pneumovax recommendations will be communicated to the ACIP Pneumococcal Workgroup through its liaison. HICPAC endorsed the ACIP recommendation to offer PPV 23 to all HCP who would currently fall under the recommendations because of underlying conditions. The committee agreed that PPV 23 should be widely offered to HCP in an outbreak of greater severity than the current one; however, the severity of the current outbreak was not felt to justify a recommendation to administer the PPV 23 to all HCP at this time.

HICPAC workgroup chairs presented status reports on four guidelines: the guideline for preventing catheter-associated urinary tract infections, methods paper for guideline production, HAI preventability manuscript, and norovirus guideline. HICPAC agreed to submit final comments on the guidelines by deadlines set in June and July 2009.

HICPAC's liaison and *ex-officio* members submitted written reports and provided additional details during the meeting describing recently completed, ongoing and upcoming activities of their organizations and agencies. The written reports highlighted organizational and agency

position statements, legislation, campaigns and related activities, press activities, publications, and other items of note.

The HCP Infection Control Guideline Workgroup presented an update on its progress to complete two tasks: identify and confirm its full membership and determine the most important sections that need to be updated because the guideline was last revised in 1998. HICPAC agreed that the next steps in the workgroup's charge would be to first determine the end-product that should be provided to the infection control field and then identify the process and structure to achieve this outcome.

The Model Legislation Workgroup presented the most recent draft of "HICPAC's Guidance for Jurisdictions Considering MRSA Legislation" and requested additional input from HICPAC on two sections: "potential benefits of a legislative approach" and recommendations for jurisdictions that decide to proceed with legislative efforts. The workgroup's next steps would be to revise the guidance document based on HICPAC's comments and add links to other resources. HICPAC would discuss and formally vote on the final draft during its conference call in early July 2009. After the CDC review process, the guidance document would be posted on the HICPAC website by the end of 2009 and then submitted for publication in peer-reviewed journals.

CDC reminded HICPAC of its charge from HHS to develop criteria for its recommendations to be considered for inclusion in the Centers for Medicare and Medicaid Services *Conditions of Participation* in Medicare as either "high-priority prevention interventions" or "high-priority HAIs." HICPAC is considering a new workgroup to fulfill its charge.

HICPAC presented an update on pediatric infection prevention activities and proposed that CDC undertake three new efforts: perform a formal gap analysis, conduct a review of the literature published subsequent to the latest HICPAC guideline on the topic, and develop a neonatal intensive care unit (NICU) infection prevention guideline. **HICPAC generally agreed** to develop a formal gap analysis and the NICU infection prevention guideline. A new workgroup would be established to conduct these activities.

Business items that were raised over the course of the meeting were reviewed, particularly scheduling of a conference call on July 23, 2009 for HICPAC to vote on recommendations proposed by the Novel H1N1 Influenza Infection Control Workgroup and finalize any outstanding issues related to "HICPAC's Guidance for Jurisdictions Considering MRSA Legislation." HICPAC also would convene an orientation session for the new HICPAC members who will attend their first meeting in November 2009. The next HICPAC meeting will be held on November 12-13, 2009 in Washington, DC.

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**HEALTHCARE INFECTION CONTROL PRACTICES ADVISORY COMMITTEE
June 15-16, 2009
Atlanta, Georgia**

Minutes of the Meeting

The Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC), National Center for Preparedness, Detection, and Control of Infectious Diseases (NCPDCID), Division of Healthcare Quality Promotion (DHQP) convened a meeting of the Healthcare Infection Control Practices Advisory Committee (HICPAC). The proceedings were held on June 15-16, 2009 in Building 19 of the Tom Harkin Global Communications Center at the CDC Roybal Campus in Atlanta, Georgia.

Opening Session

Dr. Patrick Brennan, Chair of HICPAC, called the proceedings to order at 9:14 a.m. on June 15, 2009. He welcomed the attendees to the meeting and opened the floor for introductions. No members declared any new conflicts of interest for the record that were pertinent to the published agenda for the June 15-16, 2009 HICPAC meeting. The list of participants is appended to the minutes as [Attachment 1](#).

Update on DHQP Activities

A panel of DHQP leadership presented a series of overviews on DHQP's recent activities. The presentations are summarized below.

Prevention and Response Branch (PRB). Dr. Clifford McDonald reported that PRB is strengthening its focus on injection safety due to the shift in healthcare delivery from hospitals and other acute care settings to ambulatory care, long-term care and free-standing specialty care sites. Recently CDC launched a new campaign, "One Needle, One Syringe, Only One Time" Infection Safety Campaign in collaboration with a number of industry partners and other organizations to encourage healthcare providers to perform injections more safely. Additionally, PRB has strengthened its partnership with the Centers for Medicare and Medicaid Services (CMS) to develop a more systematic approach to improving infection control in these settings.

PRB has been partnering with the Agency for Healthcare Research and Quality (AHRQ) to address targets in the HHS HAI Action plan, specifically methicillin-resistant *Staphylococcus aureus* (MRSA) and central line-associated blood stream infections (CLABSI). DHQP and AHRQ are continuing these efforts and expanding to address other targets.

Other recent PRB efforts were described including a project to improve hand hygiene adherence and activities related to H1N1 influenza in healthcare settings.

Clinical and Environmental Microbiology Branch (CEMB). Dr. Matthew Arduino summarized current activities for the branch including work focusing on nontuberculous Mycobacteria (NTM) and the impact of *Legionella* treatment at a healthcare facility on Mycobacteria. Additional activities described included a study on the efficacy of a point-of-entry monochloramine generator in a hospital hot water system represented a collaboration among DHQP, the Division of Bacterial Diseases, California Department of Health, and a hospital. This study is an evaluation of *Legionella*, Mycobacteria and free-living amoeba in hot water and biofilm before and after monochloramine generation.

CEMB is also involved with several influenza research activities including look at environmental persistence of influenza viruses on environmental surfaces and fomites, contamination of N95 respirators will be evaluated to determine viral persistence and contamination of exterior surfaces, and evaluating the the sequence for donning and removing PPE that was developed during the severe acute respiratory syndrome (SARS) outbreak.

Office of the Director. Dr. Chesley Richards, Deputy Director of DHQP, reported that through the American Recovery and Reinvestment Act (ARRA) funding was set aside for HHS to implement the HAI Action Plan to prevent HAIs. HHS established an HAI Action Plan Steering Committee that agreed on a \$40 million allocation for CDC to award to state health departments and \$10 million allocation for CMS to award to state survey agencies to increase ASC inspections. CDC is using the Epidemiology and Laboratory Capacity (ELC) Program to rapidly allocate funding to state health departments for HAI prevention activities. More information on HAI recovery act efforts see: <http://www.cdc.gov/HAI/recoveryact/>.

Dr. Daniel Pollock, of DHQP, announced that CDC had a productive meeting in April 2009 with representatives of AHRQ and the American Hospital Association (AHA). CDC described its ongoing efforts to ensure that hospitals are not burdened with additional reporting requirements as a result of the ARRA HAI prevention projects.

Dr. Pollock also reported on recent discussions between CDC and CMS regarding HHS's Hospital Compare website that was established as a tool for the public to review hospital-specific data. Data reported to the website include administrative and chart review data as well as data from private registries and professional organizations. CDC and CMS are exploring potential strategies to use Hospital Compare as a mechanism to report NHSN data.

Interim Report by the Novel H1N1 Influenza Infection Control Workgroup

Dr. Pegues is a HICPAC member and chair of the workgroup. He reported that the seven workgroup members represent HICPAC, the occupational safety and health community, and employee unions. Dr. Pegues' summary of key points from the workgroup's conference call on June 8, 2009 is highlighted below.

The epidemiology of influenza was reviewed, including the duration of infectivity, the role of the environment on influenza, and transmission in community and healthcare facilities. Influenza transmission studies were reviewed, including those with both human and animal models as well as epidemiologic and laboratory research. Current infection control recommendations for novel H1N1 and seasonal influenza were discussed. The workgroup also reinforced its ultimate goal to formulate evidence-based, rational and feasible H1N1 infection control guidance that healthcare facilities could actually implement.

The workgroup reviewed CDC's interim guidance on H1N1 infection control for patients with novel influenza. The guidance recommends a hierarchy of infection and administrative controls in three categories: (1) respiratory hygiene and cough etiquette; (2) placement of patients in a private room or airborne infection isolation room for procedures that are likely to generate aerosols; and (3) isolation precautions, including standard and contact precautions plus eye protection as well as respiratory protection with a fit-tested N95 mask or better for all persons entering the room or a surgical mask worn by ill persons when outside of the patient's room.

The workgroup reviewed HICPAC's 2007 guideline on isolation precautions for seasonal influenza. The guidance recommends a hierarchy of infection and administrative controls in three categories: (1) respiratory hygiene and cough etiquette; (2) placement of patients in a private room or cohort setting if necessary; and (3) isolation precautions, including standard and droplet precautions as well as respiratory protection with a surgical mask worn for five days when entering the patient's room (except for immunocompromised persons) and a surgical mask worn by ill persons when transport of the patient is necessary.

The workgroup conducted a preliminary literature review on influenza transmission by direct or person-to-person contact, indirect or fomite contact, large respiratory droplets >10 µm, and airborne droplet nuclei <5 µm. These studies are summarized as follows. The 1982 Ryan, *et al.* hand washing study showed a reduction in total respiratory illnesses. The 1982 Bean, *et al.* study documented survival of influenza virus of up to 24-48 hours on non-porous surfaces and the transfer of viable influenza virus up to 24 hours.

The 2002 Saldado, *et al.* study concluded that hospital transmission of influenza was rare. The 2003 Bridges, *et al.* study showed that transmission to adjacent cribs in a pediatric ward was more likely than across the room or hallways where doors were commonly left open. Animal studies of droplet nuclei <5 µm include the 1941 Andrews study in ferrets; the 1962 and 1968 Schulman studies in mice; and the 2009 Mubareka, *et al.* study in guinea pigs that showed airborne transmission of seasonal H3N2 influenza was efficient and fomite transmission of H3N2 influenza was inefficient.

Human observational studies of airborne transmission include the 1959 Blumfeld, *et al.* study that showed the influenza-like illness attack rate was 2% in a ward with ultraviolet light and 19% in a ward without ultraviolet ward. The 1979 Moser, *et al.* study showed a 72% attack rate of influenza among passengers in an airplane that was stranded on the ground for 4.5 hours with no air controls. The 2009 National Institute for Occupational Safety and Health (NIOSH) study showed that 53% of influenza virus in an emergency department detected by RT-PCR was in an aerosol fraction <4 µm.

The workgroup reached several conclusions based on its preliminary literature review. The potential for influenza transmission via contact, droplet and airborne routes has been demonstrated. The relative contribution of these three routes to healthcare-associated influenza transmission has not been established to date. The contribution of respiratory protection to the prevention of healthcare-associated influenza transmission in the hierarchy of control measures has not been well defined. Respiratory protection must be placed in the context of other infection control and administrative measures to limit occupational transmission of H1N1 influenza in healthcare facilities.

The workgroup further concluded that PPE for HCP to limit transmission of pandemic influenza continues to be a source of debate. Recommendations supporting routine use of N95 respirators include the 2007 Institute of Medicine (IOM) report on preparing for an influenza pandemic with PPE for HCP and the 2008 NIOSH five-year action plan for PPE for HCP. Recommendations opposing routine use of respirators include the 2009 Cochrane Review on interventions for interruption or reduced transmission of the spread of respiratory viruses and the 2007 Brankston, *et al.* review that concluded no evidence has been collected to demonstrate obligate or preferential airborne transmission of influenza viruses in healthcare facilities.

The workgroup acknowledged two major positions in the infection control community related to influenza transmission. Position 1 states that NIOSH-certified fit-tested respirators currently should remain the standard for respiratory protection for HCP caring for patients infected with documented or suspected novel H1N1 influenza infection. Evidence to support this position includes influenza virus studies that raised concerns regarding the potential for increased virulence due to the lack of preexisting immunity and vaccine. Respiratory protection studies demonstrated that the performance of respirators is superior to surgical masks against various aerosol challenges. Other research showed that the cost and availability of N95 masks and the need for a comprehensive fit-testing program should not serve as barriers. Surveillance triggers should be utilized for implementing respiratory protection.

Position 2 states that both standard and droplet isolation precautions for seasonal influenza currently are sufficient to limit the transmission of novel H1N1 influenza in healthcare facilities. Clinical superiority of N95 masks versus surgical masks in preventing influenza infection from patients to HCP has not been demonstrated. Moreover, respiratory protection will not impact transmission of influenza among HCP in the community and will have limited impact in healthcare facilities. The epidemiology and virulence of H1N1 influenza are consistent with seasonal influenza at this time. Influenza isolation precautions need to be aligned.

Despite the differences in these two positions, the same top priorities were identified. HCP safety, education and compliance with the use of PPE should be assured. Transmission of H1N1 influenza in healthcare facilities should be investigated. Further research should be promoted on the aerobiology of influenza, transmission of influenza in healthcare facilities, and the efficacy PPE as detailed in the 2007 IOM report through NIOSH.

HICPAC joined Dr. Brennan in thanking Dr. Pegues for his outstanding efforts in chairing the Novel H1N1 Influenza Infection Control Workgroup and leading the literature review process on extremely short notice. Dr. Brennan opened the floor for other workgroup and HICPAC members to provide input on guidance that should be developed for novel H1N1 influenza infection control practices.

Ms. Shirley Paton is the HICPAC liaison to the Public Health Agency of Canada. She announced that Canada recently re-characterized its H1N1 recommendations as the equivalent of seasonal influenza (i.e., "H1N1 mild" and "H1N1 severe" guidance). Canada's rationale for taking this approach was the recognition of the similarity between the epidemiology of H1N1 and seasonal influenza.

Canada formulated its recommendations to strike a balance between protecting HCP and other persons in the broader healthcare environment. Canada has attempted to apply both its H1N1 mild and H1N1 severe recommendations across multiple levels of care, particularly since many HCP work in community settings and may become ill at the same rate as the community. Canada is currently developing criteria to strengthen and accelerate its "seasonal influenza-like" recommendations in the event a pandemic occurs in the future.

Mr. William Kojola, of the American Federation of Labor-Congress of Industrial Organizations (AFL-CIO), is a member of the Novel H1N1 Influenza Infection Control Workgroup. He announced that representatives of two other unions, the American Federation of State, County and Municipal Employees (AFSCME) and the Service Employees International Union (SEIU), were attending the HICPAC meeting and had prepared a joint union statement.

Mr. Kojola pointed out that HCP are on the front line in the U.S. response to provide care for patients infected with the novel H1N1 virus. The unions' perspective was that CDC's current infection control guidelines for the novel H1N1 virus in healthcare settings should be maintained and efforts should be enhanced to ensure CDC's recommendations are consistently applied and implemented.

To support this position, the joint union statement documented the difference between H1N1 and seasonal influenza; cited available scientific evidence to support protective measures for all routes of transmission; supported the use of respirators to protect against airborne transmission; and emphasized the need for the government to speak with one voice. The joint union statement also noted that the Occupational Safety and Health Act of 1970 requires HCP to be protected from material impairment of health and recognized hazards. The joint union statement was distributed to HICPAC for review.

Mr. Mark Catlin, of SEIU, informed HICPAC that SEIU recently administered a survey to its healthcare members at 16 facilities in California. His summary of key points from the survey is highlighted as follows. Only one of the 16 facilities believed worker health and safety issues are being adequately addressed at this time. None of the 16 facilities have developed and implemented protocols for high-risk procedures. None of the respondents were aware of specific guidance on H1N1 infection control that had been distributed in their individual facilities.

N95 respirators were available at the majority of the surveyed facilities, but many HCP were discouraged from using respirators by management. Some respondents reported that local and state health departments were advising employers not to comply with current CDC guidelines for HCP. HCP were encouraged to wear surgical masks instead of N95 respirators. SEIU reviewed the websites of the top 20 states that had the most confirmed cases of H1N1 influenza in May 2009. Of the top 20 states, 50% were not recommending adherence to current CDC infection control guidelines for HCP and clinicians.

These practices and other anecdotal feedback from the field support the unions' position for CDC to maintain its current infection control guidelines for novel H1N1 virus in healthcare settings and also for all levels of government to speak with one voice. Mr. Catlin concluded that the unions are now encouraging HICPAC to submit formal recommendations to CDC in this regard.

Ms. Katherine Cox, of AFSCME, is a workgroup member. She emphasized the importance of considering factors other than science when formulating infection control recommendations, such as practical issues, barriers and human behaviors among HCP with responsibility for actual implementation of the guidance. Front-line HCP have anecdotally reported to unions their lack of knowledge about whether their individual facilities have developed pandemic influenza preparedness plans.

AFL-CIO convened a Pandemic Influenza Workgroup to assess actual practices in the field. A survey was administered to union and healthcare leaders throughout the country to inform the workgroup's activities. The survey showed that only 37% of respondents believed their facilities were prepared for pandemic influenza; 17% reported their facilities were not prepared at all; and 43% were positive HCP in their facilities would not or most likely would not report to work during a pandemic. These findings emphasize the critical need for HCP to feel confident in reporting to work and being protected during an event. Ms. Cox submitted the report of the survey into the official HICPAC record for the June 15-16, 2009 meeting.

Dr. Lisa Maragakis is the HICPAC liaison to the Society of Healthcare Epidemiology of America (SHEA). She announced that SHEA collaborated with the Infectious Disease Society of America (IDSA) and the Association of Professionals of Infection Control and Epidemiology (APIC) to develop a joint position statement on CDC's interim guidance on infection control precautions for novel H1N1 influenza. The joint position statement represents consensus among experts in the hospital epidemiology, infection control and infectious disease communities.

The overarching goal of experts in these fields has been to protect HCP and patients from acquiring novel H1N1 influenza virus and assure effective and sustainable healthcare delivery. SHEA endorsed the initial public health approach of taking caution and implementing additional precautions by providing enhanced respiratory protection with N95 respirators.

In light of new data on the transmission dynamics and severity of illness of the novel H1N1 influenza virus, however, SHEA now supports a move to recommending contact, standard and droplet precautions for seasonal influenza. At this time, SHEA is formally requesting that CDC revise its infection control guidance for H1N1 influenza for alignment with seasonal influenza. SHEA's position statement was distributed to HICPAC for review.

Several HICPAC members and liaisons provided state perspectives on CDC's interim guidance on infection control precautions for novel H1N1 influenza. Ms. Rachel Stricof is the HICPAC liaison to the Advisory Council for the Elimination of Tuberculosis (ACET). She reported that New York State is applying valuable lessons learned from infection control practices for TB to the novel H1N1 influenza virus. Most notably, early identification of TB cases was found to be the most critical control measure because unrecognized cases posed the greatest risk to HCP and patients. Moreover, implementation of a hierarchy of controls was found to play a much more significant role than the use of respirators in decreasing transmission of TB in healthcare facilities.

Dr. Jeffrey Engel is a HICPAC member and reported that North Carolina diverged from federal guidelines for H1N1 influenza in May 2009 and recommended standard and droplet precautions. Dr. Marion Kainer is the HICPAC liaison to CSTE. She reported that Tennessee advised hospitals in May 2009 to follow the World Health Organization (WHO) guidelines and also assess the ability of patients to cover coughs or wear surgical masks.

HICPAC thanked the union representatives for taking time from their busy schedules to attend the meeting and provide valuable feedback and other anecdotal data from front-line HCP in the field. Several HICPAC members urged CDC to widely obtain input and endorsement from union leadership and members in the course of developing new guidance on novel H1N1 influenza infection control practices. The HICPAC members also made a number of suggestions for CDC to consider in its ongoing effort of developing new guidelines.

- CDC should consider the protection of families of HCP during a pandemic with a virulent virus when developing infection control guidelines for healthcare settings.
- CDC should consider the unintended consequences of using N95 respirators in the absence of rigorous scientific evidence. Human behaviors and logistical issues that should be taken into account include the competencies, work environments, stress or discomfort of HCP as well as potential risks to HCP from wearing poorly fitting respirators. Consideration of human behaviors would help to strike an appropriate balance between the protection of both HCP and patients.
- CDC should explore the possibility of leveraging ARRA funding to conduct a retrospective rather than a prospective study on actions taken by HCP during the H1N1 outbreak, such as those who wore a surgical mask, N95 respirator or no PPE. The study could provide evidence on differences in the geometric mean of antibody titers

between users and non-users of PPE. Data from the study also could be used to inform future influenza outbreaks.

- CDC should clearly define and provide science-based guidance on “aerosol generating procedures.” CDC, WHO and other agencies or organizations are recommending a variety of definitions at this time.
- CDC should not use RT-PCR in its upcoming studies on infection control practices among HCP. This technology is extremely sensitive, but has no capacity to demonstrate the viability of organisms.
- CDC should take the following actions to strike a balance among engineering controls, human behaviors and systems approaches in its guidance. The guidelines should educate HCP on strategies that can be utilized to develop and implement systems for early recognition of cases. Recommendations should emphasize the risks and dangers of sick or infected HCP who report to work. CDC should capitalize on its role as a public health leader to urge healthcare organizations to provide accurate information and solid guidance to front-line HCP. Based on remarks by the union representatives, HCP feel confused and poorly informed due to the dissemination of conflicting guidance on infection control practices. CDC should use its influence to provide guidance to states and professional organizations on strategies that can be utilized to increase compliance with federal guidelines and evidence-based best practices.
- CDC’s deliberations on developing new guidance on novel H1N1 influenza infection control practices should consider the implications of an H1N1 vaccine and appropriate recommendations to make to HCP in this regard. The new guidelines should be used as an opportunity to strongly encourage or require, if possible, annual influenza vaccination. Of all the potential recommendations CDC could publish, mandatory annual influenza vaccination of all HCP would have the most significant impact in protecting both HCP and patients.

Dr. Bell provided clarification in response to HICPAC’s question regarding the existence of a national plan or guidance on a pandemic virus with more virulence than novel H1N1 influenza. The existing pandemic plan is based on a presumption of increased severity and limited resources. Efforts are underway at multiple levels to address these resource constraints, but HICPAC expressed concern during the discussion about allocating limited resources because the severity of the novel H1N1 influenza virus was lower than originally expected. Dr. Bell acknowledged that a systematic process has not been developed to inform decisions on the appropriate time or strategy to move away from the existing precautionary approach for a more severe pandemic.

Dr. Brennan closed the discussion by describing HICPAC’s next steps in addressing novel H1N1 influenza infection control practices. The workgroup would be charged with making recommendations on this issue for HICPAC’s consideration, discussion and formal vote. A conference call would then be held with the entire HICPAC membership to discuss and vote on the recommendations.

Update on Measles, Mumps and Rubella (MMR) Vaccination for HCP

Dr. Kathleen Gallagher, of CDC, reminded HICPAC that an update was presented during the February 2009 meeting on CDC's proposed changes to the MMR vaccine "evidence of immunity" requirements for HCP. She reported on developments that have occurred in this activity following the previous HICPAC meeting.

Measles cases rapidly declined following the introduction of licensed vaccine in 1963 and further decreased after a second dose was incorporated into the routine childhood immunization schedule in 1989. Measles elimination was declared in the United States in 2000. Rubella rapidly declined after the initiation of routine vaccination in 1970 and was declared eliminated in the United States in 2004. Mumps rapidly declined in the United States from 1967-1989 after vaccine licensure and incorporation of the first and second doses. However, a resurgence of mumps occurred in 1986 that continued until 1990. The goal of eliminating mumps in the United States by 2010 most likely will not be achieved due to a second resurgence in 2006.

CDC is now proposing to revise MMR recommendations developed by the Advisory Committee on Immunization Practices (ACIP)/HICPAC in 1997 and ACIP in 1998. The rationale for the revision is that both sets of recommendations were written before the elimination of measles and rubella in the United States and prior to the 2006 mumps outbreak. Measles and mumps are rare, but will result in increased exposure and cost to healthcare facilities because virtually all measles cases will visit at least one institution during the infectious period. For example, a Kansas hospital spent \$56,000 containing a mumps outbreak.

Nosocomial transmission of mumps was documented in 1986-1987 in two emergency departments and two LTCFs in Tennessee. In 2001-2008, 5% of reported measles cases were transmitted in healthcare facilities and 11% of cases were transmitted in these settings in 2008 alone. Public health efforts and economic costs to contain these outbreaks have been estimated at ~\$100,000-\$400,000.

The current routine MMR vaccine recommendations for HCP state that HCP with no evidence of immunity should routinely receive two doses of MMR vaccine for protection against measles and mumps and one dose of vaccine for protection of rubella. The recommendations further state that persons who work within medical facilities should be immune to measles and rubella. Vaccine should be considered for all personnel, including those born before 1957 who have no proof of immunity. Healthcare facilities should consider recommending MMR vaccine to unvaccinated workers born before 1957.

The current recommendations outline four requirements for HCP to meet conditions of "presumptive evidence of immunity" with MMR vaccination:

- Documentation of administration of appropriate vaccination against measles, mumps and rubella (e.g., administration of two doses of live measles and mumps vaccine on or after the first birthday separated by greater than or equal to 28 days and one dose of live rubella vaccine).
- Laboratory evidence of immunity.
- Documentation of physician diagnosed measles or mumps disease.

- Birth before 1957.

Caveats to these four requirements include state or local policies as well as discretion for healthcare facilities to consider recommending an MMR vaccine dose for unvaccinated workers born before 1957 who are at risk for occupational exposure to measles and have no history of measles disease or laboratory evidence of measles immunity.

The current recommendations also provide guidance for MMR vaccine during outbreaks. For measles and rubella outbreaks, healthcare facilities should strongly consider recommending an MMR vaccine dose to unvaccinated HCP born before 1957 who do not have serologic evidence of measles or rubella immunity or a history of measles disease. For mumps outbreaks, healthcare facilities should strongly consider recommending two doses of a live mumps virus vaccine to unvaccinated workers born before 1957 who do not have evidence of mumps immunity.

During the February 2009 HICPAC meeting, CDC proposed three changes to the current MMR vaccine recommendations for HCP: (1) the addition of laboratory confirmation of disease, (2) elimination of documentation of physician diagnosed disease for measles and mumps, and (3) removal of the requirement for birth year before 1957. Input from both ACIP and HICPAC indicated mixed support for the removal of birth year before 1957 as proof of immunity. ACIP and HICPAC noted that requiring unvaccinated HCP born before 1957 to be serologically screened or vaccinated would not be cost-effective.

Due to the lack of uniform support, CDC obtained additional feedback from the ACIP Adult Workgroup and several HICPAC members. Revised language that CDC proposed based on this input will be presented during the June 24, 2009 ACIP meeting for a formal vote. The rationale for the three proposed changes is summarized below.

The addition of laboratory confirmation of disease to the recommendations would facilitate consistency and completeness. MMR cases are rare, but naturally acquired immunity is robust and long lasting. Immunity of persons who have laboratory evidence of disease is a reasonable conclusion. Reliance on laboratory confirmation of disease, particularly for measles and rubella, is especially critical. Language on "laboratory confirmation of disease" has been incorporated into recommendations for varicella vaccination.

The elimination of documentation of physician diagnosed measles or mumps as adequate evidence of immunity would address current trends. Potentially susceptible persons might work in healthcare settings as a result of non-adherence to current recommendations as intended. The ability to contact childhood physicians to obtain documentation of disease history might not be feasible. The accuracy of clinical diagnosis without laboratory evidence has declined, particularly with mumps and other vaccine-modified diseases.

Changes to footnotes related to HCP born before 1957 would strengthen and clarify the recommendations. These HCP would still be considered immune. Facilities that have been or plan to routinely screen or vaccinate these HCP would continue to garner ACIP/HICPAC

support to continue these practices. However, aggressive vaccination of HCP would be recommended when outbreaks occur.

Changes to the language in the footnote for routine circumstances are proposed as follows. For unvaccinated personnel born before 1957 who lack laboratory evidence of measles, mumps or rubella immunity or laboratory confirmation of disease, healthcare facilities should strongly consider recommending two MMR vaccine doses for measles and mumps and one MMR vaccine dose for rubella.

Changes to the language in the footnote for outbreaks are proposed as follows. For unvaccinated personnel born before 1957 who lack laboratory evidence of measles, mumps or rubella immunity or laboratory confirmation of disease, healthcare facilities should recommend two MMR vaccine doses for measles or mumps outbreaks and one MMR vaccine for rubella outbreaks. CDC recognizes that the proposed policies could be implemented with other annual routine disease prevention measures, such as influenza vaccination or TB skin testing. Implementation could be initiated in the very near future and phased in within a few years.

Dr. Gallagher concluded her update by reiterating the rationale for revising the current MMR recommendations for HCP at this time. The guidance was established more than ten years ago and needs to be updated, particularly in light of the elimination of measles and rubella in the United States. In the era of measles and rubella elimination, a goal has been set for 100% immunity in high-risk populations. Public tolerance for any cases or exposures has decreased. The risk for exposure among HCP is high and emphasizes the importance of preemptively protecting these personnel.

Measles exposures and outbreaks are sporadic, but are likely to continue to occur in healthcare facilities. Future mumps exposures in healthcare facilities are likely as well. The current recommendations are permissive and confusing for healthcare facilities and health departments to implement. Efforts to determine HCP with “presumptive evidence of immunity” and identify HCP who should be vaccinated during an outbreak can be costly and disruptive. Some facilities have already developed and implemented policies that are consistent with the proposed revisions. CDC has not performed a formal economic or cost-benefit analysis, but expects that the proposed changes will pose minimal if any additional costs to healthcare facilities.

Dr. Brennan confirmed that HICPAC would take Dr. Gallagher’s update under advisement and formally vote on this issue on the following day.

Update on the ACIP Expanded Pneumovax (PPV) Recommendations

Dr. Alexis Elward is a HICPAC member and the liaison to ACIP. She highlighted ACIP’s most recent deliberations regarding the expansion of the current PPV guidelines. ACIP is undertaking this effort due to a number of reasons. Pandemic influenza predisposes persons to secondary bacterial pneumonia. In previous pandemics, *Streptococcus pneumoniae* was

identified in ~50% of secondary bacterial pneumonia infection cases and 20% of deaths. Pneumococcal vaccines were not available during pandemics in the past.

PPV is currently recommended for persons ≥ 65 years of age, persons who are predisposed to pneumonia based on chronic medical conditions, persons ≥ 2 years of age with functional or anatomic asplenia, immunocompromised persons with a high risk for pneumonia, persons with asthma and smokers. PPV 23 serotype 1 causes up to 50% of disease, while types 3 and 14 are associated with invasive disease and bacteremia. Expansion of the PPV 23 recommendations to critical infrastructure personnel was being considered.

Dr. Elward concluded her overview by responding to comments and questions she received from HICPAC members. The initiation of PPV 23 vaccination sooner rather than later might be prudent in light of uncertainties related to the 2009 H1N1 vaccine supply and timing. Surveillance data are currently being collected on the frequency of secondary bacterial pneumonia among persons with influenza.

Dr. Elward noted that a formal ACIP vote on the expanded PPV recommendations has not yet been scheduled, but she asked HICPAC to provide her with additional comments for the workgroup to consider in the interim. The HICPAC members made two key suggestions in response to Dr. Elward's request.

First, persons who should receive PPV 23 should be identified in the context of the 2009 H1N1 influenza virus, such as obese individuals. Most notably, the most severe H1N1 hospitalizations and deaths were among persons in which obesity was a major risk factor. Second, the cost-effectiveness analysis should be evaluated with a methodology of discounting all downstream medical costs for the remainder of an individual's life, but considering life-saving interventions.

Update on the HICPAC Guidelines

Guideline for Preventing Catheter-Associated Urinary Tract Infections (CAUTI). Dr. Bell reported that the CAUTI guideline was recently published in the *Federal Register* for public comment. The four-week public comment period will end in early July 2009. CDC has received four comments to date that will be fairly easy to address.

All comments received will be formatted into PDF documents and posted on the CAUTI@cdc.gov web page to ensure transparency to the public. At the end of the four-week public comment period, CDC will collate and systematically respond to all comments submitted, make revisions as necessary and post the final guideline on its website.

Methods Paper for Guideline Production. Dr. Craig Umscheid, of the University of Pennsylvania Health System Center for Evidence-Based Practice, reported that the workgroup hopes the methods paper will be released in conjunction with the CAUTI guideline. The purpose of the document is to provide background information on HICPAC's guideline development process, outline the rationale for updating HICPAC's guideline development methodologies, and describe the approach that is being implemented to revise these methodologies.

Dr. Umscheid requested HICPAC's input on the most recent draft of the methods paper that was distributed prior to the meeting, particularly the background, future challenges and opportunities sections. He asked HICPAC to provide verbal comments during the meeting or written comments in track changes no later than June 30, 2009.

HICPAC commended the workgroup on making revisions that have continued to improve the methods paper. Several members emphasized the critical importance of the methods paper in clearly articulating HICPAC's guidelines development process for the first time and providing healthcare facilities with guidance and a strong justification for HCP to implement evidence-based infection control recommendations.

HAI Preventability Manuscript. Dr. Umscheid reported that an abstract on HAI preventability was prepared for a Congressional hearing and a manuscript was subsequently developed based on HICPAC's input on the abstract. The purpose of the manuscript is to estimate the number of HAI infections and deaths that could be prevented and cost-savings from preventing HAIs if evidence-based guidelines were universally implemented.

Dr. Umscheid confirmed that the current version of the draft manuscript would be distributed to HICPAC with a deadline to submit final comments by June 30, 2009. The manuscript would then be submitted to the CDC clearance process and posted on the CDC website as a HICPAC document.

Norovirus Guideline. Dr. Kurt Stevenson is a HICPAC member and chair of the Norovirus Workgroup. He reported that the most recent version of the *Guideline for Prevention and Management of Norovirus Outbreaks in Healthcare Settings* was distributed to HICPAC for review. Dr. Stevenson thanked Dr. Tara MacCannell of DHQP and Dr. Umscheid and his staff at the University of Pennsylvania for their diligent and outstanding efforts in continuing to revise and refine the guideline.

Dr. Stevenson reminded HICPAC that the workgroup identified three key questions to guide its research and activities to develop the norovirus guideline:

1. What patient, virus or environmental characteristics increase or decrease the risk of norovirus infection in healthcare settings?
2. What are the best methods to identify a norovirus occurrence or outbreak in healthcare settings?
3. What are the best interventions to prevent or contain norovirus outbreaks in healthcare settings?

The workgroup created an analytic framework to answer the three key research questions for the norovirus guideline based on evaluating patients at baseline, identifying sporadic infections and outbreaks, and preventing morbidity and mortality as an outbreak spreads. From September 2007-June 2008, the workgroup reviewed existing guidelines, developed the key research questions, conducted an exhaustive literature search, completed the abstract and full-text screening process, and extracted and synthesized data.

Searches of Medline and other databases led to the workgroup's identification of 3,702 potentially relevant studies. Based on the title and abstract screening process, the workgroup initially included 379 studies for full-text evaluation. The final number of studies included for data extraction was 146 because 233 additional studies were further excluded based on exclusion criteria. At this time, the workgroup is completing the evidence summaries, obtaining input from both internal and external reviewers, and drafting the recommendations.

In response to a request Dr. Umscheid conveyed from the "Grading of Recommendations, Assessment, Development and Evaluation" (GRADE) Workgroup, Dr. Bell confirmed that he would consult with CDC's attorneys. The workgroup expressed an interest in listing CDC/HICPAC as one of the organizations that uses the GRADE process. Dr. Bell emphasized the need to obtain legal guidance on whether the listing could be interpreted as CDC/HIPAC "endorsement."

Dr. Cardo noted that the multitude of Category II and IC recommendations might cause a tremendous amount of confusion in healthcare facilities. The evidence could be viewed as changes in CDC's hand hygiene, patient transfer and other infection control practices. She advised the workgroup to take extreme caution in phrasing the Category II recommendations.

HICPAC commended the workgroup on its outstanding efforts in revising and greatly improving the norovirus guideline since the previous meeting. The members particularly pointed out the usefulness of the summary table on prevention strategies. Several HICPAC members made suggestions for the workgroup to consider in its ongoing efforts to revise and finalize the guideline.

- An explicit statement should be included at the beginning of the guideline to address Dr. Cardo's concern. The language should clearly emphasize that the recommendations were based on low-quality evidence.
- The language in the guideline should be changed to food or water as a "vehicle" rather than a "reservoir."
- The Kaplan criteria should be reproduced in the guideline.
- "Potential initial cluster" should be clearly defined in the guideline to provide clearer guidance to healthcare facilities from a surveillance perspective. The definition also could be used to educate institutions on an appropriate threshold to determine when norovirus cases advance from "sporadic" to an "outbreak."
- Extreme caution should be taken in the recommendation to delay the transfer of patients back to LTCFs for a minimum of 48 hours after symptom resolution from norovirus infection due to laws in various states. For example, Michigan legislation prohibits

LTCFs from refusing to accept patients who were placed in contact isolation. The guideline should recommend and stratify a number of options in either a “Tier 1” or “Tier 2” group, such as heightened hand hygiene practices. This approach would address healthcare facilities or LTCFs with limited resources and capacity to retain patients for an additional 48 hours or place patients on contact precautions.

- The guidance should be changed to advise healthcare facilities to notify state or local health departments when norovirus outbreaks are “suspected” rather than “confirmed.”
- The guideline should document potential implications on the broader healthcare system of implementing the recommended prevention strategies in the absence of evidence.

Dr. Brennan closed the discussion by describing HICPAC’s next steps in the norovirus guideline. The workgroup expects to complete the final draft before the November 2009 meeting.

BSI Guideline. Dr. Brennan reported that Dr. Naomi O’Grady, of the National Institutes of Health, is leading the workgroup to update the 2002 BSI guideline. Dr. Brennan circulated the document to HICPAC in May 2009 for comment. He was pleased to report that AHA, APIC, IDSA and SHEA provided input.

Dr. Brennan clarified that the update on the BSI guideline was initiated before HICPAC revised its guideline development process. As a result, the categorization of recommendations between the BSI guideline and the CAUTI and norovirus guidelines is different. Because the literature search for the updated BSI guideline was conducted with a selective and convenient sample approach that is entirely different than the GRADE process, revising the categorization of recommendations would be an arduous task equivalent to starting from the beginning. Dr. Brennan asked HICPAC to provide input on whether the BSI guideline should be updated and published with or without the GRADE framework.

Ms. Lillian Burns is a HICPAC member and serves on the BSI Guideline Workgroup. She emphasized that the healthcare community has been highly anticipating this updated document for quite some time. She agreed with Dr. Brennan that revising recommendations in the guideline to be consistent with the GRADE framework would severely delay finalizing and publishing the document.

Dr. Sheila Murphey is HICPAC’s *ex-officio* member to the Food and Drug Administration (FDA). She raised serious concerns regarding the Category IB recommendation in the guideline regarding the use of prophylactic antimicrobial solution in high-risk patients with long-term catheters or patients with a history of catheter-related BSI (CRBSI). She explained that sodium citrate and sodium EDTA have never been approved in the United States for use as systemic anticoagulants or anti-infective agents.

Dr. Murphey clarified that heparin and saline are the only products approved for use as catheter flush solutions or catheter lock solutions in the United States at this time. These products are only approved for general-use catheters because FDA has never approved a product for hemodialysis catheters. Dr. Murphey confirmed that she would submit her comments in writing to the guideline authors. HICPAC’s other suggestion was for the workgroup to review the most

recent catheter standards developed by the Infusion Nurses Society to ensure consistency with the BSI guideline.

Dr. Brennan closed the discussion by describing HICPAC's next steps on the BSI guideline. Based on **HICPAC's general consensus**, the document would be finalized and published with the previous guidelines development process rather than the GRADE framework. To avoid confusion in the field, HICPAC's methods paper for guideline production would emphasize that the 2002 BSI guideline was updated without the GRADE framework. Although the guideline is being updated rather than developed, the regular process to publish an official HICPAC product must still be followed. These requirements include external review and clearance by both CDC and OMB.

Liaison and *Ex-Officio* Reports

The following liaison and *ex-officio* members submitted written reports into the official HICPAC record for the June 15-16, 2009 meeting or presented verbal reports:

- Rachel Stricof, MPH, CIC (Advisory Council for the Elimination of Tuberculosis) (ACET)
- William Baine, MD (Agency for Healthcare Research and Quality) (AHRQ)
- Roslyne Schulman, MHA, MBA (American Hospital Association) (AHA)
- Joan Blanchard, RN, BSN, MSS, CNOR, CIC (Association of periOperative Registered Nurses) (AORN)
- Nancy Bjerke, BSN, RN, MPH, CIC (Association of Professionals of Infection Control and Epidemiology, Inc.) (APIC)
- Lisa McGiffert (Consumers Union)
- Sheila Murphey, MD (Food and Drug Administration) (FDA)
- Robert A. Wise, MD (The Joint Commission)
- David Henderson, MD (National Institutes of Health) (NIH)
- Shirley Paton, RN, MN (Public Health Agency of Canada) (PHAC)
- Lisa Maragakis, MD, MPH (Society for Healthcare Epidemiology of America) (SHEA)
- Stephen Kralovic, MD, MPH (Department of Veterans Affairs) (VA)

Clarifying remarks or additional details by the liaison and *ex-officio* members on recent activities of their organizations and agencies are outlined below.

- Ms. Stricof's schedule did not permit her to submit a written report on ACET's recent activities, but she confirmed that no major developments occurred during the March 3-4, 2009 ACET meeting.
- Dr. Baine reported that Dr. McDonald had described AHRQ's most important ongoing activities during his update on the CDC Prevention and Response Branch.

- Ms. Schulman reported that AHA's most recent activities include involvement in healthcare reform with five other national organizations; engagement with its members, federal agencies and state hospital associations on the H1N1 influenza outbreak; and its submission of comments on the CMS Medicare FY2010 Inpatient Prospective Payment System Rule. AHA testified before a Congressional subcommittee in April 2009 on the "National Strategy to Reduce HAIs" and described its two key efforts in this initiative. First, AHRQ awarded \$3 million to AHA's Health Research and Educational Trust affiliate to implement the "On the CUSP" Program in ten states to reduce central-line infections in participating hospitals by 80%. Second, AHA's support of voluntary reporting of infection rates through the Hospital Quality Alliance was emphasized. Because >4,900 hospitals report quality information, AHA urged Congress not to add an unnecessary layer of reporting to an existing system with demonstrated efficacy.
- Ms. Blanchard reported that AORN will launch "National Time Out Day" on June 17, 2009 to remind all surgical team members of the critical importance of patient safety. AORN added CDC's interim guidance on the novel H1N1 influenza virus to its website. AORN's most recent publications include a newsletter article on "Practicing the Complete Sterilization Process" and an online version of the *Perioperative Standards and Recommended Practices* book.
- Ms. Bjerke confirmed that she would provide HICPAC with APIC's position paper on surveillance technology. APIC developed and distributed documents for two of its target audiences: ambulatory care facilities and the elderly population. APIC was pleased to report that its annual conference on June 7-11, 2009 was extremely successful.
- Ms. McGiffert reported that Consumers Union issued the "To Err is Human: To Delay is Deadly" report in May 2009 to assess the current state of patient safety ten years after IOM released its groundbreaking report on medical errors. Consumers Union launched the "Stop Hospital Infections.org" website to provide the public with CMS data on surgical infection prevention in more user-friendly formats. The public can use the website to easily search for and compare hospitals within their states and in other states. Consumers Union will update the website on a quarterly basis as CMS releases new hospital infections data to the public.
- Dr. Kainer's schedule did not permit her to submit a written report on CSTE's recent activities, but she announced that CSTE recently convened a successful conference with multiple sessions on HAIs. States are currently preparing applications in response to CDC's funding opportunity announcement for HAI prevention with ARRA dollars. Moreover, states are still extensively involved in activities related to H1N1 preparedness.
- Dr. Murphey reported that FDA has been extensively involved in H1N1 activities since the last HICPAC meeting. FDA posted information on consumer fraud protection activities on its website and recently updated the agency-wide and center-specific websites. However, operational issues with the websites are still being refined. Dr. Murphey offered to forward e-mail messages from HICPAC members to appropriate

FDA staff until problems with the revised websites are resolved. She regrettably announced that FDA's PPE website no longer contains links to cleared products.

- Dr. Robert Wise reported that The Joint Commission collaborated with APIC, CDC and SHEA to publish a hand hygiene monograph. The document is posted on The Joint Commission website and reflects a global view on strategies that are being implemented to measure hand hygiene practices. The Joint Commission held a meeting with the task force that developed "Compendium Strategies to Prevent HAIs in Acute Care Hospitals." The task force will hold meetings on a regular basis to explore approaches to sustain this important effort over time. The Joint Commission recently released a statement on flash sterilization in consultation with CDC, FDA and a number of experts in the field. The major development in the document is the increased focus on "steam sterilization" and decreased emphasis on "flash sterilization." The concept of "steam sterilization" will encourage healthcare facilities to more broadly focus on the entire sterilization cycle when instruments are inside the sterilizer, leave the operating room and return to the operating room. The Joint Commission will post the statement on its website.
- Ms. Paton reminded HICPAC that she reported on PHAC's recent H1N1 activities following the report by the Novel H1N1 Influenza Infection Control Workgroup during the morning session. PHAC is currently finalizing its new infection control guideline and discussion paper on pneumonia and expects to post both documents on its website within the next two months. PHAC recently completed a point prevalence study in which all hospitals participating in the Canadian Nosocomial Infections Surveillance Program counted their individual infections in February 2009. PHAC will publish papers on the study over the next few months after the data have been analyzed. PHAC is currently updating and translating its "Pandemic Influenza Infection Control Guideline" with the addition of Annex F.
- Dr. Maragakis reported that SHEA has convened a task force to address the issue of excluding pregnant or immunocompromised HCP from providing care to H1N1 patients. SHEA recognizes that outcomes from the deliberations of the task force might result in the development of another position statement on novel H1N1 influenza. SHEA has identified three major problems associated with this recommendation. Privacy could be violated in efforts to identify "immunocompromised" or "pregnant" HCP. The H1N1 guidance could establish a precedent for other pathogens that also pose a risk for pregnant and immunocompromised HCP. The guidance might erode confidence in HCP due to the implication that existing PPE recommendations are not effective. The SHEA Research Committee is preparing a white paper on research needs in healthcare epidemiology. To support this effort, SHEA submitted written testimony to Congress to advocate for FY2010 appropriations to HHS/CDC and NIH. A website will be open from June 26-November 16, 2009 for persons to submit abstracts to SHEA's 5th Decennial International Conference on HAIs in March 2010.
- Dr. Kralovic reported that the VA is continuing to conduct its national MRSA prevention project. The VA's analysis of 18-month data submitted by ICUs across the country showed a 60% reduction in healthcare-associated MRSA infection rates. The VA's

analysis of 12-month data submitted by non-ICU acute care facilities, excluding mental health centers, showed a reduction of ~30% in healthcare-associated MRSA infection rates. Despite the dramatic decrease in HAIs, however, the VA observed no differences in actual transmission of HAIs based on ICU and transmission data.

Dr. Cardo asked HICPAC to consider the possibility of submitting an abstract to SHEA's upcoming Decennial International Conference in March 2010. Dr. Brennan agreed that this event could be used to showcase HICPAC's efforts in updating its guidelines development methods.

With no further discussion or business brought before HICPAC, Dr. Brennan recessed the meeting at 4:45 p.m. on June 15, 2009.

Update by the HCP Infection Control Guideline Workgroup

Dr. Brennan reconvened the HICPAC meeting at 9:25 a.m. on June 16, 2009 and yielded the floor to the first presenter.

Dr. Tammy Lundstrom is a HICPAC member and chair of the workgroup. She reported that the workgroup is currently focusing on two key tasks. First, the workgroup is attempting to identify and confirm its full membership because only three core members and external experts are participating at this time: HICPAC (Dr. Lundstrom), SHEA (Dr. Hilary Babcock), and American College of Occupational and Environmental Medicine (ACOEM) (Dr. Mark Russi).

Core workgroup members and external experts are needed to represent CDC/DHQP, APIC, IDSA, and the University of Pennsylvania Health System Center for Evidence-Based Practice. Dr. Lundstrom noted that Dr. Bell has been representing DHQP in the short-term, but would be unable to fully support the project throughout the entire process of updating the guideline. She asked for HICPAC's input on other groups that should be engaged in this effort.

Second, the workgroup is attempting to determine the most important sections that need to be updated because the HCP infection control guideline was last revised in 1998. The workgroup reached preliminary agreement on updating the following sections: data management and confidentiality for consistency with Health Insurance Portability and Accountability Act (HIPAA) requirements; bloodborne pathogens for consistency with the upcoming SHEA guideline; gastrointestinal infections for consistency with the upcoming HICPAC guideline; and the measles, mumps, pertussis, rabies and scabies sections to highlight more recent data.

The workgroup also agreed to update other sections of the guideline to reflect developments that have occurred since 1998 in the following areas: *Staphylococcus aureus* infection and carriage; TB in terms of BCG vaccine, extensively drug-resistant TB (XDR-TB) and the blood assay for *Mycobacterium tuberculosis*; varicella, influenza and pregnant HCP; the need for less guidance on latex allergies; and the need to revise the vaccine prophylaxis and treatment tables.

The workgroup discussed the possibility of updating additional sections of the guideline for professionals in the occupational medicine and infection prevention fields. These updates would include strategies in a table, flowchart or appendix to handle white powder; approaches in an appendix to address trainees who travel to endemic areas with XDR-TB or other infections; an improved interface between occupational medicine and multidrug-resistant organisms (MDRO) beyond exposure to *S. aureus*; and descriptions on exposure to SARS, anthrax or smallpox.

The workgroup recognized the need to consider recent issues while updating the HCP infection control guideline. Most notably, HICPAC's HCP infection control guideline would need to reference and be coordinated with ACIP's updated guidelines on immunization of HCP that will be published in the near future. The section on communicable disease reporting would need to be expanded. The Occupational Safety and Health Administration section would need to be revised to reflect the 300-log.

The workgroup's next steps will be to identify the full membership of core members and external experts. Medical databases and websites will be searched to identify relevant guidelines and narrative reviews that can inform this process. Research questions will be drafted to present to HICPAC during the November 2009 meeting.

HICPAC's comments and suggestions on the workgroup's next steps in identifying external experts and developing a structure or framework to update the HCP infection control guideline are outlined below.

- The workgroup should engage PHAC, a representative from the occupational health and hygiene field, and academic centers as external experts in updating the guideline. Infection control engineers in the field also should be engaged during the guideline development and review process to strengthen compliance with the recommendations.
- The guideline should be updated and released as a live document with links to websites and other resources. For example, travel medicine, immunization and other topics in the guideline rapidly change and cannot be adequately addressed in a static document. Moreover, CDC, SHEA and other groups are currently or have already issued updated evidence-based guidance on several sections of the guideline, including measles, mumps and bloodborne pathogens.
- HIPAA issues in healthcare facilities should be strongly emphasized in the guideline. For example, occupational health employers have been discouraged from asking HCP to provide reasons for their absence from work when an important public health event needs to be controlled.
- The guideline should focus on a hierarchy of administrative and engineering controls, workflow practices and PPE to bridge the infection control and occupational health components.
- Caution should be taken in undertaking an extensive update of the guideline because infection control practitioners use the current 1998 guideline in daily practice, particularly the vaccination, treatment and prophylaxis tables. Application of the GRADE framework to the revised sections only would be a more timely and useful process.

Dr. Bell made several remarks in response to HICPAC's concerns regarding the need to strike a balance between updating and releasing the guideline in a timely fashion while covering multiple topical areas and incorporating more recent data to reflect current infection control practices. He proposed various options to resolve this dilemma. Criteria could be established to update and release certain sections of the guideline; the entire guideline could be updated and released based on a few key research questions; or updated sections of the guideline could be published initially followed by the release of the remainder of the document.

Dr. Bell expressed his support for the following process. The workgroup would draft and publish the table of contents for the guideline and then write, obtain clearance on and publish each chapter as individual documents. The approach of releasing chapters as standalone documents would be particularly helpful in assuring that the SSI and other complex chapters would not delay publication of the entire guideline. Dr. Bell also noted that co-authors from ACOEM, APIC, IDSA and SHEA could be encouraged to produce hard-copy versions of the referenced links and resources for their membership to compliment the electronic version of the guideline.

Dr. Bell concluded that the overarching goal is for the updated HCP infection control guideline to serve as a scientifically well-supported document with answers to essential research questions. He strongly emphasized that this activity should be completed in 1-1.5 years.

Dr. Brennan agreed with Dr. Bell that updating the guideline could become an insurmountable and never-ending task without a clearly defined process or framework. He closed the discussion by describing the next steps in the workgroup's charge. The workgroup would first determine the end-product that should be provided to the infection control field and then identify the process and structure to achieve this outcome. The workgroup would use answers to these questions as the basis for identifying additional core members and external experts and also as guiding principles to structure a framework for updating the guideline. The workgroup would present an update on its progress during the November 2009 HICPAC meeting.

Update by the Model Legislation Workgroup

Dr. Lundstrom is chair of the workgroup and reported that the most recent draft of "HICPAC's Guidance for Jurisdictions Considering MRSA Legislation" was distributed to HICPAC for review. The tone of the document was significantly revised based on HICPAC's input during the previous meeting. However, she requested additional feedback from HICPAC on two sections of the guidance document: "potential benefits of a legislative approach" and recommendations for jurisdictions that decide to proceed with legislative efforts.

Dr. Lundstrom's summary of the five recommendations is outlined below.

1. Adhere to current CDC MDRO guidelines rather than mandate specific infection control practices or focus on specific organisms and pathogens.

2. Authorize the responsible agency to develop a multidisciplinary advisory panel to devise methods for healthcare facilities to track and report the occurrence of MDROs.
3. Promote facility-wide risk assessment as required by CMS *Conditions of Participation* and requirements by The Joint Commission and other accreditation organizations to identify and prioritize local problems with MDROs for prevention and reduction efforts.
4. Promote the development of an antibiotic stewardship program in facilities.
5. Authorize the responsible agency, in conjunction with the advisory panel, to establish MDRO educational requirements for HCP and trainees.

HICPAC's comments and suggestions on the workgroup's next steps in finalizing the guidance document on MRSA legislation are outlined below.

- The SHEA/HICPAC position paper should be cited on recommended metrics to use in gauging progress in preventing and reducing MDROs in healthcare settings.
- Utilization of the MDRO module available through NHSN should be strongly encouraged for jurisdictions that decide to enact legislation.
- Problems with the recommendation to "adhere to current CDC MDRO guidelines" should be acknowledged. Most notably, compliance with this guidance would require each hospital to measure or establish a baseline to demonstrate progress in reducing infections or initiate screening if infections are not declining.
- The recommendation to "develop a multidisciplinary advisory panel" should be revised to advise jurisdictions to form a special subcommittee of existing committees. Each state that enacted reporting laws has established an advisory committee.
- The recommendation should be changed from "promoting" to "requiring" facilities to develop an antibiotic stewardship program. Stronger language is needed to truly make an impact in preventing or reducing MDROs in healthcare settings.
- The guidance document should reference a paper that was developed by an expert panel CDC convened to focus on MDRO surveillance. The paper is currently undergoing the clearance process and could serve as a resource for states to use in conducting surveillance of MDROs.

Dr. Brennan closed the discussion by charging the workgroup with revising the guidance document based on HICPAC's comments and circulating the updated version within one week. Final details on the document would be discussed and a formal vote would be taken during HICPAC's conference call in early July 2009. After the CDC review process, the guidance document would be posted on the HICPAC website and then submitted for publication in peer-reviewed journals.

Update on CMS Criteria for Conditions of Participation in Medicare

Dr. Bell reviewed key points from an overview that was presented by Dr. Don Wright, Principal Deputy Assistant Secretary for Health at HHS, during the June 2008 HICPAC meeting. Dr. Wright informed HICPAC of two key recommendations in the March 2008 Government Accountability Office report on HAIs. CDC's recommended clinical practices should be

prioritized to promote implementation of high-priority practices and assure compliance in hospitals. The prioritized recommendations should be considered for inclusion in CMS's *Conditions of Participation* in Medicare.

At that time, HICPAC accepted HHS's charge to develop criteria for its recommendations to be considered for inclusion in CMS's *Conditions of Participation* as either "high-priority prevention interventions" or "high-priority HAIs." Dr. Bell encouraged HICPAC to fulfill its charge at this time by designing a structure to develop conditions of participation criteria. He noted that in a parallel effort, DHQP has engaged external reviewers to evaluate an HHS-funded project of examining the cost-benefits of each HICPAC recommendation.

Dr. Bell clarified that recommending an entire HICPAC guideline as a condition of participation would not be particularly helpful from an implementation perspective. Instead, criteria for high-priority interventions, such as collecting baseline data or performing risk assessments, would be more useful.

Dr. Brennan closed the discussion by describing HICPAC's next steps in developing conditions of participation criteria. He would poll the HICPAC members after the meeting to determine their interest in serving on a new workgroup to identify and discuss exemplar conditions of participation criteria after the CAUTI guideline was officially released. He pointed out that Ms. Burns, Ms. Murphy and Ms. Soule already expressed an interest in serving on the new workgroup.

The new workgroup would consider two key suggestions Mr. Olmsted and Dr. Brennan made during the discussion. First, HICPAC's criteria should broadly focus on interventions at the infrastructure level rather than specific infection control practices to ensure the guidance would be applicable to all types of healthcare settings.

Second, HICPAC's criteria should be aligned with statutory selection criteria related to the Deficit Reduction Act. These criteria include focused coding, incidence costs of morbidity and mortality, availability of evidence-based guidelines and reasonable preventability of HAIs. HICPAC should initiate the process of developing the criteria by focusing on specific issues in the CAUTI and updated BSI guidelines that have mandatory inclusion criteria for conditions of participation. Both of these guidelines are components of value-based purchasing in hospital-acquired conditions.

Update on Pediatric Infection Prevention Activities

Dr. Elward informed HICPAC that she would present her update in two distinct sections: a summary of key points from her presentation during the February 2009 meeting and a description of actions taken since this time. Challenges in diseases that are unique to pediatric infection prevention include high-volume HAIs resulting in significant morbidity, such as CLABSI, SSI, MRSA colonization and infection, and viral infections in immunocompromised hosts. Challenges in patients that are unique to pediatric infection prevention include family-

centered care and visits to children by parents who are ill or colonized with antibiotic-resistant organisms.

The pediatric community is challenged by striking a balance between promoting parent/child interaction and protecting vulnerable hospitalized children from antibiotic-resistant organism colonization. Pediatric settings implement several interventions to distract children from their illnesses, such as pet and horticultural therapies as well as social interaction with chronically ill children who are colonized with MDROs and are on contact isolation precautions.

Reviews of the current literature, guidance and gaps in pediatric infection prevention underscore the need to better understand the attributable mortality of HAIs in children and preventability of CLABSI in select pediatric sub-populations. At this time, ~75% of children are hospitalized outside of academic tertiary care centers and children's hospitals. Moreover, some neonatal ICU and pediatric oncology patients have intestinal pathology in which the gastrointestinal tract rather than issues related to central line care might serve as the source of bacteremia.

The pediatric community recognizes the paucity of data related to benchmarks and risk stratification for pediatric SSI. These data gaps need to be filled to better understand true rates. Other data gaps include unanswered questions regarding MRSA colonization in neonatal ICUs (NICUs), such as the best anatomic sites to culture, frequency of surveillance, appropriate times and the best regimens for decolonization, and management of risks to NICU patients from family members who are colonized with MRSA.

The pediatric community is attempting to leverage existing opportunities to provide better education on HAI prevention to families and pediatric patients. Most notably, respiratory syncytial virus (RSV) and other viral infections that occur in NICUs could be fatal to pediatric patients. Existing control measures are based on anecdotal data and have been found to be expensive.

Dr. Elward described input she obtained on pediatric infection prevention from three key stakeholder groups following the February 2009 HICPAC meeting. The SHEA Pediatric Special Interest Group (PSIG) holds two meetings per year with its membership of ~40 pediatric infectious disease physicians and pediatric infection prevention practitioners. Attendees of the PSIG meeting unanimously opposed the development of a white paper on family- and patient-centered issues because the document would be solely based on expert opinion rather than solid data.

PSIG strongly recommended that HICPAC develop an evidence-based guideline on the important topic of pediatric infection prevention. In the interim of collecting data, PSIG agreed that toolkits should be posted on the SHEA website. PSIG noted that sufficient evidence does not exist at this time to support the development of a separate pediatric guideline. However, PSIG pointed out that a review of emerging data reported in the literature on NICUs might serve as a basis to write an evidence-based guideline on infection prevention in these settings. PSIG highly recommended conducting a formal gap analysis to prioritize research.

A survey was administered to PSIG to identify and rank the top research priorities for pediatric infection prevention. Based on responses by 22 PSIG members, MDROs were ranked highest with a mean score of 2.32 and viral respiratory infections and CLABSI were tied with mean scores of 3.41. Research priorities with lower mean scores ranging from 5.1-6 included other device-related infections, fungal infections, SSI and ventilator-associated pneumonia. For “other” research priorities, the respondents identified ventriculoperitoneal shunts, peritoneal dialysis catheters, gastrostomy tubes, diarrheal diseases other than *C. difficile*, nosocomial influenza, and special populations (e.g., NICU, cystic fibrosis, transplant and cardiothoracic surgery patients).

The Child Health Corporation of America’s Children’s Hospital Neonatal Consortium (CHNC) has been attempting to develop a database over the past 18 months to track HAIs and other outcomes in children and also to create severity of illness measures. CHNC’s overarching mission is to obtain the best comparative neonatal data for children’s hospitals. Based on a survey administered to CHNC leadership, BSI prevention in patients with intestinal pathology was prioritized as a research topic and enthusiasm was expressed for the development of an infection prevention guideline specific to NICUs.

The Society for Pediatric Research held a session on NICU infection prevention, with a strong focus on CLABSI and MRSA, during its May 2009 “Compendium of Strategies to Prevent HAIs in NICUs” Symposium. Dr. Elward formulated three key questions to advance the field of NICU infection prevention based on her review of abstracts and other materials from the symposium.

One, what are the best strategies to prevent CLABSI in NICU patients? Data should be reviewed in the following areas to answer this question: the safety and efficacy of chlorhexidine in infants <2 months of age; impact of silver-coated catheters on CLABSI rates; efficacy of close flush medication systems; and efficacy of two-person tubing changes using sterile garb.

Two, what are the most effective methods of preventing MRSA colonization among NICU patients? Data on the risk of vertical transmission of MRSA should be reviewed to answer this question. Three, what are the most effective methods of preventing invasive Candidal infection among NICU patients? Data on Fluconazole versus Nystatin prophylaxis should be reviewed to answer this question.

Dr. Elward’s literature search of NICU infection prevention research showed that four of 46 studies on CLABSI described interventions; 13 of 60 studies on MRSA described interventions; and 10 of 79 studies on *Candida* described interventions. *Candida* was the only topic for which randomized controlled trials had been conducted.

Dr. Elward concluded her update by requesting HICPAC’s input on the most appropriate documents HICPAC should write to add the most value to the field. She reminded HICPAC of PSIG’s strong recommendations for a formal gap analysis, a review of literature that was published subsequent to the latest HICPAC guideline on the topic, and the development of a NICU infection prevention guideline.

Dr. Brennan noted that Dr. Elward's extensive preparation in proposing a new guideline to HICPAC should serve as a model in initiating the process to develop new guidelines in the future.

In response to Dr. Elward's request for input, **HICPAC generally agreed** to develop a formal gap analysis and the NICU infection prevention guideline. The members made two suggestions that should be considered as progress is made on these activities. First, the neonatal community should be urged to place more emphasis on smoking cessation during pregnancy, avoidance of teen pregnancies and other primary prevention measures to decrease neonatal complications and prevent premature births at the front end. Second, the Vermont Oxford Network and Pediatric Infectious Disease Society should be engaged as partners in developing the NICU infection prevention guideline.

Drs. Bell and Cardo strongly advised HICPAC to develop a systematic process and framework to perform the gap analysis and write the NICU infection prevention guideline. This approach would be important to focus the guideline, determine whether sufficient data exist to inform the development of the guideline, and ensure the recommendations do not conflict with HICPAC's existing or upcoming guidance.

Dr. Bell proposed several approaches HICPAC could take to develop the guideline in a cohesive and concise manner. Emphasis could be placed on issues that are unique to NICUs and have not been addressed in any guidance to date, such as umbilical catheterization, necrotizing enterocolitis or immature skin development. Efforts could be made to answer specific research questions based on HICPAC's guidelines development process. The same "outcome, process and structure" approach that will be used to update the HCP infection control guideline could be applied in developing the NICU guideline. Research on pathogens that are most important to pediatric populations could be addressed, such as viral respiratory infections, RSV or adenovirus.

Dr. Brennan closed the discussion by describing next steps in performing the gap analysis and developing the NICU infection prevention guideline. A new workgroup would be formed and the process or framework to develop the guideline would be based on one of the options Dr. Bell outlined. Dr. David Henderson is the HICPAC liaison to NIH and chair of the SHEA Research Committee. He would be placed on the November 2009 agenda to provide an update on recent activities of the committee to inform HICPAC's development of the NICU infection prevention guideline.

HICPAC Business Session

Dr. Brennan presented letters of commendation to three HICPAC members whose terms would expire prior to the next meeting: Drs. Jeffrey Engel, Keith Ramsey and Kurt Stevenson. The participants joined Dr. Brennan in applauding the tremendous contributions the outgoing members have made to HICPAC and CDC as well as their ongoing commitments and sacrifices to the broader healthcare infection control and public health communities.

To facilitate HICPAC's vote on MMR vaccination for HCP, Dr. Brennan reviewed the three changes that were made to the recommendations following the February 2009 meeting.

1. Revised footnote for routine circumstances: For unvaccinated personnel born before 1957 who lack laboratory evidence of measles, mumps or rubella immunity or laboratory confirmation of disease, healthcare facilities should strongly consider recommending two MMR vaccine doses for measles and mumps and one MMR vaccine dose for rubella.
2. The requirement for documentation of physician diagnosed measles or mumps was eliminated.
3. Revised footnote for outbreaks: For unvaccinated personnel born before 1957 who lack laboratory evidence of measles, mumps or rubella immunity or laboratory confirmation of disease, healthcare facilities should recommend two MMR vaccine doses for measles or mumps outbreaks and one MMR vaccine for rubella outbreaks.

A motion was properly placed on the floor and seconded by Dr. Engel and Ms. Murphy, respectively, for HICPAC to adopt the recommendations for MMR vaccination of HCP as revised. **HICPAC unanimously approved the motion with no further discussion.**

Dr. Brennan asked Dr. Elward to convey HICPAC's position on the expanded pneumovax recommendations to the ACIP Pneumococcal Workgroup. HICPAC endorsed offering PPV 23 to all HCP who would currently fall under the recommendations because of underlying conditions. PPV 23 should be widely offered to HCP in an outbreak of greater severity than the current one. However, HICPAC expressed reticence about the severity of the current outbreak as being a necessity to administer the current vaccine.

Dr. Brennan led HICPAC in a review of the business items that were raised over the course of the meeting.

- Ms. Wendy Vance, the HICPAC Committee Management Specialist, will schedule a conference call the July 23, 2009 for HICPAC to vote on recommendations proposed by the Novel H1N1 Influenza Infection Control Workgroup and finalize any outstanding issues related to "HICPAC's Guidance for Jurisdictions Considering MRSA Legislation."
- Ms. Vance will circulate four documents to HICPAC for review and submission of comments by the following deadlines.
 - June 30, 2009 for comments on the methods paper for guideline production.
 - June 30, 2009 for comments on the HAI preventability manuscript.
 - July 7, 2009 for comments on the norovirus guideline.
 - July 15, 2009 for comments on the BSI guideline.
- Drs. Brennan and Bell will collaborate offline to advance HICPAC's efforts in developing criteria for CMS *Conditions of Participation* in Medicare.

- Dr. Brennan will consult with Dr. Umscheid to discuss the possibility of conducting an evidence-based review of the H1N1 studies the Novel H1N1 Influenza Infection Control Workgroup used to inform its preliminary research.
- Dr. Brennan and Ms. Murphy will convene an orientation session in the fall of 2009 for the new HICPAC members who will attend their first meeting in November 2009. The orientation session will focus on HICPAC's roles, responsibilities, processes, reporting methods, partnerships and models for gathering input from key stakeholders. The methods paper for guideline production and HICPAC's other key documents also will be discussed during the orientation session.
- The HICPAC members will participate in the following ongoing or new activities:
 - Follow-up conference call for the Novel H1N1 Influenza Infection Control Workgroup to formulate recommendations for HICPAC's consideration and formal vote. [Drs. Pegues and Engel, Mr. Olmsted, Ms. Soule]
 - Evidence-based review of the H1N1 studies the Novel H1N1 Influenza Infection Control Workgroup used to inform its preliminary research. [Dr. Pegues]
 - Formulation of key research questions to inform the development of the new NICU infection prevention guideline. [Drs. Elward, McCarter, Pegues]
 - Discussions with the ACIP Pneumococcal Workgroup regarding HICPAC's position on the administration of PPV 23 to HCP. [Dr. Elward]
 - Participation on the new *Conditions of Participation* workgroup. [Ms. Burns, Mr. Olmsted, Dr. Lundstrom, Ms. Murphy, Ms. Soule]
 - Development of an orientation document and implementation of an orientation session for the new HICPAC members prior to the November 2009 meeting. [Ms. Murphy, Dr. Schecter]
 - Completion of the norovirus guideline. [Drs. Stevenson, Ramsey]
 - Continued revisions to finalize the BSI guideline. [Ms. Burns]
 - Participation on the HCP Infection Control Guideline Workgroup. [Drs. Lundstrom, McCarter and Schecter, and Ms. Soule]
 - Final revisions on "HICPAC's Guidance for Jurisdictions Considering MRSA Legislation" for HICPAC's consideration and formal vote. [Dr. Lundstrom]

Closing Session

The next HICPAC meeting will be held on November 12-13, 2009 in Washington, DC. The participants joined Dr. Brennan in applauding Ms. Vance for her incredible efforts in planning, preparing and overseeing all logistical arrangements for the HICPAC meeting.

With no further discussion or business brought before HICPAC, Dr. Brennan adjourned the meeting at 11:34 a.m. on June 16, 2009.

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

Date

Patrick J. Brennan, M.D.
Chair, Healthcare Infection Control
Practices Advisory Committee