



**Board of
Trustees 2009**

President

Mark E. Rupp, MD
University of Nebraska Medical Center

President-Elect

Neil O. Fishman, MD
University of Pennsylvania School of Medicine

Vice-President

Steven M. Gordon, MD
Cleveland Clinic Foundation

Secretary

John A. Jernigan, MD, MS
Emory University School of Medicine and
Centers for Disease Control and Prevention

Treasurer

James P. Steinberg, MD
Emory University School of Medicine

Past President

Patrick J. Brennan, MD
University of Pennsylvania Health System

Councilors

Raymond Y. Chinn, MD
Sharp Metropolitan Medical Campus

Sara E. Cosgrove, MD
Johns Hopkins Medical Institutions

Connie S. Price, MD
University of Colorado Health Sciences Center

David K. Warren, MD
Washington University School of Medicine

International Councilor

Paul A. Tambyah, MBBS
National University of Singapore

Executive Director

Jennifer L. Bright, MPA

**SHEA Position Statement:
Interim Guidance on Infection Control Precautions for
Novel Swine-Origin Influenza A H1N1 in Healthcare Facilities**

The emergence of a novel swine-origin influenza A H1N1 (novel H1N1) virus has dramatically impacted healthcare institutions across the globe.^{1,2} Fortunately, most public health and healthcare organizations have participated in pandemic preparedness activities for the past few years. Key components of pandemic influenza preparedness include rapid implementation of infection prevention and control procedures and practices to prevent transmission of both existing and novel pathogens. Such prevention practices should be rooted in the best available evidence, provide appropriate protection based upon proposed or established modes of disease transmission, and be coupled with additional community-based public health measures, such as social distancing. As additional information regarding the transmission patterns and disease severity of the specific pathogen becomes available, infection prevention and control guidance can and should be amended to provide effective protection of healthcare workers and their patients.

As an organization representing over 1,400 physicians and other professionals who direct infection prevention and control programs in our nation's healthcare facilities, the Society for Healthcare Epidemiology of America (SHEA) is directly involved in the ongoing discussions between the Centers for Disease Control and Prevention (CDC) and key stakeholders on recommended infection prevention and control measures for use in healthcare facilities during the evaluation and care of patients with suspected or confirmed novel H1N1 infection. Our primary goal is to ensure effective and sustainable delivery of patient care while protecting healthcare workers and patients from influenza acquisition in healthcare settings.

At the start of the 2009 outbreak, there was uncertainty regarding the transmission dynamics of the novel H1N1 virus. While seasonal influenza is spread by large respiratory droplets, a concern at the onset of any potential influenza pandemic is whether the pathogen will have different transmission dynamics or methods of spread (e.g. via airborne spread such as tuberculosis). Evidence for airborne transmission of seasonal influenza is lacking outside of laboratory-based experiments involving artificial aerosolization of influenza virus and rare events in closed environments with minimal air circulation and opportunities for indirect contact (e.g. airplanes).³⁻⁵ Based upon the available evidence regarding seasonal influenza transmission, the CDC Healthcare Infection Control Practices Advisory Committee (HICPAC) has recommended the use of droplet precautions when caring for patients with either suspected or

confirmed seasonal influenza.⁶ HICPAC does not recommend the use of particulate respirators or negative pressure rooms for seasonal influenza, rather these measures are recommended for pathogens which are transmitted predominantly via airborne spread by small particles that remain infective over time and may be dispersed over long distances. Such “airborne” spread is not clearly documented for influenza.

At the onset of the 2009 novel H1N1 outbreak, the CDC recommended that healthcare workers wear a fit-tested disposable N95 respirator, disposable non-sterile gloves, gowns, and eye protection (e.g., goggles) while providing direct patient care to or collecting clinical specimens from patients with suspected or confirmed novel H1N1.⁷ Placing patients in a negative pressure room was suggested for all patient care activities if such rooms were available and was only required for performance of aerosol-generating procedures (e.g. airway suctioning, bronchoscopy, or intubation). This guidance applied to all types of patient care areas (including ambulatory care). SHEA endorsed the initial approach taken by the CDC and other organizations to recommend enhanced precautions, as the exact transmission mode of the novel H1N1 virus was not known at the outbreak’s onset. As the outbreak has evolved, additional knowledge and experience regarding the transmission dynamics and severity of novel H1N1 has become available. Consistent with current scientific knowledge concerning the dynamics of transmission of seasonal influenza, available data and clinical experiences suggest that novel H1N1 transmission also occurs, like seasonal influenza, via droplet spread.

Just as other recommendations have been revised to reflect the increased understanding of the current wave of the novel H1N1 influenza outbreak,⁸ SHEA strongly supports and encourages updating the CDC guidance on recommended infection prevention and control practices in healthcare settings for the current wave of the novel H1N1 outbreak. Based on available data and the evolution of the H1N1 outbreak, SHEA endorses implementing the same practices recommended to prevent the transmission of seasonal influenza for the novel H1N1 virus at this time. Specifically, we recommend the use of standard and droplet precautions for suspected or confirmed cases of novel H1N1 influenza; placing surgical masks on patients with suspected or confirmed novel H1N1 infection at the point of contact with the healthcare facility; placing such patients in a single room, if available, or cohorting them with other infected patients; strict adherence to hand hygiene, respiratory hygiene and cough etiquette; early recognition and identification of suspected novel H1N1-infected patients upon presentation to a healthcare facility; and restriction of visitors and healthcare workers with febrile respiratory illnesses. Negative pressure rooms are not needed for the routine care of such patients. In recent weeks, similar guidance has been recommended and implemented by an increasing number of organizations, including healthcare facilities and public health departments.⁹⁻¹⁸

One unresolved issue involves recommendations for enhanced respiratory precautions for healthcare workers performing aerosol-generating procedures for suspect or confirmed novel H1N1. The current recommended precautions include the use of fit-tested N95 particulate respirators, gloves, eye protection and a gown when performing these activities. While the use of gloves, surgical mask, eye protection and a gown in these clinical settings is appropriate and consistent with standard precautions for aerosol-generating procedures where splashing of body fluid and/or secretions is anticipated, the use of a particulate respirator during aerosol-generating procedures is **not** recommended as a part of standard precautions nor to prevent seasonal influenza transmission in healthcare facilities.

The rationale, to date, for such enhanced respiratory protection for novel H1N1 stems from experiences with aerosol-generating procedures and transmission of the severe acute

respiratory syndrome (SARS), the absence of an available vaccine against the new virus, and the increased susceptibility of the population to the novel H1N1 virus (with reported secondary attack rates ranging from 22-33% vs. 5-15% noted with seasonal influenza).¹⁹ While a more controversial issue, we are supportive of recommendations for enhanced respiratory protection when performing certain aerosol-generating procedures on patients with suspected or confirmed novel H1N1. However, these specific recommendations should be re-evaluated over the coming weeks as more data are available from the current outbreak. We hope that as more data become available, the guidance for aerosol-generating procedures for novel H1N1 can be aligned to match that provided for seasonal influenza.

The specific practices included as “aerosol-generating” procedures for novel H1N1 guidance must also be clarified. Various recommendations have included bronchoscopy, collection of nasopharyngeal specimens (e.g. nasal washes or nasopharyngeal aspirates and swabs), administration of nebulized medications, airway suctioning, resuscitation involving emergency intubation or cardiac pulmonary resuscitation, and endotracheal intubation as aerosol-generating procedures that require enhanced respiratory precautions if performed on patients with suspected or confirmed novel H1N1. We, however, recommend following HICPAC standard precautions guidance to include only the following as aerosol-generating procedures: bronchoscopy, open suctioning of airway secretions, resuscitation involving emergency intubation or cardiac pulmonary resuscitation, and endotracheal intubation. Collection of nasopharyngeal specimens from patients with suspected or confirmed novel H1N1, closed suctioning of airway secretions and administration of nebulized medications should not be considered aerosol-generating and, therefore, do not require enhanced respiratory protection.

As noted earlier, we recommend the use of surgical masks for respiratory protection during routine patient care activities as opposed to continued universal use of N95 particulate respirators. Inappropriate and widespread use of N95 respirators for all novel H1N1 patient care activities does not provide increased protection against the virus and may have an adverse impact on patient and healthcare worker safety. Namely, reports of limited supplies of N-95 respirators during the current novel H1N1 outbreak raise concerns of respirator availability in healthcare settings at times when they are actually needed. Since respirators are essential components of infection prevention and control strategies for truly obligate airborne pathogens such as *M. tuberculosis*, a shortage of respirators could put healthcare workers at increased risk in the event proper respiratory protection is unavailable for the care of patients infected with airborne-transmissible pathogens.

Transmission of influenza in acute care hospitals is a risk many magnitudes lower than the risk of community transmission and strategies that place excessive focus on preventing influenza transmission within healthcare facilities are of limited utility in an outbreak and divert attention from important community control strategies. Therefore, the precautions recommended to prevent transmission of novel H1N1 in healthcare facilities must be part of a larger program to prevent spread of illness in the community. Effective influenza control programs require coordinated application of a variety of strategies including the use of vaccines (when available), administration of both therapeutic and prophylactic antiviral agents, and targeted containment strategies such as social distancing in a manner which limits or delays disease transmission while preserving other essential societal functions. The basis of all pandemic planning is the recognition that both seasonal and pandemic influenza are predominantly community diseases (i.e., transmission occurs primarily in the community setting rather than in healthcare settings). Unlike other concerning pathogens, effective therapy for seasonal influenza (including the novel

H1N1 strain) is available and its administration rapidly decreases viral shedding in infected patients. Hence, influenza prevention and control programs must emphasize early recognition, physical separation of infected patients for the duration of illness (i.e. self-quarantine) and avoidance of unnecessary public gatherings where influenza may be transmitted.

The current strain of novel H1N1 has the same transmission dynamics as seasonal influenza and should be managed accordingly based on the currently available scientific evidence. Although the current H1N1 strain is behaving like seasonal influenza, this could change. The virus could mutate, or new reassorted viruses could emerge. Therefore, we urge vigilant monitoring of the novel H1N1 virus as it circulates in the Southern hemisphere throughout the summer and into the fall. If further evidence suggests that the transmission dynamics of the virus are changing, the current interim recommendations should be re-evaluated and updated accordingly.

1. Centers for Disease Control and Prevention. H1N1 Flu (Swine Flu). Accessed on May 15, 2009 at <http://www.cdc.gov/h1n1flu/>.
2. World Health Organization. Influenza A H1N1. Accessed on May 15, 2009 at <http://www.who.int/csr/disease/swineflu/en/index.html>.
3. Lemieux C, Brankston G, Gitterman L, Hirji Z, Gardam M. Questioning aerosol transmission of influenza. *Emerg Infect Dis* 2007; 13:173-4; author reply 174-5.
4. Bridges CB, Kuehnert MJ, Hall CB. Transmission of influenza: implications for control in health care settings. *Clin Infect Dis* 2003; 37:1094-101.
5. Brankston G, Gitterman L, Hirji Z, Lemieux C, Gardam M. Transmission of influenza A in human beings. *Lancet Infect Dis* 2007; 7:257-65.
6. Centers of Disease Control and Prevention. Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007. Available at <http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf>. Accessed on May 12, 2009.
7. Healthcare Infection Control Practices Advisory Committee (HICPAC). Interim Guidance for Infection Control for Care of Patients with Confirmed or Suspected Swine Influenza A (H1N1) Virus Infection in a Healthcare Setting. Atlanta, GA: Centers for Disease Control and Prevention, April 24, 2009.
8. Centers for Disease Control and Prevention. Update on School (K – 12) and Child Care Programs: Interim CDC Guidance in Response to Human Infections with the Novel Influenza A (H1N1) Virus. Accessed on May 15, 2009 at http://www.cdc.gov/h1n1flu/K12_dismissal.htm.
9. World Health Organization. Infection prevention and control in health care in providing care for confirmed or suspected A(H1N1) swine influenza patients, (Interim guidance, April 29, 2009). Accessed on May 15, 2009 at http://www.who.int/csr/resources/publications/infection_control/en/index.html.
10. BJC HealthCare. 2009 HiN1 Flu Patient Management (May 7, 2009). Accessed on May 15, 2009 at http://www.bjc.org/uploadedFiles/BJC_HealthCare/About_BJC/05-07%202009%20H1N1%20Flu%20Patient%20Management%20Grid.pdf.
11. Infectious Diseases Society of Washington. Statement of the Infectious Diseases Society of Washington (IDSW) on Swine Influenza A (H1N1) and Personal Protective Equipment for Healthcare Workers (May 7, 2009). Accessed on May 15, 2009 at

- <http://www.kingcounty.gov/healthservices/health/communicable/providers/advisories/2009/advisory090507.aspx>.
12. Iowa Department of Public Health. Infection Control and the Use of Surgical Masks and Respirators in Health Care Settings With Regard to Novel Influenza A (H1N1) 13 May 2009. Accessed on May 18, 2009 at http://www.idph.state.ia.us/h1n1/common/pdf/infection_control_use_of_masks_and_respirators_ins_hc_settings.pdf.
 13. Minnesota Department of Public Health. Minnesota Department of Health Interim Infection Control Guidelines for Healthcare Workers: H1N1 Novel Influenza. Accessed on May 18, 2009 at <http://www.health.state.mn.us/divs/idepc/diseases/flu/h1n1/hcp/ichcp.pdf>.
 14. New York City Department of Health and Mental Hygiene. 2009 New York City Department of Health and Mental Hygiene Health Alert #16: Influenza A H1N1 (Swine Origin) Update May 6, 2009. Accessed on May 18, 2009 at <http://www.nyc.gov/html/doh/downloads/pdf/cd/2009/09md16.pdf>.
 15. Public Health Seattle & King County. For King County health care providers: Communicable diseases, epidemiology and immunization resources and guidelines. Accessed on May 15, 2009 at <http://www.kingcounty.gov/healthservices/health/preparedness/pandemicflu/swineflu/providers.aspx>.
 16. T. R. Talbot (personal communication). Vanderbilt Medical Center Interim Infection Control Guidance for Inpatient Settings, effective May 5, 2009.
 17. County of Los Angeles Public Health. Novel Influenza A H1N1— Medical, Testing, and Antiviral Guidance, revised May 15, 2009. Accessed on May 20, 2009 at <http://www.lapublichealth.org/acd/docs/Swine/MTAguidance.pdf>.
 18. Colorado Department of Public Health and Environment. Infection Control Guidelines for Healthcare Workers for Novel Influenza A (H1N1) May 8, 2009. Accessed on May 20, 2009 at <http://www.cdphe.state.co.us/epr/Public/H1N1/0508HANUupdate.pdf>.
 19. World Health Organization. Assessing the severity of an influenza pandemic, May 11, 2009. Accessed on May 15, 2009 at http://www.who.int/csr/disease/swineflu/assess/disease_swineflu_assess_20090511/en/index.html.