

long-term acute care facility where I work, located in the southeastern United States.

The increased incidence of CDI on 1 unit in our facility during the month of December 2010 caused a concern, resulting in an opportunity for research and review of current practices. A CDI team including staff from all departments was developed. Collaboration between all departments was necessary to decrease the transmission of the infection while providing a safe environment for patients. It is known that the *C. difficile* bacterium is resistant to traditional cleaning methods and forms spores that are practically immortal. To eradicate this extraordinary bug requires extraordinary measures. The following interventions were discussed and implemented following the recommended guidelines from the Association for Professionals in Infection Control and Epidemiology: early recognition of CDI through utilization of the CDI algorithm and a computerized order set for early intervention and consistency; education, revision, and placement of contact precaution signs to reduce nosocomial infections; establishment and monitoring of adherence with environmental controls such as Bioquell (terminal room cleaning protocol piloted for use); hand hygiene measures enforced, including removal of hand gels from CDI rooms; patient and family education (publishing of a patient education brochure); review of evidence-based methods for patient treatment and management of disease; education of all staff (creation of *C. difficile* puzzle included in this article); and strong administrative support and participation.⁴

After completing as much research as I could on CDI, it was evident that those at risk for CDI include not only the patient, family, and staff but also my own family. Some antibiotic-resistant strains of *C. difficile* are emerging and show resistance to macrolides and fluoroquinolones. This further broadens the number of people at risk for acquiring disease. So, I asked the question, "What is my role or responsibility in the prevention and control of CDI?" My answer: "Take the lead and become a warrior instead of a carrier." I took a lead role in the education and prevention of CDI in our facility. The following puzzle (Figure 1) was created as a unique means of educating patients and staff on a unique bug. Collaboration between all departments and education of staff, patient, and families are the key to success. The CDI stops here.

ACKNOWLEDGMENTS

This article was written solely by the author on the basis of research, evidence-based practice, and events that occurred during actual patient care. No names are mentioned in this article other than that of the author and references used.

Potential conflicts of interest. The author declares no conflict of interest relevant to this article.

Barbara A. Latten, RN, BSN¹

Affiliations: 1. Wellstar Windy Hill Hospital, Marietta, Georgia.

Address correspondence to Barbara A. Latten, RN, BSN, Wellstar Windy Hill Hospital, 2540 Windy Hill Road, Marietta, GA 30062 (bell1922@gmail.com).

Infect Control Hosp Epidemiol 2011;32(12):1233-1235

© 2011 by The Society for Healthcare Epidemiology of America. All rights reserved. 0899-823X/2011/3212-0020\$15.00. DOI: 10.1086/663013

REFERENCES

1. Mayo Clinic staff. *C. difficile*: definition. <http://www.mayoclinic.com/health/c-difficile/DS00736>. Accessed October 14, 2011.
2. Jarvis W, Schlosser J, Jarvis A, Chinn R. National point prevalence of *Clostridium difficile* in US health care facility inpatients, 2008. *Am J Infect Control* 2009;37(4):263–270.
3. Kyne L, Hamel MB, Polavaram R, Kelly CP. Health care costs and mortality associated with nosocomial diarrhea due to *Clostridium difficile*. *Clin Infect Dis* 2002;34:346–353.
4. Association for Professionals in Infection Control and Epidemiology. Guide to the elimination of *Clostridium difficile* in healthcare settings, 2008. http://www.apic.org/Content/NavigationMenu/PracticeGuidance/APICEliminationGuides/C_diff_Elimination_guide_logo.pdf. Accessed October 14, 2011.

The Influenza A/H1N1 Pandemic in Southern Brazil

To the Editor—Since the circulation of influenza subtype H1N1 (A/H1N1 pandemic) was confirmed in Mexico, the United States, and Canada in April 2009,¹ with sustained transmission in Brazil in July 2009,² strategies to minimize complications, such as vaccination, antiviral agents, and hand hygiene, have been encouraged.³ In Brazil, in epidemiological week (EW) 47, 27,850 cases of severe acute respiratory infection due to pandemic A/H1N1 (SARI/A/H1N1) were reported, resulting in an incidence rate of 14.5 per 100,000 inhabitants. Most confirmed cases of SARI/A/H1N1 (15,874) were in women, of whom 12.1% were pregnant. In 18,269 (65.6%) cases, those affected were children younger than 19 years; of these, 7,603 (40.0%) were in children younger than 2 years.

The peak of the first wave of the pandemic occurred between EW 31 and EW 32 (August 2–15, 2009), with the highest concentration of cases in the southern states: Paraná, Santa Catarina, and Rio Grande do Sul (RS). This temperate region had the highest number of SARI/A/H1N1 cases (18,349), with an incidence of 66.2 per 100,000 inhabitants.

The mortality due to the A/H1N1 pandemic was 0.13 per 100,000 inhabitants (8,768) worldwide, 0.7 per 100,000 inhabitants (5,878) in the Americas, and 0.8 per 100,000 inhabitants (1,632) in Brazil. The incidence of deaths in the southern region of Brazil was 2.3 per 100,000 inhabitants (642), with 2.7 per 100,000 inhabitants (297) in RS.

It is evident that this pandemic has had a major impact

on the Brazilian population. For 2010, a free vaccination campaign was planned for the groups at higher risk in 2009 (children aged 6 months–2 years, healthy adults aged 20–39 years, those over 60 years of age or with chronic diseases, healthcare workers, native Brazilians, and pregnant women). Vaccination coverage for higher-risk groups was 84.1% (86,247,328 doses). In addition, workers from primary and hospital healthcare units were trained for the detection, reporting, and early initiation of free treatment for influenza-like illness (ILI).⁴

Following the implementation of these measures, there was a marked reduction in the incidence of SARI/A/H1N1, to 0.4 per 100,000 inhabitants (773 cases) by September 4, 2010 (EW 35). Even at the peak of the second wave, as of March 7, 2010 (EW 10), the incidence of SARI/A/H1N1 in southern Brazil was markedly reduced, at 1.1 per 100,000 inhabitants; the RS state government had yet to be notified of any cases. Most cases occurred in the northern tropical regions, including the states of Amazonas, Pará, Acre, Amapá, Roraima, and Tocantins, with an incidence of 1.6 per 100,000 inhabitants (256 cases). Of the 472 women who contracted SARI/A/H1N1, 24.8% were pregnant. This proportion was greater than that seen in 2009. Mortality from SARI/A/H1N1 was markedly reduced, with an overall incidence in Brazil of 0.05 per 100,000 inhabitants (99 deaths), 0.07 per 100,000 inhabitants (19 deaths) in the south and 0.3 per 100,000 inhabitants (44 deaths) in the north.

As of June 26, 2011 (EW 26), the Pan American Health Organization has reported low frequencies of ILI (<10.0%) in South America.⁵ In addition, vaccination coverage in Brazil has been sustained at 84.0% for high-risk groups (25,134,125 doses). This year, RS has been the state with the highest number of notifications in the country. Up to EW 29 (July 23, 2011), 70 (7.9%) cases of SARI/A/H1N1 had been reported, an incidence of 0.6 per 100,000. The peak occurred in EW 25. The female sex was affected in 35 (50.0%) of SARI/A/H1N1 cases; 7.1% of the cases occurred in pregnant women and 55.7% in children less than 19 years of age, including 25.6% in children less than 2 years of age. Fifty-nine (84.3%) of these case-patients had not been immunized, but 38 (54.3%) were part of the vaccination campaign priority groups for Brazil.

The mortality due to pandemic A/H1N1 in the state of RS is currently 0.08 per 100,000 inhabitants (9 deaths). Mortality due to pandemic A/H1N1 was compared with that due to other currently circulating viruses, such as respiratory syncytial virus (RSV; 186 cases [42.1%]) and seasonal influenza A and B (170 cases [38.9%]). Patients with influenza (seasonal and pandemic) were significantly more likely to die than patients infected with RSV, parainfluenza, or adenovirus ($P < .005$). Patients with pandemic A/H1N1 were also significantly more likely to die from their illness than patients with RSV ($P < .005$). Deaths were more likely to occur among unvaccinated individuals, those with comorbidities, and those who received oseltamivir within 48 hours of symptom onset.^{6–9}

After 2 years of the pandemic, it is clear that the incidence has decreased, possibly because of the use of antiviral agents and vaccination, but continued vigilance is required. Early implementation of bundles prior to the onset of winter in the Southern Hemisphere, including vaccination, hand hygiene, and social-distancing campaigns, coupled with epidemiological surveillance to detect and treat index cases and to vaccinate the unprotected, is essential to reduce the circulation of the pandemic A/H1N1 virus, decrease the number of cases, and, perhaps, improve outcomes.¹⁰

ACKNOWLEDGMENTS

Potential conflicts of interest. All authors report no conflicts of interest relevant to this article.

Marcelo Carneiro, MD, ID, MSc;^{1,2}
Marilina Assunta Bercini, MD, MSc;³
Beanir da Silva Lara, RN;⁴
Tatiana Schäffer Gregianini, PhD;⁵
Janete Aparecida Machado, ICP;²
Eliane Carlosso Krummenauer, RN, ICP;²
Mariana Schmidt Adam, RN, ICP;²
Nádia Kuplich, RN, ICP, MSc;⁶
Andreia Rosane Moura Valim, PhD;¹
Lessandra Michelim, MD, ID, PhD;⁷
Fabio Lopes Pedro, MD, ID, MSc;⁸
Flávia Juliana Piña Trench, MD, ID, MSc;⁹
Luis Fernando Waib, MD, ID, MSc;¹⁰
Lia Gonçalves Possuelo, PhD¹

Affiliations: 1. Biology and Pharmacy Department, Universidade de Santa Cruz do Sul, Santa Cruz do Sul, Brazil; 2. Infection Control and Hospital Epidemiology Committee, Hospital Santa Cruz, Santa Cruz do Sul, Brazil; 3. Division of Epidemiological Surveillance, State Center for Health Surveillance, Porto Alegre, Brazil; 4. Division of Immunization, 13th Regional Health Coordinating Board, Santa Cruz do Sul, Brazil; 5. Division of Virology, Institute for Biological Research/Central State Laboratory, Porto Alegre, Brazil; 6. Hospital Infection Control Committee, Hospital de Clínicas de Porto Alegre, Porto Alegre, Brazil; 7. Faculty of Medicine, Universidade de Caxias do Sul, Caxias do Sul, Brazil; and Infection Control and Hospital Epidemiology Committee, Hospital Pompéia, Hospital Unimed Nordeste, e Hospital Geral de Caxias, Caxias do Sul, Brazil; 8. Faculty of Medicine, Universidade Federal de Santa Maria, Santa Maria, Brazil; and Hospital Epidemiology Service, Hospital Santa Cruz, Santa Cruz do Sul, Brazil; 9. Hospital Infection Control Committee, Hospital Governador Ministro Costa Cavalcante, Foz do Iguaçu, Brazil; 10. Hospital Infection Control Committee, Hospital e Maternidade Celso Piaro–Pontifícia Universidade Católica de Campinas e Irmandade Santa Casa de Misericórdia de Campinas, São Paulo, Brazil.

Address correspondence to Marcelo Carneiro, MD, ID, MSc, Rua Thomaz Flores, 887-301, Bairro Centro 96810-090, Santa Cruz do Sul, Rio Grande do Sul, Brasil (carneiomarcelo@yahoo.com.br).

Infect Control Hosp Epidemiol 2011;32(12):1235–1237

© 2011 by The Society for Healthcare Epidemiology of America. All rights reserved. 0899-823X/2011/3212-0021\$15.00. DOI: 10.1086/663012

REFERENCES

1. Writing Committee of the WHO Consultation on Clinical Aspects of Pandemic (H1N1) 2009 Influenza. Clinical aspects of pandemic 2009 influenza A (H1N1) virus infection. *N Engl J Med* 2010;362(18):1708–1719.
2. Oliveira WK, Carmo EH, Penna GO, et al. Surveillance team for the pandemic influenza A (H1N1) 2009 in the Ministry of Health. Pandemic H1N1 influenza in Brazil: analysis of the first 34,506 notified cases of influenza-like illness with severe acute respiratory infection (SARI). *Euro Surveill* 2009;14(42): pii = 19362.
3. Santos RP, Konkewicz LR, Nagel F, et al. The 2009 H1N1 influenza A pandemic and hand hygiene practices in a hospital in the south of Brazil. *Infect Control Hosp Epidemiol* 2010;31(12): 1313–1315.
4. Muscatello DJ, Barr M, Thackway SV, MacIntyre CR. Epidemiology of influenza-like illness during pandemic (H1N1) 2009, New South Wales, Australia. *Emerg Infect Dis* 2011;17(7): 1240–1247.
5. Pan American Health Organization. Regional update EW 26: influenza, 2011. http://new.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=13997&Itemid=1091. Published July 12, 2011.
6. Karageorgopoulos DE, Vouloumanou EK, Korbila IP, Kapaskelis A, Falagas ME. Age distribution of cases of 2009 (H1N1) pandemic influenza in comparison with seasonal influenza. *PLoS ONE* 2011;6(7):e21690.
7. Dabanch J, Perret C, Nájera M, et al. Age as risk factor for death from pandemic (H1N1) 2009, Chile. *Emerg Infect Dis* 2011; 17(7):1256–1258.
8. Iglesias ALH, Kudo K, Manabe T, et al. Reducing occurrence and severity of pneumonia due to pandemic H1N1 2009 by early oseltamivir administration: a retrospective study in Mexico. *PLoS ONE* 2011;6(7):e21838.
9. Kumar, A. Early versus late oseltamivir treatment in severely ill patients with 2009 pandemic influenza A (H1N1): speed is life. *J Antimicrob Chemother* 2011;66(5):959–963.
10. Pebody RG, Harris R, Kafatos G, et al. Use of antiviral drugs to reduce household transmission of pandemic (H1N1) 2009, United Kingdom. *Emerg Infect Dis* 2011;17(6):990–999.