



Mississippi Morbidity Report

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Influenza in Long-term Care Facilities: The 2012-2013 influenza season is beginning to wind down in both the US and Mississippi, but flu viruses continue to circulate and cause illness in some parts of the country. Influenza activity (measured by the percent of patient visits that were due to influenza-like illness, reported through the US Outpatient Influenza-like Illness Surveillance Network) peaked in the US and Mississippi at the end of December 2012 and has been on a gradual decrease since that time. Although influenza activity in Mississippi and most other states is currently below baseline activity, several states are still reporting widespread or regional spread along with laboratory verification of influenza.

Nationally, individuals in the 65 years and older age group have been particularly affected by influenza during the current season, accounting for 50% of all influenza-associated hospitalizations. Individuals in this age group are typically at higher risk for serious complications from influenza, have some of the highest rates of hospitalization and on average account for 90% of influenza associated deaths each year. Additionally, persons 65 and older are often residents of long-term care (LTC) facilities or nursing homes placing them at risk for healthcare-associated influenza infections. In LTC facilities the transmission of influenza can occur between and among residents, health care providers, and visitors. The Centers for Disease Control and Prevention (CDC) has provided guidance on prevention measures and management of influenza outbreaks in LTC's (available at <http://www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm>), which calls for a multi-faceted approach. **Among the most important recommendations are vaccination of healthcare workers and residents and the prompt treatment of any resident with confirmed or suspected influenza with antivirals. Another key recommendation is antiviral chemoprophylaxis of all residents in the entire LTC facility as soon as an influenza outbreak is determined.** There are two vaccines currently available for people 65 years of age and older, the regular influenza vaccine and a "high-dose" vaccine, which contains four times the amount of antigen. Clinical trials indicate higher antibody levels among people aged 65 years and older after vaccination with the high dose.

In Mississippi, any suspected outbreak (including influenza in LTC facilities) is reportable to the Mississippi State Department of Health (MSDH) within 24 hours of first knowledge or suspicion. MSDH can assist with recommendations for infection control and antiviral treatment/prophylaxis and offer laboratory support to aid in the confirmation of influenza as the cause of the outbreak. In the 2012-2013 season there have been 33 influenza-associated outbreaks in LTC facilities reported to MSDH since November 7, 2012; the most recent on April 1, 2013. Thirty-two have been in skilled nursing facilities and one in a chemical dependency unit. By comparison, in the 2011-2012 influenza season there were only two outbreaks reported in Mississippi LTC facilities.

To better characterize the LTC facilities with reported influenza-associated outbreaks a questionnaire was developed to collect data regarding influenza vaccination for residents and staff, use of antivirals for treatment and prophylaxis and reporting to MSDH, in addition to other variables related to the facility and influenza. Some of the pertinent information is summarized in the table below.

Table

Average Resident Vaccination Rate (range)	76.4 %	(30.2%-100%)
Average Resident Attack Rate (range)	17.8%	(2.7%-39.3%)
Average Staff Vaccination Rate (range)	40.2%	(0%-90.0%)
Average Staff Attack Rate (range)	6.0%	(0%-25.0%)
Average Percent Ill Residents Treated with Antivirals	82.7%	(12.5%-100%)
Average Percent of Residents Prophylaxed with Antivirals	59.9%	(0%-97.5%)

An average of 76.4% of LTC residents received the regular influenza vaccine however, the majority of facilities were not aware of “high dose” vaccine for persons 65 and older and very few residents were vaccinated with the more effective vaccine. Overall staff vaccination rates were low and antivirals were underutilized for prophylaxis. In several of the LTC facilities there were delays in reporting of the outbreaks to MSDH with an average of 5 days between recognition of the outbreak and reporting to MSDH, ranging from 1-15 days. From the reported outbreaks a total of 63 residents were hospitalized, with 3 reported deaths. The predominant influenza virus identified in the outbreaks was influenza A H3N2, which has been the predominant influenza virus seen this season in both the US and Mississippi.

These data provide several opportunities with respect to LTC facility outbreaks for the 2013-2014 influenza season. Among the most important is working toward an improvement in both staff and resident vaccine rates, and offering high dose vaccine when appropriate. High levels of vaccination of both employees and residents is associated with decreased pneumonia mortality and all cause death rates among elderly in institutional settings. Following CDC guidelines for use of prophylactic antivirals for well residents, and having an awareness of the need to report influenza-associated outbreaks to MSDH in a timely manner are also areas for potential improvement. In February 2013, the CDC released a report discussing the interim adjusted estimates of seasonal vaccine effectiveness for the current season (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6207a2.htm>). The overall vaccine effectiveness against influenza A and B virus infections associated with medically attended acute respiratory illness was 56%. However, when analyzed by age group, the vaccine effectiveness for individuals 65 and older was not significant. This information reinforces the need for vaccination of staff around residents 65 and older to provide the best protection, and the use of high dose vaccine where appropriate, to give the residents the best chance of being protected.

Submitted by: Paul Byers, MD, Nykiconia Preacely, DrPh, MPH, Jannifer Anderson, RN, BSN and Alisha Brinson, MS; MSDH Office of Epidemiology. References on Request

Multidrug Resistant CRE Organisms in Mississippi: Enterobacteriaceae are a group of organisms commonly found in soil, water and the human GI tract, such as *E. coli*, *Klebsiella*, and *Enterobacter*. Recently reported Carbapenem-resistant Enterobacteriaceae (CRE) have emerged that are not only resistant to carbapenems (antibiotics such as imipenem, meropenem and doripenem) but also to a broad range of antibiotics, making these organisms virtually untreatable with routinely available antibiotics. Over the past 10 years, approximately 4% of U.S. hospitals, and 18% of acute long-term hospitals, have reported CRE infections in 42 states. Approximately 50% mortality has been reported from infections caused by CRE. CRE can be identified among *E.coli*, *Klebsiella* and *Enterobacter* by resistance to carbapenems, and resistance to all of the following third generation cephalosporins: ceftriaxone, cefotaxime and ceftazidime. There are several mechanisms for carbapenem resistance but a new form of resistance, from carbapenemase, is of particular concern. Carbapenemases are capable of breaking down a broad range of antibiotics. To identify carbapenemase as the mechanism of resistance in CRE, additional testing, such as the Modified Hodge Test, is required.

Klebsiella pneumoniae carbapenemase, or KPC, was first isolated in the U.S. in 2001 and is the most common form nationwide. Since 2009 other forms of carbapenemase, such as the New Delhi metallo-beta-lactamase have been isolated, primarily related to foreign importation. CRE is not currently a reportable condition with the Mississippi State Department of Health (MSDH). MSDH has identified two multidrug resistant clinical isolates from Mississippi residents with evidence of carbapenemase production. The first was an *Enterobacter cloacae* cultured from a urine specimen in August of 2012 and was susceptible only to amikacin (tigecycline susceptibility was not performed). The second was also an *Enterobacter cloacae* isolated from a wound culture in March, 2013. This isolate was susceptible only to amikacin, gentamicin and tigecycline, with KPC identified by molecular methods.

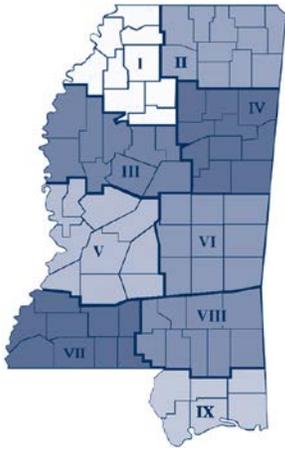
As a nearly untreatable organism, the best management strategy is to prevent infection and transmission. To prevent the spread of CRE within medical facilities, CDC has generated the following recommendations:

(Continued on Back Flap)

Mississippi

Provisional Reportable Disease Statistics

March 2013



		Public Health District									State Totals*			
		I	II	III	IV	V	VI	VII	VIII	IX	Mar 2013	Mar 2012	YTD 2013	YTD 2012
Sexually Transmitted Diseases	Primary & Secondary Syphilis	1	0	1	1	4	0	0	0	2	9	17	17	41
	Early Latent Syphilis	2	3	2	0	5	0	0	1	3	16	24	36	58
	Gonorrhea	55	46	70	48	172	31	39	40	55	556	444	1,456	1,781
	Chlamydia	226	169	266	138	424	159	100	125	195	1802	1,715	4,778	6,591
	HIV Disease	2	5	0	4	6	1	2	2	1	23	14	103	155
Mycobacterial Diseases	Pulmonary Tuberculosis (TB)	0	0	0	0	0	1	1	1	4	7	4	18	19
	Extrapulmonary TB	0	0	0	0	0	0	0	0	0	0	2	0	2
	Mycobacteria Other Than TB	1	2	2	2	5	3	3	1	6	25	28	93	67
Vaccine Preventable Diseases	Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	2	0	0	1	3	11	13	25
	Tetanus	0	0	0	0	0	0	0	0	0	0	0	0	1
	Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0	0
	Measles	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mumps	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hepatitis B (acute)	0	0	0	0	0	0	0	0	1	1	8	10	15
	Invasive <i>H. influenzae</i> disease	0	0	0	1	1	0	0	0	0	2	1	9	9
	Invasive Meningococcal disease	0	0	0	0	0	0	0	0	0	0	1	2	2
Enteric Diseases	Hepatitis A (acute)	0	0	0	0	0	0	0	0	0	0	1	1	1
	Salmonellosis	2	3	1	4	7	5	0	5	2	29	40	85	104
	Shigellosis	2	0	0	0	3	0	1	0	3	9	17	37	75
	Campylobacteriosis	1	1	0	0	4	0	0	1	2	9	7	20	20
	<i>E. coli</i> O157:H7/STEC/HUS	2	0	0	0	0	0	0	0	0	2	1	6	5
Zoonotic Diseases	Animal Rabies (bats)	0	0	0	0	0	0	0	0	0	0	1	0	1
	Lyme disease	0	0	0	0	0	0	0	0	0	0	0	0	1
	Rocky Mountain spotted fever	0	0	0	0	0	0	0	0	0	0	0	0	0
	West Nile virus	0	0	0	0	1	0	0	0	0	1	0	1	0

*Totals include reports from Department of Corrections and those not reported from a specific District.

1. Reinforce and maintain routine hand hygiene for healthcare personnel;
2. Place patients infected or colonized with CRE on contact precautions including: hand hygiene prior to donning gown and gloves, donning gown and gloves prior to entering the affected patient's room, and removal of gown and gloves prior to exiting room;
3. Educate healthcare personnel about CRE and other Multidrug Resistant Organisms (MDRO's).
4. Minimize the use of invasive devices such as central venous lines, endotracheal tubes and urinary catheters; and remove such devices as soon as clinically appropriate;
5. Laboratories should notify appropriate infection control personnel on first knowledge of identifying CRE organism;
6. Institute and maintain an antimicrobial stewardship program, with the goal of using the most appropriate antibiotics for the proper duration of time; and
7. On transfer to another facility, institutions should share information about the status of infection or colonization with CRE (or any multidrug resistant organism) so that the receiving institution may take the appropriate steps.

CRE organisms, including those producing carbapenemase, have been identified in Mississippi. Lacking effective treatment options, infections with these organisms can be serious and are frequently deadly. Although MSDH has had limited reports of CRE, the Office of Communicable Diseases will be conducting a survey of acute care inpatient facilities statewide to better understand the current distribution of CRE. Aggressive infection control procedures, prior to the widespread establishment of these organisms in a healthcare environment, is the best way to minimize the risk posed by CRE. For additional guidance please see the *2012 CRE Toolkit - Guidance for Control of Carbapenem-resistant Enterobacteriaceae (CRE)* @ <http://www.cdc.gov/hai/organisms/cre/cre-toolkit/f-level-prevention.html#facility-measures>.

Submitted by Thomas Dobbs, MD, MPH and Cindy Allard, RN, BSN; MSDH Office of Epidemiology. References on Request.

Erratum: As a correction to the March 2013 MMR, only physicians licensed in Mississippi who prescribe or propose to prescribe controlled substances are required to register with the Mississippi Prescription Monitoring Program (MPMP) by December 31, 2013.