Infectious Disease Epidemiology
LA Office of Public Health
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Approaching the "Post-Antibiotic Era"?

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Region 6 Medical Director, HAI Advisory Committee Member

Infectious diseases were once the leading killers of the world. In the US in 1900, pneumonia, TB and infectious diarrheas were the first three causes of death. By 1997 and beyond, heart disease and cancer dominated, while pneumonia had dropped to a distant 6th place. Since penicillin was first introduced in 1943, the entire medical landscape shifted, with infectious diseases steadily retreating. The public has always felt reassured that the proliferation of new and improved products would keep pace with the rapid appearance of what scientist call "resistant" germs. What has followed has been a race between human ingenuity and microbial evolution, with the same holding true for viral, fungal, parasitic diseases other organisms.

Many microbes (and other microscopic organisms) proliferate in astonishing numbers and with breath-taking rapidity. They respond to changes in their environment by eventually developing and transferring genetic resistance to each and every antibiotic that is thrown their way. Penicillin-resistant *Staphylococcus* was already identified before the mass introduction of penicillin. As each new antibiotic hit the market (tetracycline, erythromycin, methicillin, gentamicin, vancomycin, imipenem, ceftazidime, levofloxin, and more recently linezolid, daptomycin and ceftaroline), some resistant organisms have developed.

It is now estimated by the CDC that there are over 2 million illnesses and 23,000 deaths each year caused by antibiotic resistant organisms. The top five culprits by number of cases are Streptococcus *pneumonieae* (1,200,000), *Campylobactor* (310,000), *Neisseria gonorrhaeae* (246,000), *Salmonella* (100,000) and Methicillin-resistant *Staphylococcus aureus* (MRSA) (80,000). One particular organism, *Clostridium difficile*, proliferates when antibiotics are given for other reasons and causes 250,000 cases and 14,000 deaths although it is not itself antibiotic resistant. *C. difficile* alone results in over a billion dollars of excess medical costs a year.
While this counter-attack of bacterial resistance has been increasing, the number of new antibiotics has been steadily dwindling. From 1980-1984, around 18 new antibiotics were developed. By 1995-1999, this number had dropped to 11 and from 2010-2012, only one new antibiotic was developed and approved.

Beyond the growing problem of resistance, antibiotics themselves are not without side effects, which result in one out of five emergency room visits. This number is particularly true in children under the age of 18 for whom drug reactions to antibiotics are the most common cause of medication side effects.

There is no doubt that the overuse of antibiotics has contributed to the worsening of this national crisis. While prescription patterns vary widely, the states with the highest antibiotic prescriptions rates per capita include Louisiana, Mississippi, Alabama, Arkansas, Tennessee, Kentucky, Ohio and West Virginia. The lowest rates include the states of California, Oregon, Washington, Colorado, New Hampshire and Vermont.

("Post-Antibiotic Era" continued on page 2)

The HAI program allows Louisiana to create a collaborative effort to prevent healthcare associated infections. It includes development of a state plan for preventing healthcare associated infections, development of a monitoring system, and implementation of a prevention program. Visit dhh.louisiana.gov/idepi to access the Healthcare-Associated Infections Resource Center.

("Post Antibiotic-Era")
Although preventive measures vary with the organism, some of the most troublesome organisms are often found within the hospital setting and include *C. difficile*, *Enterobacteriaceae*, *Acinetobacter*, resistant *Candida* (fungus), *Enterobacteriaceae*, *Enteroccoccus*, *Pseudomonas aeruginosa*, and MRSA. Both healthcare providers and patients should follow some simple (and not so simple) rules. For the public, wash your hands, long and hard, and take antibiotics only when needed and then only as directed. For providers, know the resistant organisms in your institutions. If you have drug-resistant organisms, personnel, especially the infection control practitioner, should be alerted within your own and other facilities. Staff and other patients should be protected from infectious cases and remove medical devices (including catheters, IV lines, ventilators and drains) should be removed as soon as possible.

The CDC offers a 4-part solution to tackling this vexing problem: (1) Prevent infections, (2) Track resistance patterns, (3) Practice antibiotic stewardship and (4) Develop new antibiotics and diagnostic tests. Antibiotics are wonderful tools, but they are double-edged swords if not used correctly. If you do not need antibiotics, do not insist on getting them. Remember, it takes a busy doctor a couple of minutes to write a prescription, but 20 or more to explain why they should not be prescribed when you are your loved will not benefit. If we do not use antibiotics wisely, we may well enter into the "post antibiotic era" when none are available.

http://www.cdc.gov/drugresistance/threat-report-2013

From the NHSN Help Desk: Changing Facility Ownership

The following is a transcript of an e-mail exchange that was sent to the NHSN Help Desk in response to Louisiana facilities that may be experiencing public to private ownership conversion and subsequent change in CCN Medicare Provider numbers. Please follow the guidance below if your facility is of this type.

From: Erica Washington [mailto:Erica.Washington@LA.GOV]
Sent: Wednesday, September 04, 2013 2:32 PM
Subject: Facility conversion inquiry

Hello,
This inquiry is one that will be shared by facilities in Louisiana because several hospitals are converting from public to private ownership. In this conversion, the hospitals will get a new name and CCN#. I was originally going to suggest that IP's update their facility information in NHSN; however, the following questions arise:

- Will they be able to access old NHSN data that was logged for their former facility?
- Will CMS understand that the measures reported with the old CCN affect the reimbursements for the facility's new CCN?

From: Schneider, Amy **On Behalf Of** NHSN (CDC)
Sent: Thursday, September 05, 2013 10:09 AM
Subject: RE: Facility conversion inquiry

Thank you for your email. Because only the ownership, name and CCN will be changing we would request that these facilities DO NOT enroll a brand new facility in NHSN. These facilities can simply update the name and CCN of the facility within NHSN on the facility information page which you've highlighted in your screenshot. Changing these values will not affect the ability for the facility users nor CDC to see the historical data. All data, historical and future, would be entered into the same NHSN facility.

As far as what CMS does with using data from the old CCN after the new CCN has been obtained, you'll need to reach out to your local QIO or the QIOSC (HRPQIOSC@iaqio.sdps.org) to obtain that information. We would recommend not changing the facility CCN within NHSN until the last data reported under that CCN has been sent to CMS. For example, if the old CCN was effective until September 30, 2013, the old CCN should remain in NHSN until after the Q3 2013 data has been sent to CMS (February 15, 2014).

Reporting Requirements and Deadlines in NHSN per CMS Current Rules

Healthcare Settings	NHSN Event	CMS Reporting Deadlines
Acute Care Facilities that participate in CMS Hospital IQR Program *Medicare beneficiary number required for all applicable patients beginning July 2014*	**CLABSI** Start Q1 2011 - adult, pediatric, and neonatal ICUs Start Q1 2015 - adult and pediatric medical, surgical, and medical/surgical wards	Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15
	CAUTI Start Q1 2012 - adult and pediatric ICUs Start Q1 2015 - adult and pediatric medical, surgical, and medical/surgical wards	Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15
	SSI (following COLO Procedures) (Start Q1 2012)	Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15
	SSI (following HYST Procedures) (Start Q1 2012)	Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15
	MRSA Bacteremia LabID Event (FacWideIN) (Start Q1 2013)	Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15
	***C. difficile* LabID Event (FacWideIN)** (Start Q1 2013)	Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15
	Healthcare Personnel Influenza Vaccination (Start Q1 2013)	Q4 (Oct.-Dec.) - Q1 (Jan.-March): May 15

Healthcare Settings	NHSN Event	CMS Reporting Deadlines	
Outpatient Dialysis Facilities that participate in CMS ESRD QIP Program	**Dialysis Event (includes Positive blood culture, I.V. antimicrobial start, and Signs of vascular access infection)** (Start 2012)	Q1-Q4 2012 (Jan.-Dec.: 3 month minimum): April 30, 2013 Q1-Q4 2013 (Jan.-Dec.: 6 month minimum): April 15, 2014	
Long-term Acute Care Facilities (LTACs) that participate in CMS LTCHQR Program *Starting January 2014, reporting deadline will be 1.5 months after the end of the quarter* Data from Q4 2013 & Q1 2014 are both due on May 15, 2014	**CLABSI (all bedded inpatient care locations)** (Start Q4 2012)	**Q4 2012 – Q4 2013** Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15	**Starting Q1 2014** Q1 (Jan.-March): May 15 Q2 (April-June): August 15 Q3 (Jul.-Sept.): November 15 Q4 (Oct.-Dec.): February 15
	CAUTI (all bedded inpatient care locations) (Start Q4 2012)	**Q4 2012 – Q4 2013** Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15	**Starting Q1 2014** Q1 (Jan.-March): May 15 Q2 (April-June): August 15 Q3 (Jul.-Sept.): November 15 Q4 (Oct.-Dec.): February 15
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	***C. difficile* LabID Event (FacWideIN)** (Start Q1 2015)	Q1 (Jan.-March): May 15 Q2 (April-June): August 15 Q3 (Jul.-Sept.): November 15 Q4 (Oct.-Dec.): February 15	
	Healthcare Personnel Influenza Vaccination (Start Q4 2014)	Q4 (Oct.-Dec.) – Q1 (Jan.-March): May 15	
Inpatient Rehabilitation Facilities (IRFs) that participate in CMS Quality Reporting Program	**CAUTI (all bedded inpatient care locations)** (Start Q4 2012)	Q1 (Jan.-March): August 15 Q2 (April-June): November 15 Q3 (Jul.-Sept.): February 15 Q4 (Oct.-Dec.): May 15	
	Healthcare Personnel Influenza Vaccination (Start Q4 2014)	Q4 (Oct.-Dec.) – Q1 (Jan.-March): May 15	

Healthcare Settings	NHSN Event	CMS Reporting Deadlines
PPS-Exempt Cancer Facilities that participate in CMS PCHQR Program	**CLABSI (all bedded inpatient care locations)**	Q1 (Jan.-March): August 15
	(Start Q1 2013)	Q2 (April-June): November 15
		Q3 (Jul.-Sept.): February 15
		Q4 (Oct.-Dec.): May 15
	CAUTI (all bedded inpatient care locations)	Q1 (Jan.-March): August 15
	(Start Q1 2013)	Q2 (April-June): November 15
		Q3 (Jul.-Sept.): February 15
		Q4 (Oct.-Dec.): May 15
	SSI (following COLO Procedures)	Q1 (Jan.-March): August 15
	(Start Q1 2014)	Q2 (April-June): November 15
		Q3 (Jul.-Sept.): February 15
		Q4 (Oct.-Dec.): May 15
	SSI (following HYST Procedures)	Q1 (Jan.-March): August 15
	(Start Q1 2014)	Q2 (April-June): November 15
		Q3 (Jul.-Sept.): February 15
		Q4 (Oct.-Dec.): May 15