Healthcare Quality Reporting Program

HOSPITAL-ACQUIRED INFECTIONS AND PREVENTION ADVISORY SUBCOMMITTEE

8:00-9:00am, 7/16/2012 at Healthcentric Advisors

Goals/Objectives
▪ To discuss HAI work to date and make policy recommendations for pending and upcoming reports

Members		
✓ Nicole Alexander, MD	☐ Linda McDonald, RN	✓ Georgette Uttley, MEd, BSN, RN
✓ Rosa Baier, MPH	✓ Leonard Mermel, DO, ScM	☐ Nancy Vallande, MSM, MT, CIC
☐ Utpala Bandy, MD	✓ Pat Mastors	✓ Cindy Vanner
✓ Marlene Fishman, MPH, CIC	✓ Robin Neale, MT (ASCP), SM,CIC	☐ Margaret Vigorito, MS, RN
☐ Yongwen Jiang	✓ Kathleen O'Connell, RN,BSN,CIC	✓ Samara Viner-Brown, MS
☐ Julie Jefferson, RN, MPH, CIC	☐ Lee Ann Quinn, RN, BS, CIC	
✓ Maureen Marsella, RN, BS	✓ Janet Robinson, RN, Med, CIC	

Time	Topic/Notes

8:00am **Welcome & Administrative Updates**
Leonard Mermel, DO, ScM
Samara Viner-Brown, MS

- Len opened the meeting and reviewed the agenda topics, which include discussion of CDI reporting plans and the requirement to educate patients on infection risk.
- The group then reviewed the action items from the previous meeting:
  - **Discuss requirement to inform patients of infection risk** (Subcommittee) – Pending

    Today's agenda included this discussion.
  - **Provide HDD data analysis of CDI rates** (Kathy Taylor) – Complete

    Today's agenda included discussion of the HDD data.
  - **Evaluate diamond calculations for CDI vs. HDDS** (Rosa) – Complete

    Today's agenda included discussion of the diamond calculations.
  - **Comment on draft HHS letter by COB 6/20** (Subcommittee) – Complete

    Rosa incorporated Subcommittee members' comments into the final version of the HHS letter about the National Action Plan for HAI.
  - **Finalize and send HHS letter by COB 6/21** (Rosa) – Complete

    Rosa submitted the HHS letter ahead of the comment deadline.

8:30am **CDI Reporting**
Leonard Mermel, DO, ScM
Rosa Baier, MPH

- As discussed in June:
  - The 5/30 Steering Committee approved the HAI Subcommittee's recommendation to link to existing Medicare reports, where available, and cease generating local reports (e.g., for SCIP).
  - The committee also directed that subcommittees continue local data collection and reporting efforts until national reports are published, if national reporting is planned but has not yet begun. This is because reporting topics reflect and support local priorities, and the Steering Committee wants to ensure that there are no reporting delays. Once national reports exist, local reports can be removed from HEALTH's site to eliminate any potential confusion.
  - Medicare will not begin reporting Lab ID until Spring 2014.
- With that guidance in mind, the discussion returned to the CDI measurement options:
  - NHSN CDI rates
  - NHSN Lab ID
  - Hospital Discharge Data Set (HDD) data, using the present on admission indicator
- In preparation for today's discussion, Kathy Taylor, analyst from HEALTH, calculated incidence rates using HDD data and Blake generated mock diamond reports using both the NHSN CDI and HDD data sources. Overall, the HDD resulted in greater numbers of *C. Difficile* cases than the NHSN CDI methodology. With the HDD, half of the hospitals received the same number of diamonds; half had worse (lower) diamond ratings.
- Rosa noted that the reports have fewer quarters of data (comparing the most recent 2 quarters to a 2-quarter baseline) than previously discussed for the SIR methods (comparing 2 or more to a 4-quarter baseline); but said that this allows us to begin to understand the potential differences between the two data sources.
- The group discussed next steps, including:
  - The pros and cons of the two data sources (NHSN CDI and HDD) vs. the Lab ID methodology that hospitals began reporting to Medicare on July 1, 2012. Most believe that the NHSN CDI method is the most accurate, but recognize that it is burdensome to collect and submit more than one data source.
  - Critically examining the reporting methodologies to see if there is sufficient data to publicly report the NHSN CDI data gathered to date (5 quarters). The CDC has been very cautious in their advice to us, but we may have enough data to create a report using the cautious methods we've discussed (SIRs, confidence intervals and diamond).
  - Reporting issues that arise when hospitals switch tests over time (e.g., beginning to use higher-sensitivity PCR testing vs. other methods). Some hospitals have changed their testing methods, so we should survey them again to determine what they are using now and when they changed. This survey could include:

- Which test is used
- Which test was previously used
- When did the hospital change to the new process
- What are the nurse protocols related to infection control
- What is the process related to hand hygiene monitoring

Discussion included possible reporting of process measures, too.

- Suggesting to the Steering Committee that the program generate a white paper in lieu of a data report, discussing *C. Difficile*, what the state has done and what information is currently available or anticipated. The paper would document our achievements for example in hand hygiene, environmental cleaning, specimen collection, nursing protocols to isolate, and steps towards *C. Difficile* elimination.
- In the absence of a new vote, the existing recommendation carries forward and hospitals will continue collecting NHSN CDI data for at least another quarter (Q3 2012). Ann will also send the first reminder for the Q1 2012 data, which are due in about four weeks.

8:40am **Discussion of Hospital Requirement to Inform Patients of Infection Risk**
Pat Mastors

- The following is embedded in the legislative mandate to publicly report HAIs:
  - "The advisory committee shall recommend written guidelines to be given to every individual before and if necessary during their hospitalization for the purpose of preventing hospital-acquired infections. In emergency hospitalizations, written guidelines shall be given within a reasonable period of time." (R.I.G.L. Chapter 23-17.17)
- The group discussed the requirement:
  - When the Subcommittee first began meeting, hospitals indicated that they were all already meeting this requirement through existing materials provided to patients.
  - Today, participants reviewed a document shared by Pat, which includes information for patients and is intended to be given upon admission to acute-care settings to help avoid infections. This type of information could be adapted for hospitals to provide to patients, but the group discussed the need to ensure it meets a 5th grade reading level and Gina commented on the importance of ensuring it's available in the five most common languages.
  - Several participants noted other documents their individual hospitals provide to patients for this purpose, such as Speak Up (from the Joint Commission). Robin noted that Speak Up also includes specific documents that address individual hospital needs (maternal and child concerns, etc.). There are also similar brochures created by the Infection Control Preventionists of Southern New England (ICPSNE).

8:55am **Open Forum & Action Items**
Rosa Baier, MPH

- Pat reported that *USA Today* will have a front page article on Friday, July 20, 2012 about *C. Difficile*. She suggested that Len draft a letter to the editor in anticipation of the article, discussing the work that Rhode Island has already done in working towards preventing *C. Difficile*. The group it may not be possible to write an editorial in that timeframe, but agreed to explore the *C. Difficile* materials already available on HEALTH's site and how to highlight them from the program's website.

- Rosa reminded the group about the Public Hearing for *the Rules and Regulations Pertaining to* Immunization, scheduled for 7/17 at 1pm at HEALTH. She encouraged all interested parties to attend.
- **Action items**
    - Survey hospitals about CDI testing and processes (Maureen/Margaret)
    - Research the Speak Up and ICPSNE patient education materials (Ann)
    - Consider writing a *C. Difficile* editorial (Len)
    - Identify the *C. Difficile* materials available from HEALTH (Nicole)
    - Put *C. Difficile* information on the program's website (Maureen)
- **Next meeting:** 8/20/12 at Healthcentric Advisors

Suggested Information for Patients upon admission to acute care setting (or during PAT)

1) While hospitalized, appoint a **companion** if possible. Having a friend or relative with you can be important the first night after surgery and at times you are too sick to speak for yourself.
(If the companion can perform simple tasks - like tidy the bed or fill the water pitcher - it will free up the nurses for more sophisticated patient care. When you call on your nurses, they'll know it's important and you'll find them appreciative.)

2) Insist on **cleanliness from everyone who touches you**. It can feel awkward to ask your visitor, doctor or nurse to wash their hands before touching you, but good hand hygiene is the best way to avoid infection in the hospital. The best approach is a combination of routine hand washing and sanitizing gels. Use your knuckles to press elevator buttons.

3) In the hospital setting it is especially important to wash your hands before eating, and to **avoid touching your mouth**, eyes or wounds with unclean hands. Clostridium Difficile or "C-diff" is a bacteria carried by some of us in our digestive systems. C-diff (along with certain other infectious germs) can also gain access into our body when we touch an object (a table or bedrail for example) that was not thoroughly cleaned, and then touch our mouth, nose or eyes. C-diff often won't cause problems until you begin to take antibiotics for another illness. At that point the C. diff organism can grow out of control, making you very ill. (Hand-washing has proved more effective than alcohol gels in eliminating C-diff). Keep purses, briefcases and backpacks (whose bottoms carry large amounts of bacteria) off beds and tables. Don't pass along magazines and books to other patients (or accept them from others). If something falls on the floor, never put it back on the bed, bed table or chair.

4) **Be alert for how infections are transmitted**. Germs, such as MRSA (an infection resistant to many antibiotics), enter the skin through surgical wounds or intravenous (IV) lines inserted into your body to deliver drugs, fluids or nutrition. Any break in the skin is a potential "port of entry" for infection. Germs can also cause problems around a urinary catheter that is left in too long. If the skin around a surgical wound, intravenous line or catheter should become red, swollen, hot or painful, or if you develop chills or feel feverish, alert hospital staff immediately.

5) **Write down developments**, medications administered, names of procedures, instructions given, and dates and times of the above. Also jot down any questions as they occur to you, so you won't forget them when the caregiver enters your room. This engagement on your part will help you manage your care (and recover more quickly) while in the hospital, and after discharge once you're in a rehab facility or at home. Before leaving the hospital, ask for a conversation about discharge plans, so you are left feeling you understand your health issues in your own language, and know what concerning changes to look out for once you're discharged. You should also ensure you have an "action plan" if any of these concerning changes develop.

6) **Be polite but assertive when necessary**. Complaining too often or too aggressively about minor inconveniences can alienate the multi-tasking staff. But you should expect reasonable and timely responses to reasonable requests and questions. If you're being neglected, ask to speak to the hospital's patient advocate or social-service worker.

Rhode Island Healthcare Quality Reporting Program
Hospital-Acquired Infections Subcommittee

Leonard Mermel, DO, ScM
HAI Subcommittee Co-Chair and Academic Researcher (Rhode Island Hospital)

Rosa Baier, MPH
Facilitator and Rhode Island HAI Coordinator (Rhode Island Department of Health)

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Infection Prevention Representative and Infection Control Practitioners of Southeast New England Liaison (Rhode Island Hospital)

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Medicare QIO Liaison (Healthcentric Advisors)

Linda McDonald, RN
Organized Labor Representative (United Nurses and Allied Professionals)

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Janet Robinson, MEd, RN, CIC
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Nancy Vallande, MSM, MT, CIC
Infection Prevention Representative (The Miriam Hospital)

Margaret Vigorito, MS, RN
ICU Collaborative Representative (Healthcentric Advisors)

Cindy Vanner
State Laboratory Representative (Rhode Island Department of Health)

Samara Viner-Brown, MS
HAI Subcommittee Co-Chair (Rhode Island Department of Health)

June 21, 2012

Department of Health and Human Services (HHS)
Office of Healthcare Quality
200 Independence Ave, SW., Room 711G
Washington, DC 20201,
Attention: Draft National HAI AP

To Whom It May Concern:

On behalf of the Rhode Island Department of Health's Hospital-Acquired Infections (HAI) Subcommittee, which we facilitate, we are writing to provide our committee's feedback on the draft *National Action Plan to Prevent Healthcare-Associated Infections: Roadmap to Elimination (HAI AP).*

The Rhode Island HAI Subcommittee is a multi-disciplinary stakeholder group charged with implementing our state's HAI Plan, under the 2009 National HAI AP, and publicly reporting HAI, as part of a legislatively-mandated healthcare quality reporting program.

Our group membership, listed at left, is mandated by Rhode Island General Law Chapter 23-17.17-6 and includes the following categories listed in the Federal Register: the general public; healthcare, professional and educational organizations/societies; health system providers; state and local public health agencies; public health organizations; and insurers and business groups. This composition ensures that we have the knowledge and expertise to inform implementation of our state's HAI Plan and also to react to the draft HAI AP.

First, we commend HHS for including numerous federal agencies in the development of the draft HAI AP, for explicitly stating that your goal is to coordinate and maximize the efficiency of prevention efforts across the federal government, and for specifying different agencies' roles in implementing the HAI AP. Ensuring alignment and preventing duplication is of the utmost importance, both (1) to ensure that all payors, policymakers and stakeholders are collecting and benchmarking performance using the same methods and (2) to streamline data requests for providers, encouraging efficiency.

We strongly encourage further alignment between federal agencies, such as the CDC and CMS, to ensure that requirements for NSHN surveillance and public reporting are synchronized. An example of the impact of federal misalignment on state-level work to implement HAI Plans is our committee's work to publicly report *C. difficile*: In 2009, we selected the NHSN *C. difficile* infection (CDI) methodology (one of two CDC-provided choices). We now have five quarters of data collected and planned to begin releasing public reports in late 2012, once we accrued sufficient data to account for variability. However, beginning in July 2012, CMS is requiring Inpatient Prospective Payment System (IPPS) hospitals to submit data using the NHSN Lab ID methodology; this includes all 11 acute-care hospitals in Rhode Island. (All other hospitals nationwide will be required to begin submitting these data in January 2013.) This is problematic for local

reporting efforts, because our state's hospital infection preventionists cannot commit the resources to collect both CDI and Lab ID. Switching to Lab ID may delay public reporting by 18 months or more—and yet, the infection preventionists believe strongly that CDI data most accurately reflect incidence and would have preferred to continue CDI surveillance and reporting.

Second, we support the expansion of the draft HAI AP from the acute-care setting to other healthcare settings, including long-term care. Infections require care coordination and precautions as patients transition from one provider to another, making HAIs an important issue for providers across the care continuum. Expanding the HAI AP to include other healthcare settings recognizes the cross-setting nature of HAIs and elevates the importance of related prevention efforts within local communities.

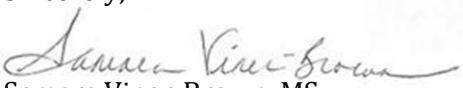
We urge caution, however, if long-term care facilities are required to submit data to NHSN, as was recently stated by Dr. Nimalie Stone from the CDC at the American Infection Control Practitioners Annual Conference. The infrastructure and resources are significantly different in long-term care as compared to acute care. The vast majority of long-term care facilities do not have dedicated infection preventionists, as hospitals do, and staff often have limited access to and ability to use computers. These facilities will need resources, education and assistance to submit NHSN data while minimizing the opportunity cost with regards to infection prevention activities.

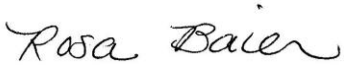
Third, we applaud the draft HAI AP's inclusion of healthcare worker influenza vaccination. Vaccinating healthcare workers is an important strategy to protect vulnerable patients by curbing the transmission of influenza. In Rhode Island, we publicly report healthcare worker influenza vaccination rates for our hospitals and are piloting a similar report for nursing homes. We also have draft rules and regulations that propose mandating influenza vaccination for workers. Including healthcare worker influenza vaccination in the HAI AP will further state and national efforts to increase influenza vaccination uptake.

Finally, we suggest that HHS incorporate patent engagement and participation into the draft HAI AP. Locally and nationally, the driving purpose behind public reporting is to inform and protect the public, and to achieve the greatest possible quality of care. Yet despite our collective commitment and best efforts, the extent to which the data we are reporting are meaningful and actionable to consumers remains unclear. We support greater patent engagement and participation to help drive the agenda for meaningful improvement in HAIs, along with solutions that inform and educate patients, enhance health literacy, foster better patient-provider communication and encourage patients to take greater ownership of their healthcare experience.

We thank you for your consideration of these comments and encourage you to contact us with questions or for clarification.

Sincerely,





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CC: HAI Subcommittee Members

June 25, 2012

Department of Health and Human Services (HHS)
Office of Healthcare Quality
200 Independence Ave., SW., Room 711G
Washington, DC 20201
Attention: Draft National HAI AP

To whom it May Concern:

As the consumer representative since 2008 on the RI Department of Health's Hospital-Acquired Infections (HAI) Subcommittee, an advisor to the CMS Partnership for Patients Patient-Family Engagement Network convened in May 2012, a person who lost her father to complications of an HAI (and worked to help pass two Rhode Island state laws enhancing patient safety), and an ardent supporter of patient engagement as a driver of quality improvement in health care, I am writing to provide expanded feedback on the draft *National Action Plan to Prevent Healthcare-Associated Infections: Roadmap to Elimination (HAI AP).*

I'm pleased that the HAI Subcommittee on which I serve has conveyed to you by separate correspondence (to which my signature is affixed) an endorsement of many of HHS's HAI reduction initiatives, as well as areas of continuing challenge that would benefit from your office's expedited direction and support. Areas where I feel your support and guidance are particularly needed include the following:

1) Resolve inconsistencies in the guidelines promulgated by the various federal agencies that govern or direct HAI reporting. Currently, the lack of clear mandates and guidelines leaves many if not most hospitals reporting the minimum required. Rhode Island has in fact gone beyond federally mandated reporting requirements and begun to voluntarily gather data on CDI (Clostridium difficile infections), which you are likely aware are "at their highest levels in history", according to the CDC.[1] While RI should be commended for its pioneering stance in this regard, we on the Subcommittee continue to struggle with which data guidelines to use (we've spent more than a year just determining how "hospital-acquired" is defined). Absent clear guidance, there is also concern that the resources we're devoting to this effort will be moot once new federal directives are finally announced. These factors drag out the process, and compromise our capacity to deliver information that is meaningful and actionable to the public. The result is that most consumers remain unaware of the risks of HAI in healthcare settings, and so are unable to proactively partner in their care. This leaves nearly 300 people still dying each day in hospitals from HAIs that might have been prevented.

2) Patient engagement is critical. In today's complex, multitasking medical environment, human error is unavoidable. Patients and their advocates deserve care that acknowledges this truth. The increased incidence of C-diff infection, and of pan-resistant MDROs (infections resistant to all known antibiotic therapies) underscore the need for a "common mental model" of HAI prevention. The public must understand the risks, symptoms, course of

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[1] For the report, researchers looked at data from the Emerging Infections Program, NHSN, and c diff prevention programs in Illinois, Massachusetts, and New York. Key findings include:

- 94% of all CDIs were related to various precedent and concurrent health-care exposures
- Of these patients, 75% had CDI onset outside of a hospital.
- Some cases occurred in patients who were exposed to multiple settings including nursing homes and hospitals.
- Mortality from CDI increased from 3,000 deaths per year during 1999–2000 to 14,000 during 2006–2007; over 90% of these cases were in patients aged 65 or older.
- Hospital-onset CDI are estimated to cost $5,042–$7,179 per case.
- Much of the recent increase in the incidence and mortality of CDIs is attributed to the emergence and spread of a hypervirulent, resistant strain of *C. difficile*.

(Sources: The Advisory Board Daily Briefing, http://advisory.com, March 7, 2012; Centers for Disease Control and Prevention, http://www.cdc.gov, March 6, 2012)

disease, and behaviors s/he can undertake to mitigate the risk of contracting an HAI. (For instance, hospitalized patients might be told that to avoid C-diff infection they should never touch mouth or nose with unclean hands). Rhode Island has passed a law requiring distribution of such information to patients upon admission, or as soon after admission as possible (R.I.G.L. Chapter 23-17.17). As we move toward implementation, this initiative may serve as a model for other states.

3) More resources are needed to research, prevent and combat HAIs in medical settings, reflecting the critical nature of this public health threat. I've become increasingly alarmed by comments at our Subcommittee meetings that new regulatory mandates divert time and attention from the patient's bedside ("we're spending too much time doing data entry"), and that in revenue-challenged times, infection control must fight a losing battle for resources. This concern is reflected in publications and medical blogs elsewhere in the nation. Your leadership in ensuring these resources are available is critical. "High tech" care is no substitute for "high-touch" care.

4) Take meaningful steps to synthesize the input of patients and families on patient engagement strategies. Though patient and family engagement is widely touted as a key goal of CMS and HHS to improve the quality of care, a true embracing of the patient/family perspective has yet to manifest through any federal entity. Case in point: I was among a small group of patient advocates invited to participate in the first ever meeting of the PfP Hospital Engagement Network, scheduled for late May 2012 in Washington, DC. Days before the event, we received an email that the meeting was cancelled, due to "budgetary restrictions on federal travel". Instead, a two-hour webinar was scheduled, during which fifteen minutes was allotted to advocate input. Those of us listening via our computers (jnstead of our phones) found ourselves technically shut out of speaking up during those fifteen minutes. Though the public relations firm handling this project has committed to "do better" (based on poor feedback from the advocate community), the event at the very least delayed the onset of any next steps that might have been taken toward helping patients. The support of HHS in getting this agenda on track (perhaps restoring funding for the gathering of PFE advocates) would, I believe, serve the public good.

History tells us that against strong lobbying interests, only public demand can fuel the engine of culture change. Personally, I've offered to help the PfP PFE network develop and deploy patient engagement strategies that utilize social media, the talents and passions of new college graduates, and a new patient-centric device that empowers the patient with tools for hand hygiene, communication and the management of care transitions. Whether it's these or other strategies that ultimately are adopted to foster patient engagement, I'm hopeful we can move quickly, as every day that passes is a lost opportunity to save someone's family member from avoidable medical harm.

I appreciate your consideration of my input, and would be pleased to provide further detail. Thank you for your work toward a more responsive, holistic and satisfactory health care system.

Sincerely,

Pat Mastors
Patient Advocate, PfP PFE Network contributor, Member, Rhode Island HAI Subcommittee, Member, Consumers Union Safe Patient Project, Participant, IHI Annual Forum, President and CEO, Pear Health LLC
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Carbapenem-Resistant *Enterobacteriaceae* Containing New Delhi Metallo-Beta-Lactamase in Two Patients — Rhode Island, March 2012

U.S. and international efforts to control carabapenem-resistant *Enterobacteriaceae* (CRE) are critical to protect public health. Clinicians caring for patients infected with such organisms have few, if any, therapeutic options available. CRE containing New Delhi metallo-beta-lactamase (NDM), first reported in a patient who had been hospitalized in New Delhi, India, in 2007 (*1*), are of particular concern because these enzymes usually are encoded on plasmids that harbor multiple resistance determinants and are transmitted easily to other *Enterobacteriaceae* and other genera of bacteria (*2*). A urine specimen collected on March 4, 2012, from a patient who recently had been hospitalized in Viet Nam, but who was receiving care at a hospital in Rhode Island, was found to have a *Klebsiella pneumoniae* isolate containing NDM. The isolate was susceptible only to tigecycline, colistin, and polymyxin B. Point-prevalence surveys of epidemiologically linked patients revealed transmission to a second patient on the hematology/oncology unit. These two cases bring to 13 the number of cases of NDM reported in the United States. After contact precautions were reinforced and environmental cleaning was implemented, no further cases were identified. Similarly aggressive infection control efforts can limit the spread of NDM in acute-care medical facilities (*3,4*).

A Rhode Island resident returned to her native Cambodia in May 2011. While there, she was diagnosed with spinal cord compression and was hospitalized December 20–30 in Ho Chi Minh City, Vietnam, where an indwelling catheter was placed in her atonic bladder. She received ceftazidime and metronidazole during that hospitalization. On January 6, 2012, she returned to Rhode Island and was hospitalized the same day. Lymphoma was diagnosed; she underwent chemotherapy and required prolonged bladder catheterization. On January 13, a urine culture grew an extended spectrum, beta-lactamase–producing *Escherichia coli*. She was placed on contact precautions requiring visitors to her room to don gowns and gloves. She was allowed to walk in the hallway if she was continent, performed hand hygiene before leaving the room, and wore a clean garment, but was incontinent at least once while outside her room. On February 15, a urine culture grew two strains of carbapenemase-producing *K. pneumoniae*. From hospital admission through March 3, the patient was administered a range of antibiotics, including ceftriaxone, cefazolin, ciprofloxacin, metronidazole, piperacillin/tazobactam, meropenem, colistin, fluconazole, and oral and intravenous vancomycin. On March 4, a second urine culture grew carbapenemase-producing *K. pneumoniae*. The modified Hodge test, a laboratory test for the presence of carbapenemase, was weakly positive. The patient was asymptomatic; her catheter was replaced and a repeat urine culture was negative, without antibiotic therapy.

In light of the patient's unusual travel history and the weakly positive modified Hodge test, the isolate was sent to CDC and was confirmed as CRE containing NDM. It was susceptible to tigecycline (minimum inhibitory concentration [MIC] = 2 μg/mL), colistin, and polymyxin B (MIC = 1 μg/mL), but resistant to 24 antimicrobials, including aztreonam and several antimicrobial combinations, by cation-adjusted Mueller-Hinton broth dilution. After receiving this information, isolation precautions were changed for this patient, prohibiting her from walking outside her room and limiting diagnostic tests or procedures requiring her to leave her room. The medical director and staff members of the hospital infection control department educated medical and nursing staff members about NDM and needed precautions. Topics reviewed included the epidemiology of CRE, specifically NDM, and modes of transmission, gastrointestinal carriage, and limited treatment options for infected patients. The patient was discharged March 26. A stool specimen collected April 3 was negative for carbapenemase-producing *K. pneumoniae* using phenotypic methods (*5*). *K. pneumoniae* isolates from the urine specimen collected February 15 also were sent to CDC; one was found to be indistinguishable from the isolate from March 4, the other was an epidemiologically related subtype. Surveillance cultures were tested using CDC-recommended methods for control of infections with carbapenem-resistant or carbapenemase-producing *Enterobacteriaceae* in acute-care facilities (*5,6*).

Results were negative for a rectal swab obtained March 30 from the next patient who occupied the same hospital room on March 28. However, one of seven patients on the same hematology/oncology unit at the time of the index patient's stay grew a carbapenemase-producing *K. pneumoniae* from a rectal swab specimen collected March 30. The specimen was confirmed as containing NDM at CDC. Molecular fingerprinting using pulsed-field gel electrophoresis revealed that it was indistinguishable from the *K. pneumoniae* isolates collected February 15 and March 4 from the index patient. Point-prevalence surveys of rectal swabs or stool specimens from the five additional patients from the hematology/oncology unit collected April 5 and 6 and from 14 patients on April 23 did not detect carbapenemase-producing *K. pneumoniae*. All

patients housed on the hematology/oncology unit as the two patients harboring CRE were identified and their charts were flagged so that they will have rectal swab screening cultures the first time they are readmitted. Environmental services staff members conducted additional cleaning of patient rooms and hallway high-touch surfaces (e.g., door knobs and hand rails) on the hematology/oncology unit on April 13. The index patient and second patient each were cared for by separate medical teams, of which no physicians or nurse practitioners had provided care to both patients. Nursing records identified 23 nursing staff members of the hematology/oncology unit who had cared for both patients between March 12 and 26; one agreed to be screened by rectal culture and was found to be negative.

Reported by

Erica E. Hardy, MD, Leonard A. Mermel, DO, Dept of Medicine, Kimberle C. Chapin, MD, Dept of Pathology, Warren Alpert Medical School of Brown Univ; Cindy Vanner, Rhode Island Dept of Health. Ekta Gupta, MD, Dept of Medicine, Boston Univ School of Medicine, Massachusetts. ***Corresponding contributor:*** *Leonard A. Mermel, lmermel@lifespan.org, 401-444-2608.*

Editorial Note

Since the first report in 2009, cases involving NDM-producing *Enterobacteriaceae* have been reported in every continent except South America and Antarctica (*7*). Among 29 cases in the United Kingdom, at least 17 involved patients who had traveled to India or Pakistan, among whom 14 had been hospitalized in one of those countries (*8*). Although medical care in the Indian subcontinent was associated with many early reports, recent cases have been described involving persons who traveled to endemic regions* but were not hospitalized (*7*). The plasmid-carrying NDM is highly transmissible to other bacteria, and bacteria carrying NDM can colonize the gastrointestinal systems of humans for prolonged periods and can spread through contamination of water sources and environmental surfaces (*7*). Not surprisingly, nosocomial spread also has been documented outside of the Indian subcontinent. Of 77 cases of infection or colonization with CRE containing NDM in Europe, 13 might have been hospital-acquired in Europe (*9*). Spread of NDM in other parts of Asia also has been reported, including four patients in South Korea without travel history (*10*), similar to recent reports elsewhere (*7*).

Based on currently available information, a robust infection control effort is needed to limit or slow the spread of all CRE, including NDM, at the local, national, and international levels. High rates of hand hygiene compliance and adherence to contact precautions, including the use of dedicated devices for monitoring vital signs, are essential, along with minimizing the use of invasive devices and antibiotics. A robust antimicrobial stewardship program can assist in limiting unnecessary antibiotic exposure among hospitalized patients. If NDM is identified, point-prevalence surveys of patients on the affected hospital or skilled nursing facility unit are important to identify patients carrying CRE containing NDM (*7*). A recent preliminary report from a U.S. hospital documented that an intensive-care unit–based, active surveillance program using nucleic acid amplification for detecting CRE colonization, coupled with contact precautions for all colonized patients, was able to achieve a sustained 53% reduction in the prevalence of CRE colonization across 100 beds in the unit (BP Currie, MD, Montefiore Medical Center, personal communication, May 14, 2012). Because patients frequently are transferred to and from acute- and chronic-care facilities, successful prevention and control of NDM most likely will be achieved by using a regional approach (*7*), as has been done in Israel (*3,4*). Because colistin often is the only available antibiotic to treat CRE containing NDM, robust infection control efforts are needed to slow the spread of NDM in the United States.

Acute- and chronic-care facilities should have a written plan that clearly describes how they will detect CRE and limit transmission before it becomes endemic. Clinical specimens will

What is already known on this topic?

New Delhi metallo-beta-lactamase (NDM)–producing *Klebsiella pneumoniae* are resistant to extended-spectrum antimicrobials, including carbapenems. The resistance mechanism is highly transmissible and its presence substantially limits treatment options. NDM-producing *Enterobacteriaceae* have been identified in the United States, primarily among patients with exposure to health care in endemic countries.

What is added by this report?

An NDM-producing organism was isolated from a patient being treated in the United States after having been hospitalized in Vietnam. Implementation of CDC-recommended carbapenem-resistant *Enterobacteriaceae* (CRE) control practices, including surveillance cultures of epidemiologically linked contacts, identified likely transmission to one other patient on the same ward of the U.S. hospital. Additional control measures were applied and additional surveillance and clinical cultures have not identified further transmission.

What are the implications for public health practice?

An aggressive approach to control of CRE, including highly transmissible carbapenemase-producing organisms, is essential to slow the spread of these organisms in the United States. In an outbreak, use of surveillance cultures to identify asymptomatic transmission potentially is an important part of these efforts.

* Point prevalence studies have found high levels of colonization of CRE containing NDM in the Indian subcontinent.

identify only a fraction of cases. Screening cultures of contacts are important during an outbreak. Surveillance cultures might be used in acute-care or long-term–care facilities that admit few patients colonized or infected with such microbes to alert infection control staff members to implement aggressive containment strategies, as noted in the updated CDC guidance.[†] As described in this report, point-prevalence surveys can identify patients colonized with CRE. Identifying CRE at the facility level and reporting to state departments of health should trigger regional efforts to enhance detection and control of such multiresistant microbes. The continued global emergence of NDM and the manner in which it has become endemic in some regions highlights the importance of preventing the spread of NDM (*2–4,6,7*). Robust local, regional, and national detection and control efforts will be required to do so.

[†] Available at http://www.cdc.gov/hai/organisms/cre/cre-toolkit/index.html.

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