



HOSPITAL INFECTION CONTROL & PREVENTION

THE TRUSTED SOURCE FOR THE INFECTION PREVENTIONIST FOR MORE THAN FOUR DECADES

SEPTEMBER 2017

Vol. 44, No. 9; p. 97-108

➔ INSIDE

Resistance to Change?

How do you get someone to change behavior when telling them to do so is met with resistance? 101

Twin Peaks:

A persistent norovirus outbreak was stopped in one unit, only to arise again in another. . . . 102

Bad to the Bone:

How a NICU and a bone marrow transplant unit fought off CLABSI outbreaks. 104

Measles Update:

The CDC's updated guidelines for measles and healthcare workers, as the once-eradicated childhood infection spreads 106

Novel Approaches to Change Behavior and Protect Patients

Mindfulness, motivational interviewing, and infection prevention

By Gary Evans, Medical Writer

Much of infection control work — a frustrating portion to many IPs —

is trying to change human behavior. One need look no further than the historic struggle with hand hygiene and the various carrots and sticks that have been dangled and cracked in the name of compliance for decades.

In what was more like a TED talk (<https://www.ted.com/>) than an infection control lecture, a veteran epidemiologist recently took a holistic, somewhat psychological view of these challenges, addressing diverse topics from mindfulness to motivation in a fascinat-

ing closing plenary at the recent APIC conference in Portland.

For example, mindfulness — a hot

topic across a variety of fields — has been suggested as a buffer to burnout in health-care and shows initial signs of having positive implications for infection prevention, said **Sanjay Saint**, MD, MPH, chief of medicine at the VA Ann Arbor Healthcare System and director of the

University of Michigan Patient Safety Enhancement Program.

“Mindfulness is the awareness that arises by paying attention on purpose in the present moment, nonjudgmentally,” he said. “Being fully present, fully aware, and fully engaged.”

“THE BOTTOM LINE IS THAT BRIEF MINDFULNESS INTERVENTIONS SHOW PROMISE IN IMPROVING HEALTHCARE WORKER WELLBEING.”



NOW AVAILABLE ONLINE! VISIT AHCMedia.com or **CALL** (800) 688-2421

Financial Disclosure: Senior Writer Gary Evans, Editor Dana Spector, Editor Jill Drachenberg, Nurse Planner Patti Grant, RN, BSN, MS, CIC, Peer Reviewer Patrick Joseph, MD, and AHC Editorial Group Manager Terrey L. Hatcher report no consultant, stockholder, speaker's bureau, research, or other financial relationships with companies having ties to this field of study.



HOSPITAL INFECTION CONTROL & PREVENTION

Hospital Infection Control & Prevention®, ISSN 0098-180X, is published monthly by AHC Media, a Relias Learning company
111 Coming Road, Suite 250
Cary, North Carolina 27518.

Periodicals Postage Paid at Atlanta, GA 30304
and at additional mailing offices.

POSTMASTER: Send address changes to:
Hospital Infection Control & Prevention
P.O. Box 550669
Atlanta, GA 30355.

SUBSCRIBER INFORMATION:
Customer Service: (800) 688-2421
Customer.Service@AHCMedia.com
AHCMedia.com

EDITOR: Dana Spector,
(404) 262-5470 dspector@reliaslearning.com

SUBSCRIPTION PRICES:
U.S., Print: 1 year with free AMA PRA Category 1 Credits™ or Nursing Contact Hours (12 issues), \$499. Add \$19.99 for shipping & handling. Online only, single user: 1 year with free AMA PRA Category 1 Credits™ or Nursing Contact Hours, \$449. Outside U.S., add \$30 per year, total prepaid in U.S. funds.

Discounts are available for group subscriptions, multiple copies, site-licenses, or electronic distribution. For pricing information, please contact our Group Account Managers at Groups@AHCMedia.com or (866) 213-0844.

ACCREDITATION:
Relias Learning LLC is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. Contact hours [1.5] will be awarded to participants who meet the criteria for successful completion. California Board of Registered Nursing, Provider CEP#13791.

Successful completion of this CME activity, which includes participation in the evaluation component, enables the participant to earn up to 1.5 MOC Medical Knowledge points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program. Participants will earn MOC points equivalent to the amount of CME credits claimed for the activity. It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of granting ABIM MOC credit.

Relias Learning is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Relias Learning designates this enduring material for a maximum of 1.5 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

This activity is effective for 36 months from the date of publication.

Opinions expressed are not necessarily those of this publication. Mention of products or services does not constitute endorsement. Clinical, legal, tax, and other comments are offered for general guidance only; professional counsel should be sought for specific situations.

Copyright© 2017 by AHC Media, LLC, a Relias Learning company. All rights reserved. No part of this newsletter may be reproduced in any form or incorporated into any information-retrieval system without the written permission of the copyright owner.

In a study that has not yet been published, Saint and colleagues conducted a systematic literature review of brief mindfulness practices for healthcare providers.

“There were a total of 14 studies,” he said. “Nine showed improvement — positive change in healthcare worker stress, anxiety, resiliency, or burnout. The bottom line is that brief mindfulness interventions show promise in improving healthcare worker well-being. This idea of mindfulness and wellness is something that APIC could take the lead on. We have to put the oxygen mask on ourselves before assisting others.”

To focus the study specifically on infection prevention, Saint and colleagues asked the question, “Could hand hygiene compliance be increased by tying it to a brief moment of mindfulness?”

They conducted a quasi-experimental study with a control group and two simple components in the intervention arm.

“The first [component] is we had the medical team, medical residents, and medical students and the attending physician watch Andy Puddicombe’s TED talk, ‘All it takes is 10 mindful minutes.’ [The TED talk can be viewed at: <http://bit.ly/1ApYvfJ>.] It’s been watched over a million times. And the second [component] is we held brief, guided discussions on ways to use mindfulness to enhance awareness and enhance patient safety. We told our residents and students, ‘Let’s use hand hygiene as an external cue to prompt a moment of mindfulness as we enter and exit the patient rooms. What if we use that alcohol-based hand rub to remind ourselves that we are about to take care of a vulnerable patient? These next 10 min-

utes are really important to them and their family, so be present.’”

The intervention yielded an 11% increase in hand hygiene compliance, going from 72% to 83% in an effect that was statistically significant, he said. There was a less tangible improvement in “feelings” associated with the hand hygiene performed mindfully. “It was small but it was moving in the right direction, so I think that there is something to this,” Saint said.

Framing Effect

Another psychological technique for motivating change is the so-called “framing effect,” which can be used to communicate, he said.

“Framing effects, and this comes from the cognitive psychological field, occur when a different conclusion is drawn from the same information depending entirely on how that information is presented to the audience,” he said. “Some believe that we as humans are ‘cognitive misers’ and we prefer to do as little thinking as possible. I realize that some of us are more miserly than others. Frames provide a quick way to process huge amounts of information.”

For example, one undertakes a hand hygiene initiative at a hospital, as the supervisors are demanding better performance due to historic lax compliance or a spike in infection rates.

“So, the nurse unit manager calls a meeting of his or her troops, and they can frame the discussion in different ways,” Saint said. “I’ll just give you two examples. The first is they can say, ‘You know what, it seems

like our rates are lousy and the bosses want us to improve. Make sure you wash your hands.”

The same message with a different frame is, “We went into health-care to help patients, especially the most vulnerable patients, and those are the patients on our unit,” Saint said. “Unfortunately, our low hand hygiene rates are undermining our goals. Let’s prove that we can be the best performing unit in the hospital, and be a regional, if not a national, example of how to wash our hands. What do you say?”

Saint has tried both framing effects and another approach called motivational interviewing. The latter is attempting to change behavior by engaging in a non-judgmental, empathetic conversation with a “resister,” he says. (*For more information, see the scenario in this issue*). This is opposed to just telling people they need to change, which typically elicits a defensive “righting reflex,” he explained. “People get dug in.”

It’s no coincidence that Saint has come to search beyond the normal tactics in an attempt to change human behavior and protect patients. Having spent two decades of his career trying to reduce catheter-associated urinary tract infections (CAUTIs), Saint has had to convince people that the “Rodney Dangerfield” of infections can have serious effects on patients and is important to prevent.

His research has revealed that catheters are too often placed and forgotten, where they can seed an infection if ignored long enough. Sometimes there is no medical record indicating catheterization, though there is a Foley attached to the patient.

“We call this phenomenon the ‘immaculate catheterization,’”

he joked. Saint also emphasizes the non-infectious harms of the Foley, including that it functions as a one-point of restraint, tethering the patient to the bed and leading to other complications and increasing length of stay.

“SOMETIMES THERE IS NO MEDICAL RECORD INDICATING CATHETERIZATION, THOUGH THERE IS A FOLEY ATTACHED TO THE PATIENT.”

Fortunately, the misconception that it is a nuisance infection that can be easily treated with an antibiotic is gradually giving way in an era of drug stewardship and seeing patients as satisfied customers. CAUTIs have also become a major target for prevention by the CDC, in part because use of antibiotics drives resistance and sets up *Clostridium difficile* infections.

Culture Is King

In attempting change that will improve infection prevention and patient safety, IPs must be cognizant of the work culture at their facility, he said.

“Culture eats strategy for breakfast and lunch,” Saint said, showing a slide of a Korean Air 747 commercial aircraft in perfect condition on the runway. In the next slide it is in ruins, having crashed upon attempting to land in Guam on Aug. 5, 1997. The weather played a role, but the prevailing work culture at the airline also heavily contributed

to the disaster, he said, recalling the incident as described in Malcolm Gladwell’s book, “Outliers.”

“There was a long list of crashes involving Korean Air,” he said. “In fact, crashes on Korean Air were 17 times higher than for American or United during the exact same period. Communication was cited in many of the accidents, just like the communication is cited in many of the root cause analyses that occur in hospitals across this country.”

Weather conditions made instrument readings critical, but the captain was not correctly following the gauges, and ignoring the subtle cues of his first officer and flight engineer.

“The captain was tired and wasn’t interested in what this first officer or his flight engineer were trying to tell him,” Saint said. “They were picking up signals that the flight engineer and the first officer kind of knew were not coming from the airport, but coming from a different place. But the captain thought it was coming from the airport. Again, the first officer and the engineer gave him subtle clues, but in Korea, just like in Japan, the culture is one in which the listener is expected to pick up on subtle cues.”

Thus, if something is not communicated, it is the fault of the listener, not the speaker.

“In English, it is very different,” Saint said. “If you are not understanding what I’m saying, that is on me.”

Another cultural aspect that played into the incident is that there are very strict rules in many Asian countries on how one can speak to superiors, he added. In retrospect, Korean Air acknowledged that their culture had a very high “power-distance” between supervisor and the subordinate, he noted.

Analyzing the crash and

looking at the larger pattern of accidents, the airline came across an answer that has resulted in a perfect safety record since 1999: All flight communications were switched to English.

“Instead of using their native language, English was chosen, allowing the crew to have a completely different identity,” Saint told APIC attendees. “Korean Air believes its success was because it acknowledged the importance of its cultural legacy.”

The other aspect of this is the “power-distance” cultural dynamic, which can vary by countries, regions, and even individual hospitals.

“The power-distance index is the extent to which the less powerful members of society accept that power is distributed unequally,” he explained. “People in these societies accept a hierarchical order in which everybody has a place, and which needs no further justification. In societies with low power distance, people strive to equalize the distribution of power.”

Using nations as an example, Russia was at the top in power distance, and the more egalitarian Scandinavian countries at the bottom.

“Even though we talked about national cultures, there are some parts of the U.S. where the power distance is probably higher than others,” Saint said. “There are probably some units in your hospital where the power distance is higher than other units. What’s the relevance to what we do? Subordinates in countries, or hospitals within those countries with high power distance tend not to speak up when something is wrong. This applies to nurses speaking up to docs, frontline clinicians speaking up to executives, or patients speaking up to healthcare workers.”

Even though the power-distance in the United States may be low in

general, Saint said he has visited hospitals where that is far from the case.

“Where orthopedic surgeons will tell the nurses who remind them to remove the catheter after one or two days post-hip transplantation, ‘First go to medical school, and then tell me how to practice medicine,’” Saint said. “We’ve all heard that.”

“THE SECOND FACTOR IN PERSONAL SATISFACTION IS ‘MASTERY,’ MORE IN THE SENSE OF SEEKING TO EVER IMPROVE THAN TO REACH THE SUMMIT.”

Yet, in some facilities that empower nurses to order Foley removal, the result is often lower CAUTI rates, he notes. “A nurse-initiated Foley removal protocol, which a lot of hospitals now have, works much better in hospitals with low power distance,” Saint said. “So, it is important as you roll out initiatives — especially if it relies upon an [employee] to do the right thing and to speak up — to understand the power distance at your hospital or in the particular unit.”

Mission and Purpose

The power of a mission statement can congeal these individual attempts at change around a core idea. “The best ones are obvious and are short,” he said. “The Humane Society: ‘Celebrating animals, confronting cruelty.’ Four words.”

The statement Saint and colleagues have adopted at the Ann

Arbor VA is, “Treat every veteran like a family member.”

“Seven words — this captures what we do and why we work for a VA hospital,” he said. “I’ve learned from site visits from around the country that it is easier to implement infection control practices in hospitals that are mission-based.”

Institutional mission distills down to personal mission, which for work would typically be answered by “money.” However, that only goes so far, said Saint, citing the findings in Daniel Pink’s book “Drive.”

“He argues that that the best use of money, as a motivator, is to pay people enough to take the issue of money off the table,” Saint said. “You don’t offend them by paying them too little, but once you pay them enough it turns out there are three factors that lead to better performance, not to mention increased personal satisfaction.”

The first of these is “autonomy” — the desire to be self-directed.

“I think that applies to a lot of infection preventionists,” he said.

“The desire to be self-directed.

People need autonomy over task, time, team, and techniques. I think we have that in infection prevention — not as much of it as we would like, but we have this.”

The second factor in personal satisfaction is “mastery,” more in the sense of seeking to ever improve than to reach the summit.

“It is, in fact, impossible to fully realize, which makes it simultaneously frustrating and alluring,” Saint said. “Anyone who is an athlete understands this. Anyone who plays a musical instrument, anyone who’s an artist. The reason we keep going back is because we know we can never truly master something. That’s why I love internal medicine — you can’t know everything. This is also true of

infection prevention — success lies in the attempt of getting to zero.”

The final factor is “purpose,” meaning you are serving something beyond yourself.

“We know that the richest experiences in our lives are not when we are clamoring for validation from others, but when you’re listening to our own voice,” he said.

“Doing something that matters and doing it well. And doing it in the service of a cause larger than ourselves. This is our jobs. This is what we do for a living.” ■

Resistance to Change? Try Motivational Interviewing

Technique developed in addiction field applied to IP

How do you get someone to change behavior when simply telling them to do so is met with resistance — the “righting reaction” as APIC closing plenary speaker **Sanjay Saint**, MD, terms it. One approach is called “motivational interviewing,” which first demonstrated efficacy in the addiction field, said Saint, director of the University of Michigan Patient Safety Enhancement Program.

The technique involves empathetic listening as part of a non-judgmental conversation with the person resisting change. If successful, they come to a decision on their own terms after an airing of their concerns, perhaps feeling somewhat validated in the process.

“The question we asked is, could motivational interviewing be used to improve healthcare worker behavior?” Saint said. “Ultimately, it will be their decision to wash their hands before touching the patient or to keep the catheter in. Our job is to provide new information during this conversation that will provide important [insight] about the problem and possible solutions. The goal is to help them see the discrepancy between what they do and what they should do.”

To provide an example that can be adapted by other IPs, Saint went through the following scenario of a

chief of medicine, a non-surgeon, having a motivational interview with a surgeon who is resistant to changes designed to prevent CAUTIs by removing catheters promptly and other measures.

Chief: “Thanks for meeting with me. I guess you’ve been having some trouble with this CAUTI initiative. Do you want to tell me about it?”

“THE QUESTION WE ASKED IS COULD MOTIVATIONAL INTERVIEWING BE USED TO IMPROVE HEALTHCARE WORKER BEHAVIOR?”

Surgeon: “I’m disgusted with it. I’ve been ordering Foleys for 25 years and never had a problem. Now, all of a sudden, they come up with these new regulations. It can throw you off your game. As far as I’m concerned, if it ain’t broke don’t fix it. And pity the poor residents who are supposed to unlearn what they have just been taught.”

Chief: “You’re really frustrated about this. What else bothers you about these new regulations?”

Surgeon: “Don’t get me started. All these people telling me what to do. I’ve got the nurses telling me when I should and shouldn’t order a Foley, when I should or shouldn’t have it taken out. Give me a break.”

Chief: “What do you think about the science behind the initiative?”

Surgeon: “That’s another thing. They keep coming up with these new quality projects. It’s like a blizzard of them, and a couple of years later they change their minds. This is probably just another one of those things. Anyway, why all of this fuss about a little old UTI? CAUTI, schmauti — we are about saving lives.”

Chief: “I hear you. You’re frustrated to keep getting hit with these changes, and I really appreciate how open you’re being with me. One other thing, can you tell me whether your opposition to the regulations is making things awkward with your colleagues?”

Surgeon: “Well, maybe a little — especially the younger surgeons and some of the nurses, and I guess the docs who are running the initiative, along with one of the infection control gals, are also getting annoyed with me.”

Chief: “You seem to be saying you feel a little uncomfortable about that.”

Surgeon: “Well, they are committed to making the changes,

and they are not totally stupid.”

Chief: “Speaking of that, I just got some new data about the initiative. I thought you might be interested. OK if I share that with you?”

Surgeon: “I suppose so.”

Chief: “There’s a new meta-analysis from Harvard and a national study from Michigan. They both show big decreases in CAUTI using these same evidence-

based recommendations our hospital is pushing. The patients studied are similar to our patients. Did you know our CAUTI rate was up again last month?”

Surgeon: “No, I didn’t realize it was still rising. I guess that is something to worry about.”

Chief: “One other thing you might consider is that those bean counters from upstairs are all about

making the patients happy customers. UTIs may not kill many people, but it sure makes them unhappy for a while. Plus, we have to use antibiotics, which may then lead to a case of *C. diff* which can kill people, especially the older patients you operate on.”

Surgeon: Yeah, yeah, I hear you. I suppose I’m going to have to give in sooner or later, so it might as well be sooner.” ■

Twin Peaks: A Persistent Norovirus Outbreak

Raises questions about spread from asymptomatic patients

A nasty, easily transmitted bug that has ruined many a cruise vacation, norovirus can cause chaotic, labor-intensive outbreaks in hospitals. In that regard, an infection preventionist recently described a norovirus outbreak that kept reigniting in different locations in a situation somewhat akin to fighting a forest fire in high wind.

How bad was it? When traditional and enhanced measures had been exhausted, the hospital shut down the affected rehab unit for deep cleaning and disinfection by a special cleaning outfit, an IP said recently in Portland at the annual conference of the Association for Professionals in Infection Control and Epidemiology.

“This outbreak had a tremendous impact on our facility,” said **Deborah Danzig Brodie**, MPH, BSN, CIC, an infection preventionist at Hebrew SeniorLife in Roslindale, MA. “It had a tremendous impact on the patients, the families and the staff — and on our financial budget, as you can imagine. During the second peak of the outbreak, we were closed to admissions. We hired a cleaning company from New York City; they came in with hazmat suits.

We moved patients to one side of the unit, and they disinfected the entire [other] side. Once we knew that the place was completely disinfected — you could eat off the floor — we finally reopened to admissions. Thank God, because it was six weeks later.”

Index Case

The outbreak began innocently enough when a patient from an acute care hospital was admitted to the short-term rehab unit at SeniorLife. The rehab unit has some 50 beds and is divided into north and south units. There are only two private rooms and four private rooms with a shared bath. The rest are double rooms with a shared bath.

“You can imagine our challenge for room placement,” she said. “Our first case started with a new admission from an acute care facility on January 3, 2016 with GI symptoms. We weren’t that concerned — the patient went on contact-plus precautions, we initiated CDC recommendations per protocol.”

Over the next month, the total norovirus cases in the unit would

go from one to 31. The index case and one other came in from the community; the rest were apparently acquired due to cross-transmission in the rehab unit.¹

As IPs are aware, norovirus can occur year-round, but has increased prevalence during the late fall and winter months. The most common cause of gastroenteritis, norovirus is extremely contagious and can be transmitted by food, water, environmental surfaces, and directly from person to person.

“The incubation period is usually from 12 to 48 hours post-exposure to the virus,” Brodie said. “It usually lasts about one to three days, but may last longer — especially in the elderly and in hospitalized patients. It’s transmitted most frequently from symptomatic patients via the fecal-oral route, respiratory droplets — especially if somebody vomits. The virus can spread through the aerosolized particles.”

The note about usual transmission by symptomatic patients is significant, as the “second peak” of the outbreak was started by a patient who was asymptomatic for four days and was no longer considered

infectious by traditional standards.

But, at the beginning, the index case was admitted. “Then, we had a new case a few days later, followed by a new admission,” Brodie says. “We still weren’t that concerned. However, three days later we had four cases in one day. That’s when we became really concerned, and that was followed by several other cases.”

The department of health was contacted and Brodie and her colleagues doubled down on infection control measures to quell the outbreak.

“We were observant,” she said. “We were vigilant with our infection control, but all of a sudden we had a whole new crop [of cases].”

The outbreak had two peaks, as cases from the north side of the unit eventually spread to the south side via the aforementioned asymptomatic patient, “RH.” He became symptomatic on Jan. 13, apparently acquiring it from his roommate, who had become symptomatic two days earlier.

“RH was ready to come off precautions; his roommate was not ready yet,” she said. “It had been five days — and, by the way, RH was only symptomatic for one day.”

Brodie and colleagues consulted with health department officials, who gave the green light to take RH off precautions. He was moved to a south side unit to a room with another asymptomatic patient. About 2.5 days later, RH’s new roommate had symptomatic infection with norovirus.

Continuing Problems

“We were shocked — what was happening here?” Brodie said. “In a matter of a few days, we had another

cluster — a norovirus outbreak even worse than the first time.”

They sent stool samples to the state and went back to the medical literature, finding two significant pieces of information.

“We realized that transmission may still occur once acute symptoms have resolved,” she said. “The usual pattern is you can discontinue precautions if they’re asymptomatic for 72 hours.” In this case, RH was asymptomatic for four days, but they obviously were not dealing with a normal outbreak — and, perhaps, not a normal norovirus. The mean viral load in the stool samples was much higher than historical levels.

“THE OUTBREAK HAD TWO PEAKS, AS CASES FROM THE NORTH SIDE OF THE UNIT EVENTUALLY SPREAD TO THE SOUTH SIDE VIA THE AFOREMENTIONED ASYMPTOMATIC PATIENT, ‘RH.’”

“We realized also that norovirus shedding can occur in the stool for at least three weeks,” she said. “Even though the person is most infectious during the symptomatic period. Our experience suggests the transmission can occur in asymptomatic patients. We realized our traditional interventions weren’t working. We had to up the ante with infection control practice.”

The multiple overlapping efforts included posting hand hygiene signs in all areas, adding hand

hygiene stations in the unit, increasing environmental cleaning, and washing the hands of all patients with soap and water before meals.

In addition, confirmed or suspected norovirus patients were placed under enhanced contact-plus and droplet isolation precautions.

“That meant anybody crossing the threshold had to wash hands with soap and water,” she said. “That was everybody — and I have to say they were really compliant with that. We enhanced their housekeeping activities to include all high-touch areas and on different shifts, on both units, common areas, and the kitchen.”

A decision was made for ill patients who became asymptomatic to remain in isolation for an increased period, which quickly became until they were discharged as the hospital stepped up measures rapidly as cases continued.

“You have to understand, our average length of stay is two weeks,” she said. “If they have a medical complication, they may be there for three weeks. That’s a long time to be on precautions.”

Given this situation, an extra effort was made to stay in communication with isolated patients, family, and staff caring for them. As noted, the outbreak was finally stopped with closure of the unit to new admissions and extensive disinfection of the entire area. ■

REFERENCE

1. Brodie DD, Kandel, R. Lessons Learned: A Journey Through a Norovirus Outbreak. Oral Abstract 1207. APIC 44th Annual Educational Conference. Portland, OR: June 14-16.

High-risk Patients, High-risk Infections

How a NICU and bone marrow unit drove CLABSIs to zero

If there is a worst-case scenario in infection control, it likely involves a life-threatening infection spreading in a vulnerable patient population. They don't get much more vulnerable than babies in a neonatal ICU, or adults undergoing bone marrow transplant. With their frail immune systems compromised, central line-associated bloodstream infections (CLABSIs) pose a serious threat warranting an immediate infection control response.

What follows is a portrait of two units that rose to the challenge, as described by IPs in presentations recently in Portland at the annual APIC conference. They included a NICU and a bone marrow unit that adopted and carefully reinforced measures to drive CLABSIs down to zero for prolonged periods.

In fact, the success of the CLABSI prevention effort in the NICU is exemplified by the need to continuously change the posters heralding the time period since the last infection.

"We used to have posters with days without a CLABSI; then we went to weeks without a CLABSI, and now we list months without a CLABSI," said **Robin Neale**, MS, MT (ASCP) SM, CIC, FAPIC, director of infection prevention at the Care New England Health System in East Greenwich, RI.

As part of that system, Women & Infants Hospital houses an 80-bed NICU, one of the largest in the country. Over the past six years, through a collaborative effort of all the NICU staff, the unit has reduced the CLABSI standardized

infection ratio from 1.2 to 0.20, a statistically significant improvement that has been sustained for three years, Neale reported.¹

In human terms, the infants infected decreased from 12 to 2 annually, Neale said. She credits a knowledgeable and inclusive team of physicians, nurses, laboratorians, and nutritionists who collaborated to create a bundle for central line insertion and maintenance that includes the following key steps:

"WE USED TO HAVE POSTERS WITH DAYS WITHOUT A CLABSI; THEN WE WENT TO WEEKS WITHOUT A CLABSI, AND NOW WE LIST MONTHS WITHOUT A CLABSI."

Insertion bundle

- Insert lines only when clearly indicated;
- clean hands;
- mask, cap, gown, sterile gloves for insertion;
- Chlorhexidine (CHG) for skin antisepsis.

Maintenance Bundle

- Clean hands;
- scrub the hub;
- sterile two-person tubing changing;
- CHG for skin cleaning at dressing change;
- remove the line as soon as no longer needed.

Without the bundle interven-

tions, the previous rate of bloodstream infections would have taken a severe toll. Neale estimates that 42 babies would have experienced a CLABSI between January 2013 and June 2016. Instead, there were 10 infections during this timeframe. Thus, some 32 infections were prevented, and based on CLABSI mortality rates, between four and eight lives were saved. Neale and colleagues estimate \$537,600 was saved by preventable infections over the 3.5-year period.

"Give staff feedback on performance and celebrate success," she recommended. "At one point, we went 54 weeks [without a CLABSI]; another time, we went 51 weeks. In a NICU our size, that is a huge accomplishment for our staff. It's really a tribute to what the staff is doing at the bedside, so we make sure that we celebrate with pizza lunches or cake. You need to have unwavering support from physician and nurse leaders. If they are not engaged, it's hard to do anything. We all know that as IPs."

Bad to the Bone

Turning to the bone marrow transplant unit (BMTU), alarms went off when the CLABSI rate went up to 3.44% in June 2015 and continued to be elevated through October 2015.²

"We all know that central line infections are among the most common we get in the hospital, and bone marrow transplant patients are really the most high-risk patients in our hospital because of

their immunocompromised clinical state,” said **Marissa McMeen**, MPH, MLS, (ASCP), CIC, an infection preventionist at Thomas Jefferson University hospital in Philadelphia. “We wanted to make sure that we had a plan in place. We created a comprehensive action plan that focused on increasing staffing engagement and awareness of the problem.”

The plan included re-education for evidence-based CLABSI prevention strategies and mandatory, demonstrated central line care competencies that allowed for immediate follow-up and “teaching moments.”

“To empower staff and promote ownership, we began to foster an environment of transparency by regularly sharing metrics with the team and celebrating successes,” said **Jessica Radicke**, BSN, RN, OCN, the BMTU administrative charge nurse. “Unit signage was moved to highly visible staff areas. Days since last infection were posted and updated weekly. The unit celebrated infection control week to promote staff education.”

One of the activities was a scrub-the-hub challenge, in which invisible lotion was coated on the catheter hub and staff tried to scrub it off.

“Afterward, we used a black light and the areas that weren’t scrubbed were illuminated,” Radicke said. “So, it allowed for immediate teaching points. The nurses could see the different areas that they were missing. We also used it for handwashing. The staff really enjoyed it — it was a fun activity that they were able to participate in.”

In addition, unit leadership purchased a “chest” mannequin with central line areas clearly

delineated for staff practice and education. Mandatory competencies were established, and ultimately, central line care on patients was limited to the staff that demonstrated the most skill on the dummy.

“Return demonstrations’ were key because it allowed for time to observe the staff and really see if they were making any mistakes, and allow for education right then and there,” Radicke said.

“RETURN DEMONSTRATIONS’ WERE KEY BECAUSE IT ALLOWED FOR TIME TO OBSERVE THE STAFF AND REALLY SEE IF THEY WERE MAKING ANY MISTAKES, AND ALLOW FOR EDUCATION RIGHT THEN AND THERE.”

Each Monday, the critical care technicians completed central line dressing changes. Leadership adjusted staffing levels to allow a four-hour overlap in ancillary coverage to allow the techs appropriate time to change these dressings and pay close attention to the small details. The hospital also bought new dressing kits. “Super users” were again identified, and then watched the staff complete return demonstrations.

“The unit staff completed the team steps program facilitated by the patient safety department, and were further supported and empowered to speak up for patient safety,” Radicke said. “Speak up”

programs typically empower anyone involved in a procedure to call attention to a break in protocol.

“As they became more engaged, they embraced the ‘speak up’ program more, which then fostered a culture of safety,” she said.

The CLABSI rate from June through October 2015 was 3.26% (five infections/1,532 line days) compared to the rate from November through June 2016 of 0.0% (zero infections/1,707 line days).

“Since the safety plan was implemented the unit has sustained zero CLABSIs, and a culture of safety pervades the unit,” McMeen said.

Future steps for the Thomas Jefferson BMTU include:

- Development of room auditing process and auditing tool.
- Annual return demonstration of central line dressing changes will be required by the CCTs.
- Weekly unit broadcast email highlighting infection rates.
- Sharing of best practices among among peers.
- A secure high importance alert email will be sent to all staff when a CLABSI is suspected.
- Development of a standardized way to draw blood cultures from central lines. ■

REFERENCES

1. Robin Neale, CLABSI Prevention: Baby Bundle in an 80-Bed NICU Session 2308. APIC 44th Annual Educational Conference. Portland, OR: June 14-16.
2. McMeen M, Radicke, J, Miller C. Bone Marrow Transplant Unit Embraces Culture Change to Meet and Sustain Unprecedented Central Line-associated Bloodstream Infection Rates. Oral abstract 1203. APIC 44th Annual Educational Conference. Portland, OR: June 14-16.

CDC Updating Measles Guidelines for HCWs

Disease once eradicated is causing expensive, disruptive outbreaks

The CDC is preparing to review its guideline for measles and healthcare workers, as the once-eradicated childhood infection spreads in ongoing outbreaks in the U.S. and Europe.

“There have been several outbreaks involving hospitals in recent years, so we thought that measles was probably important to get to next,” says **David Kuhar**, MD, a medical officer in the CDC’s Division of Healthcare Quality Promotion who is spearheading development of the guidelines. “It is labor-intensive and expensive when you have these outbreaks. I think a lot of these recent measles outbreaks have involved healthcare workers who got measles, and some of them had been immunized previously. That raises a lot of questions about how to appropriately approach measles, especially in the outbreak setting.”

Indeed, an outbreak reported last year found that even clinicians with history of measles vaccination have about a 3% chance of breakthrough, with the investigators recommending N95 respirators be worn to examine and care for patients with suspected or confirmed measles.¹

Kuhar was also co-author of a review study² that found that 78 reported measles cases resulted from transmission in U.S. healthcare facilities in 2001-2014. That in-

cludes 29 healthcare workers who were infected from occupational exposure, one of whom transmitted measles to a patient. The economic impact of preventing and controlling measles transmission in healthcare facilities was \$19,000–\$114,286.

“IN ADDITION TO THE 29, THERE WERE 5 MEASLES CASES AMONG HCP WHO WERE EITHER INFECTED OUTSIDE OF WORK OR HAD AN UNKNOWN TRANSMISSION SETTING.”

“Of the 29 HCP who were infected with measles, 19 (65.5%) had adequate presumptive evidence of measles immunity which includes: written documentation of vaccination with 2 doses of live measles or MMR vaccine administered at least 28 days apart, laboratory evidence of immunity, laboratory confirmation of disease, or birth before 1957,” Kuhar and colleagues wrote. “In addition to the 29, there were 5 measles cases among HCP who

were either infected outside of work or had an unknown transmission setting. Although we did not include these 5 HCP, they had the potential to pass on measles to their patients or other healthcare providers.”

Indeed, community outbreaks threaten to bring measles in via patients or healthcare workers. As this report was filed, Minnesota state health officials reported an ongoing measles outbreak in the Minneapolis area had reached 79 cases. Of those, 71 people had not received MMR vaccine.

Most of the infections were in children and adolescents. The unvaccinated were primarily people in the Somali community, some of whom fear adverse effects of vaccination. The connection between MMR and autism has been completely debunked, but an anti-vaccination movement in the U.S. is one reason a disease declared eradicated in the country in 2000 is still causing disruptive and expensive outbreaks.

“Healthcare workers, students in post-high school educational institutions, or international travelers should have two documented vaccinations with a live measles (for example, MMR) vaccine separated by at least 28 days and administered after the person turned 1 year old,” Minnesota state health officials advised.

live & on-demand **WEBINARS**

- ✓ Instructor-led Webinars
- ✓ Live & On-Demand
- ✓ New Topics Added Weekly

CONTACT US TO LEARN MORE!

Visit us online at AHCMedia.com/Webinars or call us at (800) 688-2421.

With the peak summer travel season under way, the CDC is reminding travelers to Europe and other global destinations to take steps to protect themselves against measles. More than 14,000 cases of measles have been reported in Europe since January 2016, according to the European Centre for Disease Prevention and Control. In the past year, 35 people across Europe have died from the disease, according to the World Health Organization.

Pertussis Resurges

Another childhood vaccine-preventable disease is resurging. As of July 27, 2017, Indiana had already doubled its number of cases of pertussis seen last year, and state health officials were urging immunization with Tdap in predicting the case count would continue to climb.

“In the first half of 2017, 136 cases of pertussis have been confirmed in Indiana,” the department reported. “During the same period in 2016, the state saw 66 cases. Because pertussis tends to be cyclical, [we] expect to continue to see an increase in cases this year.”

The health department emphasized the need for the series of Tdap shots for the public, particularly those that may be exposed to infants highly vulnerable to the infection. Though there are signs of gradual improvement, healthcare workers are still woefully under-immunized against pertussis, putting vulnerable patients such as infants at risk, the CDC reports.³

“We want all healthcare workers up to date with their Tdap vaccine, but especially those who work and interact with young infants,” says **Jennifer L. Liang, DVM, MPVM**, a co-author of the study and a medical epidemiologist in the CDC Division of Bacterial Dis-

eases. “They are too young to even begin receiving the vaccination.”

The CDC recommends that healthcare workers be vaccinated with Tdap (tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis) to protect themselves and vulnerable patients. The CDC study assessed Tdap vaccination coverage in healthcare worker surveillance for the years 2012–2014, the most recent data available. The internet panel surveys revealed Tdap vaccination coverage among healthcare personnel (HCP) was 34.8% in 2012; 40.2% in 2013; and 42.4% in 2014, Liang and co-authors report.

“WE WANT ALL HEALTHCARE WORKERS UP TO DATE WITH THEIR TDAP VACCINE, BUT ESPECIALLY THOSE WHO WORK AND INTERACT WITH YOUNG INFANTS.”

“Based on the findings, we see that most healthcare personnel are not receiving the Tdap vaccination, which leaves them vulnerable to getting pertussis and spreading it to their patients,” Liang says. “We’re hopeful that we will continue to see the trend increasing, and we encourage employee health professionals

to have strategies in place similar to what they do with flu vaccine campaigns to help increase coverage.”

To prevent pertussis in healthcare settings, the CDC recommended in 2005 that HCP receive a single dose of Tdap vaccine at an interval as short as two years from the last dose of tetanus and diphtheria toxoids (Td). In 2011, the CDC expanded the Tdap recommendations to all healthcare workers, regardless of age and time since their most recent Td vaccination. Some confusion about the guidelines may be part of the reason for the low uptake of vaccine, the CDC concedes.

“A booster is not recommended at this time,” Liang says. “The recommendation is that healthcare workers receive one dose of the Tdap vaccine. At this time, it is a one-lifetime dose. The one exception is pregnant women. They should have a Tdap vaccine every pregnancy.” ■

REFERENCES

1. Gohil SK, Okubo S, Dickey L, et al. Healthcare Workers and Post-Elimination Era Measles: Lessons on Acquisition and Exposure Prevention. *Clin Infect Dis* 2016; 62:166-172.
2. Fiebelkorn AB, Redd SB, Kuhar DT. Measles in Healthcare Facilities in the United States during the Post-elimination Era, 2001–2014. *Clin Infect Dis* 2015;61(4):615–618.
3. Srivastav A, Black CL, Lu P, et al. Tdap Vaccination Among Healthcare Personnel, Internet Panel Survey, 2012–2014. *Am J Prev Med* 2017; May 23. [Epub ahead of print].

COMING IN FUTURE MONTHS

- The haves and have nots: HAIs and social justice
- Is non-vent pneumonia killing under the radar?
- Drop MRSA isolation sooner with nurse-driven algorithm
- National HAI Action Plan: What’s next?



HOSPITAL INFECTION CONTROL & PREVENTION

EDITORIAL ADVISORY BOARD:

Kay Ball, PhD, RN, CNOR, FAAN
Professor, Nursing
Otterbein University
Westerville, OH

Allison McGeer, MD,
Professor,
Dalla Lana School of Public Health,
University of Toronto
Director, Infection Control and
Microbiologist, Mount Sinai Hospital,
Toronto

William Schaffner, MD
Chairman
Department of Preventive Medicine
Vanderbilt University
School of Medicine
Nashville, TN

Connie Steed, MSN, RN, CIC
Director, Infection Prevention
Greenville Health System
Greenville, SC

Katherine West, BSN, MEd, CIC
Infection Control Consultant
Infection Control/Emerging Concepts
Manassas, VA

REVIEWERS:

Patrick Joseph, MD
Chief of Epidemiology
San Ramon (CA) Regional Medical
Center and
President,
California Infection Control
Consultants
San Ramon

Patti Grant, RN, BSN, MS, CIC, FAPIC
Director: Infection Prevention/Quality
Methodist Hospital for Surgery
Addison, TX

Interested in reprints or posting an article to your company's site? There are numerous opportunities for you to leverage editorial recognition for the benefit of your brand.
Call: (800) 688-2421
Email: Reprints@AHCMedia.com

To reproduce any part of AHC newsletters for educational purposes, please contact:

The Copyright Clearance Center for permission
Email: Info@Copyright.com
Phone: (978) 750-8400

CME/CE INSTRUCTIONS

To earn credit for this activity, please follow these instructions:

1. Read and study the activity, using the provided references for further research.
2. Log on to AHCMedia.com then select "My Account" to take a post-test. *First-time users must register on the site.*
3. Pass the online test with a score of 100%; you will be allowed to answer the questions as many times as needed to achieve a score of 100%.
4. After completing the test, a credit letter will be emailed to you instantly.
5. Twice yearly after the test, your browser will be directed to an activity evaluation form, which must be completed to receive your credit letter.

CME/CE QUESTIONS

1. Sanjay Saint, MD, MPH, tested a novel use of "mindfulness" to increase hand hygiene. Unfortunately, workers were distracted by the intervention and hand hygiene compliance fell by 11%.

- a. True
- b. False

2. According to Deborah Danzig Brodie, MPH, BSN, CIC, including a single admission of a patient with gastrointestinal symptoms, how many total cases of norovirus occurred over the next month?

- a. 17
- b. 24
- c. 31
- d. 43

3. Which of the following were possible contributing factors to the prolonged norovirus outbreak?

- a. Lack of private rooms
- b. Spread by at least one asymptomatic patient
- c. Mean viral load in the stool samples was much higher than historical levels
- d. All of the above

4. The CLABSI rate in a bone marrow unit from June through October 2015 was 3.26%. What did it fall to after several infection control interventions from November through June 2016?

- a. Zero
- b. 1.14
- c. 1.75
- d. 2.02

CME/CE OBJECTIVES

Upon completion of this educational activity, participants should be able to:

1. Identify the clinical, legal, or educational issues encountered by infection preventionists and epidemiologists;
2. Describe the effect of infection control and prevention issues on nurses, hospitals, or the healthcare industry in general;
3. Cite solutions to the problems encountered by infection preventionists based on guidelines from the relevant regulatory authorities, and/or independent recommendations from clinicians at individual institutions.