Clostridium difficile
A multifaceted approach to prevention

+ Q&A with Dr. Nathan Wolfe, APIC 2013 keynote
Virulence factors of bacteria
Mandatory flu vaccination program
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A:
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Hemostasis

An in vivo animal test showed that, compared to gauze dressings, wounds treated with the GuardIVa* Dressing significantly reduced time to hemostasis and had up to 7 times less blood loss.

Healing

An in vivo animal study showed that the GuardIVa* Dressing allowed wound healing in a manner more consistent with that of untreated wounds as compared to the BioPatch* Dressing.

Antimicrobial

Demonstrated in vitro antimicrobial efficacy against test organisms known to cause CRBSIs.

In vitro testing demonstrated sustained antimicrobial efficacy for up to 7 days. A greater than 4 log reduction in microbial count was observed for all test organisms.

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Hemostasis
An in vivo animal test showed that, compared to gauze dressings, wounds treated with the GuardIVa* Dressing significantly reduced time to hemostasis and had up to 7 times less blood loss.² ³

Healing
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The GuardIVa* dressing has not been clinically tested for its ability to reduce catheter-related blood stream infections.

INDICATIONS FOR USE:
The GuardIVa* Antimicrobial Hemostatic IV Dressing is intended for use as a hydrophilic wound dressing to absorb exudate, cover and protect catheter sites. Common applications include IV catheters, other intravenous catheters and percutaneous devices. It is also indicated for control of surface bleeding from percutaneous catheters and vascular access sites.

WARNINGS:
• Do not use the GuardIVa* dressing on patients with a known sensitivity to chlorhexidine gluconate. The use of chlorhexidine gluconate containing products has been reported to cause irritation, sensitization, and generalized allergic reactions. If any such reactions occur, discontinue use of the dressing immediately, and if severe, contact a physician.
• For external use only. Do not allow this product to contact ears, eyes, mouth or mucous membranes.

PRECAUTION:
• GuardIVa* dressing is not intended to treat infection.

Please consult package insert for more detailed safety information and instructions for use.

CDC Guidelines recommend the use of a chlorhexidine-impregnated sponge dressing for temporary short-term catheters.¹

²CDC Guidelines, 2011, pg. 14, Category 1B

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This micrograph of the bacterium *Clostridium difficile* is made from an impression smear of 72-hour anaerobe blood agar. Photo credit: CDC/Dr. Gilda Jones.

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By Dr. David J. Witt and Sue Barnes

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Dr. Nathan Wolfe, world-renowned viral forecaster and epidemiologist, to headline APIC 2013 as keynote speaker.

Q&A with Dr. Nathan Wolfe

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APIC: Only as strong as you

THE INFECTION PREVENTIONIST (IP) can’t help but become disproportionately focused with requisite statistics, reporting deadlines, voluntary accreditation processes, mandatory regulations, and various corporate “round peg/square hole” initiatives. Each piece of these multi-faceted demands is well intentioned to serve patient and employee safety. With that said, these new constants may be capable of pulling the IP from their ability to customize a program to the services, culture, and geographic realities of their immediate environment—the item(s) known to be a unique challenge to patient safety in their facility. The overall impact of these changes may not be fully understood for decades; however, what I have observed is a negative impact on the willingness—not the ability—of the IP to volunteer, lead, and serve their community.

What communities you ask? The employer remains the IP’s primary focus. Yet, what about our local schools and volunteer work needed at local APIC chapters and APIC headquarters? It may seem harsh to state that IPs are not reaching their full potential. I, also, am guilty as charged. Too often IPs state, “I do not have time”; yet, if we don’t manage our time to give back, like those who have made it their quest to teach us, how can we lead the vision of healthcare without infection?

Stated another way, how can each IP not find time to give back through volunteerism in the prevention of infection? Sure, we are very busy now, but can you imagine how those original APIC leaders wondered how it would all turn out? At least we have the benefit of 40 years of science and peer-reviewed publications. APIC now knows we are capable of great things when supporting one another and collaborating with like-partners in healthcare. APIC would not have more than 120 U.S. chapters and a growing list of international chapters without IPs giving of themselves beyond their primary employer responsibilities.

While reading the winter 2012 issue of Prevention Strategist, it became clear that APIC is the sum of volunteerism—so much so that we now require a highly trained professional staff to help with the operational logistics of our vast breadth of committees, task forces, and specialty groups. When I allow myself to fully absorb the strength of APIC’s potential, it is intimidating and accompanied by a strong dose of humility: it keeps me focused on serving infection prevention and mentoring those to find their passion and gift of giving. You will know this to be true if you allow yourself to experience the passion of APIC’s collective soul.

Attending the APIC Conference in Ft. Lauderdale, Florida, this June will bring home just how special you are. Experience how much we teach one another. Touch the reality of our collective uniqueness and be part of making time to lead, learn, and know when to follow. Be there. You owe it to yourself and those you serve to be part of the cutting edge of patient safety.

Patricia S. Grant, RN, BSN, MS, CIC
APIC 2013 President

“Too often IPs state, ‘I do not have time’; yet, if we don’t manage our time to give back, like those who have made it their quest to teach us, how can we lead the vision of healthcare without infection?”

BY PATRICIA S. GRANT, RN, BSN, MS, CIC

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Take ownership, unveil the champion

“Associations are unique because they are like a triple-helix DNA composed of three intertwined threads—members as owners, members as customers, and members as workforce. Associations are different from for-profit businesses in that associations’ owners, customers, and workforce are one and the same.”

—The Will to Govern Well by Glenn H. Tecker, Paul D. Meyer, Leigh Wintz, CAE, and Bud Crouch

FORTY YEARS AGO, a group of individuals came together in common purpose to create an association to increase patient safety through focused attention on controlling and preventing the transmission of infections in healthcare settings. Recognized worldwide by its acronym alone, APIC, the Association for Professionals in Infection Control and Epidemiology, now has more than 14,000 owners (members) who find value in forums for information and knowledge exchange, participation in activities, receipt of content, and a desire to belong to a community that affirms their own experiences as infection preventionists and the contributions of their efforts toward a higher purpose.

Another unique aspect to associations is that shareholder value tends to grow versus dilute as the number of owners increase. The collective voice of the membership, not to mention increased capital to expand services and programming, provides greater return on investment.

Issues like defining the role of the infection control nurse in those early years were accomplished through the commitment and strategic direction of a governing body (board of directors) and the efforts and dedication of a workforce (committees, task forces). This structure for mission-focused, cause oriented, not-for-profit associations still stands.

Over the past several decades, infection control nurses, microbiologists, epidemiologists, medical technologists, public health specialists, physicians, and others came together and leveraged APIC—resulting in the establishment of a defined profession. At the front of the 21st Century, the infection preventionist is mainstream in acute care settings in developed countries and evolving to a larger and more dedicated role in alternate settings, including ambulatory surgery centers, long-term care facilities, home care, dialysis centers, and others. Today the association is focused on the needs of a changing profession in North America and looking to elevate the profession and build organizational leaders through certification and competencies.

The success of these efforts depends on a renewed commitment by the members (owners) to engage in volunteerism for the future. APIC is committed to building a strong leadership pipeline and demonstrating the tangible and intangible benefits to serving on the board of directors (governing body) and committees (workforce) to advance your profession and collective priorities.

As stated by Tecker et al., “Voluntary participation organizations are well designed for perseverance and associations’ possess succession competencies that enable them to pursue large change and transfer energy and activity to a series of champions over time.”

You are a shareholder of APIC. Take ownership and increase your value.

Make a commitment to get involved in your local chapter—this is where it all starts. You will do great things with great people. Together, we will unveil the champion inside of you!

Katrina Crist, MBA
APIC Chief Executive Officer
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References:
2. Study #R05-0025.

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THE CERTIFICATION BOARD of Infection Control and Epidemiology, Inc. (CBIC), is celebrating its 30th anniversary in 2013 by launching a campaign that will highlight beneficial aspects of certification in infection prevention and control (CIC®) and celebrate the CICs who demonstrate excellence in infection prevention.

As an infection preventionist (IP) working in a pediatric hospital, I realize that infection prevention is complex and brings challenges to decreasing healthcare-associated infections (HAIs), monitoring disinfection and sterilization practices, understanding the changes in HAI definitions and their application in surveillance activities, and educating healthcare personnel, families, and patients on reduction of risk. All of these activities are measured in our testing process to ensure a successful candidate has a base of knowledge to protect patients.

CBIC’s vision for certification is to be the standard of excellence of which IPs will seek in order to assure quality care that the public expects, demands, and deserves. I’m glad to report that the number of board certified IPs increased 3 percent in 2012 over 2011 for a total of 5,071 board certified professionals in infection prevention and control. Our goal is to push for 50 percent of eligible IPs to become board certified over the next two years.

CBIC and its partners can do a number of things to reach this goal. First of all, it’s important to promote certification to the general public. Last year I attended a conference for certifying boards and obtained ideas from Oncology Nursing Certification Corporation, which created a video titled, “Certified Nurses Make a Difference,” for public viewing (www.oncc.org). Additionally, in the winter of 2013, CBS Television Network will show a public service announcement in major media markets titled, “Just Ask,” which encourages adults to ask if their OB or NICU nurse is certified, stressing that certification is a primary differentiator in quality care.

Secondly, we must continue to promote certification (as well as maintenance of certification) to our colleagues. I ask for all certified IPs to mentor and encourage a candidate in 2013. Explain how you prepared and how you and your facility have benefitted from your CIC. Also plan to spend time each month discussing your mentee’s progress on preparation. When he/she becomes certified, make sure colleagues and your local chapter recognize his/her commitment to professionalism and patient safety.

APIC made a big difference in 2012 to help IPs better manage the costs associated with obtaining certification or recertification by introducing the Competency Advancement Assistance Program (CAA), which provided financial assistance to more than 70 IPs.

Although we’ve made progress in increasing board certification among IPs, we must continue to strive for continued improvement. Committing to board certification is essential to advancing our profession and continued excellence. As Theodore Roosevelt said, “The credit belongs to the man who is actually in the arena…who strives valiantly, who knows the great devotions, and spends himself in worthy causes.”

What better a worthy cause than patient safety via certification?
AT PDI, WE NEVER FORGET WHO WE’RE ALL WORKING FOR.

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History in the making

APIC BEGAN DOCUMENTING its history and showcasing milestones to celebrate its 40th anniversary in 2012. However, the history doesn’t stop with the feature in the winter 2012 issue of Prevention Strategist. It lives on via www.apic.org/history. Visit the website to view more milestones and APIC’s founders, including the first board of directors, executive committee, and steering committee.

Expanding the information on the site is an ongoing process. We welcome submissions regarding past presidents and Carole DeMille Award winners. Email editor@apic.org with 150-200 words detailing his/her accomplishments and the significance of APIC in his/her life. Please include a photo of the person with the submission. Also include links and/or supporting documents for our records.

Thank you for helping us document APIC’s growth and progress.

APIC announces recipients of Heroes Research Award program

APIC CHOSE TWO recipients of the new Heroes Research Award program to facilitate the spread of best practices in infection prevention: Lillian S. Kao, MD, MS, FACS, associate professor and vice-chair for Quality in the Department of Surgery at University of Texas Health Sciences Center at Houston; and Kristen Woodman, MPH, infection control coordinator at the University of Toledo Medical Center.

The Heroes Research Award program, which is an extension of the Heroes of Infection Prevention Award program, was created to help identify successful strategies as exemplified within the Heroes group and determine potential ways to implement these interventions across the infection prevention community. The Heroes of Infection Prevention Award was introduced in 2006 and has recognized more than 80 individuals and groups for their exceptional work in the infection prevention field.

Dr. Kao and Woodman each received $50,000 to support their innovative research projects. Dr. Kao’s research project is titled, “Strategies for Preventing Healthcare-Associated Infections—Putting Them into Context.” Woodman’s research project is titled, “I Can Prevent.”

Proposals were evaluated based on their potential to support professional development in one or more of the core areas or future-oriented domains of infection prevention (as identified in the APIC Competency Model for the Infection Preventionist); strength of the proposed methodology, including analysis of data obtained from previous recipients of the Heroes award; and potential for the project to demonstrate the use of implementation science to help advance the infection preventionist role. The research projects will be completed by December 2013, and APIC will share the results of the research in 2014.

BD is delighted to have the opportunity to join APIC in recognizing those who are pioneering new practices to more effectively protect patients from the risk of infection.

The opportunity to support related research and learning will help ensure that the larger infection prevention community has the ability to implement these advances on an accelerated basis.

The Heroes of Infection Prevention Award is supported by a grant from BD.
Meet the 2013 APIC Board of Directors

THROUGHOUT 40 YEARS of growth and progress, APIC leaders have remained committed to their role as leaders of infection prevention for both the practice and the profession. As we continue to work to advance toward our vision of healthcare without infection, APIC’s 2013 elected officers and directors are well suited to lead the association into the future.

PRESIDENT
Patricia (Patti) S. Grant, RN, BSN, MS, CIC, is the director of infection prevention and quality at Methodist Hospital for Surgery in Addison, Texas, a Nuerterra healthcare facility. Patti has been an infection preventionist for 20 years in hospitals of varying sizes, which has afforded her with many learning opportunities to enhance patient safety. She is passionate about mentoring upcoming generations of infection preventionists and fostering the skills necessary to prevent infection. She frequently speaks before novice professionals, aiming to increase their confidence level and ability to work most effectively within their institutions while helping to protect those they serve on a daily basis.

Patti served as past president of the Texas Society of Infection Control and Prevention (TSCIP), three terms on the Texas Healthcare-Associated Infection/Preventable Adverse Event Advisory Panel, and as past chair of the Government Affairs Committee of the APIC Dallas-Fort Worth chapter.

Patti is the recipient of numerous awards including the 1994 Great 100 Nurses for Dallas-Fort Worth Texas award, the 1997 APIC New Investigator Award, the 2001 Gerry Haynes Award for Excellence in Texas Infection Control, and a 2011 APIC Leadership award. She currently is serving her second term on the Editorial Review Board of the American Journal of Infection Control and authors the bi-monthly “iPNewbie” column for Hospital Infection Control and Prevention.

PRESIDENT-ELECT
Jennie L. Mayfield, BSN, MPH, CIC, is a clinical epidemiologist for the Site- man Cancer Center at Barnes-Jewish Hospital/Washington University Medical Center in St. Louis, Missouri. She has worked in infection prevention for more than 26 years. In her current role, Jennie’s focus is on infection prevention in oncology populations across the continuum of care.

Jennie was an invited member to a global consensus conference on control of Clostridium difficile infection in Toronto in 2007 and has presented abstracts and lectures at local and national meetings. In 2005 she received the Advanced Practice Infection Control Professional Award from the Society for Healthcare Epidemiology of America. Jennie has been a member of APIC for 24 years; in 2007, she was a recipient of an APIC Heroes of Infection Prevention Award.

Jennie has served in numerous offices for her local APIC chapter. Recently she served as treasurer of APIC, a position she has held since 2009. In her capacity as treasurer, Jennie took an active role in financial oversight of the association. She also co-chaired the APIC CEO Search Committee in 2011.

TREASURER
Vickie M. Brown, RN, MPH, CIC, is director of infection prevention and control at WakeMed in Raleigh, North Carolina.

SECRETARY
Linda R. Greene, RN, MPS, CIC, is the director of infection prevention for Rochester General Health System in Rochester, New York.

IMMEDIATE PAST PRESIDENT
Michelle R. Farber, RN, CIC, is the infection control manager for Regions Hospital in St. Paul, Minnesota.
DIRECTORS

Barbara DeBaun, RN, MSN, CIC, is improvement advisor for Cynosure Healthcare Consulting in San Francisco, California.

Susan A. Dolan, RN, MS, CIC, is hospital epidemiologist at Children's Hospital Colorado in Aurora, Colorado.

Donna Giannuzzi, RN, MBA, NEA-BC, is chief patient care officer for Lee Memorial Health System and chief administrative officer for the HealthPark Medical Center, a part of the Lee Memorial Health System, in Fort Myers, Florida.

Linda K. Goss, MSN, APRN, ANP-BC, CIC, COHN-S, is director of infection prevention and the vascular access specialist team at the University of Louisville Hospital in Louisville, Kentucky.

Carole S. Guinane, RN, MBA, is vice president for OrthoCarolina in Lake Wylie, South Carolina.

Mary Lou Manning, PhD, CRNP, CIC, is associate professor and director of the Doctor of Nursing Practice Program at the Thomas Jefferson University School of Nursing in Philadelphia, Pennsylvania.

Connie J. Steed, RN, MSN, CIC, is director of infection prevention at the Greenville Hospital System University Medical Center in Greenville, South Carolina.

Jacie C. Volkman, MPH, CIC, CHEP, is manager of infection prevention at Mission Health System in Asheville, North Carolina, and a senior consultant with Safety Management Services.

Sharon A. Williamson, MT(ASCP)SM, CIC, is infection prevention manager for the Texas Health Presbyterian Hospital Dallas in Dallas, Texas.

Marc-Oliver Wright, MT(ASCP), MS, CIC, is the corporate director of infection control for NorthShore University HealthSystem in Evanston, Illinois.

EX OFFICIO

Katrina Crist, MBA, chief executive officer of APIC, serves as an ex-officio member of the board.
AS THE DUST settles on the fiercely contested 2012 elections, we turn toward what the outcome will be on the work of infection preventionists (IPs) going forward.

Although there has been some reshuffling of the deck chairs in Washington at the federal level, not much has changed. President Obama was re-elected, Republicans maintained the majority in the House of Representatives, and Democrats maintained the majority in the Senate. Political analysts looking back on the 112th Congress (2011-2012) have noted that the deadlock, caused in part by the split party control in Washington and extreme partisanship, resulted in the least productive federal legislative session in history. We can expect much of the same, but our focus in Washington will be to continue working to ensure that infection prevention issues are appropriately addressed by members of both political parties.

Although there has been less focus on the issue in the national news, state legislative elections over the last two cycles have also proven to be historic. The 2010 elections brought more new legislators into state government than any other election prior to a decennial census in history—approximately 24 percent of all state legislators were newly elected in 2010. Post-census elections are generally known to result in large state legislator turnover due to redistricting. Not only was 2012 the first election since the 2010 census, but many states are also now seeing the results of term-limit legislation enacted over the past decade. Prior to the election it was predicted that the combined 2010 and 2012 elections would result in almost half of the 7,382 state legislators having two or fewer years of experience.

Although this can be seen as either encouraging or scary depending on your point of view, there is no doubt that it presents an opportunity for IPs to use their experience to educate state legislators about infection prevention.

Over the last 10 years, more than 30 states have enacted legislation relating to healthcare-associated infections (HAIs), and over the last two years, healthcare facilities in all states have implemented HAI reporting requirements mandated by federal regulations. With so much new HAI policy occurring in a nation with so many novice legislators, IP contact with state legislators has never been needed more.

Fortunately, APIC has a new tool in place to help IPs with this task. In October 2012, we released the Voice for Infection Prevention (VIP) Advocacy Toolkit: A Guide for Visits to State Legislators. This multi-component toolkit was designed to assist APIC chapters in planning visits to state legislators.

A meeting with a legislator does not need to be only for the purpose of advocating on a particular piece of legislation. In fact, a more successful strategy is to first develop a relationship by scheduling a “meet and greet” to introduce yourself to the legislator and his/her staff and let them know about what you do and the service you provide to the legislator’s community and constituents. Legislators are more likely to remember people they meet in person, and after hearing from you about infection prevention and APIC, they will be more likely to look to you and your colleagues when legislative issues arise relating to infection prevention. Most legislators do not have a healthcare background, and part of learning to be a policymaker is learning who to call for information regarding the many issues on which they will be called to legislate.

Would you like to start planning a legislative visit? Contact Nancy Hailpern (nhailpern@apic.org, 202-454-2643) or Lisa
Tomlinson (ltomlinson@apic.org, 202-454-2606). We would like to work with you. Here are some additional tips to help you get started.

Who should you meet with? Start with the legislators who represent the districts where you live and where you work. If you can’t remember who they are, never fear. All the information you need is available from the APIC website. Simply go to the Take Action tab on the Public Policy page, then click the Elected Officials tab. By inserting your ZIP code, or that of your healthcare organization, you can obtain contact information for all the policymakers who represent you. Need help? Call us.

It is also helpful to meet with the chairs, vice-chairs, and senior minority party members of your state legislature’s health committees. You can find this information on your state legislature’s website, usually under a Committees tab. Need help? Call us.

The APIC VIP Advocacy Toolkit includes tips for planning your legislative visits, suggestions on who to meet with, sample guidance and talking points for your visit, and even sample letters to request meetings and express your appreciation afterward.

Still nervous about getting started? Call us! Your APIC government affairs staff is anxious to talk to you about how you can advance public policy related to infection prevention in your state. As former legislative staffers and current lobbyists, we are anxious to talk to you about why it is important for your legislators to learn about infection prevention from you, give you tips on meeting with legislators, and convince you that you will have a great time while adding a new angle to your expertise in preventing infection.

Most state legislatures convene early in the calendar year, and most states have legislative sessions that last nine months or less. Now is the time to act. Still not convinced? Call us! Nancy Hailpern is APIC director of Regulatory Affairs and Lisa Tomlinson is APIC senior director of Government Affairs.
The difference between high- and low-resourced countries in transferring knowledge and educating healthcare personnel (HCP) is obvious. Donor-funded programs that abound in Africa send tutors or trainers as part of a large financial package. Most of them come from wealthy universities that have won the tender to deliver infection prevention training programs in Africa. Colleagues who come over as part of these programs are enthusiastic and are armed to the teeth with materials, resources, and established standards on evidence-based guidelines that have been tried and tested in high-resource situations. With laptops at the ready and Internet access under their belts, these fresh-faced good Samaritans disembark to a warm and embracing Africa to teach infection prevention principles. For some, it might be the first time away from their native country. The smells are unique, and the scenery in Africa is incredibly beautiful. The beauty is stark, contrasting, and in the true sense of the word, wild. It is, to coin a phrase, “awesome” for the first-timers in Africa. While external tutors may have the best of intentions when coming to Africa to teach infection prevention, without knowledge of the challenges faced in a resource-limited country such as Africa, it can be confusing and challenging to effectively transfer knowledge to our HCP.

The Unit for Infection Prevention and Control (UIPC) of Stellenbosch University, by Professor Shaheen Mehtar, is improving patient outcomes via a new model of infection prevention education within its resource-limited country.

Student teams (doctors, nurses) discuss the contents of the basic IPC course.

“Without knowledge of the challenges faced in a resource-limited country such as Africa, it can be confusing and challenging to effectively transfer knowledge to our HCP.”

Below Left. A Train the Trainer (TTT) student presents to his peers and evaluates the various topics included in the basic five-day IPC training course. Above Right. Based on these scores, standard precautions need to be re-emphasized and clarified.
Cape Town, South Africa, has structured a unique infection prevention training program that addresses African teaching culture and draws on local knowledge and expertise. Our “home-grown” teaching program is effective in transferring universal infection prevention knowledge to our healthcare organizations to improve patient outcomes.

INFECTION PREVENTION CHALLENGES IN SOUTH AFRICA

While each region of the world has different population disease profiles, South Africa sees a considerable number of patients with tuberculosis and HIV; viral hemorrhagic fever is widespread in the East African region. Few infection prevention and control policies exist in the region. The ones that do exist are out of date and included only in nursing procedure curriculum, which devoted very little time to infection prevention best-practices. Furthermore, the continent has very few infectious disease physicians, due in part to the fact that infection prevention and control has not been historically considered a specialty or a sub specialty. Only recently, since the World Health Organization set forth directives on establishing infection prevention structures, has infection prevention become an important national initiative. Convincing the government of the necessity of infection prevention training was challenging; however, we are making progress, albeit slowly.

THE AFRICAN WAY: NUANCES IN CULTURE AND COMMUNICATION

COMMUNICATION IN AFRICA is primarily verbal, face-to-face, and very expressive. There is a long tradition of people sitting together and talking or listening to the elders, discussing matters, and arriving at a collective decision. From this stems the reluctance to express oneself too aggressively in a gathering, for it is considered unbecoming. In an educational context, most students will speak softly (it is disrespectful to talk loudly) and say the absolute minimum about him or herself. This belies the depth of knowledge and experience, particularly amongst nurses, who deliver up to 70 percent of health services in most of Africa; they are used to working with minimal resources. The non-African instructor might find it difficult to understand why there are no questions. Once students are at ease, they feel comfortable asking questions individually. Often medical supplies are erratic, the patients are extremely sick and have travelled far for treatment—they are not prepared to go back without some treatment. Scarce resources have taught many of our colleagues to deliver health within what is available; hence, the principles rather than the practice have to be ingrained in the IPC teaching program. The equipment is usually under considerable strain because of the lack of continuous supply of electricity or servicing; things are sent only for repairs, not usually for servicing. Computers, if available, may be old and slow and Internet access is limited. For visiting instructors, the lack of basic electronic Internet amenities is difficult to cope with. While Internet access and communications are rapidly increasing in Africa, which now has more than 260 million mobile phones, the use of electronics in healthcare settings is limited.

The concept of self-teaching is slowly catching on, but in the absence of the Internet and with poor access to computers and electronic learning platforms, it is not easy to go down this path outside major universities in Africa. In the meantime, we must think of innovative ways to educate those in the field and in non-academic situations.

A CUSTOM-MADE INFECTION PREVENTION EDUCATION PROGRAM

The UIPC delivers a range of customized infection prevention and control (IPC) training courses for HCP to meet the local needs. While the method of delivery changes depending on the circumstances, the basic principles taught remain the same. Although infection prevention plays a significant role in the outcome of clinical practice, few training courses cover essential aspects of patient care for low- to middle-income countries.

Stellenbosch University infection prevention courses range from a five-day basic IPC course for all HCP (including one for administrative managers) to a masters in IPC. The most
ROLE PLAYING: Students deal with a hypothetical case of viral haemorrhagic fever.

Effective of all these courses has been the Train the Trainer (TTT) program, which has had measured outcomes of improvement. The pre- and post-assessment of the TTT show a 25.7 percent increase in knowledge and a 50 percent reduction of response time in answering multiple choice infection prevention questions within our program examination—from 30 minutes to 15 minutes.

THE TTT COURSE

Before allowing infection prevention professionals to teach the TTT course, they are required to take the basic five-day IPC course. Managers of healthcare organizations are encouraged to recruit those who are interested in IPC and in educating other colleagues for the program. Generally, no more than 20 students participate in this twice-per-year course. Students who score above 75 percent during the final examination are selected to teach the TTT course.

Under supervision of the UIPC, the TTT course instructors’ objectives are to:
- Revise the contents of the current five-day basic IPC course and advise modifications on how it should be delivered based on the local conditions
- Present proposed modifications to their peers for evaluation of content, presentation, and sustainable messages (i.e., marketing IPC to their classmates)
- Produce teaching materials that are culturally and socially sensitive (e.g., via PowerPoint, diagrams, song and dance, demonstrations, and/or role playing)
- Train five people of their choosing, preferably colleagues from the workplace, upon their return to their healthcare organization

After six months, the UIPC team from Stellenbosch University goes on site visits to examine students taught by the TTT program for IPC knowledge. If 50 percent of the IPC knowledge has been transferred to the five new students, the trainer will pass the TTT course; if not, then they will get credits for the basic IPC course alone. The students (taught by the TTT) who pass will get credits for the basic IPC course from Stellenbosch University. This type of training has shown to have several advantages. In order to teach, one has to learn and simplify the message. It is the quickest way of increasing knowledge rapidly. For instance, if we trained 20 colleagues via the TTT course, and they train five each, the exposure level increases to 120 HCP within six months of the initial course. Even if only 80 percent pass, there are still 100 trained HCP in IPC within a very short period of time. Simple IPC messages are transferred not only to HCP in remote areas, but also to the communities within which they work and live.

But most of all, the methods used by the TTTs to transfer knowledge is unique and highly innovative—it is the African way!

Professor Shaheen Mehtar is chair of Infection Control Africa Network (ICAN), Extraordinary Professor for the Unit for Infection Prevention and Control within the Division of Community Health, Faculty of Medicine and Health Sciences of Stellenbosch University. She can be contacted via email at smehtar@sun.ac.za.

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• Provide additional details about the surface’s stewardship program and invite interested infection prevention specialists to join a working group
• Educate infection prevention specialists about the proper use, maintenance, efficacy and registration efforts for the Antimicrobial Cupron Enhanced EOS Surface
• Answer questions during a live Q&A session

If you are unable to attend the webinar, please contact Kate Mitchell at katem@eos-surfaces.com to receive a link to a recorded copy once it becomes available. For more information, please visit the Antimicrobial Cupron Enhanced EOS Surface’s Stewardship website, www.cupronenhanced.com.

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• This surface kills greater than 99.9% of bacteria* within two hours and continues to kill 99% of bacteria* even after repeated contamination.
• This surface helps inhibit the buildup and growth of bacteria* within two hours of exposure between routine cleaning and sanitizing steps.

*Testing demonstrates effective antibacterial activity against Staphylococcus aureus (ATCC 6538), Enterobacter aerogenes (ATCC 13048), Methicillin-resistant Staphylococcus aureus (MRSA-ATCC 33592), Escherichia coli O157:H7 (ATCC 35150) and Pseudomonas aeruginosa (ATCC 15442).

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Testing demonstrates effective antibacterial activity against this surface kills greater than 99.9% of bacteria within two hours and continues to kill this surface kills greater than 99.9% of Gram negative and Gram positive bacteria. This surface continuously reduces bacterial contamination achieving a 99.9% reduction. Laboratory testing has shown that when cleaned regularly:

If you are unable to attend the webinar, please contact Kate Mitchell at katem@eos-surfaces.com to receive a link to a recording.

Explore the role the Antimicrobial Cupron Enhanced EOS Surfaces can play in existing infection prevention specialists to join a working group and registration efforts for the Antimicrobial Cupron Enhanced EOS Surface.

FREE WEBINAR
1:00-2:00 p.m. Eastern Time
Tuesday, March 12, 2013
hospital infections at the latest and simplest tool for battling exposure between routine cleaning and sanitizing steps.

The use of the Antimicrobial Cupron Enhanced EOS Surface is a supplement to and not a substitute for standard infection control practices; users must continue to follow all current infection control practices, including those practices related to cleaning and disinfection.

The Antimicrobial Cupron Enhanced EOS Surface has been shown to reduce microbial contamination but it is not a substitute for standard infection control practices. Cupron and EOS Surfaces will be hosting a free webinar to:

- Answer questions during a live Q&A session
- Explore the role the Antimicrobial Cupron Enhanced EOS Surfaces can play in existing infection prevention programs
- Partnering with ordinary healthcare materials like solid technology, which uses the antimicrobial properties of copper to enhance otherwise ordinary healthcare materials like solid technologies, which uses the antimicrobial properties of copper to enhance otherwise ordinary healthcare materials like solid technologies, which uses the antimicrobial properties of copper to enhance otherwise ordinary healthcare materials like solid technologies, which uses the antimicrobial properties of copper to enhance otherwise ordinary healthcare materials like solid technologies, which uses the antimicrobial properties of copper to enhance otherwise.

B. Joann Andrews, RN, MSN, CIC
Senior Infection Preventionist, Lee Memorial Health System, Fort Myers, Florida

Q: WHY DID YOU CHOOSE INFECTION PREVENTION AS A CAREER?

While I would like to say that I spent countless hours weighing the merits of a change in positions, my career decision had much more to do with simply being in the right place at the right time. As the supervisor of case management, I was fortunate to share an office with the director of Infection Control (as it was called then). As time went on, I found that I wanted to know more about her role in the hospital. It all seemed fascinating—no day was the same, and she got involved in the most interesting situations. She really liked what she did for the hospital, and her enthusiasm rubbed off on me. When a position in her department was available, she let me know about it, and I was hooked.

I felt it was an opportunity to make a big difference and interact on a different level. My emergency department and case management background was helpful in preparing for this new area of nursing, but I knew there was a lot more to learn.

Q: WHY DID YOU DECIDE TO PURSUE BOARD CERTIFICATION?

I have always had a passion for life-long learning. Education is a powerful tool that can change lives—and organizations as well. Every day I try to learn something new; to do otherwise is to grow stagnant. In fact, I am currently completing my Doctorate of Nursing Practice degree in order to lead in the healthcare changes that loom before us. Certification is one of the best examples of how we, as professionals, prepare to assure optimal care for our patients. I held certifications in my two previous nursing specialties, and I knew I would undertake the certification in infection prevention and control (CIC®) as soon as I was able.

Why become certified? I believe that it is the most important thing we can do to demonstrate our competence and commitment to the profession to others.

Why do we as an organization believe in certification? It comes down to our very roots—our mission and vision support certification, as does APIC’s new IP Competency Model. My organization’s vision statement calls certification “the standard of excellence,” and the mission statement states our goal is to protect the public. I believe the following equation fits nicely with our goals: Expertise + Education = Excellence.

Q: IN WHAT WAYS HAS YOUR CIC BENEFITTED YOU?

Further education is what elevates us to the title “professional.” Certification provides an avenue to grow in one’s chosen field, to advance the profession, and to assure improved safety for our patients and caregivers. The preparation itself provided me with a large body of knowledge from which to draw when new questions arise. While I was familiar with much of the content, I...
learned a tremendous amount about infection prevention in unfamiliar areas of practice. I even began to think differently after studying for the certification. It gave me a matrix for problem solving, and now I feel much more comfortable when questions and novel situations arise. This comes in handy quite often when considering how to prioritize the ever-changing events of the day. Certification turned me from a competent professional into a resident expert who is recognized by others for having advanced training and skills.

Q: **IN WHAT WAYS HAS YOUR CIC BENEFITTED YOUR HEALTHCARE ORGANIZATION?**

As a certified infection preventionist, I am able to protect our healthcare system in three important ways. The first is by appropriately managing the day-to-day concerns that arise. I believe our greatest strength is the ability to use our knowledge to keep patients and caregivers informed and to provide for their safety. It’s a big job, but we are up to the task. Secondly, I am quite comfortable speaking with others regarding infection prevention. Supporting the profession to staff, leadership committees, community organizations, local media, and regulatory agencies is a joy—one of my favorite parts of the day. Lastly, certification allows me to better assess for risks in the system and to plan for the future.

In closing, it comes down to trust—if you were to turn to any other professional for advice, you would want to be able to trust they had the very best educational preparation to assist you. Nursing is no different; and we all need to make the commitment to attain certification. 

“I have always had a passion for life-long learning. Education is a powerful tool that can change lives—and organizations as well. Every day I try to learn something new; to do otherwise is to grow stagnant.”
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My Bugaboo: Virulence factors of bacteria

A microbiological overview of specific natural properties of bacteria that proliferate and result in infection—under the right conditions.

BY IRENA L. KENNELEY, PHD, APRN-BC, CIC

GREETINGS, FELLOW INFECTION PREVENTIONISTS!

THE SCIENCE OF infectious diseases involves hundreds of bacteria, viruses, fungi, and protozoa. The amount of information available about microbial organisms poses a special problem to infection preventionists. Obviously, the impact of microbial disease cannot be overstated. Traditionally, the teaching of microbiology has been based mostly on memorization of facts (the “bug parade”). Too much information makes it difficult to tease out what is important and directly applicable to practice. This quarter’s My Bugaboo column will feature a review of the virulence factors of bacteria. The intention is to convey succinct information to busy infection preventionists for common etiologic agents of healthcare-associated infections.

E. coli with fimbriae: causes urinary tract infections, traveler’s diarrhea and healthcare-associated infections.
A significant source of infection is exposure to the long-term care facility healthcare setting. Daily, everyone is exposed to all types of bacteria, yet the vast majority of these exposures do not result in an infection. How does this happen? This column will describe some of the specific natural properties bacteria possess so that under the right conditions they are able to proliferate in a human host resulting in infection.¹

**Virulence** refers to the degree to which bacteria can invade and damage host tissues. **Virulence factors** are bacterial structures or properties that enable host entry or adhesion. Many virulence factors directly lead to tissue damage. They fall into three categories: enzymes, toxins, and the induction of a damaging host response.

**Pathogens** are those microbes that can infect the body. Disease results when enough cells enter the body through a specific route, then grow and disrupt tissues. The production of virulence factors aids in invasion and damage to host cells. The effects of infection and disease are seen in the host as signs and symptoms, which may include both short- and long-term damage. Pathogens are spread by direct and indirect means involving overtly infected people, carriers, vectors, and vehicles.

**INFECTION AND DISEASE**

Bacterial organisms residing as normal flora are beneficial to humans because they produce vitamins (e.g., vitamin K in the gut), help digest food, and serve a protective function by preventing the host from colonization with pathogens (microbial antagonism). Major risk factors for disease include the type of bacterial strain and the size of inoculum (or dose) that it would take to cause infection. For example, the ingestion of less than 200 cells of *Shigella* species, a very small inoculum size, can cause dysentery. Other bacterial organisms must have a much larger inoculum size of a million cells or more to cause disease such as *Campylobacter* and *Salmonella* species.² The infectious disease process generally follows three steps:

**Colonization → Adhesion → Invasion**

**Colonization** of a sterile site can be indicative of a defective host defense mechanism. Factors that weaken host defenses and increase susceptibility to infection include: old age and the very young, genetic defects in immunity and acquired defects in immunity (e.g., AIDS); surgery and organ transplants, organic disease such as cancer; liver malfunction; diabetes; chemotherapy/immunosuppressive drugs; physical/mental stress; and other infections.

Biofilms have special adaptations to facilitate colonization. Biofilms are defined as a community formed by the binding of bacterial cells into a polysaccharide web that is sticky and connects the cells together. The polysaccharide web also offers protection to many members of the community by shielding them from the body’s immune system and even antibiotic therapy. Biofilms are formed when bacteria secrete slimy, mucilaginous materials that provide the microorganisms with a means of attachment to moist surfaces. Biofilms have been found on artificial heart valves and indwelling intravascular catheters.²

**Adhesion** of a bacterial cell occurs through various mechanisms. First, bacteria have the ability to bind to specific receptors on host tissue surfaces by the use of adhesins such as fimbriae or pili. These are hairlike appendages on many Gram-negative bacilli.

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*Klebsiella pneumoniae* bacteria are commonly found in the human gastrointestinal tract, and are often the cause of healthcare-associated infections involving the urinary and pulmonary systems. You can actually see the “capsule” by the mucoid colonies that grow on MacConkey agar.³
Access peer-reviewed articles about virulence factors of bacteria in the American Journal of Infection Control


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Some bacteria produce a capsule—a slimy layer on the outside of each cell that shields the bacteria from the host’s immune response and even recognition by white blood cells. The capsule is an important virulence factor primarily because it serves as protection and defies recognition by the immune system and, in this way, their ability is enhanced to colonize, adhere, and invade without resistance from host defenses.

**Invasion** usually involves the use of toxins produced by the bacteria to destroy tissue. Many bacteria also release degradative enzymes that break down host tissues, which is then used as food and consequently promotes the spread of that organism. *Streptococci* use the degradative enzymes streptolysin S and O, hyaluronidase, DNases, and streptokinases. *Staphylococci* are able to modify the tissue environment not only with hyaluronidase, but degradative enzymes fibrinolysin and lipases. After adherence, this process helps the bacterial pathogens to burrow into the tissue, multiply, and spread.²

Toxins also cause tissue destruction and aid in the invasion process. First, **endotoxins** are produced only by Gram-negative bacterial organisms. When the host’s immune system detects the presence of a foreign protein (the endotoxin), cytokines are produced because the protective systems are activated.

The endotoxin triggers a systemic response. **Exotoxins** are protein substances produced by both Gram-negative and Gram-positive bacteria. **Superantigens** are exotoxins that cause a nonspecific systemic activation of the immune response that rapidly becomes a life-threatening autoimmune response. For example, certain strains of *Staphylococcus aureus* produce superantigen exotoxins that cause toxic shock syndrome.²

The human body is in constant contact with bacterial organisms, some of which invade the body and multiply. Bacteria provide some benefits to the host. Some are able to cause disease, especially when the immune system of the host is compromised or when the bacteria are able to invade a normally sterile site of the body.³

Irena L. Kenneley, PhD, APRN-BC, CIC, is assistant professor at Case Western Reserve University, Frances Payne Bolton School of Nursing in Cleveland, Ohio.

**References**


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Accomplish more through networking

Keep in mind four key tips to make the most of your networking experiences.

BY MARSHA WALLANDER, RN, ASSOCIATE DIRECTOR, ACCREDITATION SERVICES, ACCREDITATION ASSOCIATION FOR AMBULATORY HEALTH CARE (AAAHC)

On a daily basis, I field inquiries from leaders and staff members from a variety of healthcare settings. I help answer a number of complex questions and simple concerns—from issues involving individual patients or the healthcare organization as a whole, to those relating to professional practices and personal work-life balance. There is no denying that the healthcare environment is complex in all settings and on all levels. So how can a group of similarly purposed APIC professionals impact positive change?

I have the wonderful benefit of networking with many infection preventionists (IPs) in person while I travel to local, regional and national events promoting overall ambulatory infection prevention and espousing the benefits of the survey process. IPs have helped me better understand the daily difficulties they confront. It is knowledge and insight I’ve gained from IPs that allows me to assist and inform future inquirers. Networking is a great way for IPs to identify mentors. Set a goal to engage in more networking to grow in personal and professional ways. Here’s how networking pays off:

1. LEARN HOW OTHER COLLEAGUES TACKLE(D) THE SAME OR A SIMILAR CHALLENGE.

Old saying: Don’t reinvent the wheel. New saying: Just tweak the wheel that has already been proven as a solution. Do not waste time on duplicate work efforts. Many infection prevention challenges have multiple solutions that are already proven and readily available. Conduct a search for American Journal of Infection Control (AJIC) articles related to your infection prevention challenge or use a search engine to identify an evidence-based solution, tweak it (as needed), and move on! My favorite search engine is Google Scholar [go to the Google toolbar, click “More” and scroll down to “Scholar” to use it].

Some readers may be wondering how using Google Scholar or searching for AJIC articles could be considered networking—remember there’s a person or persons behind those evidence-based links. Many links contain the names and email addresses of the authors, so it is often possible to directly contact the authors with questions.

2. IDENTIFY AND EMULATE THE ADMIRE SKILLS/TRAINS/ABILITIES OF OTHERS.

It is impossible to be a subject matter expert in all subjects. Part of being a leader is being aware of one’s own knowledge gaps. Identify the deficit, find a “subject matter expert,” and be direct. For example, if you...
observe another person managing a personnel issue and wish you had that same management skill, reach out to that person and add him/her to your networking list. A little blatant flattery might work: “I really respected how you handled that issue with Mary this morning. Could you share with me how you learned to feel comfortable with [insert issue here]?”

Connect with fellow infection preventionists via MyAPIC (www.apic.org/myapic) and make a commitment to become active—or more active—in your local APIC chapter.

3 ASCERTAIN VALUABLE SOURCES OF NEEDED OR “NEW-FOR-YOU” INFORMATION.

Repeat after me: “I am not the first person ever to be new at infection prevention. Others have learned and so will I.” Following the previous tips, make a plan to obtain needed education. Becoming an active and fully participating member of a local APIC chapter is an excellent way to get started. At the very first meeting, there will be a room full of people who were also once the “new IP on the block.”

Also note that new IPs may know more than they think they do. Share knowledge freely with all who could benefit. APIC recently launched a wonderful networking webpage—MyAPIC—in which many APIC cohorts ask and respond to infection prevention concerns from others. The topics list and posted comments grow daily. Take advantage of this easy-to-use communication method (www.apic.org/myapic). Problem(s) solved.

4 ACCESS AND SHARE INFORMATION AND BRAINSTORM SOLUTIONS.

While attending a conference—large or small—do not use the scheduled meeting breaks for just visiting the pastry table. Here’s a different idea: Arrive at the meeting break with one or two troublesome issues that are high on your “to-be-resolved” list. For example, one of those troublesome issues might be finding an improved method to determine staff ongoing competency in a specific high-risk task. Upon arrival at the conference, scan the attendee list for prospective networking buddies (with similar practice settings or who are geographically close). Or simply join a small group of conference attendees (who might be wolfing down cookies) and plead for some on-the-spot brainstorming. Don’t use these conference breaks to load up on calories; instead “load up” on new networking buddies.

P.S.—At APIC’s live training courses, Infection Prevention for Ambulatory Surgery Centers: Meeting CMS Conditions for Coverage and Education for the Prevention of Infection (EPI®), all attendees are supplied with a sheet of preprinted business cards; put them to good use. Set a goal to collect as many attendee business cards as possible, while giving away every single one of your own.

In today’s electronic environment, there are many ways to network. Social media has helped millions of people connect quickly and its use need not be limited to personal. Try texting a networking buddy—it is faster than waiting for an email response and easier for the respondent. Get the free Bump app (http://bu.mp) for your smartphone; it is very useful in large gatherings. This app shares pre-programmed contact information with another smartphone when the two phones are tapped together.

Networking enlarges the IP’s circle of resources, shares and expands their knowledge, and increases their personal and professional skills. These are all valuable tools in improving quality and safety for patients. Commit to the next higher level and everyone benefits! 🌍
Overcoming obstacles to vaccination

A facility in Cincinnati successfully faced down union opposition to a proposed mandatory flu vaccination program for healthcare personnel.

BY MARY CRESSE

In 2009, the phrase “mandatory flu vaccination” long on the lips of infection preventionists (IPs), inspired more talk than ever. In April of that year novel influenza A (H1N1) appeared with a vengeance, and by June, the World Health Organization had raised the worldwide pandemic alert level of H1N1 to Phase 6.

At an August clinical leadership committee meeting held at University Hospital in Cincinnati (now the University of Cincinnati Medical Center), a physician asked if the hospital was going to mandate flu vaccinations for the upcoming flu season. After a flurry of discussion, the matter went before the administration and the medical executive committee, which pounded the gavel decisively: Yes, there would be a mandate for seasonal flu vaccine for all—and not just non-clinical employees, but also for all medical staff. The deadline was October 20.

Infection Control Director Francine Kidd, BSN, RN, CIC, knew she had a lot of work to do. The facility was a 400-bed teaching hospital that employed 4,500. In addition to setting up rooms and handling the flow of people; communicating with secretarial staff to ensure everyone received emails about weekly meetings; and meeting with the staff in the central supply department to review what extra supplies might be needed.

While this was occurring, the hospital established a flu clinic, set up a mobile cart, and got in touch with public relations department to launch a “protect your patient” campaign. (At one point, on one of the first days of the clinic, Kidd buttonholed the hospital president in the hallway and publicly vaccinated him as a PR stunt.)

Things looked good. Kidd, who is well known for getting the usual flu-vaccination protocol, Kidd and colleagues Robert Wones, MD, and Adam Momper, MHSA, BS, had to get the infection prevention department moving in anticipation of the mandatory paperwork that came along with plans for a mandatory flu-vaccination program.

As the plan got underway, University Hospital contacted the unions and informed them of the decision. Meanwhile Kidd, who had handled infection prevention at University Hospital for 17 years, kicked into high gear.

On the to-do list were such tasks as contacting the safety officer about how the facility might handle logistics for...
things done, didn’t have much to do to inspire department heads to get up to speed.

“Oh, they see me coming and they hide,” joked Kidd. “Infection prevention is not an easy job; to make a program work, you have to get out to every section of the hospital to make sure people know what you are doing and what you need from them. In the course of a day, I might deal with neurosurgeons and plumbers, with environmental services and nurses, with finance and administration and safety.”

There was just one fly in the ointment—or rather, three. Representatives from the International Union of Operating Engineers, the Ohio Nurses Association, and the American Federation of State, County, and Municipal Employees voiced concerns. There was discussion about whether mandatory flu vaccinations would violate members’ health and civil rights.

To IPs, who are well aware of the clinical evidence supporting vaccination, this can be vexing. The year of the mandate, for example, results of a study performed at George Washington University Medical Center and George Washington University School of Public Health and Health Service affirmed the efficacy of vaccination (in reducing absenteeism, protecting health and safety of staff, patients, and visitors).1 The Centers for Disease Control and Prevention’s Advisory Committee on Immunization Practices, and Healthcare Infection Control Practices Advisory Committee recommend that all U.S. healthcare personnel (HCP) get vaccinated annually against influenza. But during the 2010–2011 influenza season, coverage for influenza vaccination among HCP was estimated at 63.5 percent.

In some facilities, a mandatory flu vaccination situation would be a call to war. At University Hospital, it wasn’t. University Hospital’s choice of collaboration over combat resulted in a 100 percent compliance rate in 2009 and reduced associate flu-season call-off hours by almost 8,000 over 2008. It became the first unionized hospital to mandate vaccinations for all employees, including medical staff. Cincinnati IPs sent the message that hospitals can work with unions to protect the health and safety of all.

THE CINCINNATI MODEL
Before the unions expressed opposition to the mandate, the focus was on standard implementation of the program. When the unions balked, University Hospital had to ask some hard questions: Could a facility mandate without exception? Would there be exemptions, and if so, who would determine them and how? What documentation

Infection Preventionist Missy Hamburg, BA, CIC, (left) and Francine Kidd, RN, BSN, CIC, (right) championed a successful mandatory influenza vaccine initiative.
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would be put in place, and who would draft it? Would the standard documentation (e.g., allergy forms) be enough?

Another question, addressed in an *American Journal of Infection Control (AJIC)* article about the program, inquired whether or not healthcare management had the right “to make and encircle reasonable rules protecting the health and safety of employees.”

As Kidd said, of not only infection prevention but also of management, “This was new for us, all of us. It brought up different questions for everyone, not just the unions.”

To the questions posed above, there was no specific answer or set of answers; however, there was promise of an answer in proper management. At University Hospital, there was a management system in place ready to find answers.

**A TURNING POINT**

Hospitals often talk about “working for the best patient outcome.” The union situation presented the need for the hospital to work extra diligently for the best outcome for itself and for its unions (ideally assuring patient outcomes).

“It’s delicate,” said Linda Jamison, MSN, RN, CIC, CCRC, the IP at University-affiliated (and award winning) UC Health-West Chester Hospital in West Chester, Ohio. Referring to the fact that some employees were sure to ask for exemptions (e.g., on the basis of religious or medical reasons), she said, “No one is saying that certain exemptions aren’t valid. The problem is that the IP can think it’s merely a clinical issue. We are part of a management structure. We serve patients, but we also have to educate senior management.”

This is just what University Hospital did. Rather than allow the matter to slide into argument, they did the following:

- Created a multi-departmental committee to approve or deny applications for exemption (denials were required to receive the vaccine)
- Established proper documentation for requests and appeals of exemptions
- Informed all employees of the consequence of denial (i.e., job loss)
- Held negotiations with each of the unions according to terms of their respective contracts

They didn’t escape arbitration. Although one union (the nursing union) was supportive, according to Kidd, the other two brought grievances. An arbitrator was brought in.

Kidd recalls the situation, noting the presence of the elephant in the room. “When you have situations like this, there is always the question of, will you lose people. Employees hear ‘mandatory’ and they think ‘job loss.’ There are also the people who think, ‘Who are you to tell me whether I can make any healthcare decisions for myself?’ The beauty of the University approach, she said, was that the hospital was not, in any way, acting as a task-master; rather, it was positing itself as a partner in ensuring the rights and safety of everyone under its roof. Including the unions.

Reasoning that both sides had to communicate effectively meant that each side had to speak the other’s language. University Hospital staff became fluent in the collective bargaining language used by the unions, bringing in people to review the language of contracts.

**LAST-MINUTE CRISIS**

If University staff didn’t have enough on their plate during the arbitration process, they had to deal with a last-minute crisis.

They ran out of vaccine.

“We had no idea what we were going to do. We were down to 20 doses. We had ordered it…and yet the supplier said they couldn’t get it to us,” recalled Kidd.

Then, in the drama that seems to accompany many things infection prevention, a magic shipment arrived. According to Kidd, 14,000 vaccines were delivered, “and we hadn’t even ordered them.”

Again, management came through for IPs. Without hesi-
Access peer-reviewed articles about mandatory vaccine programs in the American Journal of Infection Control

Attitudes toward mandatory occupational vaccinations and vaccination coverage against vaccine-preventable diseases of health care workers in primary health care centers, Helena C. Maltezou, Panos Katerelos, Sophia Poufta, Androula Pavli, Antonios Maragos, Maria Theodoridou [June 2012 (Article in Press DOI: 10.1016/j.ajic.2012.01.028)]


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**PREVENTION IN ACTION > OVERCOMING OBSTACLES**

**The Denouement**

As autumn wound down, so did the drama. The arbitrator upheld the hospital’s mandatory seasonal flu policy. University’s tactic of informing the unions early was clearly a symbol of future negotiation, in which—through their human relations process—the hospital was to give adequate notice and opportunity for negotiation to the union before the deadline for vaccination.

Kidd and the rest of the hospital were ready for flu season.

When asked about lessons learned, Kidd offered the following advice, “As infection preventionist, you are working with all parts of the hospital, but when a situation occurs, you can’t step back and say, ‘This is your job’ or ‘That is my job’; It’s everyone’s job.”

Since 2009, University Hospital has undergone a name change and a renovation. It will soon expand to more than 500 beds. But one thing has remained the same: It has achieved stellar flu vaccination compliance rates, and with nary a complaint.

**References**

1 Tan LJ. American Medical Association: science, research, and technology. Chicago [IL]: Litjen (L.J.); 2009.
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CHAPTER SPOTLIGHT APIC Alabama Chapter 61

Educating about infection prevention and giving back to the community

APIC Alabama saw an opportunity to educate students and faculty and give back to a local school by providing resources.

BY BETH GOODALL, RN, BSN, CIC, AND BECKY MCKINNEY, RN, BSN, CIC

In the spirit of giving this past 2012 holiday season, the APIC Alabama Chapter 61 made a donation of health, personal hygiene, environmental cleanliness, and nutritional supplies to Reform Elementary School located in West Central Alabama. This small rural elementary school was hit hard by decreases in school funding and had experienced cutbacks in environmental cleaning staff members who kept the school clean and changes to the content and quantity of lunches provided for students. For many of the students at Reform Elementary School, lunch is their only full meal for the day and many are still hungry before the school day ends.

The APIC Alabama chapter saw an opportunity to help not only educate students and faculty about infection prevention, but give back to the school by providing resources to ensure nutrition and cleanliness within the environment.

Items donated to Reform Elementary School included alcohol-based hand rub, paper towels, gloves, facial tissues, disinfectant spray and wipes, healthy snacks and juices, band-aids, toothpaste, toothbrushes, and bathroom tissue. Enough items were provided to last well through the remainder of the school year. APIC Alabama chapter members were as pleased to provide these needed items to the school as the teachers and students were to receive them.

As Immediate Past President Beth Goodall and members Beverly Walters, Robyn Trenk, and Neil Daniel opened the doors of two packed SUVs, and students carried the supplies into the school with big grins and expressions of excitement on their faces. A surprise was also waiting for the APIC chapter members. Inside the school, students joined together to hold up a big “Thank You APIC” sign with more than 300 of the children’s handwritten signatures.
Teachers, students, and APIC members alike felt the spirit of the holiday giving season.

In addition, the members of APIC Alabama educated faculty members and students about infection prevention basics:

• Clean hands frequently and thoroughly with soap and water or alcohol-based hand rub.
• Cough or sneeze into your sleeve, not your hands.
• Get a flu shot each year.
• Eat healthy foods and get plenty of rest.

“Community outreach is one of APIC Alabama’s goals, and they have fulfilled this goal for the past three years by supporting their local schools in improving health and safety by reducing risks of infections.”

TIPS FOR COMMUNITY OUTREACH

APIC MEMBERS AND chapters work hard on a daily basis to protect patients, employees, and others by preventing infections. Why not share the wealth of knowledge in your local communities and bring attention to the importance of infection prevention? Here are a few tips to help you and your chapter members find success by spreading the word about infection prevention in your community:

1 DETERMINE THE NEED AND IDENTIFY OPPORTUNITIES.

Work with fellow chapter members to scout out ways to spread the word about infection prevention in your community. Are you aware of a long-term care facility in need of flu vaccination education/clinics? Is a local school system in need of alcohol-based hand rub or other supplies? Opportunities abound and it’s your goal to find them. Chances are, the people you help and educate will be grateful for your time and effort. It could be as simple as distributing hand hygiene brochures at a community center or giving a talk on norovirus to faculty at a long-term care facility.

2 USE RESOURCES AVAILABLE TO YOU.

Finding resources to use for a community project doesn’t have to be challenging. Use what is available to you! The Centers for Disease Control and Prevention has excellent consumer-focused resources. APIC also has a variety of consumer resources to guide your outreach efforts including, Infection Prevention and You brochures, fliers, posters, and PowerPoint presentations that educate others about infection preventionists and how to stay safe while receiving healthcare, and “Infection info for consumers” education on a variety of consumer infection prevention topics. Check out the consumer tab of www.APIC.org to learn more.

3 DETERMINE A PLAN FOR THE FUTURE AND WORK AS A TEAM.

Set a goal for your chapter’s community outreach. What does success look like for your chapter? Set realistic and attainable goals, and draw on the expertise of your fellow chapter members.
Stepping outside the box

A program designed to break through the boundaries of hospital administration allows the clinical lab and IP to leverage the strengths of each department.

BY MARY CRESSE

When APIC, in collaboration with the American Society for Microbiology (ASM), unveiled the IP Col-lab-oration Project last year, one could almost hear the collective sigh of relief among infection preventionists (IPs) and laboratorians. Professionals from each specialty had long sought a program that would link ever more closely the specialties of infection prevention and the clinical laboratory—departments that, though sharing common goals, may not always work together at top efficiency.

There was one facility, however, that was ahead of the curve—the NorthShore University HealthSystem (NorthShore), which serves the Chicago region. The 867-bed system includes four Illinois hospitals in Evanston, Glenview, Highland Park, and Skokie. NorthShore handles more than 1.3 million outpatient visits annually, with emergency department visits comprising another 125,000. NorthShore also handles more than 61,000 hospital cases including births.

NorthShore has won a raft of awards, but it may become just as well known for its embrace of IP Col-lab-oration and the way the project seeks to leverage the best of both departments. Already, according to Marc-Oliver Wright, MT(ASCP), MS, CIC, the techniques have allowed the lab to send test results much faster to clinicians tending patients (enabling them,
for example, to get patients to isolation more quickly).

There is definitely a mandate for such a program. A 2011 survey conducted by Mathew Greenwald & Associates and released early last year by APIC and ASM highlighted the fact that a lag in turnaround could threaten management of healthcare-associated infections (HAIs). Fifty-one percent of the IPs surveyed indicated they need results for MRSA screening tests within 12 hours to initiate the necessary precautions; however, MRSA cultures—a traditional method for screening—typically take 24 to 48 hours to complete.

The survey also showed that 80 percent of respondents wanted to hear how other facilities were creating partnerships between laboratory and infection prevention departments and effect a swift response to HAIs. The IP Col-lab-oration Project is part of the Building Bridges series (www.apic.org/buildingbridges) and is funded by an unrestricted grant from Roche Diagnostics (an APIC Strategic Partner since 2009). At the panel presentation at the APIC 2011 Annual Conference, the positive response to the project showed it’s hitting many a pain point with those in the continuum of care. It inspired discussion of topics not only of patient outcomes but a new look at management and administration. Over the course of the conference, IPs and clinical lab professionals alike posed questions such as how the program can get buy-in from the C-suite; how one can make the most of technology to manage test results; how to structure education in an e-learning environment; and, perhaps most importantly, how one might avoid red tape when working with others in departments of the hospital not under the same branches of the management tree.

Lillian Burns, BS, MT, MPH, CIC, lead clinical advisor and APIC representative for the project panel said, “The demands that are placed on the IP greatly influence the relationship with the lab, so people who work in the field need to not feel that they are unique in their relationships and their institution with regard to the lab.”

**THE GOALS**

The project launched with the following goals:

• To increase the communication and understanding between IPs and healthcare personnel (HCP)
• To equip IPs and laboratory professionals with compelling educational resources and tools
that will lead to improved patient outcomes
• To educate HCP in the area of microbiology, the importance of surveillance via diagnostics/screening, and the role of the IP in diagnostic decisions

Bolstering the program is a panel of IP and laboratory experts with diverse backgrounds. Joining Wright, Peterson, and Burns are Kathy Aureden, MS, MT(ASCP), SI, CIC, and Marty Evans, MD.

HOW IT HAPPENED

Wright knew right away that in order to make any infection prevention program work, he had to have buy-in from management and engage the C-suite.

What gets the attention from management is results, and good results begin with good communication among frontline staff, he believes. Wright began by creating a solid team that could create proven results. Employing his training in both medical technology and his degree in epidemiology, Wright can ably act as a conduit between infection prevention, executives, and the clinical laboratory.

Essential to his clinical team is Evanston Hospital Microbiology Manager Irene Dusich. Each believed that the first thing that had to happen was for frontline people to talk to one another. It may not be unusual for the IPs and the laboratory staff to get together; however, it may be unusual for each side to be encouraged to be very open about their concerns—while listeners avoid cross talk. The ultimate goal is education. “Some IPs come in with very limited experience; perhaps they are new to infection prevention or they have a nursing background,” said Wright. “We teach them the microbiology of the laboratory.” Similarly, laboratory staff technologists learn the duties of the IP through rounds and seminars.

The hope is that IPs may learn the importance of the clinical lab in diagnostic testing and that technologists know how to partner with IPs in outbreak investigations. In many hospitals, the laboratory is often in a far-off section of the building and there is always the risk that this may be reflected in the way the laboratory is perceived. Dusich isn’t afraid to address this. “I remind lab technologists of the fact that they are performing crucial and meaningful tasks though they do not have direct contact with the patient.”

Such education enhances operational effectiveness—for example, in the way that it helps members of the hospital anticipate the need of other departments. One example is through use of Epic, an integrated-access electronic health records system. “When MRSA is detected, either from an nasal admission screen or from a clinical culture, microbiology technical specialists are able to place an alert in the patient’s electronic medical record and immediately order an isolation cart,” said Dusich. “This speeds the process of getting the patient in isolation and eliminates phone calls to the nursing unit and infection prevention.”

APPROACHING THE C-SUITE

Another aspect of management, Wright said, is for the lab management, non-lab clinical personnel, and IPs to learn the language of the C-suite. Dealing with executives may be daunting for those accustomed to conference rooms, especially if—as with infection prevention—one’s department may be classified as a “cost center.” Wright urges clinicians to discard any hesitation they may have in discussing finances and to see executive counterparts as advocates. Those who would seek funding for such programs as The IP Co-lab-oration Project are wise to embrace the idea that the backing of the C-suite can bring the laboratory and the IP department into a new, stronger realm within operations.

APIC CURRICULUM

Since its introduction, the project has inspired a range of educational materials, including conference abstracts, five webinars, and electronic and print publications. An August 2012 webinar titled, “What Infection Preventionists Need to Know About the Laboratory” introduces IPs to laboratory tests and techniques relevant to infection prevention practice; offers ways of helping IPs communicate with the laboratory; and offers guidance on how to summarize important laboratory topics to disseminate to other departments. All webinars are available free to APIC members.

APIC also published The Infection Preventionist’s Guide to the Lab, a quick reference that serves as a handy companion to the webinar in its review of the basics of microbiology and testing. Edited by Patricia A. Kulich, RN, CIC, and David L. Taylor, PhD, and reviewed by IPs and laboratory personnel, it presents a wide variety of easy-to-use descriptions, summaries, and tables.

APIC has been a great factor in the program’s success, according to all involved. At NorthShore, the job description for IP lists a requirement for membership in APIC. “APIC’s education initiatives are especially important in our operations,” said Wright. “Especially if you consider that many of the older generation of IPs are leaving the field and that those entering are seeing new challenges in infection prevention—facing challenges either not seen before or presenting on a scale not before realized.”

This comes to the fore in the success of The IP Co-lab-oration Project. “To have an effective program you have to have a solid relationship and reputation with your laboratory,” said Wright. B3
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What you need to know: NHSN data audits and more

Compiled by Leslie Kretzu, Executive Director of APIC Consulting Services, Inc.

Mary Andrus, BA, RN, CIC, has worked with APIC Consulting Services, Inc. (APIC Consulting), for the past four years leading National Healthcare Safety Network (NHSN) data audits in several states. Until forming her own consulting company in 2009, she was the nurse epidemiologist in the Surveillance Branch in the Division of Healthcare Quality Promotion at the Centers for Disease Control and Prevention (CDC). During her tenure at the CDC, she acted as the subject matter expert and supported and trained for NHSN. Over the years, Andrus has given presentations on NHSN surveillance definitions throughout the U.S., as well as in France, England, Japan, and Saudi Arabia.

An APIC member since 1993, Andrus is a past president of the Greater Atlanta Chapter of APIC, served two terms on the APIC Board of Directors, and completed a term on the APIC Nominating and Awards Committee. Andrus was also the 2010 Elaine Larson Lectureship Award (now known as the Distinguished Scientist Award) winner. Prevention Strategist interviewed Andrus to explore key NHSN issues and the intricacies of public reporting.

Q: You previously worked for the CDC at a time when NHSN was in its infancy stage. Since then, you have trained thousands of infection preventionists (IPs) on the intricacies of reporting healthcare-associated infection (HAI) data. What are three pieces of advice you would give to IPs who are responsible for reporting to NHSN?

1. **Read every word of every email and newsletter that you receive from NHSN.** These communications contain clarifications, changes, and case studies that are essential for the IP to stay current with HAI surveillance science. Likewise, have an up-to-date copy of the NHSN Patient Safety Manual (available online at [www.cdc.gov/nhsn](http://www.cdc.gov/nhsn)) on your desk for reference. Read and replace the chapters as they are updated.

2. **Pay close attention to how your denominator data are collected.** The methodology you use to collect denominators will affect your rates/ratios every bit as much as the definition you use to collect HAI data.

3. **Establish a relationship with a physician champion.** Introduce him/her to the CDC/NHSN HAI definitions and discuss the differences between clinical and surveillance criteria. The more you can do to help clinicians understand standardized surveillance criteria, the easier your HAI surveillance work will become.

Q: You have led six data audit projects for APIC Consulting in the past four years. Can you share with readers what a data audit project entails?

APIC Consulting conducts data audit projects for state health departments, where we...
auditing specific HAI data that is reported to NHSN. Initially, we sit down together with the HAI prevention leaders from the state to determine—based on budgetary and other considerations—how many hospitals will be audited and the measures (e.g., CLABSI, CAUTI, SSI) that will be included. We outline options for a basic audit plan, including selection of patient records and the timeline.

APIC Consulting requests microbiology results and other data from hospitals, which are then used to select the patient records (Target List) that will be reviewed during the audit—a complex and detailed process. We write and customize the audit plan that outlines the methodology that will be used for the audit and the metrics that will be applied to the collected data.

Our team of experienced auditors reviews the data during the hospital audit process, which takes roughly two weeks, depending on the total number of facilities audited. Patient records are reviewed, documented, and discussed with the hospital IP. APIC Consulting data auditors present an educational program to the staff members who collect the data and obtain details from them about the collection methods they employ. These sessions have provided great information about variations throughout the country in the methods used to collect and report HAI data.

Following a secondary review of all data, final audit results are sent to each hospital IP in the study. Hospitals have a few weeks to contest any results. When there are contested cases, we contact the IP and discuss the case in greater detail, with a final determination by the end of the call. In just a few cases, APIC Consulting and the hospital IP have not been able to agree on the audit determination. When this happens, the case is presented to the subject matter experts at NHSN who are asked to make a final determination.

When all cases are resolved, we prepare a final report that includes a summary of the data, including the questions about data collection asked during the interviews, a discussion of the results, and recommendations about steps that could improve the collection of data for facilities in the state.

Overall, the audit process takes a few months. If the audit includes more than one measure, it may take longer.

**Q**. The CDC has prioritized data audits/validation efforts for state health departments in recent years. Why do you think these types of data audit projects are necessary?

There are several reasons these data should be audited. As public reporting mandates for disclosure of data on HAI increase, with both economic and reputational implications for hospitals and physicians, validation of publicly reported data has become more important. Consistency of surveillance, along with appropriate risk stratification, is the only way comparison of rates/ratios between hospitals is possible. An audit process lends credibility to the hospitals that report HAI data, it gives credence to the IPs’ data collection processes, and the public (and payers) may ultimately have confidence that the published results reflect the infection prevention efforts that the hospitals undertake.

**Q**. What have you found during these data audits that has surprised you the most?

So many people I have spoken with over the years complained...
that the CDC definitions are subjective and inconsistently applied, so my expectation going in to the “audit business” was that we would confirm what I had been hearing. The reality is, however, that most IPs have a pretty good grasp of HAI surveillance definitions and that errors were often clustered into small groups of individuals who either did not have comprehensive training or who were unduly influenced by physicians and administrators using clinical criteria instead of surveillance criteria. I have also observed that hospitals do not consistently use the NHSN protocol for the collection of denominator data. I think there is a serious underestimation of the importance of using an appropriate and accurate denominator in reporting HAI data in NHSN.

I’m truly grateful for the many and varied experiences I’ve been privileged to have during my career. It’s been a great ride, and I’m proud of it all! Without question, the years I spent working with the CDC were the most fun and really defined my career. I spent many hours on the phone with IPs, answering their questions and talking them through case studies as we transitioned from NNIS to NHSN. I swear, I learned as much from them as they learned from me.

As soon as I wrap up my current project, I’m going to focus on making life sweet and simple! I have four children and six grandchildren who are spread out all over the country. My husband and I also have family in Belgium, so we hope to spend some time traveling to see them all. We have also fallen in love with Costa Rica, and we’ll start our retirement by spending a few relaxing weeks on the Nicoya peninsula. I’m guessing it will take me awhile to adjust to retirement, but I’m going to give it my best shot!

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3. Cost of care saving estimated over 6-month period, Q1 and Q2 2011, Cone Health MRSA reduction initiative which included using the Xenex room disinfection system.
Clostridium difficile

A multifaceted approach to prevention

By David J. Witt, MD, and Sue Barnes, RN, BSN, CIC

Each year, more than 14,000 Americans die of Clostridium difficile (C. difficile) infection (CDI) according to the Centers for Disease Control and Prevention (CDC). Furthermore, CDI costs at least $1 billion in extra healthcare costs annually, as reported in the March 2012 CDC Vital Signs report. While significant progress has been made in the prevention of central line-associated bloodstream infections, invasive MRSA infections, and surgical site infections—as per the U.S. Department of Health and Human Services’ (HHS) National HAI Action Plan to Eliminate Healthcare-Associated Infections—in the United States, CDI remains at historically high levels. HHS has set a goal for a 30 percent reduction in C. difficile infections and hospitalizations; however, preliminary data from the first half of 2012 have shown an increase in CDI.
These alarming statistics make the need for an increased emphasis on CDI prevention strategies clear; this comes as no surprise to healthcare professionals working in the infection prevention field. While we have witnessed widespread efforts to address these CDI prevention gaps across the continuum of care, more must be done to prevent these deadly infections. Healthcare personnel (HCP) at all levels—physicians, infection preventionists (IPs), pharmacists, nurses, laboratory professionals, environmental services professionals, and others—must effectively communicate and work in concert in order to move the needle toward progress of CDI prevention. Key areas of effort include hand hygiene, contact precautions, environmental cleaning, rapid diagnostics, antimicrobial stewardship, and fecal bacteriotherapy. While no simple solution exists for eliminating CDI, prevention is possible through teamwork, education, and open communication at all levels in multiple care settings.

**HEALTHCARE PROVIDER AND PATIENT HAND HYGIENE**

Hand hygiene is the cornerstone of any successful CDI prevention program, due in part to the small infectious dose required to transmit *C. difficile* from patient to patient. As recommended in the National HAI Action Plan, one area of research is focused on identifying the best method for hand hygiene for those who care for CDI patients. Wearing gloves can significantly reduce the spread of CDI by providing a physical barrier that decreases, if not prevents, hand contamination with spores. There is no increase in CDI with alcohol-based hand rub and no decrease in CDI with hand washing compared to the use of alcohol-based hand rub. The recommendation to use soap and water preferentially in outbreak settings after caring for a patient with CDI is based on expert opinion, as there are no data that demonstrate preferential use of soap and water for hand hygiene after caring for a patient with CDI in an outbreak setting is effective at preventing CDI. To ensure optimal hand hygiene is performed, the IP may wish to institute a hand hygiene monitoring program.

One of the newest tools for optimizing hand hygiene is automated compliance monitoring. These systems are designed to track hand hygiene compliance using one of several technologies including radio frequency identification sensors. There are numerous systems on the market, most designed to sense the proximity of employees to soap and degermer dispensers and other key patient zone locations and to register the use of degermer and soap. The resulting compliance data provides immediate feedback, printed reports, and (in some cases) can interface with infection prevention software programs to overlay compliance rates on infection rate graphs. One study suggests this type of technology not only improves compliance with

This micrograph depicts Gram-positive *C. difficile* bacteria from a stool sample culture obtained using a .1µm filter.

This is an impression smear photomicrograph of *C. difficile*. 
hand hygiene, but can reduce overall healthcare-associated infection (HAI) rates.5, 6 Dr. Maryanne McGuckin has published a guide for evaluation of automated hand hygiene compliance monitoring systems.7

Experts have also recommended extending hand hygiene programs to include patient participation to further reduce the risk of infection transmission.8 And beyond hands, as an adjunct to patient bathing, chlorhexidine gluconate-impregnated cloths has been used to reduce the rate and risk of device-associated infections as well as pathogens of interest, including MRSA, vancomycin-resistant enterococci, and CDI.9 This additional prevention measure might be one to consider if other standard prevention efforts are not successful in achieving a zero rate.

**CONTACT PRECAUTIONS**

Any successful CDI prevention program includes contact precautions directing the use of gowns and gloves to create a barrier to contamination of HCP hands and clothing.10 The term “contact plus” precautions is sometimes used for CDI patients to reference the addition of bleach for environmental disinfection, and soap and water for cleaning hands. Removal of personal protective equipment (PPE) at point of use is critical to ensure these items do not become fomites for transmission of infection. Furthermore, HCP must remove PPE in a manner to prevent contamination of hands and clothing.11 Healthcare organizations have successfully used simulation to support more deliberate and correct performance of basic healthcare protocols, which include contact precautions and hand hygiene processes.12

**ENVIRONMENTAL CLEANING**

A patient’s risk of acquiring CDI is increased when placed in a room recently occupied by a patient with CDI.13 Environmental cleaning and disinfection is critical to any successful CDI prevention program to prevent transmission to new admissions. Healthcare product manufacturers continue to introduce improved environmental disinfection products that are more effective against spore-forming organisms such as *C. difficile* and

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**“Any successful CDI prevention program includes contact precautions directing the use of gowns and gloves to create a barrier to contamination of HCP hands and clothing.”**
that also have a shorter required contact time. The three most effective solutions for elimination of *C. difficile* spores are bleach, hydrogen peroxide, and peracetic acid.\textsuperscript{14} Cubicle curtains and hard surfaces are a concern for transmission of CDI. Strategies proposed to address contaminated cubicle curtains during recent APIC Annual Conference poster presentations have included the following: using disposable or antimicrobial impregnated curtains; increasing curtain inventory to permit changing at discharge for all contact isolation rooms; using specialized curtains that permit quick switching without a ladder; utilizing a disposable plastic adhesive shield that can be applied to the grab area of the curtain and changed between patients; and spraying HP disinfectant solution on the grab area of the privacy curtain during daily room cleaning and at time of discharge.\textsuperscript{15}

Quality tools have been introduced in recent years for the assessment of environmental cleanliness resulting in improved cleaning and disinfection and increased engagement of environmental services departments. They include fluorescing marker solution that glows under ultra violet light and adenosine triphosphate (ATP).\textsuperscript{16-18}

Automated cleaning technologies have been introduced as a means for eliminating environmental contamination of CDI. Perfect environmental cleaning is not possible due to human factors; therefore, it is necessary to closely scrutinize the evolving evidence relative to automated cleaning technologies. These technologies are designed for use in addition to manual cleaning and include ultra violet light, hydrogen peroxide vapor, steam cleaning, and active ionized water.\textsuperscript{19-22}

RAPID DIAGNOSTICS

Rapid diagnosis of CDI is vital for appropriate isolation. Early termination of unnecessary isolation will permit effective use of limited isolation resources and avoid the well-delineated adverse consequences of isolation for the patient. Several tests and test strategies are available for the diagnosis of CDI. Suspecting CDI is the most vital part of diagnosis. Clinical suspicion is required in any patient with diarrhea and recent antibiotic use. However, antibiotic use is not a prerequisite, as patients who are immunocompromised, receiving chemotherapeutic agents and even, on occasion, healthy persons, may all have *C. difficile* diarrhea. Additionally, patients with severe disease may present with sepsis and abdominal pain without diarrhea. A nurse’s clinical identification of *C. difficile* stools is surprisingly accurate and has a sensitivity of 55 percent and specificity of 83 percent—decent, but not adequate to discriminate those who may or may not have *C. difficile* diarrhea.\textsuperscript{23} Several laboratory tests are used for *C. difficile* identification. The enzyme immunoassay (EIA) test for glutamate dehydrogenase.

“Rapid diagnosis of CDI is vital for appropriate isolation. Early termination of unnecessary isolation will permit effective use of limited isolation resources and avoid the well-delineated adverse consequences of isolation for the patient.”

This photograph depicts *C. difficile* colonies after 48-hour growth on a blood agar plate; magnified 4.8X.
(GDH), an enzyme that C. difficile produces constitutively, is 96 to 100 percent sensitive for the presence of the organism; however, because it does not test for toxin, it cannot distinguish between pathogenic and non-pathogenic strains. EIA tests for both toxin A and B are only 70 to 80 percent sensitive, but do identify pathogenic strains. EIA tests for toxin A alone are also available, but even less sensitive. These tests are inexpensive but are limited by their low sensitivity for pathogenic strains. Polymerase Chain Reaction (PCR) tests are now commercially available and have excellent sensitivity and specificity, 93 and 97 percent respectively, but are relatively expensive and require enhanced laboratory support. Some PCR tests can detect the epidemic strain, 027/NAP1/BI, responsible for the more aggressive CDI strains, which adds some epidemiologic value. Two-step tests combine speed and specificity using the sensitive GDH EIA with testing of positive samples with either PCR or toxin EIA for confirmation.

Cytotoxin assays are 94 to 100 percent sensitive but are slow and expensive and, therefore, not commonly utilized. Culture is slow, expensive, and cannot distinguish pathogenic from non-pathogenic strains, and is also not often utilized clinically.

The selection of testing strategy varies according to hospital resources and testing volume. If an effective testing strategy is not adopted by one’s healthcare facility, it is vital for the Infection Prevention Committee to mandate availability of appropriate testing.

ANTIBIOTIC STEWARDSHIP AND ACID BLOCKERS

The use of antibiotics has been highly associated with the risk for CDI, dating to the original recognition of “Antibiotic Associated Colitis,” long before the identification of C. difficile as the etiology. Antibiotics are not all equally at risk, but in general, the more antibiotic exposure, the higher the risk. The antibiotics with the highest possibility of causing CDI in susceptible patients include fluoroquinolones, clindamycin, and third-generation cephalosporins. Antibiotics with the lowest risk of causing CDI are tetracyclines.

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and metronidazole. Combinations of antibiotics increase the possibility of CDI, as does an increased duration of exposure. However, fatal CDI has been identified with even prophylactic doses of first generation cephalosporins.27

Restriction of total and broad-spectrum antibiotic use has demonstrated to be an effective intervention to control outbreaks of C. difficile. Experts believe that an antibiotic stewardship program is one of the critical interventions to prevent CDI, but this has been hard to prove as a specific intervention, as the factors related to the spread of C. difficile are multifaceted and include adequacy of environmental cleaning, adherence to isolation requirements, severity of illness, obesity, and others.

Furthermore, reducing unnecessary proton pump inhibitor (PPI) use may potentially be an effective intervention to decrease CDI incidence. Stomach-acid suppression is highly associated with CDI, with PPIs being a more significant risk than histamine blockers. Interestingly, the risk is increased over three-fold with PPIs and approximately half of that with histamine blockers. Interestingly enough, this is on par with antibiotic use in hospitals where the risk is increased over three-fold with PPIs and approximately half of that with histamine blockers.

**FECAL BACTERIOTHERAPY**

Treatments available for CDI are less than optimal. Although the majority of patients are effectively treated with currently available medications, a significant percentage of patients still have treatment failures. Of these failures, a disturbing number have repeated treatment failures leading to severe ongoing morbidity. Attempts to restore the normal bowel flora have been performed for years, albeit infrequently, despite the fact that this may be the most effective treatment for refractory disease. The reluctance to pursue this therapy for aesthetic reasons is apparent and the lack of protocols for donor screening, processing, and administration of the therapy has worsened the problem.

The mechanism of action of this therapy is not totally clear. While restoration of normal bowel flora may be the mechanism, other theories besides restoration of the intestinal microbiome include: addition of flora that inhibit C. difficile growth; stimulation of immune responses of the host by changes in the microbiome; and, even changes induced by the cathartic prep for the installation procedure itself.28

The procedure itself is relatively simple and has reportedly been performed at home with clear instruction (anecdotal). A sample of stool from a donor screened for potentially contagious diseases is suspended in saline and infused by enema, colonoscopic, enteroscopic, or nasogastric tube. Efficacy rates in refractory cases range from 70 to 100 percent, depending on route, preparation, and even the source of the donor.29 The optimal process remains to be delineated, but even the least effective route cures cases refractory to all other available therapy the vast majority of the time.

**CONCLUSION**

Healthcare professionals across the continuum of care should

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**Access peer-reviewed articles about Clostridium difficile in the American Journal of Infection Control**

- **Assessing colectomies due to Clostridium difficile infection: Increases in the community, but not in the referral center.** Kathleen M. McMullen, Jennie L. Mayfield, Angela Abdul-Hakim, David K. Warren, Erik R. Dubberke [October 2012 (volume 40, issue 8, pages 778-780 DOI: 10.1016/j.ajic.2011.09.010)]


- **Implications for vancomycin-resistant Enterococcus colonization associated with Clostridium difficile infections.** Shigeki Fujitani, W. Lance George, Margie A. Morgan, Stephen Nichols, A. Rekha Murthy [April 2011 (volume 39, issue 3, pages 188-193 DOI: 10.1016/j.ajic.2010.10.024)]

- **Preventing Clostridium difficile infections: An executive summary of the Association for Professionals in Infection Control and Epidemiology’s elimination guide.** Terri Rebmann, Ruth M. Carrico [April 2011 (volume 39, issue 3, pages 239-242 DOI: 10.1016/j.ajic.2010.10.011)]


- **Diabetes mellitus as a risk factor for recurrence of Clostridium difficile infection in the acute care hospital setting.** Rada Shakov, Raquel S. Salazar, Silvester K. Kagunye, Walid J. Baddoura, Vincent A. DeBarri [April 2011 (volume 39, issue 3, pages 194-198 DOI: 0.1016/j.ajic.2010.08.017)]

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actively pursue opportunities to improve CDI prevention via hand hygiene, contact precautions, environmental cleaning, rapid diagnostics, antimicrobial stewardship, and fecal bacteriotherapy. Utilizing teamwork and research, prevention of CDI is possible with a multifaceted approach to aim toward elimination. Research will continue to best direct efforts relative to promising new technologies including automated room disinfection, automated hand hygiene compliance monitoring, and more universal employment of fecal transplant.

David J. Witt, MD, is chief of Infectious Diseases for Kaiser Permanente in San Rafael, California. Sue Barnes, RN, BSN, CIC, is the national program leader, Infection Prevention and Control, at the national Kaiser Permanente HQ in Oakland, California.

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Dr. Nathan Wolfe, world-renowned viral forecaster and epidemiologist, to headline APIC 2013 as keynote speaker.

INTERVIEW BY APIC MANAGING EDITOR JANIENE BOHANNON

“V”irus hunter” Nathan Wolfe, DSc, will be the closing keynote speaker of the APIC 2013 Annual Conference, June 8-10, in Fort Lauderdale. Dr. Wolfe, Lorry I. Lokey visiting professor in Human Biology at Stanford University, has dedicated his life studying deadly viruses in order to forecast, pinpoint, and control worldwide disease pandemics before they kill millions. Named Time’s 100 Most Influential People in the World for 2011, Dr. Wolfe is founder and CEO of Metabiota and founder and executive chairman of Global Viral, a non-profit promoting understanding, exploration, and stewardship of the microbial world.

Prevention Strategist had the opportunity to talk to Dr. Wolfe about viral forecasting, promising technologies to detect emerging pathogens, and what APIC 2013 attendees can expect from his talk on Monday, June 10.

Q: **WHAT INSPIRED YOU TO DEVOTE YOUR LIFE TO FORECASTING AND PREVENTING PANDEMICS?**

I really fell in love with the science of epidemiology and microbiology. I have always found the complexity of the relationship between humans and microorganisms—and animals and microorganisms—fascinating. There’s such potential for interesting discovery, and we’re just beginning to understand the diversity of bugs that are interacting with and having an impact on humans. And obviously, there is a huge importance to catch these things early before they spread. That was demonstrated very clearly by HIV, among other agents.

Even though in the U.S. most people aren’t focused on a day-to-day battle, we must be prepared for the untold stories of what could be waiting around the corner.
day basis on infectious diseases, these still have a huge impact on people around the world and it’s very easy to become complacent about this. There is huge importance in the work that we do—trying to detect these things early and to try to prevent them before they spread.

**Q:** **What viruses could have the most imminent threat to humans worldwide?**

When we think about the microbes that are most dangerous to us, part of the problem is that we aren’t even aware of them. There is so much diversity of microbes that exist in the animal population—and even in humans—and they haven’t been detected. There are a lot of things out there that have the capacity to blindside us. When you look at the pattern of infectious diseases that have had an impact on human population—for example, HIV and influenza—these are a group of viruses that have an incredible capacity to generate a lot of genetic novelty to be able to evolve very rapidly. Having said that, there is no reason why it couldn’t be a fungus, parasite, or a bacterial pathogen. There are a lot of things out there, and we are really in the infancy of understanding the diversity of these bugs.

**Q:** **What parts of the world pose the greatest risk for future viral incursions?**

My colleagues and I try to understand where the hotspots are around the world and what places we really need to focus our surveillance on. For example, we work closely with the USAID [United States Agency for International Development] Emerging Pandemics Threats group. We spend a lot of time doing a whole range of activities aimed at addressing this question. But while we’re still early in our work, there are certainly some patterns that have emerged.

One of the factors is diversity of underlying mammal species; some mammals will be more important than others. Things like bats, non-human primates, or rodents are likely to be pivotal as reservoirs for new agents that could potentially enter and emerge into human populations. That is in terms of the origin, but there are also certain locations that really have the potential to amplify and spread these epidemics—places that have a lot of air networks coming in and out of them, such as Dubai, Singapore, New York, or London. Those locations will likely be very pivotal in the early stages of the spread of these pathogens.

We need much better systems for detecting these bugs in our public health systems, whether it’s the use of digital epidemiology, monitoring, search patterns in the ways that Google trends has done it, or looking at novel, data-oriented approaches to detect changes from the baseline. Also, when you look historically at how many of these outbreaks have been diagnosed, it was by people on the front line—clinicians, people who work in hospital or acute care settings who are really engaged with patients and see things that are unusual.

A problem with our healthcare system—which we have a lot of potential to change—is that we take for granted the important perspective and data of the individuals who deal with patients on a day-to-day basis. As much as it will be painful for everyone to adapt to the digital and data
approaches to managing health records, there is a lot of potential there to combine data and to tap into the expertise and minds of clinicians and acute care practitioners to gain some perspective to catch these things early.

Q. WHAT IS THE BIGGEST BARRIER TO PREVENTING THE SPREAD OF INFECTIONS THROUGHOUT THE WORLD? IN YOUR OPINION, WHAT IS LACKING IN TERMS OF PREVENTION EFFORTS?

From my perspective, one of the areas of low-hanging fruit is trying to detect outbreaks very, very early and to try to contain them before they spread subsequently around the world. This is really not an area that our public health systems have focused on. There are a number of ways we can do this kind of work—we can set up novel kinds of surveillance efforts, and this is some of the work we’ve done to focus on populations that are highly exposed to certain types of animals, for example, people who are hunting and butchering bushmeat in certain parts of the world who are exposed in a range of different ways.

Q. WHAT CAN ATTENDEES EXPECT OF YOUR TALK AT THE APIC ANNUAL CONFERENCE?

I am really looking forward to the talk and also engaging with the infection preventionist community. It is certainly an honor, and I’m really excited about it. I will be spending some time talking about a range of issues related to the changes in activity that the human population has experienced and giving a sense of the perspective that I have on why we are seeing such risks right now. I will discuss a lot of the work I have explored in my book, The Viral Storm. We also have some interesting findings that we haven’t released yet, so I’m hoping we’ll be able to talk about some new and exciting data. I also want to go through what our approaches have been; we’re at the earliest stages and nobody knows the right approach to mitigate these threats. So I look forward to the feedback and talking about the work we’ve done around the world to try to understand and set up surveillance systems.

Q. WHAT ARE SOME KEY, PRACTICAL TIPS FOR INFECTION PREVENTIONISTS (IPs) IN PLAYING A ROLE IN HELPING TO IDENTIFY, CONTROL, AND PREVENT THE FURTHER SPREAD OF INFECTION IN INDIVIDUAL HEALTHCARE FACILITIES?

There will be a range of new ways that IPs can aid in this process. But just taking a step back, it’s partially just continuing to do the great work that is being done. A lot of these bugs are spread through behavioral mechanisms, and a lot of it we can control if we just do the right kind of care and give people the right kind of information, such as vaccinating populations, using personal protection, and washing hands. These things add up in a really substantive way. We just need to advocate and get more people to do this work. And we need for it to be seen as valuable as it really is. The prevention communities are going to be tapped into more and more, and the systems they feed into are going to be utilized as a fundamental feature to catch these epidemics in coming years.

Q. WHY ATTEND APIC 2013?

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Learn more about Dr. Wolfe by visiting http://nathanwolfe.net. And don’t miss his talk on Monday, June 10, at the APIC 2013 Annual Conference in Fort Lauderdale.
An unexpected pursuit

BY CAROL MCLAY, DRPH, RN, CIC

An After-School Job as an aide in a chronic care hospital introduced me to the incredible world of nursing. I entered nursing school as soon as I graduated from high school and spent the next nine years as a bedside nurse.

Ready for a new challenge, I pursued my BSN degree at the University of Ottawa, in Ottawa, Canada. I enrolled in an epidemiology class and was immediately captivated. My professors encouraged me to consider graduate studies; however, the field of epidemiology was still in its infancy and there was a very limited selection of degrees available in Canada at the time.

My career path took me to eastern North Carolina to work as an ICU nurse at Pitt County Memorial Hospital. The hospital had a very strong infection prevention department and I began to volunteer my time to help them with their research studies, reinforcing my desire to pursue a career in epidemiology. Oddly enough, I gave little thought to infection prevention.

Two years later, I was thrilled to be accepted at the Rollins School of Public Health at Emory University and moved to Atlanta to begin my Master of Public Health degree in epidemiology.

I was offered a position as a graduate student research assistant at the Centers for Disease Control and Prevention (CDC)’s Hospital Infection Program (now the Division of Healthcare Quality and Promotion). I was initially hesitant, thinking that working in an office might not be “lively” enough for me. Nonetheless, I accepted. I’m glad I did. I had the pleasure of working with Grace Emori, Teresa Horan, and the other greats at the CDC managing data related to the National Nosocomial Infections Surveillance System (now integrated into the National Healthcare Safety Network). Their work has made a profound impact on the field of infection prevention and has greatly influenced HAI prevention efforts. Their passion for infection prevention also had a profound effect on me and defined my career path. I had finally found the perfect match between epidemiology and nursing.

I have since completed a Doctorate of Public Health in epidemiology and obtained my board certification in infection prevention and control (CIC). I am glad that APIC has been part of my professional journey along the way—I passionately believe in APIC’s mission and strategic plan.

Without the mentorship of my professors and colleagues, I wouldn’t be where I am today. I encourage us all to help our colleagues define their passions and realize their dreams.

Carol McLay, DrPH, RN, CIC, is consultant in the fields of Infection Prevention and Healthcare Epidemiology and teaches part-time at the University of Kentucky. She is also chair of the APIC Communications Committee and a member of the APIC Education Committee.
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