Resources for Infection Prevention and Control on the World Wide Web

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This review summarizes infection prevention resources on the Internet. Web sites are presented in 8 categories: guidelines, policies, and regulatory bodies; health care–associated infection and multidrug-resistant organisms; surveillance, reporting, and initiatives; antibiotic use; employee health; long-term care facilities; facility and environmental infection control; and professional societies, educational opportunities, and listserves. For example, links to the National Surgical Quality Improvement Program and National Healthcare Safety Network reports are provided among resources for infection surveillance, reporting, and initiatives. A link to guidelines for infection prevention in health care workers is listed with other information regarding employee health. The Web address for the Society for Healthcare Epidemiology of America guidelines for infection control in long-term care facilities is listed with resources for long-term care facilities. Guidelines for construction and environmental services are summarized with other information regarding facility and environmental infection control. This review summarizes the most useful and up-to-date infection prevention resources on the Internet and will simplify the search for pertinent information.

Awareness and attention to health care–associated infections and infection prevention have increased dramatically in the past several years. Many clinicians, infection prevention specialists, and hospital organizations are confronting new expectations, including the public reporting of infections, a target of zero infections, and no reimbursement for certain hospital-acquired conditions. The threat of increasingly resistant organisms in the health care setting is forcing clinicians to take a more aggressive approach to preventive measures. Guidelines, regulations, and recommendations are changing at a rapid pace, and the Internet is a valuable resource for the most up-to-date and relevant information. Searching for information on the World Wide Web can be overwhelming and tedious, because of the many Web sites and Web pages, duplicated or poorly organized information, links to similar topics, and uncertainty regarding a Web site's credibility.

Numerous Web sites are available on the Internet that address the issues of infection prevention and control. Our aim is to simplify the search process by providing an essential guide to reliable resources. In this article, we present an organized summary of useful Web sites that will assist the clinician and prevention specialist with respect to multiple aspects of infection control.

METHODS

Broad categories of infection prevention and control were identified, and a search engine (http://www.google.com) was used to identify Web sites; links listed on Web pages were explored to identify more sites. An Internet search for information relevant to infection control can be a daunting task. As an example, a search for "MRSA" (methicillin-resistant *Staphylococcus aureus*) among English language sites generated 2,940,000 hits, and a search for "infection control" generated 2,680,000 hits. From the sites identified by the search engine, we selected those that were relevant to infection control, comprehensive, easy to use, and up to date and that contained peer-reviewed data, useful links, or regulatory guidelines [1]. We included sites maintained by the federal government, medical societies, regulatory bodies, nonprofit academic institutions, and various quality improvement initiatives. We did not incorporate Web sites into this review that were state specific, commercial, or based on patient testimonials. For each site, we gathered information on the subject, content or objectives, and source or

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sponsor. The Web sites were categorized into different topics, although some overlap could not be avoided. Each Web site identified and presented in this article was accessed and reviewed to verify its content and information. We made every effort to be comprehensive, but we recognize that there may have been some relevant sites that were not included.

RESULTS

Infection control topics of interest were divided into 8 categories: guidelines, policies, and regulatory bodies; health care–associated infections and multidrug-resistant organisms; surveillance, reporting, and initiatives; antibiotic use; employee health; long-term care facilities; facility and environmental infection control; and professional societies, educational opportunities, and listserves.

Table 1 presents Web sites that provide guidelines and policies for infection prevention. The sites represent government-funded agencies, professional societies, and regulatory bodies, including the Joint Commission and the Centers for Medicare and Medicaid Services (CMS). The most comprehensive site is from the Centers for Disease Control and Prevention (CDC). The Association for Professionals in Infection Control and Epidemiology (APIC) Web site provides easy access to guidelines and position papers on various topics (figure 1). The Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals is located on the Society for Healthcare Epidemiology of America (SHEA) Web site (figure 2).

Table 2 provides a summary of Web sites that are focused on health care–associated infections and multidrug-resistant organisms. The CDC provides information on disease prevalence and disease-specific information. For up-to-date guidelines and management strategies specific to bloodstream infections, urinary tract infections, ventilator-associated pneumonia, and surgical site infections, the CDC Web site is comprehensive and easy to use. Table 2 also includes Web sites that are focused on campaigns and legislation to decrease nosocomial infection and the prevalence of multidrug-resistant organisms. For example, the Institute for Healthcare Improvement hosts the Surgical Site Infection Web page, which describes a plan to prevent surgery-related infections.

Table 3 summarizes Web sites that focus on infection surveillance and reporting, as well as initiatives to increase reporting and decrease infections. Access to the National Healthcare Safety Network data from the CDC is useful for identifying benchmarks to compare infection rates at individual hospitals. Table 3 also includes Web sites for initiatives that aim to decrease hospital infections, including the 5 Million Lives Campaign, the Leapfrog Group for Patient Safety, the Surgical Care Improvement Project, and the National Surgical Quality Improvement Program. Web sites that focus on surveillance and prevention of food-borne infections are included in this table as well. Although the sites are not presented here, Ferguson et al. [2] previously provided detailed information on Web sites for bioterrorism surveillance and prevention.

Table 4 summarizes sites that are focused on limiting antimicrobial use and decreasing resistance. The CDC sponsors a site designed to help a lay person understand the issues of antibiotic overuse that may be useful in clinical practice: "If You Have a Cold or Flu, Antibiotics Won't Work for You!" Guidelines for antimicrobial use for various indications are provided by the Infectious Diseases Society of America (IDSA) and by the antibiotic guide from Johns Hopkins University.

Table 5 provides a summary of Web sites that are focused on employee health, including safety in the workplace, bloodborne pathogen exposure, influenza preparedness, and guidelines for infection prevention. The Health Care Planning page, sponsored by the US Department of Health and Human Services, provides checklists for use as an aid to pandemic influenza preparedness. APIC and CDC both provide a link to the American Journal of Infection Control position paper for prevention of infection in health care workers.

Table 6 summarizes Web sites that provide information relating to infection prevention in long-term care facilities, including care at dialysis centers. Both the SHEA site and the CDC site provide links to guidelines and position papers relevant for long-term care facilities. The SHEA Web site lists position papers that cover issues of antibiotic use, antibiotic resistance, and even *Clostridium difficile*–associated diarrhea in long-term care facilities.

Table 7 lists Web sites that are focused on facility issues, including construction, disinfection, and sterilization. Both the APIC site and the CDC site provide links to guidelines and position papers on environmental infection control. The CDC Web page links to recently published guidelines for disinfection and sterilization in health care facilities [3].

Table 8 provides a summary of Web sites for professional societies, educational opportunities, and listserves. The major professional societies in infection control include SHEA, APIC, the CDC, and the IDSA. Educational opportunities are available through SHEA (training course in hospital epidemiology) and IDSA (infection control fellows course). Listserves to help keep clinicians up to date on outbreaks and emerging diseases include the ProMED-mail, ClinMicroNet, and Emerging Infectious Diseases listserves.

DISCUSSION

Prevention and control of infection in the health care setting is a complex, multifaceted task with a variety of challenges that include managing critical information, recommending policies and procedures, assisting with regulatory and accreditation requirements, interacting with employee health and facility man-

Table 1. Guidelines, policies, and regulatory bodies for infection prevention and control.

Resource	Web address	Content	Source or sponsor
APIC Guidelines and Standards	http://www.apic.org/AM/Template.cfm?Section=Practice	Links to guidelines for construction, environmental services, employee health, infection definitions and surveillance, and disease specific information	APIC
Infection Control in Healthcare Settings	http://www.cdc.gov/ncidod/dhqp/index.html	Links to guidelines for catheter-associated UTI, HCAP, catheter-associated BSI, SSI, MDROs, isolation precautions, exposures, environment, and construction	CDC
Epidemic and Pandemic Alert and Response	http://www.who.int/csr/disease/en/	Updates and guidelines for diseases covered by epidemic and pandemic alert and response	WHO
SHEA Guidelines and Position Papers	http://www.shea-online.org/publications/shea_position_papers.cfm	Topics include antibiotic stewardship, *Clostridium difficile,* hand hygiene, health care epidemiology, infection prevention and control, influenza, legislative mandates, long-term care, and MRSA and VRE	SHEA
Hospital Infection Society Resource Library	http://www.his.org.uk/resource_library.cfm	Guidelines and resources for hospital-acquired infections	HIS
Morbidity and Mortality Weekly Report	http://www.cdc.gov/mmwr/	Weekly reports, surveillance summaries, and recommendations based on weekly reports to the CDC by state health departments	CDC
2009 National Patient Safety Goals	http://www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/	Resources for patient safety goals and links to previous goals	The Joint Commission
CMS Regulations and Guidance	http://www.cms.hhs.gov/home/regsguidance.asp	Medicare regulations	CMS

NOTE. APIC, Association for Professionals in Infection Control and Epidemiology; BSI, bloodstream infection; CDC, Centers for Disease Control and Prevention; CMS, Centers for Medicare and Medicaid Services; HCAP, health care–associated pneumonia; HIS, Hospital Infection Society; MDRO, multidrug-resistant organism; MRSA, methicillin-resistant *Staphylococcus aureus;* SHEA, Society for Healthcare Epidemiology of America; SSI, surgical site infection; UTI, urinary tract infection; VRE, vancomycin-resistant *Enterococcus;* WHO, World Health Organization.

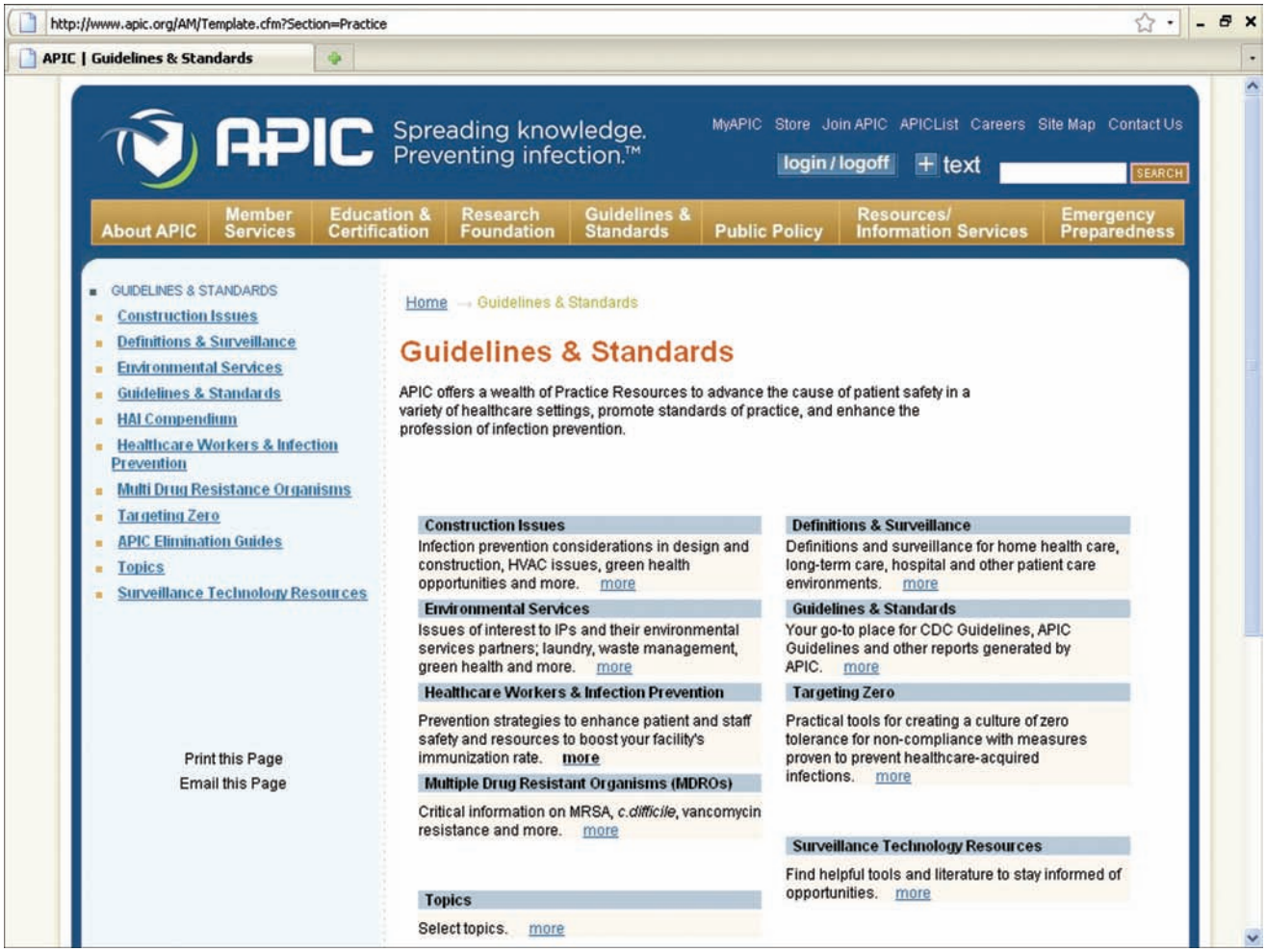

Figure 1. Guidelines and Standards page from the Association for Professionals in Infection Control and Epidemiology Web site

agement, directly preventing transmission of infectious diseases, and educating personnel [4]. These challenges are compounded by the zero tolerance approach to health care–associated infection. As health care workers strive to improve patient care and eliminate nosocomial infection, the general public and regulatory bodies are expecting transparent data. The concept of "never events," endorsed by the National Quality Forum, has transformed the concept of hospital reimbursement. CMS will not provide reimbursement for certain hospital-acquired conditions, including catheter-associated urinary tract infections, central line–associated bloodstream infections, and some surgical site infections, including mediastinitis after coronary artery bypass graft and infections after bariatric surgery and certain orthopedic procedures. Conditions that may be added to this list in the future include *C. difficile*–associated diarrhea, ventilator-associated pneumonia, and MRSA infection. The World Wide Web is the most up-to-date and efficient resource for clinicians and practitioners who must survey for and prevent infections; however, the abundance of information available can be overwhelming. This review provides useful categories of Web sites for important infection control topics that can be easily accessed and trusted by clinicians. We made an effort to be comprehensive, but we acknowledge that this may not be an exhaustive list and that information on the Web can change quickly.

In this review, infection control Web sites are presented in 8 categories: guidelines, policies, and regulatory bodies; health care–associated infection and multidrug-resistant organisms; surveillance, reporting, and initiatives; antibiotic use; employee health; long-term care facilities; facility and environmental infection control; and professional societies, educational opportunities, and listserves. Of note, the CDC Web site is referenced in all categories and can be considered the gold standard for Internet resources. Detailed guidelines and educational materials can be accessed from the home page for various infection control topics, including health care–associated infection, protecting patients, and protecting health care workers. A comprehensive and easy-to-use index of infection control topics

Figure 2. Society for Healthcare Epidemiology of America Web page with the Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals.

facilitates an efficient search. The SHEA and APIC Web sites are also referenced in most of the tables, signifying these as important general-purpose sites for infection control information. The CDC, SHEA, and APIC Web sites are the most comprehensive and useful Internet resources for infection control and prevention.

Hospital epidemiologists and infection prevention specialists must work with administrators to ensure compliance with various policies and regulations, including the Joint Commission's National Patient Safety Goals and the CMS regulations. Guidelines and position papers can be used to assist an institution in addressing these regulations. Table 1 includes links to the organizations that impose the regulations and links to comprehensive infection control guidelines that facilitate compliance with these regulations. In addition, the resources listed in table 1 are often updated to match current information on the CMS reimbursement for hospital-acquired conditions and to guide a facility in avoiding these "never events."

Useful Internet resources that address specific health care–associated infections and multidrug-resistant organisms are listed in table 2 and include links for SHEA and the CDC. For example, if a health care system that has not routinely surveyed for catheter-associated urinary tract infection is faced with receiving no reimbursement by CMS, administrators can find the compendium of strategies to prevent catheter-associated urinary tract infection in acute care hospitals on the SHEA site [5]. This document provides detailed recommendations for the implementation of prevention and monitoring strategies. The health care system can access National Healthcare Safety Network reports via the CDC site to benchmark their surveillance findings. *C. difficile*–associated diarrhea is another devastating health care–associated problem that has become more common, with increasing mortality and significant hospital costs [6, 7]. The CDC site has links to documents specific to *C. difficile* surveillance, including suggestions for standardized definitions of infection [8]. The CDC Data and Statistics page for

Table 2. Resources for health care–associated infections and multidrug-resistant organisms (MDROs).

Resource	Web address	Content	Source or sponsor
Infection Control in Healthcare Settings	http://www.cdc.gov/ncidod/dhqp/index.html	Links to guidelines for catheter-associated UTI, HCAP, catheter-associated BSI, SSI, MDRO, isolation precautions, exposures, environment, and construction	CDC
Healthcare-Associated Infections	http://www.cdc.gov/ncidod/dhqp/healthDis.html	Links to estimates, disease-specific information, and antibiotic resistance information	CDC
Healthcare-Associated Infections	http://www.hhs.gov/ophs/initiatives/hai/index.html	Action plan to prevent health care–associated infections	HHS
Healthcare Infection Control Special Interest Group	http://www.asid.net.au/hicsigwiki/index.php?title=Main_Page	Aim to develop standard approach to health care–associated infections	HICSIG
Drug-Resistant Organisms	http://www.shea-online.org/news/mdros.cfm	Link to guidelines, position papers, and resources for MDROs	SHEA
Multiple Drug Resistant Organisms	http://www.apic.org/AM/Template.cfm?Section=Multi_Drug_Resistance_Organisms&Template=/CM/HTMLDisplay.cfm&ContentID=11527	Links to guidelines and position papers for MDROs	APIC
Surgical Site Infections	http://www.ihi.org/IHI/Topics/PatientSafety/SurgicalSiteInfections/	Case to improve SSI prevention and treatment; links to guidelines	IHI
Critical Care	http://www.ihi.org/IHI/Topics/CriticalCare/	Case to decrease BSI and VAP and improve sepsis management; links to guidelines	IHI
Antibiotic/Antimicrobial Resistance	http://www.cdc.gov/drugresistance/	Links to campaigns for monitoring, surveying, and preventing antibiotic resistance	CDC
Strategies to Address Antimicrobial Resistance Act	http://www.idsociety.org/STAARAct.htm	Government legislation and strategies to contain antimicrobial resistance	IDSA
Antimicrobial (Drug) Resistance	http://www3.niaid.nih.gov/topics/antimicrobialResistance/	NIAID research in antimicrobial resistance	NIAID

NOTE. APIC, Association for Professionals in Infection Control and Epidemiology; BSI, bloodstream infection; CDC, Centers for Disease Control and Prevention; HCAP, health care–associated pneumonia; HHS, US Department of Health and Human Services; HICSIG, Healthcare Infection Control Special Interest Group; IDSA, Infectious Diseases Society of America; IHI, Institute for Healthcare Improvement; MDRO, multidrug-resistant organism; NIAID, National Institute for Allergy and Infectious Disease; SHEA, Society for Healthcare Epidemiology of America; SSI, surgical site infection; UTI, urinary tract infection; VAP, ventilator-associated pneumonia.

Table 3. Infection surveillance, reporting, and initiatives.

Resource	Web address	Content	Source or sponsor
National Quality Forum	http://www.qualityforum.org/	Encourages public reporting; informational	NQF
Hospital Quality Initiatives	http://www.cms.hhs.gov/HospitalQualityInits/	CMS initiatives	CMS
National Healthcare Safety Network	http://www.cdc.gov/ncidod/dhqp/nhsn.html	Links to surveillance definitions, reports, and training modules	CDC
National Nosocomial Infections Surveillance System	http://www.cdc.gov/ncidod/dhqp/nnis_pubs.html	Links to surveillance definitions and reports	CDC
Definitions & Surveillance	http://www.apic.org/AM/Template.cfm?Section=Practice&Template=/CM/HTMLDisplay.cfm&ContentID=11351&MicrositeID=0&WebsiteKey=28980e36-1554-46a7-8e91-d7f06abd0a11	Provides definitions and guidelines for surveillance practices	APIC
Surviving Sepsis Campaign	http://www.survivingsepsis.org/	Background on sepsis, campaign, and tools to implement	SCCM
Intensive Care Measures	http://www.ihi.org/IHI/Topics/CriticalCare/IntensiveCare/Measures/	Describes measures for outcome, ventilator bundle compliance, central line bundle compliance, rapid response team, and glycemic control	IHI
5 Million Lives Campaign	http://www.ihi.org/IHI/Programs/Campaign/Campaign.htm	Strategies to protect patients from harm	IHI
The Leapfrog Group, hospital public reporting initiatives	http://www.leapfroggroup.org/for_hospitals	Describes initiative to reduce medical errors, encourage public reporting, and improve safety and quality	The Leapfrog Group
Performance Measurement Initiatives	http://www.jointcommission.org/PerformanceMeasurement/PerformanceMeasurement/	Core measures and initiatives, including SCIP and pneumonia	The Joint Commission
National Surgical Quality Improvement Program	https://acsnsqip.org/login/default.aspx	Program to collect and analyze surgical outcomes	ACS NSQIP
Initiative to Estimate the Global Burden of Foodborne Diseases	http://www.who.int/foodsafety/foodborne_disease/ferg/en/index.html	Foodborne diseases: burden, surveillance, and strategies	WHO
Food Safety Information Center	http://foodsafety.nal.usda.gov/nal_display/index.php?info_center=16&tax_level=1	Reports of foodborne disease outbreaks and guidelines to prevent disease	USDA
National Food Safety Information Network	http://www.foodsafety.gov/~fsg/network.html	Initiative to provide food safety information; links to other Web sites	FDA
Fistula First National Vascular Access Improvement Initiative	http://www.fistulafirst.org/pdfs/NVAIIProjectDescription.pdf	Reduce vascular access complications for patients undergoing hemodialysis	FFBIC

NOTE. ACS NSQIP, American College of Surgeons National Surgical Quality Improvement Program; APIC, Association for Professionals in Infection Control and Epidemiology; CDC, Centers for Disease Control and Prevention; CMS, Centers for Medicare and Medicaid Services; FDA, US Food and Drug Administration; FFBIC, Fistula First Breakthrough Initiative Coalition; IHI, Institute for Healthcare Improvement; NQF, National Quality Forum; SCCM, Society of Critical Care Medicine; SCIP, Surgical Care Improvement Project; USDA, US Department of Agriculture; WHO, Work Health Organization.

Table 4. Resources on the use of antimicrobials.

Resource	Web address	Content	Source or sponsor
Antimicrobial Agent Use	http://www.idsociety.org/content.aspx?id=4428	Guidelines for antimicrobial use	IDSA
Antibiotic Resistance	http://www.fda.gov/oc/opacom/hottopics/anti_resist.html	Information and links regarding antibiotic resistance	FDA
ABX Guide	http://www.hopkins-abxguide.org/	Antibiotic guide for treatment of infections	Johns Hopkins University
Antibiotic/Antimicrobial Resistance	http://www.cdc.gov/drugresistance/	Information for lay persons to decrease overuse of antibiotics	CDC
Keep Antibiotics Working	http://www.keepantibioticsworking.com/new/index.cfm	Coalition to decrease inappropriate use of antibiotics in food animals	KAW
www.antimicrobe.org	http://www.antimicrobe.org	Provides access to antimicrobial texts, intuitive search engines, and access to clinical vignettes	Antimicrobe.org

NOTE. CDC, Centers for Disease Control and Prevention; FDA, US Food and Drug Administration; IDSA, Infectious Disease Society of America; KAW, Keep Antibiotics Working.

C. difficile infections illustrates which states have documented disease with the hypervirulent North American pulsed field type 1 strain. Also, the SHEA compendium not only includes a detailed outline of recommendations to implement strategies for the prevention and monitoring of *C. difficile*–associated diarrhea in acute care hospitals [9], but also provides patients with guides to hospital-acquired infections, including *C. difficile* infection. These patient guides are comprehensive, straightforward, and ready for use. Similarly, resources on health care–associated pneumonia, catheter-associated bloodstream infection, and surgical site infection can be easily located on the SHEA, CDC, or APIC Web sites. In addition, Web resources listed in table 2 may be used when attempting to implement active surveillance for multidrug-resistant organisms, such as MRSA. Links to guidelines regarding the surveillance for and management of drug-resistant organisms are also listed on table 2.

In an effort to decrease health care–associated infections and improve patient care, health care institutions often participate in various quality and safety initiatives, which are outlined in table 3. These initiatives include Surviving Sepsis, the 5 Million Lives Campaign, the Leapfrog Group for Patient Safety, the Surgical Care Improvement Project, and the National Surgical Quality Improvement Program. Although not commonly addressed in the health care setting, food safety resources and initiatives are very important and are also listed in table 3.

Limiting unnecessary antimicrobial use is necessary to control the spread of multidrug-resistant organisms and reduce the incidence of *C. difficile*–associated diarrhea, but the task is challenging and involves working with providers in hospitals, long-term care facilities, and the community, as well as with patients. The resources listed in table 4 include clinician-directed guidelines for appropriate antimicrobial use (IDSA and Johns Hopkins University Antibiotic Guide) and patient-directed information to understand when antibiotics are not helpful (CDC). A more detailed summary of Web sites on antimicrobial resis-

Table 5. Resources on employee health.

Resource	Web address	Content	Source or sponsor
Safety and Health Topics	http://www.osha.gov/SLTC/index.html	Safety in the workplace with links to biological agent information and needlestick prevention	OSHA
Occupational Health	http://www.who.int/occupational_health/en/	Global strategies for occupational health	WHO
Protecting Healthcare Personnel	http://www.cdc.gov/ncidod/dhqp/worker.html	Guidelines information on blood-borne pathogens and immunization	CDC
Health Care Planning	http://www.pandemicflu.gov/plan/healthcare/index.html	Influenza preparedness in health care	HHS
Healthcare Worker Role in Infection Prevention	http://www.apic.org/AM/Template.cfm?Section=Healthcare_Workers_and_Infection_Prevention&Template=/CM/HTMLDisplay.cfm&ContentID=11525	Provides influenza resources and guidelines for infection prevention in health care workers	APIC

NOTE. APIC, Association for Professionals in Infection Control and Epidemiology; CDC, Centers for Disease Control and Prevention; HHS, US Department of Health and Human Services; OSHA, Occupational Safety and Health Administration; WHO, World Health Organization.

Table 6. Resources on facilities for long-term care.

Resource	Web address	Content	Source or sponsor
SHEA Guidelines and Position Papers	http://www.shea-online.org/publications/shea_position_papers.cfm	Links to position papers for long-term care facilities	SHEA
Long-Term Care and Other Residential Facilities Pandemic Influenza Planning Checklist	http://www.pandemicflu.gov/plan/healthcare/longtermcarechecklist.html	Checklist for pandemic influenza planning in long-term care facilities	HHS
Infection Control in Long-Term Care Facilities	http://www.cdc.gov/ncidod/dhqp/gl_longterm_care.html	Links to guidelines and position papers	CDC
The National Kidney Foundation Kidney Disease Outcomes Quality Initiative	http://www.kidney.org/professionals/KDOQI/	Quality initiative for chronic kidney disease patients	NKF
Fistula First National Vascular Access Improvement Initiative	http://www.fistulafirst.org/pdfs/NVAIIProjectDescription.pdf	Reduce vascular access complications for patients undergoing hemodialysis	FFBIC

NOTE. CDC, Centers for Disease Control and Prevention; FFBIC, Fistula First Breakthrough Initiative Coalition; HHS, US Department of Health and Human Services; NKF, National Kidney Foundation; SHEA, Society for Healthcare Epidemiology of America.

tance is provided in a previous article by Falagas and Karveli [10], but the sites listed in table 4 are most useful for information regarding antimicrobial use and infection prevention.

Employee health often falls under the umbrella of infection control and consists of multiple issues. Internet resources for employee health are listed in table 5. Difficult questions regarding exposure to blood-borne pathogens or prevention of infection in health care workers are answered on the Protecting Healthcare Personnel page of the CDC site. Resources that address special concerns of pregnant health care workers or of laboratory personnel, among many other specific issues, are found via the Occupational Health Guidelines page of the CDC site [11]. Influenza vaccination of health care personnel is another major infection control effort. A recent APIC position paper and free tool kit to increase health care worker influenza vaccination are available under the Issues and Initiatives page of the APIC site. The resources listed in table 5 will assist clinicians and infection prevention specialists in addressing the myriad infection control questions that arise from employee health issues.

Infection prevention and control responsibilities extend to long-term care facilities and include concerns unique to the specific population. Hemodialysis centers are an example of a long-term care facility that requires strict infection control and has unique needs, including preventing catheter-associated bloodstream infections. The National Kidney Foundation and Fistula First Internet sites are useful for collaborating with nephrologists to avoid infection in dialysis patients. These Web sites and others, including those that access position papers and guidelines for infection control in long-term care facilities, are listed in table 6.

Although not always recognized by administrators and other health care workers, infection prevention specialists play an important role in construction, facility, and environmental infection control. As outlined in table 7, the APIC Web site provides access to guidelines for infection control in construction and guidelines for environmental infection control [12, 13]. In addition to APIC and the CDC, Disinfection and Sterilization (table 7) is a good resource for educational slide sets regarding the complex issues of disinfection and sterilization in the health care setting.

For all aspects of infection control, education of health care personnel, patients, and visitors is a major responsibility of infection prevention specialists and hospital epidemiologists.

Table 7. Resources on facility and environmental infection control.

Resource	Web address	Content	Source or sponsor
Disinfection and Sterilization	http://disinfectionandsterilization.org/	Links to guidelines and presentations	Dr. William Rutala
Construction Issues	http://www.apic.org/AM/Template.cfm?Section=Construction_Issues1&Template=/CM/HTMLDisplay.cfm&ContentID=11515	Link to guidelines for construction in health care facilities	APIC
Environmental Services	http://www.apic.org/AM/Template.cfm?Section=Environmental_Services&Template=/CM/HTMLDisplay.cfm&ContentID=11518	Link to guidelines for environmental infection control	APIC
Guideline for Environmental Infection Control in Health-Care Facilities, 2003	http://www.cdc.gov/ncidod/dhqp/gl_environinfection.html	CDC and HICPAC recommendations for environmental infection control	CDC

NOTE. APIC, Association for Professionals in Infection Control and Epidemiology; CDC, Centers for Disease Control and Prevention; HICPAC, Healthcare Infection Control Practices Advisory Committee.

Table 8. Professional societies, educational opportunities, and listserves.

Resource	Web address	Objective	Source or sponsor
Society for Healthcare Epidemiology of America	http://www.shea-online.org/index.cfm	To advance the application of the science of health care epidemiology and improve quality of health care	…
International Nosocomial Infection Control Consortium	http://inicc.org/english/	International scientific community that works through a network to reduce health care–associated infections	…
Association for Professionals in Infection Control and Epidemiology	http://www.apic.org//AM/Template.cfm?Section=Home1	To improve health and patient safety by reducing risks for adverse outcome, including infection	…
Australian Infection Control Association	http://www.aica.org.au/	To improve and support infection control specialists	…
Infectious Diseases Society of America	http://www.idsociety.org/default.aspx	Represents physicians, scientists, and health care professionals in the specialty of infectious diseases	…
Healthcare Infection Control Practices Advisory Committee	http://www.cdc.gov/ncidod/dhqp/hicpac.html	Advisory committee for infection control practices	CDC
Australasian Society for Infectious Diseases	http://www.asid.net.au/	Dedicated to education, research, and advancement of infectious disease practice	…
American Thoracic Society	http://www.thoracic.org/	Society for pulmonologists	…
American Academy of Orthopaedic Surgeons	http://www.aaos.org/	Society for orthopedic surgeons	…
American College of Surgeons	http://www.facs.org/	Society for surgeons	…
National Kidney Foundation	http://www.kidney.org/index.cfm	Society for nephrology and chronic kidney disease	…
National Healthcare Safety Network	http://www.cdc.gov/ncidod/dhqp/nhsn_members.html	Links to training modules	CDC
Training Courses in Healthcare Epidemiology	http://www.shea-online.org/about/shea_courses.cfm	Training course in hospital epidemiology	SHEA-CDC
Infection Control Fellows Course	http://www.iccourse.org/	Infection control fellows course	IDSA-SHEA
ProMED-mail Listserve	http://www.promedmail.org/pls/otn/f?p=2400:1000:	Internet-based dissemination of outbreak and exposure information	ISID
ClinMicroNet Listserve	http://www.asm.org/subscribe.asp	Listserve for microbiology laboratory directors; provides information relevant to infection control	ASM
Emerging Infectious Diseases Listserve	http://www.cdc.gov/NCIDOD/EID/subscrib.htm	Listserve for Emerging Infectious Diseases	CDC

NOTE. ASM, American Society for Microbiology; CDC, Centers for Disease Control and Prevention; IDSA, Infectious Disease Society of America; ISID, International Society for Infectious Diseases; SHEA, Society for Healthcare Epidemiology of America.

Educational material and training tools for health care workers are available on the CDC site. These include materials to promote hand hygiene and the proper use of personal protective equipment, as well as a workbook and posters on prevention of sharps injuries. The compendium of resources on the SHEA site includes a patient guide to hospital-acquired infections; disease-specific information can be printed from the Web site for immediate patient use. The 5 Million Lives Campaign on the Institute for Healthcare Improvement site also provides patient-oriented fact sheets on MRSA infection, surgical site infection, ventilator-associated pneumonia, and catheter-associated bloodstream infection. Other educational materials can be ordered from the APIC site. Additional educational material for infection prevention specialists and clinicians can be accessed via the professional societies listed in table 8, including the SHEA online training course and the IDSA infection control fellows course. Table 8 also contains Web sites for professional societies and listserves that keep clinicians informed with regard to outbreaks and emerging diseases.

Infection prevention and control have become major issues in the health care arena and the public eye. The Internet can be a very helpful resource in this complex and changing field if used efficiently. This article enumerates the most useful and up-to-date resources and guidelines on the Internet, and it will aid providers and infection prevention specialists to stay on top of the ever-changing challenges and expectations that are inherently part of infection control and hospital epidemiology.

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