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APIC professional and practice standards

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Professional and practice standards for IPs have existed since 2008. The expanding, evolving, and increasingly critical role of the profession demanded they be updated. The standards emphasize flexibility and applicability across a multitude of domains and settings and provide the profession with a rigorous, well-defined set of expectations, competencies, and practices. The result is a succinct set of precepts that encapsulates the field of IPC in the present and foreseeable future.

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Professional standards are authoritative statements that reflect the expectations, values, and priorities of a profession.¹ They provide direction and a framework for professional practice and define the scope, role, and minimal level of competency required of an infection preventionist (IP). In 2008, representatives of the Association for Professionals in Infection Control and Epidemiology (APIC) and Community and Hospital Infection Control Association (CHICA)-Canada (now Infection Prevention and Control Canada [IPAC-Canada]) authored "APIC/CHICA-Canada infection prevention, control, and epidemiology: Professional and practice standards," which appeared in the *American Journal of Infection Control*.² Although this original work provided a strong foundation, the APIC Competency Model and changes to the profession necessitated an update to the standards. These updated standards of practice are intentionally general so that they may be used regardless of practice setting. They include key indicators that are designed to assist IPs in identifying areas for continued professional growth and knowledge. They also

provide criteria for evaluation of job performance. These standards are intended to be used in conjunction with the APIC Competency Model³ and the Certification Board for Infection Control's (CBIC) core competencies.⁴

CURRENT ISSUES

Infection prevention and control (IPC) is a priority for patient safety efforts in health care facilities. The burden of health care-associated infections (HAIs) is significant. Approximately 1 out of every 25 patients in the United States acquires an HAI. HAIs increase lengths of stay, morbidity, and mortality, as well as place excess demand on health care system resources, patients, families, and communities at large.⁵

The growth and expansion of health care into multisystems increases the complexity of health care delivery,^{6,7} which directly results in corresponding increases in the breadth and purview of an IP's role.^{3,4,6} This may include managing the effects of regulatory scrutiny on the incidence of HAIs (namely, device-related, surgical site, and *Clostridium difficile* infections); preventing and controlling HAIs in a variety of different health care settings; the growing responsibility of hospital-based IPs collaborating with the

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ambulatory outpatient service areas; and managing increasing antimicrobial resistance.⁸

Globalization also present challenges related to identifying, controlling, and preventing the transmission of infectious diseases. The ability of people and manufactured goods and products to move easily between state and international boundaries facilitates the transmission of infectious diseases.⁹ This phenomenon underscores the need for a well-informed and versatile IP who can respond to rapidly changing circumstances and evolving priorities.

The field of IPC has grown over time from a primary focus on surveillance and reporting to complex program and project management, including the use of performance improvement methodologies and multidisciplinary collaboration. IPs are also responsible for the execution of comprehensive, multisystem surveillance plans; reporting to regulatory agencies; and providing expert guidance on the maintenance of health care environments that are safe for patients, visitors, and staff. These priorities often compete for resources.^{3,6} The use of technology to assist IPs in their day-to-day responsibilities may afford a level of data analysis that illuminates prevention and patient safety opportunities.³ One example of this is the ability to overlay coding, admission, and discharge data over HAI data to reach conclusions about higher-risk populations as well as drive prioritization and design of more-effective infection prevention efforts.

SCOPE OF PRACTICE

These standards encompass a broad spectrum of practice settings (including, but not limited to, acute care, behavioral health, long-term care, outpatient facilities, rehabilitation centers, public health centers, and dialysis centers) and should be applied to every health care delivery practice setting where IPC must occur.

APIC Competency Model

The APIC Competency Model guides the practice of IPs by delineating career stages, core, and critical competencies. The model is graphically represented by a circle that encompasses the aforementioned components. The core, evidence-based competencies are established by CBIC and are grounded in patient safety. There are 3 career states that surround the core competencies in the circular model: early (novice), middle (proficient), and advanced (expert). Throughout each of the career stages, and radiating from the core competencies, are 4 critical competencies: leadership and program management, technical, IPC, and performance improvement and implementation science. These serve as future-oriented domains of an IP's practice. They are relevant at every level of competency and provide guidance for the growth of IPs throughout their careers.³

Generally, the boundaries among the 3 career stages are fluid, because an individual IP may have a background, or have developed specialized skills, in any 1 of the future-oriented critical competency domains. The 1 exception is the clear delineation between the early and middle career state by the Certification in Infection Control (CIC) designation.

Evaluating the career state of an IP (especially at the middle or at the advanced level) is currently driven by self-assessment. This self-assessment should focus on the ability of each IP to apply the basic skills acquired in the early career state and is validated by the acquisition of the CIC credential. Integral to self-assessment is the professional development plan to advance an IP's proficiency in each competency category.

Career stages

Early (novice)

Although there is no set amount of experience necessary to move through each of the career stages, it is generally estimated that an IP will be in the early career stage for approximately 2-3 years. During this time, an IP gains basic skills that focus on patient safety. Although IPs are likely to develop strength in competencies that reflect their practice settings, to move past the novice state every IP must develop a broad skill set that encompasses the whole of the CBIC core competencies.³

Middle (proficient)

Proficiency in the IP role is demonstrated through the CIC credential. This credential is the gateway to the middle (proficient) career stage. In this stage, IPs work to demonstrate how the skills gained in the novice stage are used to improve patient outcomes. The focus of this career stage is also on continued development of an IP's skills through the future-oriented critical competency domains.³

Advanced (expert)

An advanced (expert) IP serves as a role model and content expert in the field. At this career stage, IPs continue to develop and broaden acquired skills through consulting, teaching and mentoring, and/or leadership opportunities. Most importantly, expert IPs should keep their focus on expanding their abilities within the future-oriented critical competency domains as they continue to advance and evolve.³

PROFESSIONAL AND PRACTICE STANDARDS

Standards of professional performance

Qualifications

An IP may have a variety of backgrounds and become certified in IPC when eligible through CBIC (and maintain certification thereafter). It is preferable that IPs have either a baccalaureate and/or nursing degree. The following skills/attributes are also highly desirable:

- Analytical
- Problem solving
- Collaboration and communication
- Ability to implement evidenced-based guidelines
- Conflict management
- Program and project management
- Expertise in data mining, report writing, and/or data presentation
- Leadership

Professional development through certification

- The CIC represents an IP's transition from novice to proficient. Certification shall be pursued once an IP has sufficient field experience and education to have a firm foundation in the CBIC core competencies; generally recommended to be 2 years of experience in IPC.⁶ Certified IPs shall maintain certification throughout their careers.
- IPs shall pursue competency in the domains as set by CBIC: Identification of infectious disease processes; surveillance and epidemiologic investigation; preventing/controlling the transmission of infectious agents; employee/occupational health; management and communication; education and research; environment of care; and cleaning, sterilization, disinfection, and asepsis.³

They shall also pursue competency in the following, future-oriented domains, as delineated by the APIC Competency Model: technical, IPC, leadership and program management, performance improvement, and implementation science.

- Once CIC certification has been achieved, ongoing professional development is highly individualized and technically complex. It is driven by multiple factors, including educational opportunities, practice setting, and personal interests. Because competency is highly personalized and develops across the career span, an IP is expected to be competent in most or all areas at any particular time. The goal is to identify areas for individualized improvement so that professional development becomes a lifelong career endeavor.³
- By integrating the core competencies and future-oriented domains from the APIC Competency Model into a comprehensive self-assessment, IPs will be better prepared to address both immediate and evolving professional demands.³
- The core competencies identified by CBIC are relevant across the career span, so as proficiency increases, so too does the level of execution. As a result, assessment of core competencies for proficient and advanced IPs focuses on how these skills are applied and the extent to which an IP is able to use them to foster program development and to assist others in their prevention efforts.³
- The future-oriented domains identified by APIC build on the CBIC core competencies. Although the content may at times appear to overlap, the future-oriented domains attempt to identify those skills not yet included in the CBIC practice analysis, which based on observation and professional consensus, are expected to be essential for IP practice during the next 3-5 years.^{3,6}

Professional accountability

IPs shall assume responsibility for the development, evaluation, and improvement of his/her own practice to maintain the required skills and knowledge. This includes:

- Establishing professional goals and objectives at least yearly.
- Completing a competency self-assessment with a professional development plan at least yearly.
- Seeking constructive feedback from superiors, mentors, and colleagues regarding professional practice.
- Maintaining current knowledge through the review of best practices, evidence-based research, consensus, and guidelines.
- Actively participating in professional organizations, both nationally and locally, if possible.
- Demonstrating professionalism through commitment to patient safety and protecting patients and providers by advocating safe practices and policies.

Ethics

IPs shall make decisions based on professional standards and values that guide professional behavior, including:

- Hold paramount the safety, health, and welfare of the public in the performance of professional duties.
- Comply with laws and regulations related to practice, geographic location, and settings.
- Maintain confidentiality, and the safety, health, and welfare of all people, in the performance of his/her professional duties.
- Respect the uniqueness, dignity, and autonomy of every patient, visitor, and provider.
- Demonstrate personal and professional honor, integrity, and dignity.
- Establish his/her professional reputation based on personal merit.

- Accept responsibility and accountability for professional competence.
- Engage in research in a professional manner by using and supporting the advancement of the science of IPC and epidemiology.
- Ensure transparency and disclosure in performing research and/or applying for grants.
- Disclose all potential or perceived conflicts of interest.
- Refrain from competing unfairly with others.
- Refuse gratuities, gifts, or favors that might impair or appear to impair professional judgment and never offer any favor, service, or thing of value to obtain special advantage.

Standards of practice

The standard of practice for IPs defines the specialty and provides a framework for appropriate and effective practice, as well as include key indicators to be used in evaluating the competency of the individual and his/her practice. The indicators represent multiple skills that are considered necessary to meet the demands of the evolving health care environment.² The standard of practice is not a static set of rules and definitions; rather, it is a fluid framework that adjusts to reflect the evolving body of knowledge as it relates to infection prevention. IPs are expected to meet or exceed the indicators associated with the professional and practice standards. The categories below reflect the indicators for the minimum standard of practice expected of an IP.

Surveillance/epidemiology

IPs shall use a systematic approach to monitor the effectiveness of prevention and control strategies that are consistent with the organization's goals and objectives. This includes applying epidemiologic principles and statistical methods, including risk stratification and benchmarking, to identify target populations; determining risk factors; designing prevention and control strategies; analyzing trends; and evaluating processes. In particular, IPs shall:

- Develop a surveillance plan based on the population(s) served, services provided, and previous surveillance data.
- Select indicators and design surveillance based on the projected use of the data.
- Periodically evaluate the effectiveness of the surveillance plan and modify as necessary.
- Collect and compile surveillance data.
- Integrate regulatory requirements.
- Use standardized definitions for the identification and classification of events, indicators/measures, and/or outcomes.
- Report epidemiologically significant findings to key stakeholders.
- Ensure requirements for communicable disease reporting are met.
- Use epidemiologic principles to conduct surveillance and investigations.
- Conduct outbreak investigations.
- Use statistical techniques to describe the data, calculate risk-adjusted rates, and establish benchmarks.
- Incorporate information technology and systems applications into the analysis and dissemination of data.
- Critically evaluate the significance of findings and make recommendations for improvement based on those findings.

Education

IPs shall act as educators and be a resource and catalyst for change for health care providers, ancillary staff, patients, families, and the general public. IPs shall also be knowledgeable and well versed in

the foundations of IPC, including identification of the infectious disease process and how to prevent and control the transmission of infectious agents. In particular, IPs shall:

- Assess the needs of customers and develop educational objectives and strategies to meet those needs.
- Use learning principles appropriate to the target audience (eg, adult learners).
- Use appropriate information technology in educational design and delivery.
- Collaborate in the development and delivery of educational programs and/or tools that relate to infection prevention, control, and epidemiology.
- Evaluate the effectiveness of educational programs and learner outcomes.
- Enhance the visibility of healthcare providers and their knowledge of specific infection prevention and control practices, targets, and organizational goals.

Collaboration/consultation

IPs shall provide expert knowledge, guidance, and perform routine risk assessments in IPC in collaboration and consultation with the multidisciplinary team as appropriate. IPs act as team members and facilitators, requiring skilled negotiation in consensus building that are key to the success of an infection prevention program.² In particular, IPs shall:

- Collaborate with departments, disciplines, and organizations to implement into practice pertinent regulatory requirements, accreditation standards, and guidelines.
- Support patients, families, administration, committees, health care providers, and ancillary staff in infection prevention, control, and epidemiology.
- Provide input into patient safety and quality initiatives.
- Collaborate with community health organizations.
- Be recognized experts who are experienced in presenting to community, state, national, and/or international audiences.
- Serve as a role model and coach to both novice and experienced IPs.
- Collaborate, as needed, with local and state public health officials.
- Consult and/or collaborate, as needed, with the Centers for Disease Control and Prevention.
- Be identified as experts in specialty areas, such as public health, outpatient settings, research, or consulting.
- Provide input to accrediting bodies and other stakeholders regarding the development of standards, measures, and metrics.

Program management

IPs are responsible for either oversight of the program in its entirety or for participating in the execution of the program's mission and goals. There are 3 principal goals for IPC programs: protect patients; protect health care workers, visitors, and others in the health care environment; and accomplish, whenever possible, the previous 2 goals in a cost-effective manner.^{3,6} IPs shall systematically evaluate the effectiveness of the program and its appropriateness to the practice setting. In particular, IPs shall:

- Develop and review the effectiveness of the program's goals and objectives.
- Ensure that customer needs and expectations are considered in the development of and continuous improvement of processes, products, and services.
- Determine resource needs to accomplish the proposed goals and objectives.

- Communicate resource needs to key stakeholders based on the goals and objectives.

Performance improvement

IPs are responsible for developing improvement initiatives focused on reducing HAIs, enhancing patient safety, and minimizing waste. Every IP shall function in a variety of performance improvement roles spanning management and leadership to participant and/or facilitator. In particular, IPs shall:

- Use performance improvement methodology as a means of enacting change.
- Define the scope of a project to maintain focus.
- Select appropriate performance improvement tools to aid in efficiency and help in achieving results, and to ensure the reliability and sustainability of the initiative.
- Use process and outcome measures to ensure that interventions are sustained over time.

Leadership

IPs serve as leaders, mentors, and role models for their colleagues, institutions and the broader professional organization (ie, APIC). Leadership roles are often largely based on the influence, skill, and knowledge of an IP rather than authority.² In particular, IPs shall:

- Use principles of influence, leadership, and change management.
- Work collaboratively with others and provide direction when necessary.
- Readily share knowledge and expertise.
- Contribute to the development of less-experienced health care providers through education and mentorship.
- Recognize the importance of research and critically evaluate and apply research findings to practice setting.
- Bring enthusiasm, creativity, and innovation to practice.
- Collaborate with colleagues to educate and influence policy-making bodies and the public.
- Communicate effectively to a diverse audience.
- Collaborate and/or educate themselves and their colleagues about the global scope of IPC activities.

Implementation science

IPs use scientific studies to promote and integrate evidenced-based practices into routine practices to improve the quality, reliability, and safety of health care.³ In particular, IPs shall:

- Translate evidence-based practices and research findings into routine practice.
- Involve the multidisciplinary team to ensure changes are vetted by all stakeholder groups.
- Appropriately implement initiatives that maximize benefits and minimize barriers.
- Develop strategies to remove implementation barriers such as workflow, space, or access to supplies.
- Design process and outcome measures to promote consistency of interventions over the long-term.

Research

IPs routinely conduct, participate in, evaluate, and/or apply research findings to the practice of infection prevention, control, and epidemiology. The research undertaken by IPs includes investigational and epidemiologic studies that both guide and enhance the practice of IPC. In particular, IPs shall:

- Critically evaluate published research and incorporate appropriate findings into practice.

- Disseminate relevant research findings through practice, education, and/or consultation (ie, develop or revise policies, guidelines, protocols, and relevant educational modules/strategies).
- Participate in IPC-related research independently and/or collaboratively with other professions and organizations.
- Organize and share findings from surveillance activities and/or outbreak investigations.
- Publish and present research findings to assist in advancing the field.
- Conduct research in compliance with human subject protection and the Health Insurance and Accountability Act of 1996 regulations.
- Identify sources and apply for funding when applicable.
- Incorporate cost analysis into IPC research.

Technology

The role of technology in infection prevention is expanding. Widespread adoption of electronic medical records creates opportunities to use data mining and surveillance technology. Other technologies include capabilities for hand hygiene compliance monitoring, scenario simulations, environmental disinfection methods, and device design with the intent of reducing the risk of device-associated infections. In particular, these technologies afford IPs:

- The ability to monitor health care worker activities related to patient and provider safety (eg, hand hygiene compliance).
- The ability to incorporate infection prevention concepts and practices in scenario simulations.
- The use of algorithms to identify potential HAIs or syndromes to prompt further evaluation and review.
- The use of aggregate data to identify changing patterns in microbial isolates in a population.
- Access to a variety of tools to aid in prevention efforts.
- The ability to use a systematic approach to evaluate costs, benefits, and efficacy.

Occupational health

IPs collaborate with occupational health professionals in the development of strategies to address the risk of disease transmission to health care providers and ancillary staff. In particular, IPs shall:

- Participate in the development/review of occupational health policies and procedures related to IPC.
- Assess the risk of occupational exposures to infectious diseases.
- Assist in the development of immunization and screening programs.
- Collaborate with occupational health professionals regarding work restrictions and recommendations related to communicable diseases or following provider exposure event.
- Assist with analysis and trending of occupational exposure events.

Fiscal responsibility

The IP optimizes available resources and ensures safety of patients and community by practicing in a fiscally responsible and accountable manner. In particular, IPs shall:

- Consider the financial implications, safety implications, and clinical outcomes when making recommendations, evaluating technology and products, and developing policies and procedures.
- Incorporate fiscal assessments into program evaluations and/or reports.
- Develop and maintain departmental budgets.

CONCLUSIONS

These standards of professional performance and practice support the daily work of IPs and others committed to the pursuit of excellence in minimizing the burden of HAIs and the transmission of infectious agents and in implementing judicious and quality-focused interventions. As the field of IPC continues to evolve, it is crucial that every IP is prepared to critically evaluate and identify situationally relevant needs. IPs are encouraged to use these standards to guide practice in conjunction with a foundation of evidence-based research and to challenge current practice standards and guidelines as a means to improve both processes and outcomes.

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