



# CIC<sup>®</sup> Support Guide

*for Partners and Collaborators*



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Certification Board of Infection Control and Epidemiology, Inc.  
555 E. Wells Street, Suite 1100  
Milwaukee, WI 53202

Phone: (414) 918-9796  
Fax: (414) 276-3349  
Email: [info@cbic.org](mailto:info@cbic.org)

[www.cbic.org](http://www.cbic.org)

# Letter from the CBIC President

Dear Colleague,

I am writing to request that your organization consider supporting or endorsing certification in infection prevention and control (CIC®) amongst your members. The CIC® credential is administered by the Certification Board of Infection Control & Epidemiology, Inc. (CBIC®). CBIC is a voluntary autonomous multidisciplinary board that provides direction for and administers the certification process for professionals in infection control and applied epidemiology. The mission of CBIC is to protect the public through the development, administration, and promotion of an accredited certification in infection prevention and control.

Infection prevention and control is a universal healthcare issue that knows no boundaries. It can happen in an acute care hospital, long term care facility, correctional setting, or ambulatory surgery center, just to name a few. I think you'll agree that the healthcare environment across all areas of practice need more competent healthcare workers specializing in the field of infection prevention and control.

Having certified infection prevention and control professionals (IPs) brings value to employers by assuring competence in their workforce. The credential brings value not only to the individual IP, but to the healthcare facility as a whole. Ultimately, we share common goals of reducing infections and increasing competency.

There are several components included in this document. The first is our **Practice Analysis** that was most recently conducted in 2014. You'll see that IPs from many different practice settings engage in tasks associated with infection prevention and control on a daily basis. After conducting the Practice Analysis, we were able to update our **Content Outline** also included here for your reference. Our research indicated that there are eight domains through which an IP should demonstrate competence. Each question on the certification examination can be linked back to the source materials used to develop the questions. Our **References List** provides candidates with all primary and secondary reference materials useful as they prepare to sit for the initial examination. If you or any of your members are interested in learning more about the CIC® credential, a copy of our PowerPoint slides, "[Understanding CBIC and the CIC® Credential](#)" provides a succinct overview. If you currently have certified members and they would like to present on the CIC® credential to other colleagues, they may use these slide presentations for that purpose. Lastly, CBIC currently partners with several organizations who have ongoing initiatives to support certification. CBIC has included a section titled **What Other Organizations Are Doing to Support Certification** in order to inspire you to create your own initiatives.

We are pleased that you are considering endorsing the CIC® credential to your members. I encourage you to contact CBIC's Executive Director, Anne Krolikowski, if you have any follow-up questions. Anne can be reached by phone at 414.918.9796 or by email at [www.cbic.org](mailto:www.cbic.org). Of course, our website provides a wealth of information and many items can be found by visiting [www.cbic.org](http://www.cbic.org).

Thank you.

Sincerely,



Lita Jo Henman, MPH, CIC  
2017 CBIC Board President



Contents lists available at [ScienceDirect](#)

## American Journal of Infection Control

journal homepage: [www.ajicjournal.org](http://www.ajicjournal.org)



Practice forum

### Identifying changes in the role of the infection preventionist through the 2014 practice analysis study conducted by the Certification Board of Infection Control and Epidemiology, Inc



Lita Jo Henman MPH, CIC<sup>a,\*</sup>, Robert Corrigan MS<sup>b</sup>, Ruth Carrico PhD, RN, CIC<sup>c</sup>, Kathryn N. Suh MD, FRCPC, CIC<sup>d</sup>, Practice Analysis Survey Development Team<sup>†</sup>, Practice Analysis Review and Test Specification Development Team<sup>†</sup>

<sup>a</sup> OhioHealth Riverside Methodist Hospital, Quality, Accreditation and Patient Safety, Columbus, OH

<sup>b</sup> Prometric Test Development Solutions, Baltimore, MD

<sup>c</sup> Division of Infectious Diseases, University of Louisville School of Medicine, Louisville, KY

<sup>d</sup> The Ottawa Hospital, Division of Infectious Diseases, Ottawa, ON, Canada

#### Key Words:

CIC certification examination

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Practice analysis

The Certification Board of Infection Control and Epidemiology, Inc (CBIC) is a voluntary autonomous multidisciplinary board that provides direction and administers the certification process for professionals who are responsible for the infection prevention and control program in a health care facility. The CBIC performs a practice analysis approximately every 4-5 years. The practice analysis is an integral part of the certification examination development process and serves as the backbone of the test content outline. In 2013, the CBIC determined that a practice analysis was required and contracted with Prometric to facilitate the process. The practice analysis was carried out in 2014 by a diverse group of subject matter experts from the United States and Canada. The practice analysis results showed a significant change in the number of tasks and associated knowledge required for the competent practice of infection prevention. As authorized by the CBIC, the test committee is currently reclassifying the bank of examination questions as required and is writing and reviewing questions based on the updated test specifications and content outline. The new content outline will be reflected in examinations that are taken beginning in July 2015. This iterative process of assessing and updating the certification examination ensures not only a valid competency tool but a true reflection of current practices.

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Protecting the patient is the foundation of all health care practice. The Institute of Medicine brought to light many challenges in patient safety and systems performance in the landmark publications of *To Err is Human: Building a Safer Health System*<sup>1</sup> and *Crossing the Quality Chasm: A New Health System for the 21st Century*.<sup>2</sup> Those responsible for preventing infection have long recognized the risks associated with infection and its transmission, with the importance of organized infection prevention practice first highlighted in the Study on the Efficacy of Nosocomial Infection Control report.<sup>3</sup> In response to the call for demonstration of competent practice, the Association for Professionals in Infection Control (APIC) structured

the APIC Certification Association and subsequently launched the first certification examination in 1982. This provided the first structured opportunity for infection control professionals to demonstrate their competence in preventing infection and its outcomes. Since that first examination, there have been many changes in the profession and therefore the certification process. Today, there are >5,600 infection preventionists (IPs) with certifications in infection control (CICs) with broad and varied responsibilities in the realm of infection prevention and control.

The Certification Board of Infection Control and Epidemiology, Inc (CBIC) is a voluntary autonomous multidisciplinary board that provides direction and administers the certification process for professionals who are responsible for the infection prevention and control program in a health care facility. The mission of the CBIC is to “protect the public through the development, administration, and promotion of an accredited certification” process that focuses on current infection prevention and control practice.<sup>4</sup> The CBIC

\* Address correspondence to Lita Jo Henman, MPH, CIC, Practice Analysis Chair, OhioHealth Riverside Methodist Hospital, 3535 Olentangy River Rd, NMB Ste 201, Columbus, OH 43214.

E-mail address: [Jo.henman@ohiohealth.com](mailto:Jo.henman@ohiohealth.com) (L.J. Henman).

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† A complete list of contributors is available in the acknowledgments

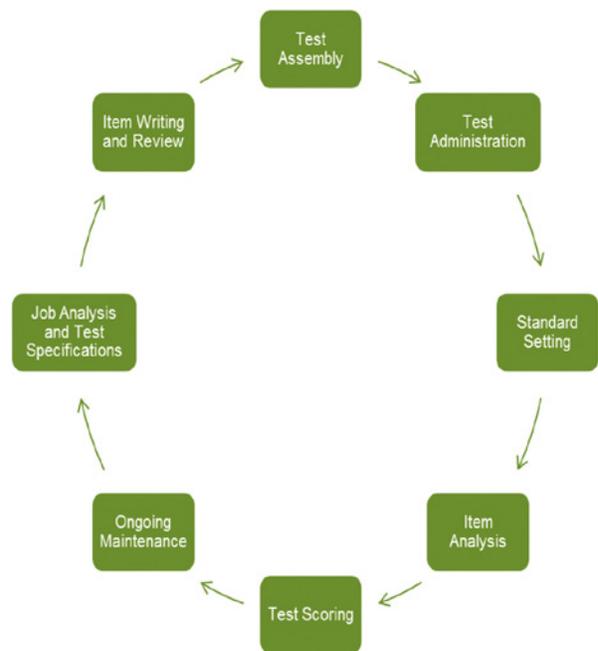
currently works with Prometric (Baltimore, MD), a test development and delivery provider, in developing a certification examination that is psychometrically sound and able to be administered to infection prevention professionals worldwide. All elements of examination development, delivery, and assessment are performed within standards set by the National Commission for Certifying Agencies (<http://www.credentialingexcellence.org/ncca>).

The examination contents are driven by the practice of infection prevention in all settings where care is delivered. As the practice of infection prevention and control continues to evolve, capturing that evolution and ensuring that the certification examination recognizes current practice and enables demonstration of competence are cornerstones to the certification examination. Competence is the ability to put knowledge into action. Measurement of competence is a complex process that requires sound and consistent methods that can be replicated and defended. Measuring competence in the field of infection prevention and control requires that there be a firm understanding of the elements of the practice; therefore, metrics can be established that align with those practice elements. Although some level of competence may be achieved through structured education and clinical experience, only through a defined and standardized certification process can competence be objectively and consistently evaluated.

The association between certification and improved clinical outcomes is becoming more evident and has been demonstrated in intensive care and medical-surgical units, surgical services, and oncology.<sup>5-7</sup> Certification has been linked with improved ability to manage patient symptoms, improved knowledge regarding established practice standards and guidelines,<sup>6</sup> and lower rates of adverse outcomes, including 30-day mortality in 1 study.<sup>5,7,8</sup>

To date, 3 published studies support the value of CIC and its relationship to improved patient outcomes. Pogorzelska et al<sup>9</sup> demonstrated that certification of IPs had significant impact on infection rates involving multidrug-resistant organisms, notably methicillin-resistant *Staphylococcus aureus* bloodstream infections. Saint et al<sup>10</sup> showed that certified (CIC) IPs were more likely to perceive the evidence as strong for certain preventive activities than were their noncertified colleagues, the implication being that certification may lead to greater use of evidence-based practice. Finally, Carrico et al<sup>11</sup> found that immunization programs managed by certified (CIC) IPs were more likely to adhere to recognized best practices than those managed by noncertified colleagues. These 3 studies serve to recognize the value of IP certification and are the first to demonstrate that certification in infection control can positively impact practice and outcomes.

Approximately every 5 years, the CBIC performs a broad assessment of existing practice among certified IPs. The last practice analysis (PA) was conducted in 2009. Through the PA, IPs in all settings articulate current job responsibilities and the knowledge required for their performance. Because IPs have moved from traditional health care settings (eg, acute care hospitals) into nontraditional health care settings (eg, ambulatory surgery centers, boutique clinics) and into public health arenas (eg, health care-associated infection prevention programs), the information provided through the PA has become a rich collection of information regarding the evolution and transformation of IPs' practice. The PA is an integral part of the certification examination development process and serves as the backbone of the test content outline (Fig 1). Its purpose is to obtain information about the tasks performed for a particular role and the knowledge needed to competently perform those tasks. The specific intents of the CBIC PA are to (1) identify and re-evaluate the current role definition of the IP; (2) validate and update the list of tasks and knowledge statements related to work performed by IPs; (3) verify that the tasks and knowledge statements are consistent with the objective of certifying the IP; and (4) develop the test specifications for the CIC examination.



**Fig 1.** Examination development process. The job (practice) analysis is the first step in developing test specifications, which in turn direct the development of examination items (questions) and examination forms.

## METHODS

A subcommittee of the CBIC provided oversight of the PA process along with 2 distinct subject matter expert (SME) groups. Both SME groups were strategically created to represent a range of experiences, practice settings, facility sizes, and geographic locations throughout the United States and Canada, where most certificants practice. This professional diversity provided a wide perspective that took into account the ever-changing role of the IP/infection control practitioner (ICP). SMEs were provided with an overview of test development, a purpose statement for the PA, and the 2010 content outline. Prometric provided the technical and psychometric expertise to carry out the PA in a manner consistent with the *Standards for Educational and Psychological Testing*.<sup>12</sup>

For the purposes of this multinational survey, the phrase IP/ICP was used to facilitate common understanding of this role. The 2014 CBIC eligibility criteria for the CIC examination were used to define the IP/ICP. An IP/ICP was defined as having primary responsibility for the infection prevention program that included accountability for (1) collection, analysis, and interpretation of infection prevention outcome data; (2) investigation and surveillance of suspected outbreaks of infection; and (3) planning, implementation, and evaluation of infection prevention and control measures.

### Survey development

The PA survey development team consisted of 14 IPs/ICPs. The survey development meeting was conducted in Chicago, Illinois, on March 13-14, 2014. Brainstorming, consensus building, and the affinity process were used to list, categorize, and determine the importance of the various items deemed to be necessary to a competent IP/ICP. Facilitated group discussions and multivoting methods were used to categorize the items into either tasks or knowledge statements. The final list of 120 task and knowledge

**Table 1**  
Five-point scale for rating importance of tasks and knowledge statements and frequency of tasks performed

Importance	Frequency
0 = Of no importance	0 = Never
1 = Of little importance	1 = Seldom
2 = Of moderate importance	2 = Occasionally
3 = Important	3 = Often
4 = Very important	4 = Very often

statements vastly differed from those used for the 2010 CBIC PA,<sup>13</sup> with only 15 items unchanged. The task and knowledge statements were grouped together into broad categories. Each of these categories was then reviewed to determine if it was distinct and critical to the practice of infection prevention to require a stand-alone classification. This resulted in the creation of 8 categories called domains. Although questions covering all 120 task and knowledge statements cannot be included in every examination, the specified number of questions from each domain creates the test specification or content outline. The survey development team developed an appropriate 5-point Likert scale for measurement of importance for tasks and knowledge statements and frequency of the tasks (Table 1).

Sixteen demographic and background questions were developed for the updated survey. These questions provided an opportunity to better understand the overall picture of the survey respondents and also allowed for subgroup analysis to determine if there were variations in response based on demographic features, background, and experience.

The survey was drafted and revised and piloted by a group of volunteers who provided comments on content and clarity. Feedback from the pilot group was incorporated into the final survey tool, which contained a total of 8 domains, including 80 tasks and 40 knowledge statements. In addition to completing background and demographic questions, respondents were asked to rate the importance and frequency of performance for each of the 80 tasks, the importance of each of the 40 knowledge statements, and how well the tasks and knowledge statements represented each of the domains (content coverage ratings), the latter using a 5-point scale that ranged from very poorly to very well. Respondents were able to include free text to indicate any areas that they felt were not covered within each of the domains. Respondents were also asked to indicate what proportion of the examination should be devoted to each domain by distributing 100 percentage points across the 8 domains. Finally, respondents were asked open-ended questions including the following: How do you expect your work role to change over the next few years? and What knowledge will be needed to meet changing job demands?

### Survey dissemination

To provide the widest distribution of the survey to a comprehensive sample of health care workers responsible for the infection prevention programs in a wide variety of practice settings, 6 distribution lists were obtained and used. In addition to the CBIC (worldwide) database of all certified IPs/ICPs, an e-mail invitation was sent to the membership list of the APIC and Infection Prevention and Control Canada. A link for the survey was also posted on the Internal Federation of Infection Control Web site. Contact lists for US hospitals, long-term care facilities, and ambulatory centers were also obtained from the American Hospital Association. The lists were edited to review duplicates. To encourage participation, drawings were conducted for gift cards. A follow-up e-mail was sent out 2 weeks after the initial survey invitation to thank

those who had already completed the survey and provide a reminder to those had not yet completed the survey.

### Analysis of the survey data

Prometric used statistical and psychometric analytical methods to determine the mean importance ratings for tasks and knowledge statements. A criterion commonly used in similar studies is a mean importance rating that represents the midpoint between moderately important and important. Based on this, the recommendation was to use a mean importance rating of 2.50 as the threshold for inclusion of an item in the final test specifications. Any item with a mean rating between 2.40 and 2.49 would be reviewed by the survey review and test specification team. Any item with a mean rating of <2.40 would be excluded from the test specifications. The derivation of test specifications from those statements verified as important by surveyed IPs/ICPs provides a substantial evidential basis for content validity of the credentialing examination.

Data analysis by subgroups (eg, practice setting) was possible when responses from at least 30 respondents were included in the mean analysis and was performed based on several demographic and background characteristics. The index of agreement (IOA) is a measure of the extent to which subgroups of respondents agree on which tasks and knowledge are important and is more tailored to a PA than the correlation coefficient.<sup>14</sup> Using the mean importance ratings for tasks and knowledge, IOAs were tabulated to determine if there were any disagreements between subgroups (ie, whether 2 groups agreed that the content should [or should not] be included in an examination). IOA values of <0.80 are considered as disagreement; therefore, additional analysis would be required to determine if 1 examination would be valid for those ≥2 variant groups.

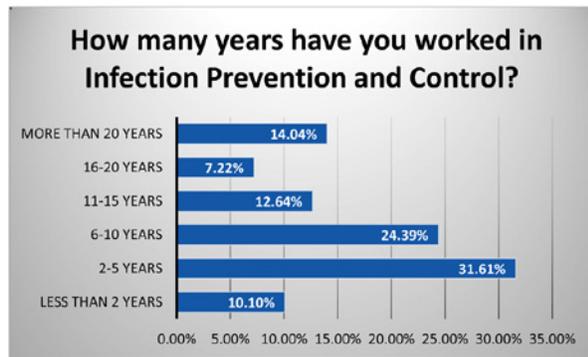
Quantitative results included the following:

- Means, SDs, and frequency (percentage) distributions for task statements and content coverage ratings.
- Means, SDs, and frequency (percentage) distributions for knowledge statements and content coverage ratings.
- Medians and modes for task frequency ratings.
- Means and SDs for test content recommendations.
- IOA values for designated subgroups.

### Survey review and test specifications development

The survey review and test specification meeting was held June 27-28, 2014, in Baltimore, Maryland. The survey review and test specifications team, comprised of 10 IPs/ICPs, was given specific instruction regarding the test specifications process. The team reviewed the statistical analysis provided by Prometric and all comments provided by respondents in the survey and then finalized which tasks and knowledge statements should be included in the test specifications, established how many questions would be included for each domain area, and finally performed linkage between task and knowledge statements. Tasks and knowledge linking verifies that each knowledge statement included on an examination is related to the competent performance of important tasks. As such, linking documents the content validity of the tasks included in the test specifications.

Content weights for each domain were specified by each member of the test specification team and compared with those derived from survey respondents. Using facilitated group discussions and multivoting methods, a consensus was reached regarding the optimal percentages and thereby the number of questions for each domain on the CIC examination.



**Fig 2.** Years of experience in infection prevention and control among respondents who returned usable surveys.

## RESULT

The survey link was distributed to a total of 17,946 medical professionals; 2,819 (15.7%) were returned. For a survey to be usable, the respondent must have answered yes to the following question: Are you an IP/ICP? They also must have completed >55% of the rating scales. There were 2,494 usable surveys received. A representative group of IPs/ICPs completed the survey in sufficient numbers to meet the requirements to conduct statistical analysis. Sufficient responses were received to allow subgroup analysis based on background or demographic responses.

### Demographic characteristics of survey respondents

Durations of employment in infection prevention and control are shown in [Figure 2](#).

Most respondents were in the 50- to 59-year old age group (40.6%), followed by the 40- to 49-year age group (21.3%). Only 3.13% of respondents were <30 years of age, whereas 19.21% were ≥60 years of age.

A total of 2,150 (87.08%) of participants practiced in the United States, 271 (10.98%) practiced in Canada, and 73 (2.92%) practiced outside of the United States or Canada. Responses were received from every US state and Canadian province and territory. Most (65.8%) respondents worked in an acute care setting, a large difference from the 86.6% of respondents who completed the 2009 CBIC PA survey.<sup>13</sup> Approximately 10% practiced in a variety of ambulatory and outpatient facilities, 9.42% worked in long-term care or rehabilitation settings, and 2.41% practiced in a public health capacity.

Of those who worked in an acute care facility, 46.61% practiced in a setting with <200 beds. Just less than 15% were employed in facilities with ≥500 beds. Most (51.04%) indicated they had ≤1 full-time equivalent IP/ICP in their facility, whereas 12.3% had >4 full-time equivalent IPs/ICPs in their setting. Most (62.3%) participants had other job responsibilities besides infection prevention and control, with employee health and quality functions being cited most.

About half of those surveyed were CIC certified (50.24%), with 77.14% of those not certified planning to become certified. Almost half (44.86%) had a baccalaureate degree, with an additional 31.53% holding a Master's degree or above. Nursing was the most common professional background (81.87%) with microbiology-laboratory the next largest with 10.53%. The group was predominantly women (92.76%), and nearly all (98.79%) indicated that English was their preferred language.

**Table 2**  
Background and demographic questions used for subgroup analysis

Question
How many years have you worked in infection prevention and control?
Which practice setting do you most identify with?
What is the bed capacity of your primary practice setting?
How many IPs/ICPs (FTE) are assigned to your primary practice setting?
Over the last year, approximately how many hours per week have you spent in infection control activities?
Is your primary facility accredited (eg, DNV Healthcare, Joint Commission)?
Are you currently certified by CBIC in infection prevention and control?
In what geographic area are you employed? (split into United States, Canada, Middle East)
If in the United States, select state (split into Northeast, Midwest, South, West)
If in Canada, select province/territory (split into West, Ontario, Quebec, East/Maritimes)
Which of the following best describes your highest level of education?
Which of these describes your professional background?

CBIC, Certification Board of Infection Control and Epidemiology, Inc; FTE, full-time equivalent; IP/ICP, infection preventionist/infection control practitioner.

**Table 3**  
Test specification content areas, certification in infection control

Category	No. of items (questions)
Identification of infectious disease processes	22
Surveillance and epidemiologic investigation	24
Preventing and controlling the transmission of infectious agents	25
Employee and occupational health	11
Management and communication	13
Education and research	11
Environment of care	14
Cleaning, sterilization, disinfection, and asepsis	15

NOTE. There are 135 questions, including cognitive levels (20%), recall (60%), and application (20%) analysis.

### Content coverage ratings

The means for each content area ranged from 3.03-3.23, above the threshold of 2.5, which provided evidence that the content areas were deemed to be adequately to very well covered on the survey.

### Task and knowledge ratings

All 120 of the tasks and knowledge statements achieved high means (>2.50), thereby validating their importance to competent performance for IPs/ICPs. The mean rating for tasks varied between 2.99 and 3.87, and the mean rating for knowledge statements ranged from 2.72-3.82. Because 100% of the tasks and knowledge statements were determined to be important based on respondents' high mean rating, all were included in the test specifications.

### Subgroup analysis

IOAs were determined for 12 background and demographic questions ([Table 2](#)). IOAs ranged from 0.99-1.00 for tasks and 0.95-1.00 for the knowledge statements. All subgroups achieved strong agreement, with no difference in the mean importance ratings demonstrated between any of the subgroups. There was no evidence in this analysis to support the creation of a tiered certification examination based on years of experience or a separate certification examination based on practice setting.

## 2014 TEST SPECIFICATIONS

The culmination of the work, the 2014 content domains and test specifications, is shown in [Table 3](#).

## DISCUSSION

To achieve the mission of the CBIC, a rigorous process that adheres to nationally recognized testing standards must be followed. Completing a PA every 4-5 years is one of the requirements to meet the strict standards of the National Commission for Certifying Agencies. The commitment to providing the highest quality certification examination helps to enhance public protection through infection prevention and control certification.

The PA study for the CIC examination was conducted to identify tasks and knowledge statements that are important to the work performed by IPs/ICPs. Further, the data collected were used to guide the development of the test specifications and will be used to develop future examinations.

The tasks and knowledge statements were developed through an iterative process involving the combined efforts of the CBIC and SMEs and the expert test development guidance from Prometric staff. The results of the study support that all of the tasks and knowledge statements were verified as important through the PA process and provide the foundation of empirically derived information to develop the test specifications for the CIC examination.

Although the full details of the examination specifications must remain confidential to protect the integrity of the examination development process, an outline form of the test content will be available in the *CBIC Candidate Handbook* and online ([www.cbic.org](http://www.cbic.org)).

As authorized by the CBIC, the test committee is currently reclassifying the bank of examination questions as required and is writing and reviewing questions based on the updated test specifications. The new test specifications will be reflected in examinations that are taken beginning in July 2015. This iterative process of assessing and updating the certification examination ensures not only a valid competency tool but a true reflection of current practices.

## Acknowledgments

CBIC sincerely thanks all of those who generously gave their expertise and time to develop and review the survey tool and those who participated in the survey. The ability to provide a reliable and recognized certification examination would not be possible without their support and involvement.

CBIC wishes to acknowledge the invaluable assistance of Prometric and the members of both subject matter expert groups.

Prometric: Robert Corrigan, MS, Prometric Test Developer, Baltimore, MD.

PA Survey Development Team: Lita Jo Henman, MLT(ASCP), MPH, CIC (Chair), Columbus, OH; Karen Anderson, MT, MPH, CIC, San Francisco, CA; Roy Boukidjian, RN, BSN, PHN, NE-BC, CIC, San Francisco, CA; Sandra Callery, RN, CIC, Toronto, ON, Canada; Ruth Carrico, PhD, RN, CIC, Louisville, KY; Janet Conner, MT(ASCP), MSPH, CIC, Loveland, CO; Melissa Fugate, BSN, RN, CIC, Louisville, KY;

Sylvia Garcia-Houchins, RN, MBA, CIC, Chicago, IL; Julie Gibbons, RN, CIC, Des Moines, IA; Michelle T. Kaiser, CIC, Albany, NY; Terri Rebmann, PhD, RN, CIC, St Louis, MO; Leesa Round, RN, CIC, London, ON, Canada; Pam Rohrbach, RN, CIC, Harrisburg, PA; and Suzanne Rhodenizer-Rose, RN, CIC, Halifax, NS, Canada.

PA Review and Test Specification Development Team: Lita Jo Henman, MLT (ASCP), MPH, CIC (Chair), Columbus, OH; JoAnn Andrews, DNP, RN, CIC, Fort Myers, FL; Sandra Callery, RN, CIC, Toronto, ON, Canada; Ruth Carrico, PhD, RN, CIC, Louisville, KY; Janet Conner, MT(ASCP), MSPH, CIC, Loveland, CO; Andrea Flinchum, RN, MPH, CIC, Lexington, KY; Melissa Fugate, RN, BSN, CIC, Louisville, KY; Mary Fulton, RN, BSN, CIC, Dallas, TX; Vincent Hsu, MD, MPH, FACP, CIC, Orlando, FL; and Justin Smyer, MT(ASCP), MPH, CIC, Columbus, OH.

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# Examination Content Outline

Please note: The below content outline is for the initial certification examination. The recertification examination content outline contains the same content as listed below but the scored domains and number of items in each domain area may vary slightly.

## 1) Identification of Infectious Disease Processes (22 items)

- a. Interpret the relevance of diagnostic and laboratory reports
- b. Identify appropriate practices for specimen collection, transportation, handling, and storage
- c. Correlate clinical signs and symptoms with infectious disease process
- d. Differentiate between colonization infection and contamination
- e. Differentiate between prophylactic empiric and therapeutic uses of antimicrobials

## 2) Surveillance and Epidemiologic Investigation (24 items)

- a. Design of Surveillance Systems
  - i. Conduct a risk assessment on the population served, services provided, and regulatory or other requirements
  - ii. Develop goals and objectives based upon the risk assessment
  - iii. Develop a surveillance plan based on the goals identified from the risk assessment
  - iv. Evaluate periodically the effectiveness of the surveillance plan and modify as necessary
  - v. Create a notification system based on surveillance plan including epidemiologically significant findings
  - vi. Integrate surveillance activities across health care settings (e.g., ambulatory, home health, long term care, acute care)
  - vii. Establish mechanisms for identifying individuals with communicable diseases requiring follow-up and/or transmission based precautions
- b. Collection and Compilation of Surveillance Data
  - i. Use a systematic approach to record surveillance data
  - ii. Organize and manage data in preparation for analysis
  - iii. Calculate the incidence or prevalence of infections
  - iv. Calculate specific infection rates/ratios (e.g., provider-specific, unit-specific, device-specific, procedure-specific, Standardized Infection Ratio)
  - v. Use of standardized definitions

- c. Interpretation of Surveillance Data
  - i. Generate, and validate surveillance data
  - ii. Use basic statistical techniques to describe data (e.g., mean, standard deviation, rates, ratios, proportions)
  - iii. Monitor and interpret the relevance of antimicrobial susceptibility patterns
  - iv. Compare surveillance results to published data and/or other relevant benchmarks
  - v. Analyze and interpret data using appropriate methods
  - vi. Prepare and present findings in an appropriate format that is relevant to the audience/ stakeholders (e.g., graph, tables, charts)
  - vii. Develop and facilitate corrective action plans based on surveillance findings
  - viii. When to implement an epidemiological study to investigate a problem (e.g., case control, cohort studies)
- d. Outbreak Investigation
  - i. Verify existence of outbreak
  - ii. Collaborate with appropriate persons to establish the case definition, period of investigation, and case-finding methods
  - iii. Define the problem using time, place, person, and risk factors
  - iv. Formulate hypothesis on source and mode of transmission
  - v. Implement and evaluate control measures, including ongoing surveillance
  - vi. Prepare and disseminate reports

## 3) Preventing/Controlling the Transmission of Infectious Agents (25 items)

- a. Develop evidence-based/informed infection prevention and control policies and procedures
- b. Collaborate with relevant groups and agencies in planning community/facility responses to biologic threats and disasters (e.g., public health, anthrax, influenza)

# Examination Content Outline

- c. Identify and implement infection prevention and control strategies related to:
  - i. Hand hygiene
  - ii. Cleaning, disinfection, and sterilization
  - iii. Wherever healthcare is provided (e.g., patient care units, operating room, ambulatory care center, home health, pre-hospital care)
  - iv. Infection risks associated with therapeutic and diagnostic procedures and devices (e.g., dialysis, angiography, bronchoscopy, endoscopy, intravascular devices, urinary drainage catheter)
  - v. Recall of potentially contaminated equipment, food, medications, and supplies
  - vi. Transmission-based Precautions
  - vii. Appropriate selection, use, and disposal of Personal Protective Equipment
  - viii. Patient placement, transfer, and discharge
  - ix. Environmental pathogens (e.g., Legionella, Aspergillus)
  - x. Use of patient care products and medical equipment
  - xi. Immunization programs for patients
  - xii. The influx of patients with known/suspected communicable diseases (e.g., bioterrorism, emerging infectious diseases, syndromic surveillance)
  - xiii. Principles of safe injection practices (e.g., parenteral medication administration, single use of syringes and needles, appropriate use of single and multi-dose vials)
  - xiv. Identifying, implementing and evaluating elements of Standard Precautions/Routine Practices (e.g., respiratory hygiene/cough etiquette)
  - xv. Antimicrobial stewardship

## 4) Employee/Occupational Health (11 items)

- a. Review and/or develop screening and immunization programs
- b. Collaborate regarding counseling, follow up, and work restriction recommendations related to communicable diseases and/or exposures
- c. Collaborate with occupational health to evaluate infection prevention-related data and provide recommendations

- d. Collaborate with occupational health to recognize healthcare personnel who may represent a transmission risk to patients, coworkers, and communities
- e. Assess risk of occupational exposure to infectious diseases (e.g., Mycobacterium tuberculosis, bloodborne pathogens)

## 5) Management and Communication (13 items)

- a. Planning
  - i. Develop, evaluate, and revise a mission and vision statement, goals, measurable objectives, and action plans for the Infection Prevention and Control Program
  - ii. Assess needs then recommend specific equipment, personnel, and resources for the Infection Prevention and Control Program
  - iii. Participate in cost benefit assessments, efficacy studies, evaluations, and standardization of products
  - iv. Recommend changes in practice based on current evidence, clinical outcomes, and financial implications
  - v. Incorporate business modeling to assign value to prevention of and/or presence of healthcare-associated infection (e.g., cost/benefit analysis, return on investment)
- b. Communication and Feedback
  - i. Provide infection prevention and control findings, recommendations, and reports to appropriate stakeholders
  - ii. Facilitate implementation of policies, procedures, and recommendations
  - iii. Communicate effectively with internal and external stakeholders (e.g., transitions of care, reporting of notifiable diseases)
  - iv. Collaborate with internal and external stakeholders in the identification and review of adverse and sentinel events
  - v. Evaluate and facilitate compliance with accreditation standards/regulatory requirements
  - vi. Perform and create a personalized development plan. (e.g., set goals, maintain competence)

# Examination Content Outline

- c. Quality Performance Improvement and Patient Safety
  - i. Participate in quality/performance improvement and patient safety activities related to infection prevention and control (e.g., failure mode and effects analysis, plan-do-study-act)
  - ii. Develop, monitor, measure, and evaluate performance indicators to drive quality improvement initiatives
  - iii. Select and apply appropriate quality/performance improvement tools (e.g., “fishbone” diagram, Pareto charts, flow charts, Strengths-Weaknesses-Opportunities-Threats, Gap Analysis)

## 6) Education and Research (11 items)

- a. Education
  - i. Assess needs, develop goals and measurable objectives for preparing educational offerings
  - ii. Prepare, present, or coordinate educational content that is appropriate for the audience
  - iii. Provide immediate feedback, education, and/or training when lapses in practice are observed
  - iv. Evaluate the effectiveness of education and learner outcomes (e.g., observation of practice, process measures)
  - v. Facilitate effective education of patients, families, and others regarding prevention and control measures
  - vi. Implement strategies that engage the patient, family, and others in activities aimed at preventing infection
- b. Research
  - i. Conduct a literature review
  - ii. Critically appraise the literature
  - iii. Facilitate incorporation of applicable research findings into practice

## 7) Environment of Care (14 items)

- a. Recognize and monitor elements important for a safe care environment (e.g., Heating-Ventilation-Air Conditioning, water standards, construction)
- b. Assess infection risks of design, construction, and renovation that impact patient care settings
- c. Provide recommendations to reduce the risk of infection as part of the design, construction, and renovation process
- d. Collaborate on the evaluation and monitoring of environmental cleaning and disinfection practices and technologies
- e. Collaborate with others to select and evaluate environmental disinfectant products

## 8) Cleaning, Sterilization, Disinfection, Asepsis (15 items)

- a. Identify and evaluate appropriate cleaning, sterilization and disinfection practices
- b. Collaborate with others to assess products under evaluation for their ability to be reprocessed
- c. Identify and evaluate critical steps of cleaning, high level disinfection, and sterilization

# CBIC Reference Books

References have been categorized as primary and secondary sources for content information. Nearly all questions are based on chapters in the primary references, but secondary references may be useful to help clarify more detailed issues in specific practice settings or content areas such as microbiology.

## Primary References:

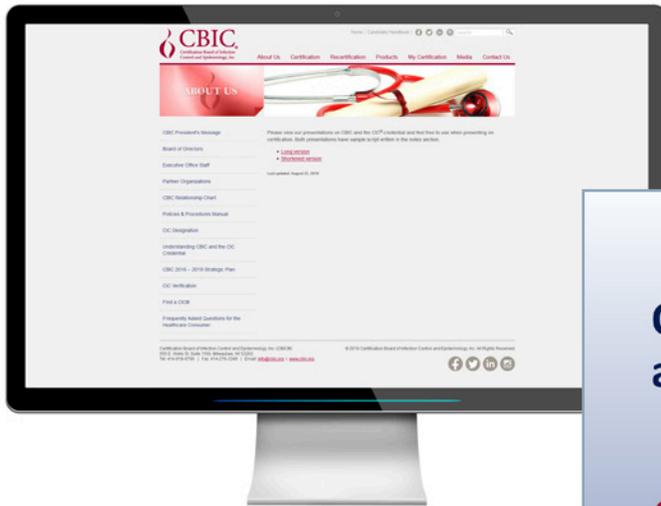
- *APIC Text of Infection Control and Epidemiology*, 4th ed., *Volume I*, *Volume II* and *Volume III*, APIC, Washington, DC, 2014.
- Kulich P, Taylor D, eds. *The Infection Preventionist's Guide to the Lab*, APIC, Washington, DC, 2012.
- Heymann, D., ed. *Control of Communicable Diseases Manual*, 19th ed., Washington, DC: American Public Health Association; 2008.
- Brooks, Kathy. *Ready Reference for Microbes*, 3rd ed., APIC; 2012.

## Secondary References:

- Current Recommendations of the Advisory Committee on Immunization Practices (ACIP).
- Current guidelines, standards, and recommendations from CDC, APIC, SHEA, and Public Health Agency of Canada.
- Pickering, Larry K, ed. *Red Book*, 29th ed., Elk Grove Village, IL: American Academy of Pediatrics; 2012.

Please note: In the CIC exam, the term “standards precautions” is equivalent to the Canadian term “routine practices.”

# Presentation on the CIC® Credential



<http://www.cbic.org/about-cbic/understanding-cbic-and-the-cic-credential>

**Certification in Infection Prevention and Control (CIC®)**

*Certification is Commitment*

**CBIC**  
Certification Board of Infection Control and Epidemiology, Inc.

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# What are Other Organizations Doing to Support Certification?

CBIC partners with the Association for Professionals in Infection Control and Epidemiology (APIC) and Infection Prevention and Control Canada (IPAC Canada). Both associations support CIC® certification as a measure of competency for infection prevention and control professionals and encourage eligible members to become certified. There are also other organizations and government agencies which recognize the CIC® credential and support and promote certification. Listed below are examples of what others do to support certification in infection prevention and control (CIC®).

## APIC

APIC helps promote certification of its members through a number of different efforts. They offer study resources to help IPs prepare for the CIC® exam, educational classes, and monetary support through the Competency Advancement Assistance (CAA) Program. APIC allows CBIC to exhibit at their annual conference and promotes certification at the chapter level as well.

## IPAC Canada

IPAC Canada helps promote certification of its members similarly to APIC. At their annual conference IPAC Canada allows CBIC to exhibit, holds a preparatory class, and recognizes the chapter who had the highest percentage of new certificants each year with The Chapter Achievement Award. In addition to this, IPAC Canada offers a membership discount to new CICs the year following initial certification.

## Other Organizations

CBIC also has a number of informal partners that support certification. If you are looking to support certification in infection prevention and control (CIC®), here are some ideas that other organizations have implemented and may be a good fit for your organization as well.

- Offering scholarships that cover study materials and the exam fee
- Organizing educational prep classes using state Ebola funds
- Presenting the “Understanding CBIC and the CIC® Credential” pre-scripted PowerPoint at meetings
- Linking CBIC webpages to their website
- Connecting on social media
- Distributing brochures at meetings and events

In addition to the above information, you may find our Facilitator CIC® Resource Toolkit useful. You can find this on the CBIC website under the Certification tab. If your organization is considering supporting certification in infection prevention and control (CIC®), please contact Anne Krolkowski, CBIC Executive Director, at [akrolkowski@cbic.org](mailto:akrolkowski@cbic.org) for more information.