

Exam Blueprint and Specialty Competencies

Introduction – Blueprint for the Gastroenterology Nursing Certification Exam

The primary function of the blueprint for the CNA Gastroenterology Nursing Certification Exam is to describe how the exam is to be developed. Specifically, this blueprint provides explicit instructions and guidelines on how the competencies are to be expressed within the exam in order for accurate decisions to be made on the candidates' competence in gastroenterology nursing.

The blueprint has two major components: (1) the content area to be measured and (2) the explicit guidelines on how this content is to be measured. The content area consists of the list of competencies (i.e., the competencies expected of fully competent practising gastroenterology nurses with at least two years of experience), and the guidelines are expressed as structural and contextual variables. The blueprint also includes a summary chart that summarizes the exam guidelines.

Description of Domain

The CNA Gastroenterology Nursing Exam is a criterion-referenced exam.¹ A fundamental component of a criterion-referenced approach to testing is the comprehensive description of the content area being measured. In the case of the Gastroenterology Nursing Certification Exam, the content consists of the competencies of a fully competent practising gastroenterology nurse with at least two years of experience.

This section describes the competencies, how they have been grouped and how they are to be sampled for creating an exam.

Developing the List of Competencies

The final list of competencies was updated and approved by the Gastroenterology Nursing Certification Exam Committee.

¹ Criterion-referenced exam: An exam that measures a candidate's command of a specified content or skills domain or list of instructional objectives. Scores are interpreted in comparison to a predetermined performance standard or as a mastery of defined domain (e.g., percentage correct and mastery scores), independently of the results obtained by other candidates (Brown, 1983).

Assumptions

In developing the set of competencies for gastroenterology nurses, the following assumptions, based on current national standards for nursing practice, were made:

The patient

- The word “patient” refers to the patient and/or family as defined by the patient.

The environment

- The gastroenterology nurse provides care in a wide variety of environments and practice settings. The practice settings may include the hospital, rehabilitation, continuing care, home, ambulatory clinics, the community and palliative care units.

The goals of gastroenterology nursing are:

- To provide care and encourage patients to function at their optimal level of wellness and autonomy throughout the continuum of care;
- To identify alterations in health as a result of gastrointestinal disease processes and complications;
- To assist patients in managing gastrointestinal disease processes and in adapting to lifestyle changes that may occur; and
- To facilitate health promotion in collaboration with patients by assessing and providing education pertaining to gastrointestinal disorder risk factors.

The gastroenterology nurse:

- Uses a holistic approach to assess, plan, implement and evaluate patient care;
- Designs a plan of care to accommodate the physical, psychological, social, cultural and spiritual needs of the patient;
- Provides a caring, therapeutic environment for the patient in an effort to encourage engagement in care planning;
- Advocates for the patient to enhance the continuity of care;
- Collaborates with the health-care team to provide coordinated, comprehensive care;
- Acts as a role model and resource;
- Participates in continuous quality improvement;
- Acknowledges the impact of chronic and complex disease processes on the nurse and recognizes the need for self-care;

- Practises within professional, legal and ethical standards and engages in a process of self-regulation based on these standards;
- Assumes responsibility for professional development;
- Demonstrates competence in theory-based nursing and accepts responsibility and accountability for professional practice; and
- Strives to provide evidence-based nursing care and acknowledges a responsibility to support research within the specialty area.

Competency Categories

The competencies are classified under a six-category scheme commonly used to organize gastroenterology nursing.

Some of the competencies lend themselves to one or more of the categories; therefore, these six categories should be viewed simply as an organizing framework. Also, it should be recognized that the competency statements vary in scope, with some representing global behaviours and others more discrete and specific nursing behaviours.

Competency Sampling

Using the grouping and the guideline that the Gastroenterology Nursing Certification Exam will consist of approximately 165 questions, the categories have been given the following weights in the total examination.

Table 1: Competency Sampling

| Categories | Approximate weights in the total examination |
|---|--|
| Anatomy, Physiology and Pathophysiology | 20-27% |
| Pharmacology | 8-15% |
| Diagnostic Tests and Therapeutic Procedures | 15-22% |
| Gastroenterology Emergencies | 8-15% |
| Care of Gastroenterology Patient | 23-30% |
| Safety, Ethics and Research | 5-12% |

Technical Specifications

In addition to the specifications related to the competencies, other variables are considered during the development of the Gastroenterology Nursing Certification Exam. This section presents the guidelines for two types of variables: structural and contextual.

Structural Variables: Structural variables include those characteristics that determine the general appearance and design of the exam. They define the length of the exam, the format and presentation of the exam questions (e.g., multiple-choice format) and special functions of exam questions (e.g., case-based or independent questions).

Contextual Variables: Contextual variables specify the nursing contexts in which the exam questions will be set (e.g., patient culture, patient health situation and health-care environment).

Structural Variables

Exam Length: The exam consists of approximately 165 multiple-choice questions.

Question Presentation: The multiple-choice questions are presented in one of two formats: case-based or independent. Case-based questions are a set of approximately four questions associated with a brief health-care scenario (i.e., a description of the patient's health-care situation). Independent questions stand alone. In the Gastroenterology Nursing Certification Exam, 60 to 75 per cent of the questions are presented as independent questions and 25 to 40 per cent are presented within cases.

Taxonomy for Questions: To ensure that competencies are measured at different levels of cognitive ability, each question on the Gastroenterology Nursing Certification Exam is aimed at one of three levels: knowledge/comprehension, application and critical thinking.²

1. Knowledge/Comprehension

This level combines the ability to recall previously learned material and to understand its meaning. It includes such mental abilities as knowing and understanding definitions, facts and principles and interpreting data (e.g., knowing the effects of certain drugs or interpreting data appearing on a patient's record).

2. Application

This level refers to the ability to apply knowledge and learning to new or practical situation. It includes applying rules, methods, principles and theories in providing care to patients (e.g., applying nursing principles to the care of patients).

² These levels are adapted from the taxonomy of cognitive abilities developed in Bloom (1956).

3. Critical Thinking

The third level of the taxonomy deals with higher-level thinking processes. It includes the abilities to judge the relevance of data, to deal with abstraction and to solve problems (e.g., identifying priorities of care or evaluating the effectiveness of interventions). The gastroenterology nurse with at least two years of experience should be able to identify cause-and-effect relationships, distinguish between relevant and irrelevant data, formulate valid conclusions and make judgments concerning the needs of patients.

The following table presents the distribution of questions for each level of cognitive ability.

Table 2: Distribution of Questions for Each Level of Cognitive Ability

| Cognitive Ability Level | Percentage of questions on Gastroenterology Nursing Exam |
|-------------------------|--|
| Knowledge/Comprehension | 15-30% |
| Application | 40-55% |
| Critical Thinking | 25-40% |

Contextual Variables

Patient Culture: Questions measuring awareness, sensitivity, and respect for different cultural values, beliefs, and practices, without introducing stereotypes, are included on the exam.

Patient Health Situation: In the development of the Gastroenterology Nursing Exam, the patient is viewed holistically. The patient health situations presented reflect a cross-section of health promotion, protection, active treatment, long-term care, rehabilitation care and palliative care.

Health-Care Environment: It is recognized that gastroenterology nursing is practised in a variety of settings. The health-care environment is specified only where it is required for clarity or in order to provide guidance to the candidate.

Conclusions

The blueprint for the Gastroenterology Nursing Certification Exam is the product of a collaborative effort between CNA, ASI and a number of gastroenterology nurses across Canada. Their work has resulted in a compilation of the competencies required of practising gastroenterology nurses and has helped determine how those competencies will be measured on the gastroenterology Nursing Certification Exam. A summary of these guidelines can be found in the summary chart Gastroenterology Nursing Certification Development Guidelines.

Gastroenterology nursing practice will continue to evolve. As this occurs, the blueprint may require revision so that it accurately reflects current practices. CNA will ensure that such revision takes place in a timely manner and will communicate any changes in updated editions of this document.

Summary Chart

Gastroenterology Nursing Exam Development Guidelines

| <i>STRUCTURAL VARIABLES</i> | | |
|--|--|----------------------|
| Exam Length and Format | Approximately 165 objective questions | |
| Question Presentation | Independent questions | 60-75% of questions |
| | Case-based questions | 25-40% of questions |
| Cognitive Ability Levels of Questions | Knowledge | 15-30% of questions |
| | Application | 40-55% of questions |
| | Critical Thinking | 25-40% of questions |
| Category | Anatomy, Physiology and Pathophysiology | 20-27 % of questions |
| | Pharmacology | 8-15 % of questions |
| | Diagnostic Tests and Therapeutic Procedures | 15-22 % of questions |
| | Gastroenterology Emergencies | 8-15 % of questions |
| | Care of Gastroenterology Patient | 23-30 % of questions |
| | Safety, Ethics and Research | 5-12 % of questions |
| <i>CONTEXTUAL VARIABLES</i> | | |
| Patient Culture | Questions measuring awareness, sensitivity, and respect for different cultural values, beliefs, and practices, without introducing stereotypes, are included on the exam. | |
| Patient Health Situation | In the development of the Gastroenterology Nursing Exam, the patient is viewed holistically. The patient health situations presented reflect a cross-section of health promotion, protection, active treatment, long-term care, rehabilitation care and palliative care. | |
| Health-Care Environment | It is recognized that gastroenterology nursing is practised in a variety of settings. The health-care environment is specified only where it is required for clarity or in order to provide guidance to the candidate. | |

The Gastroenterology Nursing Exam List of Competencies

1. Anatomy, Physiology and Pathophysiology

- 1.1 The gastroenterology nurse understands normal anatomy and physiology including structure, characteristics and mechanical and chemical function of:
 - 1.1a Mouth/esophagus (e.g., motility)
 - 1.1b Stomach (e.g., motility, secretion)
 - 1.1c Small intestine (e.g., motility, absorption, secretion)
 - 1.1d Large intestine (e.g., motility, absorption, secretion, elimination)
 - 1.1e Biliary system (e.g., motility, secretion, storage)
 - 1.1f Pancreas (e.g., secretion, production)
 - 1.1g Liver (e.g., secretion, metabolism, coagulation, detoxification, storage)

- 1.2 The gastroenterology nurse understands the etiology and symptoms of and care for the following upper gastroenterological disease processes:
 - 1.2a Mouth/esophagus (e.g., varices, strictures, Barrett's esophagus, esophagitis, achalasia)
 - 1.2b Stomach (e.g., hiatal hernia, pyloric obstruction, gastritis, bezoars, peptic ulcer disease)
 - 1.2c Small intestine (e.g., Crohn's disease, B₁₂ deficiency, obstruction, celiac disease)

- 1.3 The gastroenterology nurse understands the etiology and symptoms of and care for the following lower gastroenterological disease processes:
 - 1.3a Large intestine (e.g., polyps, ulcerative colitis, diverticular disease, irritable bowel syndrome)
 - 1.3b Biliary system (e.g., cholelithiasis, choledocholithiasis, cholecystitis, cholangitis, primary sclerosing cholangitis)
 - 1.3c Pancreas (e.g., pancreatitis, pseudocysts)
 - 1.3d Liver (e.g., cirrhosis, hepatitis, coagulopathy, steatohepatitis, primary biliary cirrhosis)

- 1.4 The gastroenterology nurse understands the following abnormalities (e.g., symptoms, implications) in the gastrointestinal tract:
 - 1.4a Tumours (i.e., benign and malignant)
 - 1.4b Infectious diseases (e.g., Clostridium difficile, Escherichia coli, Helicobacter pylori)
 - 1.4c Ulcers (e.g., gastroesophageal reflux disease (GERD), duodenal ulcer)

- 1.5 The gastroenterology nurse understands the etiology and symptoms of and care for the following hereditary diseases and conditions:
 - 1.5a Wilson's disease
 - 1.5b Cystic fibrosis
 - 1.5c Hemochromatosis
 - 1.5d Hereditary nonpolyposis colorectal cancer (Lynch syndrome)
 - 1.5e Familial adenomatous polyposis

- 1.6 The gastroenterology nurse understands the etiology and symptoms of and care for the following nutritional conditions:
 - 1.6a Malnutrition
 - 1.6b Anorexia nervosa/bulimia
 - 1.6c Metabolic syndrome

- 1.7 The gastroenterology nurse understands nursing considerations related to the care of the bariatric patient (e.g., anatomic changes, equipment, sensitive communication).

2. Pharmacology

- 2.1 The gastroenterology nurse understands nursing considerations (e.g., administration, dosage, indications, contraindications, adverse effects, interactions, expected outcomes) for the following types of agents as they relate to the gastroenterology patient:
 - 2.1a Antacids/antiulcer medications
 - 2.1b Antibiotics/antifungals
 - 2.1c Antidiarrheals/antiflatulents
 - 2.1d Antiemetics
 - 2.1e Anti-inflammatory medications
 - 2.1f Antivirals
 - 2.1g Biologics
 - 2.1h Botox injections
 - 2.1i Cholinergics/anticholinergics
 - 2.1j Contrast agents
 - 2.1k Corticosteroids
 - 2.1l Diuretics
 - 2.1m Laxatives/cathartics/bulk agents
 - 2.1n Procedural sedation agents/antagonists
 - 2.1o Sclerosing agents
 - 2.1p Topical and local anesthetics

- 2.2 The gastroenterology nurse understands nursing considerations (e.g., administration, dosage, indications, contraindications, adverse effects, interactions, expected outcomes) for nutritional therapies (e.g., oral, enteral, parenteral).

- 2.3 The gastroenterology nurse has a general awareness of food, over-the-counter drugs, probiotics, supplements, herbal remedies or alternative therapies known to have an effect on the gastrointestinal system.

3. Diagnostic Tests and Therapeutic Procedures

- 3.1 The gastroenterology nurse understands the general procedure and basic principles (e.g., indications, contraindications, patient preparation, potential complications) for the following diagnostic tests:

- 3.1a Esophagogastroduodenoscopy (EGD)
- 3.1b Endoscopic retrograde cholangiopancreatography (ERCP)
- 3.1c Colonoscopy
- 3.1d Enteroscopy
- 3.1e Small bowel capsule study
- 3.1f Sigmoidoscopy
- 3.1g Anoscopy
- 3.1h Endoscopic ultrasound
- 3.1i Manometry
- 3.1j 24-hour pH monitoring
- 3.1k Specimen collection
- 3.1l Diagnostic imaging (e.g., magnetic resonance cholangiopancreatography (MRCP), ultrasound, computed tomography (CT))

- 3.2 In relation to diagnostic test results, the gastroenterology nurse:

- 3.2a Recognizes significant deviation from normal.
- 3.2b Initiates appropriate nursing actions.

- 3.3 The gastroenterology nurse understands the general procedure and basic principles (e.g., equipment, indications, contraindications, patient preparation, potential complications) for the following therapeutic interventions:

3.3a *Hemostasis and ablation*

- i) Variceal therapy (e.g., banding, injection therapy, argon plasma coagulation)
- ii) Ablation therapy (e.g., endoscopic mucosal resection, radiofrequency ablation)
- iii) Clipping

3.3b *Intubation and drainage*

- i) Gastric lavage
- ii) Nasogastric/nasobiliary/nasoenteric tubes

- iii) Stents (e.g., transjugular intrahepatic portosystemic shunt (TIPS), biliary, colonic, esophageal, percutaneous transhepatic drain)
- iv) Percutaneous endoscopic gastrostomy tubes
- v) Decompression
- vi) Paracentesis/thoracentesis

3.3c *Excision and extraction*

- i) Foreign body removal
- ii) Polyp removal
- iii) Stone retrieval and removal
- iv) Sphincterotomy

3.3d *Other*

- i) Transplantation (e.g., liver, fecal)
- ii) Dilation

4. Gastroenterological Emergencies

- 4.1 The gastroenterology nurse demonstrates understanding of the etiology and symptoms of and care for the following potential gastroenterological emergencies:
 - 4.1a Gastroenterological tract perforation
 - 4.1b Gastroenterological hemorrhage
 - 4.1c Aspiration
 - 4.1d Post endoscopic retrograde cholangiopancreatography (ERCP) complications (e.g., pancreatitis, cholangitis, bile leaks)
 - 4.1e Toxic megacolon
 - 4.1f Foreign body
 - 4.1g Obstruction
 - 4.1h Volvulus
 - 4.1i Ischemic colitis
 - 4.1j Mallory-Weiss tear

5. Care of the Gastroenterology Patient

- 5.1 Assessment and planning

The gastroenterology nurse:

- 5.1a Uses appropriate sources to collect relevant objective and subjective information (e.g., patient, past medical history, laboratory, community services).
- 5.1b Performs a physical assessment appropriate to the patient's condition.
- 5.1c Recognizes a crisis situation.

- 5.1d Performs a risk assessment (e.g., patient identification, allergies, falls risk, isolation precautions, implant devices).
- 5.1e Identifies relevant factors affecting health (e.g., genetics, lifestyle, environmental exposures).
- 5.1f Interprets assessment and formulates a care plan.
- 5.1g Identifies expected outcomes.
- 5.1h Collaborates with the patient and the health-care team to set realistic goals.

5.2 Implementation and evaluation

The gastroenterology nurse:

- 5.2a Identifies priorities for nursing actions considering available resources and environmental limitations.
- 5.2b Demonstrates understanding of the assessment and management of pain.
- 5.2c Coordinates the sequence of diagnostic procedures for gastroenterological investigation.
- 5.2d Delegates and supervises within scope of practice.
- 5.2e Demonstrates awareness of psychological aspects and physical impact of gastroenterological disease processes (e.g., body image, eating disorders, morbid obesity) and consults with appropriate health-care professionals to determine the plan of care.
- 5.2f Demonstrates understanding of psychosocial and physical impact (e.g., fecal incontinence, fistula, ostomy) related to therapies or gastroenterological disease processes.
- 5.2g Monitors patient condition and modifies care plan accordingly.
- 5.2h Develops a discharge plan in collaboration with the patient and health-care team.
- 5.2i Communicates effectively with the health-care team.

5.3 Education

The gastroenterology nurse:

- 5.3a Demonstrates an awareness of strategies for health promotion (e.g., counselling, lifestyle modifications, nutrition, stress reduction, disease prevention).
- 5.3b Demonstrates an understanding of the advantages of early screening and detection for gastroenterological disorders.
- 5.3c Uses various teaching methods as applicable.
- 5.3d Selects the appropriate information to be communicated.
- 5.3e Communicates with the patient in a manner that is appropriate and understandable.
- 5.3f Provides the patient with an awareness of relevant resources (e.g., support groups, social media, community resources).

6. Safety, Ethics and Research

6.1 Infection control and environmental safety

The gastroenterology nurse:

- 6.1a Demonstrates knowledge of the general principles of disinfection and sterilization of equipment.
- 6.1b Demonstrates an understanding of risk factors related to the care of the patient and the safety of the health-care team (e.g., infectious diseases, positioning, equipment, environment, radiation).

6.2 Ethics

The gastroenterology nurse:

- 6.2a Practises according to the Canadian Nurses Association (CNA) Code of Ethics for Registered Nurses.
- 6.2b Demonstrates respect for patients' religious, cultural and personal values.
- 6.2c Provides patients with the information required to make informed decisions.
- 6.2d Demonstrates support of patients in their decisions.
- 6.2e Recognizes potential dilemmas related to decision-making.

6.3 Research and evidence-based practice

The gastroenterology nurse:

- 6.3a Demonstrates an understanding of the research process and implications for gastroenterology practice.
- 6.3b Demonstrates an ability to retrieve research articles.
- 6.3c Demonstrates an understanding of the concepts of incidence, prevalence and measurable outcomes as they apply to gastroenterological disease processes.
- 6.3d Demonstrates an understanding of how genetic factors or other factors (e.g., environmental, lifestyle) impact gastroenterological disease processes.
- 6.3e Demonstrates the use of evidence-based practice to improve quality patient care.