

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.

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).

Developing the List of Competencies

The gastroenterology nurses who participated in the development of the list of competencies were regionally representative of gastroenterology nurses in Canada. A working group developed a preliminary national list of competencies and the classification scheme to group these competencies. These competencies were reviewed by groups of gastroenterology nurses in Eastern, Western, and Central Canada. The final list of competencies was approved by the Gastroenterology Nursing Certification Exam Committee.

Assumptions

In developing the list of national competencies for gastroenterology nurses, the following assumptions 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 home, hospital, continuing care, ambulatory clinics, the community, palliative care units and rehabilitation.

The goals of gastroenterology nursing are:

- To provide care and encourage the patient of all ages to function at his/her optimal level of wellness and independence throughout the continuum of care;
- To monitor alterations in health as a result of gastrointestinal disease or complications and intervene to promote health collaboratively with the patient;
- To assist the patient in adaptation to, and management of his/her gastrointestinal disease, therapy and lifestyle changes that may occur; and
- To facilitate health promotion by providing education about, and assessment of, risk factors of gastrointestinal disorders.

The gastroenterology nurse

- Practises within professional, legal and ethical standards and engages in a process of self-assessment based on these standards;
- Assumes responsibility for self-growth and development to maintain knowledge and skills;
- Demonstrates competence in theory-based nursing and accepts personal responsibility and accountability for professional practice;
- Strives to provide evidence-based nursing care and acknowledges a responsibility to promote research within the specialty area;
- Acts as a role model and resource for students, auxiliary staff, nursing staff and medical colleagues;
- Recognizes the personal psychological impact of caring for a gastrointestinal patient and the need for the gastroenterology nurse to seek support when appropriate;
- Participates in continuous quality improvement;
- Advocates for the patient;
- Designs nursing care to accommodate the biological, psychological, social, cultural and spiritual needs of the patient;
- Uses a systematic, continuous and holistic approach to assessment, analysis, planning, implementation and evaluation of patient care;
- Develops, implements and evaluates individualized educational plans for patients;
- Provides a caring, therapeutic environment for the patient in an effort to encourage participation in care planning; and
- Collaborates with members of the multidisciplinary health care team to provide coordinated, comprehensive care.

Competency Categories

The competencies are classified under a five-category classification scheme. Some of the competencies lend themselves to one or more of the categories; therefore, these five 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.

Percentage of Competencies in Each Group

The following table presents the number and the percentage of competencies in each category.

Table 1: Percentage of Competencies in Each Group

Category	Number of competencies	Percentage of the total number of competencies
Anatomy, Physiology and Pathophysiology	31	23%
Pharmacology	20	15%
Diagnostic Tests and Therapeutic Procedures	42	31%
Care of the Gastroenterology Patient	28	21%
Performance Assurance	13	10%

Competency Sampling

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

Table 2: Competency Sampling

Categories	Approximate weights in the total exam
Anatomy, Physiology and Pathophysiology	15-20%
Pharmacology	10-15%
Diagnostic Tests and Therapeutic Procedures	20-25%
Care of Gastroenterology Patient	35-40%
Performance Assurance	10-15%

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) and any special functions of exam questions (e.g., 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 or 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 4 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 70 per cent of the questions are presented as independent questions and 30 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 or 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 Ces niveaux ont été adaptés à partir de la taxonomie des habiletés cognitives présentée dans le manuel de Bloom (1956).

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 while providing care to patients (e.g., applying nursing principles to the care of patients).

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 about the needs of patients.

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

Table 3: Distribution of Questions for Each Level of Cognitive Ability

Cognitive Ability level	Percentage of items on the Gastroenterology Nursing Certification Exam
Knowledge/Comprehension	20-35%
Application	40-50%
Critical Thinking	20-30%

Contextual Variables

Patient Age: One of the contextual variables specified for the Gastroenterology Nursing Exam is the age of the patients. Providing specifications for the use of these variables ensures that the patients described in the exam represent the demographic characteristics of the population encountered by the gastroenterology nurse. These specifications, listed in Table 4 as percentage ranges, serve as guidelines for test development.

Table 4: Specification for Patient Age

Age Group	Percentage of questions on the Gastroenterology Nursing Certification Exam
Child (0-12 years old)	4-10%
Adolescent (12-19 years old)	5-15%
Adult (20-65 years old)	45-65%
Older Adult (65+ years old)	20-25%

Patient Culture: The gastroenterology examination is designed to include items representing the variety of cultural backgrounds encountered while providing gastroenterology nursing care in Canada. While the exam does not test candidates' knowledge of specific values, beliefs and practices linked to individual cultures, it is intended to measure awareness, sensitivity and respect for diverse cultural values, beliefs and practices. Cultural issues are integrated within the exam without introducing cultural stereotypes.

Patient Situation: In the development of the gastroenterology exam, the patient is viewed holistically. Thus, the patient's biophysical, psychosocial and spiritual dimensions form the basis of every situation presented on the gastroenterology exam. The patient's situations also reflect a cross section of the most common situations encountered by a gastroenterology nurse with two years of experience.

Health-Care Environment: Since gastroenterology nursing can be practised in a variety of settings and most of the competencies are not setting dependent, the environment is only specified where required.

Conclusions

The Blueprint for the Gastroenterology Nursing Certification Exam is the product of a collaborative effort between CNA, ASI, Canadian Society of Gastroenterology Nurses and Associates (CSGNA) 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.

It is recognized that 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 Certification Exam Development Guidelines

Structural Variables		
Exam Length and Format	Approximately 165 multiple choice questions	
Question Presentation	Independent questions	60-70% of questions
	Case-based questions	30-40% of questions
Cognitive Ability Levels of Questions	Knowledge	20-35% of questions
	Application	40-50% of questions
	Critical Thinking	20-30% of questions
Category	Anatomy, Physiology and Pathophysiology	15-20 % of questions
	Pharmacology	10-15 % of questions
	Diagnostic Tests and Therapeutic Procedures	20-25 % of questions
	Care of Gastroenterology Patient	35-40 % of questions
	Performance Assurance	10-15 % of questions
Contextual Variables		
Age	Age Group	Total
	Child (0-12 years old)	4-10%
	Adolescent (12-19 years old)	5-15%
	Adult (20-65 years old)	45-65%
	Older Adult (65+ years old)	20-25%
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 Certification Exam List of Competencies

1 Anatomy, Physiology and Pathophysiology

- 1.1 The gastroenterology nurse describes normal anatomy including structure and characteristics of:
- 1.1a mouth
 - 1.1b esophagus
 - 1.1c stomach
 - 1.1d small intestine
 - 1.1e large intestine
 - 1.1f biliary system
 - 1.1g pancreas
 - 1.1h liver
- 1.2 The gastroenterology nurse describes normal gastrointestinal physiology including mechanical and chemical function:
- 1.2a esophagus motility
 - 1.2b stomach motility, secretion
 - 1.2c small intestine motility, absorption, secretion
 - 1.2d large intestine motility, absorption, secretion, elimination
 - 1.2e biliary system motility, secretion, storage
 - 1.2f pancreas enzyme production
 - 1.2g liver bile formation and secretion, metabolism, coagulation, detoxification, vitamin storage
- 1.3 The gastroenterology nurse describes the symptoms, pathophysiology, and evolution of the following disorders of the:
- 1.3a mouth:
 - benign/malignant tumours
 - Crohn's
 - infectious disease
 - ulcers

- 1.3b esophagus
- esophagitis/gastro-esophageal reflux disease
 - varices
 - benign/malignant tumours
 - strictures
 - rings and webs
 - diverticula
 - Mallory Weiss tear
 - motility disorders
 - Barrett’s
 - fistula
 - infectious diseases
 - ulcers
- 1.3c stomach
- peptic ulcer
 - helicobacter pylori
 - polyps
 - varices
 - benign/malignant tumours
 - hiatal hernia
 - gastritis
 - motor dysfunction
 - infectious diseases
 - bezoars
 - vascular malformations
 - pyloric obstruction
 - Zollinger Ellison

- 1.3d small intestine
 - duodenal ulcer
 - infectious diseases
 - parasitic infection
 - Crohn’s disease
 - benign/malignant tumours
 - malabsorption syndrome
 - vitamin B₁₂ deficiency
 - vascular malformations
 - duodenitis
 - small bowel obstruction
- 1.3e large intestine
 - polyps
 - vascular malformations
 - inflammatory bowel disease
 - megacolon
 - irritable bowel syndrome
 - chronic recurrent abdominal pain syndrome
 - parasitic infections
 - diverticular disease
 - benign/malignant tumours
 - intestinal obstruction
 - volvulus
 - anorectal disorders
- 1.3f biliary system
 - cholelithiasis
 - choledocholithiasis
 - cholecystitis
 - cholangitis

- benign/malignant tumours
- congenital abnormalities
- primary sclerosing cholangitis

1.3g pancreas

- pancreatitis
- pseudocysts
- fistula
- Zollinger Ellison
- benign/malignant tumours
- cystic fibrosis
- pancreatic enzyme insufficiency

1.3h liver

- glycogen storage diseases
- cirrhosis
- hepatitis
- benign/malignant tumours
- coagulopathy
- primary biliary cirrhosis
- porphyria
- vascular malformations

1.4 The gastroenterology nurse describes the symptoms, pathophysiology, and evolution of congenital anomalies:

1.4a Wilson's disease

1.4b Meckel's diverticulum

1.4c Pyloric obstruction

1.4d Hemochromatosis

- 1.5 The gastroenterology nurse describes the symptoms, pathophysiology, and evolution of eating disorders:
 - 1.5a anorexia nervosa
 - 1.5b morbid obesity
 - 1.5c bulimia

2 Pharmacology

- 2.1 The gastroenterology nurse describes nursing considerations (e.g. administration, dosage, indications, contraindications, adverse effects, interactions, expected outcomes) for the following types of agents:
 - 2.1a Antacids, anti-ulcer
 - 2.1b Antibiotics, anti-infectives, anti-parasitic & anti-fungal
 - 2.1c Anti-diarrheals & anti-flatulents
 - 2.1d Anti-emetics
 - 2.1e Anti-inflammatory
 - 2.1f Cholinergics & anti-cholinergics
 - 2.1g Contrast agents
 - 2.1h Corticosteroids
 - 2.1i Diuretics
 - 2.1j Immunotherapy
 - 2.1k Laxatives, cathartics, and bulk agents
 - 2.1l Narcotics & antagonists
 - 2.1m Sedatives & antagonists
 - 2.1n Sclerosing agents
 - 2.1o Topical and local anesthetics
 - 2.1p Other therapeutic agents (i.e., vasoconstrictors)
- 2.2 The gastroenterology nurse describes nursing considerations (e.g. administration, dosage, indications, contraindications, adverse effects, interactions, expected outcomes) for the various types of nutritional therapies:
 - 2.2a Oral
 - 2.2b Enteral
 - 2.2c Parenteral

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

3 Diagnostic Tests and Therapeutic Procedures

- 3.1 The gastroenterology nurse describes the general procedure and basic principles (including equipment, indications, contraindications, patient preparation and potential complications) for the following diagnostic tests:
- 3.1a Esophagogastroduodenoscopy
 - 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
- 3.2 The gastroenterology nurse demonstrates a general understanding of the significance of diagnostic test results:
- 3.2.1 Recognizes significant deviation from normal diagnostic test results.
 - 3.2.2 Uses appropriate nursing actions regarding diagnostic test results.

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

Hemostasis and Ablation

- 3.3a Variceal therapies
- 3.3b Tamponade
- 3.3c Injection therapy
- 3.3d Argon plasma coagulation
- 3.3e Ablation therapy (e.g., Endoscopic mucosal resection, photodynamic therapy, radiofrequency ablation)

Intubation and drainage

- 3.3f Gastric lavage
- 3.3g Nasogastric/nasobiliary/nasoenteric
- 3.3h Stents
- 3.3i Percutaneous endoscopic feeding tubes
- 3.3j Decompression
- 3.3k Paracentesis

Excision and Extraction

- 3.3l Foreign body removal
- 3.3m Polyp removal
- 3.3n Stone retrieval and removal
- 3.3o Sphincterotomy

Other:

- 3.3p Transplantation (e.g., liver)
- 3.3q Dilatation

- 3.4 The gastroenterology nurse demonstrates knowledge of the common types of surgery used for gastrointestinal problems in order to prepare the patient regarding pre and postoperative care.
- 3.5 The gastroenterology nurse demonstrates basic knowledge of signs and symptoms of potential gastroenterological emergencies or complications arising from gastroenterological procedures or other causes:
 - 3.5a Gastroenterological tract perforation
 - 3.5b Gastroenterological hemorrhage
 - 3.5c Vasovagal syndrome
 - 3.5d Aspiration
 - 3.5e Pancreatitis/cholangitis/bile leaks
 - 3.5f Toxic megacolon
 - 3.5g Foreign body
 - 3.5h Obstruction
 - 3.5i Other emergencies (i.e., ileus)

4 Care of the Gastroenterology Patient

- 4.1 Collection of data

The gastroenterology nurse:

 - 4.1.1 Selects the method(s) of collection using all appropriate sources (e.g., family, previous health records, lab, community services, etc.).
 - 4.1.2 Collects the relevant objective and subjective data.
 - 4.1.3 Performs a physical assessment appropriate to the patient's condition.
 - 4.1.4 Identifies relevant risk factors including genetics, life style and environmental exposures.
- 4.2 Interpretation of data

Based on the data obtained, the gastroenterology nurse:

 - 4.2.1 Interprets data and results.
 - 4.2.2 Identifies the most significant results and problem areas.
 - 4.2.3 Formulates a nursing diagnosis.
 - 4.2.4 Recognizes a crisis situation.

4.3 Identification of outcomes

The gastroenterology nurse:

4.3.1 Identifies expected outcomes.

4.3.2 Collaborates with the patient and other members of the health care team to set realistic goals.

4.4 Implementation of care plan:

The gastroenterology nurse develops a holistic care plan to help achieve patient goals:

4.4.1 Coordinates the sequence of diagnostic procedures for gastroenterological investigation.

4.4.2 Identifies priorities for nursing actions considering available resources and environmental limitations.

4.4.3 Plans for the safety of patient, nurse and others through appropriate measures (e.g., infection control).

4.4.4 Delegates to and supervises auxiliary personnel.

4.4.5 Demonstrates awareness of psychological aspects of gastroenterological disease (body image, eating disorders, morbid obesity) and consults with appropriate health care professionals to determine the plan of care.

4.4.6 Demonstrates understanding of psychosocial and physical impact (incontinence, fistula, etc.) of therapies or gastroenterological disease.

4.4.7 Demonstrates knowledge of the assessment and management of pain.

4.5 The gastroenterological nurse evaluates the effectiveness of care based on expected outcomes:

4.5.1 Monitors patient condition and modifies care plan accordingly.

4.5.2 Develops a discharge plan in conjunction with team members.

4.5.3 Communicates with members of the multidisciplinary team through documentation and other appropriate means.

4.6 The gastroenterological nurse provides teaching and patient/family education:

4.6.1 Demonstrates an awareness of strategies for prevention and health promotion (e.g. lifestyle modifications).

4.6.2 Utilizes various teaching methods.

4.6.3 Communicates in a manner and level that is understandable to the patient.

4.6.4 Selects the appropriate information to be communicated (depending on time, patient, situation).

- 4.6.5 Identifies the persons with whom to communicate about prevention and/or lifestyle changes.
- 4.6.6 Demonstrates an understanding of the advantages of early detection for some gastroenterological disorders.
- 4.6.7 Demonstrates an awareness of support groups and other resources and refers appropriately.

5 Performance Assurance

5.1 Infection Control and Environmental Safety

The gastroenterology nurse:

- 5.1.1 Demonstrates knowledge of the general principles of disinfection and sterilization of equipment (as described for example, in the Canadian Society of Gastroenterology Nurses and Associates Guidelines or in other referenced guidelines).
- 5.1.2 Demonstrates an understanding of risk factors related to the care of the patient and the safety of the health care team (e.g., patients with infectious diseases, positioning, equipment, environment, radiation)

5.2 Ethics

The gastroenterology nurse:

- 5.2.1 Practises according to the Canadian Nurses Association (CNA) Code of Ethics for Registered Nurses.
- 5.2.2 Provides patients and families with the information required to make informed decisions.
- 5.2.3 Demonstrates support of patients and families in their decisions.
- 5.2.4 Demonstrates respect for patients' religious, cultural and personal values.
- 5.2.5 Recognizes potential ethical dilemmas related to decision-making regarding end-of-life support.

5.3 Research

The gastroenterology nurse:

- 5.3.1 Demonstrates a basic understanding of the research process and implications for gastroenterology practice.
- 5.3.2 Demonstrates an ability to read gastroenterology research articles and draw clinical interpretation from the research data.
- 5.3.3 Demonstrates a basic understanding of the concepts of incidence and prevalence as they apply to gastroenterological disease.

- 5.3.4 Demonstrates a basic understanding of how genetic factors or other factors (environmental, lifestyle, etc.) impact on gastroenterological disease.
- 5.3.5 Demonstrates the use of best practice to improve quality patient care.
- 5.3.6 Demonstrates awareness of the applicability of different outcome measures.