

Medical Council of Canada



**GUIDELINES FOR THE
DEVELOPMENT
OF THE
MEDICAL COUNCIL OF CANADA
OBJECTIVES**

November 2010

Introduction

The Medical Council of Canada (MCC) *Objectives for the Qualifying Examination* identifies attributes expected of medical graduates entering supervised and independent practice in Canada. The Objectives have been defined in behavioural terms and reflect the content of the MCC's qualifying examinations. The Objectives are intended for medical experts who create examination questions, for candidates preparing for the MCC examinations, for educators, and for medical assessment organizations throughout the world.

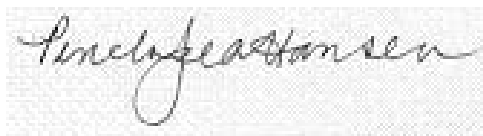
The Objectives are updated on an ongoing basis. In 2009, the MCC reclassified the Objectives based on physicians' roles as defined by The Royal College of Physicians and Surgeons' CanMEDS (Canadian Medical Education Directives for Specialists) roles framework. This classification includes the roles of communicator, collaborator, health advocate, manager, scholar, professional and expert. This framework is now used extensively in Canada and recognized worldwide.

Dear Colleagues:

As a member of the Objectives Committee of the Medical Council of Canada (MCC) or as a guest participant of the Committee, you will be assigned to participate in the review and development of the Objectives. The MCC provides a guide that will help you to develop the skills you will need to do this task. The Objectives determine MCC examination material, and your role will be to ensure that this information is based on the most up-to-date medical knowledge and is presented using the best information technology available.

We thank the Objectives Committee members whose dedication and expertise have brought the Objectives to their present state of achievement. We are grateful for the thorough review and editorial comments provided by Ms. Jenefer Kaser, who so diligently created this guide. We sincerely appreciate the significant contributions that others at MCC have made to this project, namely, Robert Lee, David Miller, Tanya Bennett, Réjeanne Nasrallah, and Anna Di Medio.

We trust you will find this guide useful. If you have comments or suggestions for improving it, please forward them to us through the MCC Objectives e-mail address at: Objectives@mcc.ca.



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Framework for Content Editing and Writing the MCC Objectives

Each Objective is comprised of four sections:

1. Rationale
2. Causal Conditions
3. Key Objectives
4. Enabling Objectives

1. The **Rationale** may have any of the three following components, as applicable:

- Definition
- Frequency
- Urgency

Example:

Rationale

Acute diarrhea is defined as a disturbance of stool frequency and/or consistency. Diarrheal diseases are extremely common worldwide. Even in North America, morbidity and mortality are significant.

2. The **Causal Conditions** (*list not exhaustive*) is presented in outline format.

- Generally, the causal conditions are organized into diagnostic chunks, grouping conditions or diseases around either clinical or biomedical concepts; e.g., low-gradient ascites vs. high-gradient ascites.
- Categorization and organization should be considered carefully.
- The amount of detail and depth should be gauged to the level of medical school graduates and those with one year of postgraduate clinical medical training.
- Limit examples to just one or two of the more representative ones rather than creating a long list.
- Try to keep the language succinct and clear, avoiding teaching and excess verbiage. The point is to provide a quick list.

Examples, **Causal Conditions:**

TO DO	NOT TO DO
<p>Revised version:</p> <p>Causal Conditions (<i>list not exhaustive</i>)</p> <ol style="list-style-type: none"> 1. Infections <ol style="list-style-type: none"> a. Viruses b. Bacteria c. Parasites 2. Drugs or toxins 3. Ischemia 4. Inflammatory bowel disease 5. Metabolic disease (e.g., hyperthyroidism) 	<p>Too much detail, verbiage and teaching:</p> <p><u>Causal Conditions</u></p> <ol style="list-style-type: none"> 1. Infectious <ol style="list-style-type: none"> a. Diarrhea predominant <ol style="list-style-type: none"> i. Small bowel (classic history: profuse, watery stools, with relatively little pain) <ol style="list-style-type: none"> a) Viruses (Norwalk, rotavirus) b) Bacteria (<i>C. perfringens</i>, <i>V. cholerae</i>, <i>E. coli</i>, <i>Salmonella</i>, <i>Yersinia</i>) c) Parasites (Giardia) d) Drugs, toxins ii. Large bowel (classic history: small volume, bloody diarrhea with cramping) <ol style="list-style-type: none"> a) Bacteria (<i>Shigella</i>, <i>Campylobacter</i>, <i>E. coli O157</i>, <i>Salmonella</i>, <i>C. difficile</i>) b. Nausea and vomiting predominant (<i>B. cereus</i>, <i>S. aureus</i>) 2. Ischemic 3. Inflammatory <ol style="list-style-type: none"> a. Non-bloody (Crohn's ileitis, Crohn's colitis) b. Bloody (Ulcerative colitis, Crohn's colitis)

3. The **Key Objectives** provide a succinct statement or two about what is absolutely key to that presentation.
- The standard sentence that is used here is “Given a patient with presentation X, the candidate will diagnose the cause, severity, and complications, and will initiate an appropriate management plan.”

Example for *Diarrhea*: “Given a patient with acute diarrhea, the candidate will diagnose the cause, severity, and complications, and will initiate an appropriate management plan. Particular attention should be paid to the history of risk factors associated with specific organisms, and the assessment for such complications as volume loss and/or electrolyte abnormalities.”

- Some Objectives bypass the standard statement to begin with the key component in order to highlight that item. In such a case, the first sentence in the Key Objective might start, “Particular attention should be paid to...”
- Use your own judgment to modify this standard statement as needed especially in presentations where there is clearly a key component that stands out.

4. The **Enabling Objectives** contain three sections:
 1. clinical findings
 2. critical investigations
 3. management plan
1. “List and interpret relevant clinical findings.” This can include any or all of:
 - a. findings deemed critical on history, or
 - b. findings deemed critical on physical, or
 - c. diagnoses that are less frequent, but important to exclude
 2. “List and interpret relevant investigations.” This can include any or all of:
 - a. laboratory findings, or
 - b. radiological findings, or
 - c. other tests
 3. “Construct an effective management plan.” This can include any or all of:
 - pharmacological interventions, or
 - non-pharmacological interventions, or
 - surgical interventions, or
 - referrals

Language Notes for the Enabling Objectives

- Keep the language succinct and clear, avoiding teaching and excess verbiage.
- Use your own judgment to modify standard statements, as needed.
- Some wording options for **clinical findings** include:
 1. “[**List/select**] and interpret [**relevant/key/appropriate/essential/critical**] clinical findings [**including an appropriate history and physical examination to determine....**] [**with particular attention to....**]”
- Some wording options for **investigations** include:
 1. “[**List/select**] and interpret [**relevant/key/appropriate/essential/critical**] investigations [**needed to make the diagnosis**]”
 2. “Select laboratory studies to exlude...”
- Some wording options for **management** plan include:
 1. “Construct an effective [initial] management plan, including”
 - a. Select patients in need of referral for specialized care.
 2. “Select and refer patients for specialized care.”

- Try to begin lists in the Enabling Objectives section with action verbs such as “perform,” “explain,” “distinguish,” “demonstrate,” rather than nouns or non-action verbs that are difficult to measure such as “understand” or “know.”

Examples Enabling Objectives:

Good EXAMPLE (to do)	Bad example (NOT to do)
<p>Revised version: Enabling Objectives</p> <p>Given a patient with acute diarrhea, the candidate will</p> <ol style="list-style-type: none"> 1. list and interpret critical clinical findings, including <ol style="list-style-type: none"> a. differentiate small from large bowel diarrhea; b. identify potential risk factors for specific infections (e.g., travel); c. perform an appropriate history and physical examination to determine severity and complications (e.g., volume depletion, co-morbidities); 2. list and interpret critical investigations, including laboratory investigations and other tests (e.g., stool cultures, electrolytes); 3. construct an effective initial management plan, including <ol style="list-style-type: none"> a. initiate dietary interventions where appropriate; b. initiate rehydration where appropriate; c. initiate specific therapy only when indicated; d. refer to specialized care when indicated by the possible diagnosis or by the severity; e. alert the public health authorities when required. 	<p>Too much detail, verbiage and teaching: Enabling Objectives</p> <p>Given a patient with acute diarrhea, the candidate will</p> <ol style="list-style-type: none"> 1. list and interpret critical clinical findings, including <ol style="list-style-type: none"> a. differentiation of small bowel diarrhea (typically profuse, watery, with mild cramping) from colonic diarrhea (typically small volume, bloody, and painful); b. identification of the potential infectious risk factor for acquiring a given organism (antibiotic use, hospital/nursing home stay, suspicious foods, contacts, travel); c. determination of volume depletion level and illness severity (profuse watery diarrhea with dehydration and volume depletion, blood and mucus in stool, fever greater than 38.5°C, more than 6 unformed stools/day for over 48 hours, severe abdominal pain in patient over 50 years, the immune-compromised, and those over 70 years old); d. consideration for colonic ischemia as a cause, especially in patients with underlying vascular risk factors. Large bowel ischemia is generally a self-limiting process as opposed to small bowel ischemia, which often leads to catastrophic consequences (infarct);

Example of Old Objective –Do NOT use as a model: Acute Diarrhea

Rationale

Acute diarrhea is defined as a disturbance of stool frequency and consistency (more than 3 loose stools per day, also defined as greater than 200 g of stool per day) of less than 14 days' duration. Diarrheal diseases are extremely common worldwide. Even in North America, morbidity and mortality are significant.

Causal Conditions

1. Infectious
 - a. Diarrhea predominant
 - i. Small bowel (classic history: profuse, watery stools, with relatively little pain)
 - a) Viruses (Norwalk, rotavirus)
 - b) Bacteria (*C. perfringens*, *V. cholerae*, *E. coli*, *Salmonella*, *Yersinia*)
 - c) Parasites (Giardia)
 - d) Drugs, toxins
 - ii. Large bowel (classic history: small volume, bloody diarrhea with cramping)
 - a) Bacteria (*Shigella*, *Campylobacter*, *E. coli O157*, *Salmonella*, *C. difficile*)
 - b. Nausea and vomiting predominant (*B. cereus*, *S. aureus*)
2. Ischemic
3. Inflammatory
 - a. Non-bloody (Crohn's ileitis, Crohn's colitis)
 - b. Bloody (Ulcerative colitis, Crohn's colitis)

Key Objectives

Given a patient with acute diarrhea, the candidate will diagnose the cause, severity, and complications, and will initiate an appropriate management plan. Particular attention should be paid to the history of risk factors associated with specific organisms, and the assessment for such complications as volume loss and/or electrolytes abnormalities.

Enabling Objectives

Given a patient with acute diarrhea, the candidate will

1. list and interpret critical clinical findings, including
 - a. differentiation of small bowel diarrhea (typically profuse, watery, with mild cramping) from colonic diarrhea (typically small volume, bloody, and painful);
 - b. identification of the potential infectious risk factor for acquiring a given organism (antibiotic use, hospital/nursing home stay, suspicious foods, contacts, travel);
 - c. determination of volume depletion level and illness severity (profuse watery diarrhea with dehydration and volume depletion, blood and mucus in stool, fever greater than 38.5°C, more than 6 unformed stools/day for over 48 hours, severe abdominal pain in patient over 50 years, the immune-compromised, and those over 70 years old);

- d. consideration for colonic ischemia as a cause, especially in patients with underlying vascular risk factors. Large bowel ischemia is generally a self-limiting process as opposed to small bowel ischemia, which often leads to catastrophic consequences (infarct);
2. list and interpret critical investigations, including
 - a. selection of patients requiring stool culture and sensitivity, *C. difficile* toxin, ova and parasites, and Giardia antigen;
 - b. selection of patients with more severe diarrhea requiring testing for electrolyte depletion and renal dysfunction;
3. conduct an effective initial management plan, including
 - a. initiation of dietary interventions (fluids, bland diet) and possibly temporary lactose-free diet;
 - b. avoidance of anti-diarrheal agents if colonic process suspected (risk of toxic megacolon);
 - c. recognition that little evidence supports antibiotic therapy for many of the infections organisms, and in fact for *E. coli* O157, there is evidence in children of an increased risk of hemolytic-uremic syndrome associated with antibiotic treatment. Organisms where antibiotic treatment is definitely recommended: parasites, *Shigella*, *C.difficile*;
 - d. recognition of the need for more aggressive oral and IV rehydration strategies in some patients;
 - e. recognition that acute diarrhea may become chronic, and thus require specialized consultation and investigation such as endoscopy.

Revised version (June 2010)—may be used as an Objective Writing Model:

Acute Diarrhea

Rationale

Acute diarrhea is defined as a disturbance of stool frequency and/or consistency. Diarrheal diseases are extremely common worldwide. Even in North America, morbidity and mortality are significant.

Causal Conditions *(list not exhaustive)*

1. Infections
 - d. Viruses
 - e. Bacteria
 - f. Parasites
2. Drugs or toxins
3. Ischemia
4. Inflammatory bowel disease
5. Metabolic disease (e.g., hyperthyroidism)

“(list not exhaustive)” should always appear with this heading

Lists are kept concise

The use of “e.g.,” in parentheses is acceptable; however, examples should be limited to only one or two of the more representative items for this causal condition.

Key Objectives

Given a patient with acute diarrhea, the candidate will diagnose the cause, severity, and complications, and will initiate an appropriate management plan. Particular attention should be paid to the history of risk factors associated with specific causes and the assessment for such complications as volume loss or electrolyte imbalance.

Standard first sentence. May be omitted in certain Objectives where it is important to highlight key items.

Enabling Objectives

Given a patient with acute diarrhea, the candidate will

1. list and interpret critical clinical findings, including
 - a. differentiate small from large bowel diarrhea;
 - d. identify potential risk factors for specific infections;
 - e. perform an appropriate history and physical examination and complications (e.g., volume depletion, co-morbidities);
2. list and interpret critical investigations, including appropriate laboratory investigations and other tests (e.g., stool cultures, electrolytes);
3. construct an effective initial management plan, including
 - a. initiate dietary interventions where appropriate;
 - b. initiate rehydration where appropriate;
 - c. initiate specific therapy only when indicated;
 - d. refer to specialized care when indicated by the possible diagnosis or by the severity;
 - f. alert the public health authorities when required.

Wording may be changed here. Suggestion: “list and interpret relevant clinical findings, including an appropriate history and physical examination to determine...”

Wording may be changed here. Suggestion: “...including appropriate laboratory and radiological studies...”

Style Sheet

Objectives

Version date: Nov. 25, 2010

Dictionary: Merriam-Webster Collegiate (9th edition)

Style Guide: Chicago Manual of Style (CMS), 15th Ed., Scientific Style and Format, 6th Ed.

Outline format:

Numerals (1., 2., 3,...)

Lower case letters (a, b, c...)

Small Roman Numerals (i., ii., iii., ...)

Upper case Letters (A, B,C)

N-dashes (–).

Spelling	Punctuation
<p>--In the Roles, Canadian spelling is used.</p> <p>--In the presentations, American spelling is used.</p>	<p><u>_/_</u> ← There are no spaces for and/or (CMS 6.112)</p> <p>--Series comma is used as a general guideline</p> <p>--Outline format for Causal Conditions follows conventions for items in a vertical list (CMS 6.127)</p> <ul style="list-style-type: none">• Caps at beginning of list item• No end punctuation unless the item is a complete sentence <p>--Outline format for Enabling Objectives follows conventions for items in a vertical list punctuated as a sentence (CMS 6.129)</p> <ul style="list-style-type: none">• No colon to introduce list• No caps at the beginning of each item• End punctuation for each item is ; except when it is a complete sentence or the last item in a list, at which point it is a period.

<p>Punctuation in English</p> <p>--in the Enabling Objectives</p> <p>--“Given a patient with...the candidate will</p> <p>1. list and interpret critical findings, including</p> <p style="margin-left: 40px;">a. sdfasdjf;ldj kf;lkj;</p>	<p>Punctuation in French</p> <p>--in the Enabling Objectives (Objectifs Spécifiques):</p> <p>--“Dans le cas d’un patient présentant..., le candidat devra</p> <p>2. énumérer et interpréter les constatations cliniques cruciales,</p> <p style="margin-left: 40px;">a. sdfasdjf;ldj kf;lki:</p>
<p>Values and Units</p> <p>14 cm</p> <p>--CMS 9.18. There is a space between the number and the value.</p> <p>--L is the symbol to be used for litre</p>	<p>Punctuation in Objectives’ Titles</p> <p>() is used for a sub-class or sub-category; e.g., <i>Abdominal Pain (Upper)</i></p> <p>, is used for items that are different; e.g., <i>Allergies, Intolerances</i></p> <p>/ is used for items that are exactly the same, but have 2 different words for it; e.g., <i>Dysphagia / Difficulty Swallowing</i></p> <p>NOTE: Use a space before and after the / in a title</p>
<p>Symbols</p> <p>--Do not retain < and > . Replace with “greater than” or “less than.”</p> <p>--Replace +/- It usually means “with or without,” but verify.</p> <p>--Also replace / with words whenever possible. It usually can be replaced by “and” or “or,” but sometimes “and/or.” A query will need to be sent to a physician to verify which conjunction should be used in the particular context.</p>	<p>Punctuation for disease name</p> <p>--Do not use hypostrophe in disease names</p> <p>Use: “Gilbert syndrome” not “Gilbert’s syndrome”</p>
<p>Editing the Roles</p> <p>--Headings do not use a cap after the first letter</p> <p>--Headings do not have a period at the end</p> <p>--Use series commas</p> <p>--Canadian spelling</p>	<p>Misc. Notes</p> <p>--Acronyms: For the first reference, use the long version of the word spelled out with the acronym in (), even for common items such as CT, MRI and CBC. Subsequent references to that item within the same Objective may be made using only the acronym.</p> <p>--Where possible, eliminate “etc.”</p>

<p>--Generally adhere to Canadian Press Style Book</p>	<p>--Judicious use of “e.g.,” is acceptable --Where possible, eliminate “you” and “your” --Take out “very” as much as possible --Use “patients” instead of “the patient” --Use active and measurable verbs to begin the lists in the Enabling Objectives as much as possible (e.g., “explain,” “demonstrate”) --When there is only one item in a list, continue to use a bullet for ease of visual scanning online; e.g., list and interpret critical investigations, including</p> <ul style="list-style-type: none"> • laboratory investigations and other tests (e.g., stool cultures, electrolytes); <p>--the last item in the Enabling Objectives should use the verb “construct” not “conduct.”</p>
<p>Numbers</p> <p>--Spell out single-digit numbers and use numerals for all others (CMS, 9.6; CPS, p. 328)</p> <p>--Ordinal numbers (first, second, etc.): spell out ordinal numbers up to 10th, then use “st,” “nd,” “rd,” and “th” with the numeral; e.g., 23rd, 15th (CMS, 9.8)</p> <p>--Use commas to set off numbers of four or more figures except house, telephone, date, year and other serial numbers (CPS, p. 332); e.g., 163,542.</p> <p>--Use numerals for numbers up to 999,999. Above that, switch to words (CPS, p. 332)</p> <p>--For large numbers:</p> <ul style="list-style-type: none"> --If it’s a large number in the thousands, give a numeral; e.g., 1,000 patients; \$3,500. --Round numbers in the millions and billions are spelled out below ten (except for monetary values—see below); e.g., two million immunizations. --For monetary values in the millions and billions, write out the numeral even if it’s below 10, then spell out “million” or “billion”; e.g., \$1 billion. 	

Glossary

Note: Glossary items were searched either in the website, UptoDate (<http://www.uptodate.com>) or in Google Scholar for use of the term in medical journal articles published within the last five years. The term most consistently used in current medical articles was selected for the purposes of this glossary.

<p>A</p> <p>ACE I = angiotensin-converting enzyme inhibitor ASA = acetylsalicylic acid ALS = amyotrophic lateral sclerosis ARDS = acute respiratory distress syndrome ASD= atrial septic defect AVNRT = atrioventricular nodal reentrant tachycardia</p>	<p>B</p> <p>Bronchopulmonary BP = blood pressure</p>	<p>C</p> <p>CNS = central nervous system CMV = cytomegalovirus CT= computed tomography CBC = complete blood count celiac disease COPD = chronic obstructive pulmonary disease</p>
<p>D</p> <p>DVT = deep vein thrombosis DHEAS = dehydroepiandrosterone</p>	<p>E</p> <p>ECG = electrocardiography EMG = electromyography</p>	<p>F</p> <p>Framingham risk score FSH = follicle-stimulating hormone</p>
<p>G</p> <p>Gastroenteritis Gastroesophageal Genitourinary Gastrointestinal GER = gastroesophageal reflux GERD = gastroesophageal reflux disease GnRH = gonadotropin-releasing hormone GFR= glomerular filtration rate</p>	<p>H</p> <p>HDL = high-density lipoprotein</p>	<p>I</p> <p>Intracranial Intra-abdominal Intrathoracic Irritable bowel syndrome IV =intravenous Inflammatory bowel disease Immunocompromised IHD = ischemic heart disease Intrauterine growth restriction</p>

<p>J</p>	<p>K</p>	<p>L Life-threatening LDL = low-density lipoprotein LP(a) = lipoprotein (a) LCAT = lecithin-cholesterol acyltransferase LH = luteinizing hormone LBBB = left bundle branch block</p>
<p>M Maldigestion Malabsorption MSK = musculoskeletal Mullerian agenesis</p>	<p>N Nonmalignant NSAIDS= non-steroidal anti-inflammatory drugs Non-organic Non-ulcer nonvestibular</p>	<p>O Sphincter of Oddi</p>
<p>P PCI = percutaneous coronary intervention PTH = parathyroid hormone Presyncope PDA = patent ductus arteriosus PT = prothrombin time PTT = partial thromboplastin time</p>	<p>Q</p>	<p>R RAST = radioallergosorbent test RBBB= right bundle branch block rewarming</p>
<p>S SLE = systemic lupus erythematosus SGA infant = small-for-gestational-age infant</p>	<p>T TSH = thyroid-stimulating hormone TTP = thrombotic thrombocytopenic purpura TTKG = transtubular potassium concentration gradient T cell lymphoma TIA = transient ischemic attack</p>	<p>U Ultrasound</p>
<p>V VSD = ventricular septal defect</p>	<p>W WPW = Wolff-Parkinson-White syndrome</p>	<p>X/ Y/ Z</p>