

CONTENT DESCRIPTION
and GENERAL INFORMATION

Step 3



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CONTENTS

Introduction	2
Examination Format	2
Multiple-choice Items	3
<i>Primum</i> [®] Computer-based Case Simulations.....	3
Purpose and Design of the Examination	3
Content Description	5
Content Outline.....	5
Table 1: Step 3 MCQ Test Content Specifications	5
Table 2: Step 3 CCS Test Content Specifications.....	6
Physician Tasks/Competencies	6
Table 3: Step 3 MCQ Physician Tasks/Competencies Specifications	6
Table 4: Step 3 CCS Physician Tasks/Competencies Specifications	7
Step 3 MCQ Content and Competency Examples	8
Clinical Context of Step 3.....	11
Site of Care	11
Clinical Encounter Frames.....	12
<i>Primum</i> Computer-based Case Simulations Overview	13
Introduction.....	13
Description.....	13
Case Interface and Format	13
The Patient	14
The Health Care Network and Facility	15
Evaluative Objectives and Assessment of Your Performance	15
Responsibilities of the Physician	15
Frequently Asked Questions	17

Introduction

This booklet will help you prepare for the Step 3 component of the United States Medical Licensing Examination® (USMLE®).

Sample test materials and tutorials, as well as other informational materials, are available at the USMLE website (www.usmle.org).

You should also review relevant descriptions that appear in the *USMLE Bulletin of Information* at www.usmle.org/bulletin.

IMPORTANT:

- You **must** run the tutorial and practice materials to become familiar with the test software **prior to your test date**.
- The tutorial provided at the beginning of the Step 3 examination has fewer screens and less detailed information than the Step 3 practice materials tutorial on the USMLE website.
- The practice materials on the website include items with associated audio findings, pharmaceutical advertisements and scientific abstracts, and sequential item sets. You should become familiar with how these types of test items function before your test date.

Please visit the USMLE website (www.usmle.org) often to view announcements, regarding changes in test delivery software, and to access updated practice materials. You must obtain the most recent information before taking any USMLE examination.

The Step 3 examination consists of questions ("test items") presented in standard multiple-choice question (MCQ) formats, as described in the *USMLE Step 3 Sample Test Questions* booklet, and Primum® Computer-based Case Simulation (CCS), a test format that allows you to provide care for a simulated patient, as described on pages 13–21. The test items are divided into "blocks" and test item formats may vary within each block. You may want to study the following descriptions of item formats before you run the practice test items.

It is essential that you practice with the Primum® Computer-based Case Simulation (CCS) format on the computer prior to taking the examination. Experience shows that those who do not practice with the format and mechanics of managing the patients in *Primum* CCS are likely to be at a disadvantage when taking the cases under standardized testing conditions. At the time of your test appointment, an optional CCS tutorial will be offered, but no practice cases will be available.

Examination Format

Step 3 consists of multiple-choice items and computer-based case simulations, distributed according to the content specifications. The examination material is prepared by examination committees broadly representing the medical profession. The committees comprise recognized experts in their fields, including both academic and non-academic practitioners, as well as members of state medical licensing boards.

Step 3 is a two-day examination. The first day of testing includes 232 multiple-choice items divided into 6 blocks of 38 to 39 items; 60 minutes are allotted for completion of each block of test items. The first-day test session is approximately 7 hours including 45 minutes of break time and a 5-minute optional tutorial. Note that the amount of time available for breaks may be increased by finishing a block of test items or the optional tutorial before the allotted time expires.

There are approximately 9 hours in the test session on the second day. This day of testing includes a 5-minute optional tutorial followed by 180 multiple-choice items, divided into 6 blocks of 30 items; 45 minutes are allotted for completion of each block of test items. The second day also includes a 7-minute CCS tutorial. This is followed by 13 case simulations, each of which is allotted a maximum of 10 or 20 minutes of real time. A minimum of 45 minutes is available for break time. There is an optional survey at the end of the second day, which can be completed if time allows.

Multiple-choice Items. One-best-answer formats are used. Items may stand alone or may be grouped together as a set of 2 to 3 items. Some sets are considered sequential and function differently than other sets. It is important to study the descriptions in the *USMLE Step 3 Sample Test Questions* booklet. Test items present detailed clinical situations usually from the patient's perspective. The presentation may be supplemented by one or more pictorials or audio. Assessing the patient's situation in the context of his or her environment or family and clinical setting is an important element of many Step 3 questions.

Items with an associated pharmaceutical advertisement or scientific abstract are included in the examination. Each pharmaceutical advertisement or scientific abstract will appear as a 2- or 3-item set; you will see no more than 6 of these item sets in the examination.

Items written in patient chart format also may be included on the examination. The patient chart format is meant to provide patient information in clearly marked sections. It is meant to provide information in list instead of paragraph form in order to facilitate ease of reviewing information relevant to the accompanying question. Familiar medical abbreviations may be used within chart format items.

During the time allotted to complete the test items in a block, you may answer the items in any order (excluding sequential item sets), review responses, and change answers. After exiting a block, no further review of items or changing of answers within that block is possible. Practicing with the multiple-choice items on the USMLE website (www.usmle.org) will provide you with a realistic understanding of the computer interface and timing of the examination.

A table of normal laboratory values for frequently ordered laboratory tests, including standard international conversions, will be available as an online reference when you take the examination.

Primum[®] Computer-based Case Simulations. You will manage one case at a time. Free-text entry of patient orders and the advancement of simulated time to execute those orders is the primary means of interacting with the format. Buttons and check boxes are used for ordering a physical examination, advancing the clock, changing the patient's location, reviewing previously displayed information, and obtaining updates on the patient.

At the beginning of each case, you will see the clinical setting, starting simulated case time, and introductory patient information. Photographs and sounds will not be provided. Normal or reference laboratory values will be provided with each report; some tests will be accompanied by a clinical interpretation. **To manage patients using the *Primum* CCS software, it is essential that you complete the tutorial and sample cases provided on the USMLE website (www.usmle.org).**

Purpose and Design of the Examination

The Step 3 examination devotes attention to the importance of assessing the knowledge and skills of physicians who are assuming independent responsibility for providing general medical care to patients. The first day of the Step 3 examination is referred to as Foundations of Independent Practice (FIP), and the second day is referred to as Advanced Clinical Medicine (ACM).

Day 1

Step 3 Foundations of Independent Practice (FIP)

This test day focuses on assessment of knowledge of basic medical and scientific principles essential for effective health care. Content areas covered include application of foundational sciences; understanding of biostatistics and epidemiology/population health and interpretation of medical literature; and application of social sciences, including communication and interpersonal skills, medical ethics, systems-based practice, and patient safety. This test day also includes content assessing knowledge of diagnosis and management, particularly focused on knowledge of history and physical examination, diagnosis, and use of diagnostic studies. This test day consists solely of multiple-choice questions and includes some of the newer item formats, such as those based on scientific abstracts and pharmaceutical advertisements.

Day 2

Step 3 Advanced Clinical Medicine (ACM)

This test day focuses on assessment of the ability to apply comprehensive knowledge of health and disease in the context of patient management and the evolving manifestation of disease over time. Content areas covered include assessment of knowledge of diagnosis and management, particularly focused on prognosis and outcome; health maintenance and screening; therapeutics; and medical decision making. Knowledge of history and physical examination, diagnosis, and use of diagnostic studies also is assessed. This test day includes multiple-choice questions and computer-based case simulations.

Content Description

The content description that follows is not intended as a curriculum development or study guide, but rather models the range of challenges that will be met in the actual practice of medicine. It provides a flexible structure for test construction that can readily accommodate new topics, emerging content domains, and shifts in emphasis. The categorizations and content coverage are subject to change. Successful completion of at least one year of postgraduate training in a program accredited by the Accreditation Council for Graduate Medical Education or the American Osteopathic Association should be helpful preparation for Step 3.

Content Outline

All USMLE examinations are constructed from an integrated content outline. The outline is available at the USMLE website (www.usmle.org/pdfs/usmlecontentoutline.pdf). Content is organized according to general principles and individual organ systems. Test questions are classified in one of 18 major areas, depending on whether they focus on concepts and principles that are important across organ systems or within individual organ systems. Most organ systems are subdivided into normal and abnormal processes. They include subcategories of specific disease processes. In most instances, knowledge of normal processes is evaluated in the context of a disease process or specific pathology.

Table 1: Step 3 MCQ Test Content Specifications*

System	Range, %*
General Principles of Foundational Science**	1–3
Immune System, Blood & Lymphoreticular System, and Multisystem Processes/Disorders	6–8
Behavioral Health	4–6
Nervous System & Special Senses	8–10
Skin & Subcutaneous Tissue	4–6
Musculoskeletal System	5–7
Cardiovascular System	9–11
Respiratory System	8–10
Gastrointestinal System	6–8
Renal/Urinary & Male Reproductive Systems	4–6
Pregnancy/Childbirth & Female Reproductive System & Breast	7–9
Endocrine System	5–7
Biostatistics & Epidemiology/Population Health & Interpretation of the Medical Literature	11–13
Social Sciences: Communication Skills/Ethics/Patient Safety	7–9

* Percentages are subject to change at any time. See the USMLE website (www.usmle.org) for the most up-to-date information.

** The general principles category for the Step 3 examination includes test items concerning normal processes not limited to specific organ systems. These test items are typically related to normal development. Categories for individual organ systems include test questions concerning those normal and abnormal processes that are system-specific.

Table 2: Step 3 CCS Test Content Specifications

Only bolded categories are potentially covered in CCS cases.

System
General Principles of Foundational Science
Immune System, Blood & Lymphoreticular System, and Multisystem Processes/Disorders
Behavioral Health
Nervous System & Special Senses
Skin & Subcutaneous Tissue
Musculoskeletal System
Cardiovascular System
Respiratory System
Gastrointestinal System
Renal/Urinary & Male Reproductive Systems
Pregnancy/Childbirth & Female Reproductive System & Breast
Endocrine System
Biostatistics & Epidemiology/Population Health & Interpretation of the Medical Literature
Social Sciences: Communication Skills/Ethics/Patient Safety

Physician Tasks/Competencies

An additional organizing construct for Step 3 design is physician tasks and competencies. More information about the physician tasks and competencies outline is available at the USMLE website (<https://www.usmle.org/pdfs/tcom.pdf>).

Table 3. Step 3 MCQ Physician Tasks/Competencies Specifications

Competency	Range, %	Step 3 Foundations of Independent Practice (Day 1)	Step 3 Advanced Clinical Medicine (Day 2)
Medical Knowledge: Applying Foundational Science Concepts	11–12	✓	
Patient Care: Diagnosis	33–36	✓	✓
<i>History/Physical Exam</i>	5–9	✓	
<i>Laboratory/Diagnostic Studies</i>	9–12	✓	
<i>Diagnosis</i>	6–10	✓	
<i>Prognosis/Outcome</i>	8–11		✓
Patient Care: Management	32–35		✓
<i>Health Maintenance/Disease Prevention</i>	6–11		✓
<i>Pharmacotherapy</i>	9–13		✓
<i>Clinical Interventions</i>	5–9		✓
<i>Mixed Management</i>	6–11		✓
Practice-based Learning & Improvement	11–13	✓	
Communication/Professionalism/Systems-based Practice & Patient Safety	7–9	✓	

Table 4. Step 3 CCS Physician Tasks/Competencies Specifications

Only bolded categories are potentially covered in CCS cases.

Competency
Medical Knowledge: Applying Foundational Science Concepts
Patient Care: Diagnosis <i>History/Physical Exam</i> <i>Laboratory/Diagnostic Studies</i> <i>Diagnosis</i> <i>Prognosis/Outcome</i>
Patient Care: Management <i>Health Maintenance/Disease Prevention</i> <i>Pharmacotherapy</i> <i>Clinical Interventions</i> <i>Mixed Management</i>
Practice-based Learning & Improvement
Communication/Professionalism/Systems-based Practice & Patient Safety

Step 3 MCQ Content and Competency Examples

Examples of Multiple Choice Questions (MCQs) focused on each of the competencies and a sampling of topics from different areas of the content outline are shown below.

Competency: Medical Knowledge/Scientific Concepts, Applying Foundational Science concepts

Content Area: Central Nervous System

A 27-year-old man is brought to the emergency department by his roommates because of an inability to walk. He began to notice some problems with his balance 2 days ago, and his walking has become progressively worse since then. He had an episode of optic neuritis in the right eye 3 years ago. He is 157 cm (5 ft 2 in) tall and weighs 55 kg (121 lb); BMI is 22 kg/m². His temperature is 37°C (98.6°F), pulse is 55/min, respirations are 10/min, and blood pressure is 110/70 mm Hg. Examination shows spastic lower extremities and moderate weakness of the left lower extremity, more prominently in the flexor than in the extensor muscles. Deep tendon reflexes are normal in the upper extremities but hyperactive in the lower extremities, especially on the left. There is clonus at the left ankle. Proprioception and sensation to vibration are absent over the left lower extremity and decreased over the right lower extremity to the level of the hip. Sensation to pain and temperature is decreased at the lower costal margin and below, most pronounced on the right. Which of the following cell types is most affected by this patient's condition?

- (A) Astrocytes
- (B) Ependymal cells
- (C) Neurons
- (D) Oligodendrocytes
- (E) Schwann cells

Answer: D

Competency: Patient Care: Diagnosis

Content Area: Musculoskeletal System

A 2-year-old girl with sickle cell disease is brought to the emergency department by her parents because of painful swelling of her feet for the past 3 hours. Her temperature is 37.0°C (98.6°F). Physical examination shows swelling and tenderness of her feet; no other abnormal findings are noted. Results of laboratory studies are shown:

Hemoglobin	7.8 g/dL
WBC	13,000/mm ³
Neutrophils, segmented	60%
Lymphocytes	40%

Which of the following is the most likely diagnosis?

- (A) Bone infarction
- (B) *Escherichia coli* sepsis
- (C) Osteomyelitis
- (D) Pneumococcal sepsis
- (E) Staphylococcal sepsis

Answer: A

Competency: Communication

Content Area: Social Sciences

A 54-year-old woman with severe rheumatoid arthritis comes to the office for a routine follow-up examination. Rheumatoid arthritis was diagnosed at age 35 years, and the patient has been unable to work for the past 10 years. She has difficulty bathing and dressing, but she is able to stand and walk independently. Medical history is otherwise unremarkable. Medications include etanercept, methotrexate, prednisone, and tramadol. She tells you that her husband of 30 years left her 6 months ago. She appears depressed. Vital signs are normal. Physical examination discloses marked joint deformities in the hands, wrists, shoulders, and feet; the findings are unchanged from previous visits. The patient says, "I cannot continue to live as I am. I've had it." Which of the following is the most appropriate response?

- (A) "Do you think you're depressed? I can help with that."
- (B) "Have you considered moving to an assisted living facility where your quality of life could be much better?"
- (C) "I know just how you feel."
- (D) "I'd like to refer you to a counselor."
- (E) "Would you like to tell me more about why you feel this way?"

Answer: E

Competency: Professionalism

Content Area: Social Sciences

A 17-year-old boy is brought to the emergency department by a caregiver after sustaining a large knife wound to his left arm. The caregiver reports that the patient cut himself with a knife, but it is unknown whether this was a suicide attempt. The patient lives in a group home with three other individuals and the caregiver; it is apparent from talking to the patient that he has limited intellectual capacity. He has an appointed legal guardian who has been contacted and is due to arrive at the hospital in approximately 45 to 60 minutes. The patient's vital signs are temperature 36.5°C (97.7°F), pulse 134/min, respirations 22/min, and blood pressure 70/40 mm Hg. He appears pale and he has a large, blood-soaked towel wrapped around his left forearm. Removal of the towel discloses a 9-cm laceration with obvious arterial hemorrhage and tendon exposure. Examinations of the chest and abdomen are unremarkable. A pressure bandage is immediately applied and consultation is obtained with a surgeon, who wants to take the patient immediately to the operating room. Which of the following statements is most accurate regarding consent for this patient?

- (A) The caregiver can legally provide consent
- (B) The need for consent can be waived
- (C) The patient is emancipated and can legally give consent
- (D) Psychiatric clearance should be obtained for patient consent
- (E) Surgery must be delayed until the guardian arrives

Answer: B

Competency: Practice-based learning

Content Area: Biostatistics

A 24-year-old man and a 22-year-old woman come to the office for the first time for premarital evaluation and counseling. Neither of them has ever been sexually active, because they "want to wait" until after marriage to have sexual intercourse. Other discussion reveals that they have never had blood transfusions, used illicit drugs, or drunk excessive amounts of alcohol. They have heard about the test for HIV antibody and wonder whether they should obtain this test before marriage. Compared with persons who have multiple risk factors for HIV, which of the following statements best applies to this couple?

- (A) The negative predictive value of the test would be lower
- (B) The positive predictive value of the test would be lower
- (C) The sensitivity of the test would be higher
- (D) The sensitivity of the test would be lower
- (E) The specificity of the test would be lower

Answer: B

Competency: Patient Care

Content Area: General Principles

A previously healthy 54-year-old man comes to the emergency department at his wife's insistence 6 days after a stray dog bit his right leg while he and his wife were walking near the dog during a trip to South America. The bite punctured the skin. He immediately cleaned the wound thoroughly with soap and peroxide and has done so daily since the incident occurred. The area of the bite is not painful, and the patient has not had fever or chills. He takes no medications. He had a tetanus booster vaccination 3 years ago. Vital signs today are normal. Examination of the right lower extremity shows healing bite puncture wounds. There is minimal erythema and the area is not fluctuant. Lymph nodes in the groin are not palpable. Which of the following is the most appropriate next step?

- (A) Administer rabies vaccination
- (B) Administer tetanus immune globulin
- (C) Order cerebrospinal fluid analysis
- (D) Order an MRI of the brain and spine
- (E) No action is necessary at this time

Answer: A

Clinical Context of Step 3

The expected outcome of the USMLE process is a general unrestricted license to practice medicine without supervision. Step 3 is the final examination in the USMLE sequence. The test items and cases reflect the clinical situations that a general, as-yet undifferentiated physician might encounter within the context of a specific setting. Although you already may have begun specialist training, for this examination, you are expected to assume the role of a general, as-yet undifferentiated physician. You are a member of an independent group practice affiliated with a number of managed care organizations. Your office has regularly scheduled hours. You can admit patients to a 400-bed regional hospital, which provides care for both the urban and the outlying rural communities. The hospital provides standard diagnostic, radiologic, and therapeutic options, including ICUs and cardiothoracic surgery. There is a labor and delivery suite. A fully equipped emergency department adjoins the hospital, and medical evacuation helicopter service is available for emergency transfer to a regional trauma center. You do not have specialty-oriented hospital privileges, but you may request any specialty consultation. Laboratory values provided in the *USMLE Step 3 Sample Test Questions* booklet are the normal ranges for this hospital.

Step 3 patients reflect the diversity of health care populations with respect to age, gender, cultural group, and occupation. The patient population mix is intended to be representative of data collected from various national health care databases in the United States.

Site of Care

The physician-patient encounters described in Step 3 multiple-choice items are usually associated with a site of care in which the encounter first occurs. There are three sites of care, which are described below.

Ambulatory: includes office/health center, home care, outpatient hospice, and ambulatory surgical center. You primarily see patients in two locations: an office suite, which is adjacent to a hospital, and at a community-based health center. Patients are seen for routine and urgent care. The laboratory and radiology departments have a full range of services available. Your office practice is in a primary care generalist group. Occasionally you will see a patient cared for by one of your associates and reference may be made to the patient's medical records. Known patients may be managed by telephone. You may have to respond to questions about information appearing in the public media, which will require interpretation of the medical literature.

Inpatient Facilities: includes hospital, ICU/CCU, inpatient hospice, acute rehabilitation facility, and subacute rehabilitation facility, including skilled nursing care facility. You have general admitting privileges to the hospital including to the children's and women's services. On occasion you see patients in the critical care unit. Postoperative patients are usually seen in their rooms unless the recovery room is specified. You may also be called to see patients in the psychiatric unit. There is a short-stay unit where you may see patients undergoing same-day operations or being held for observation. Also, you may visit patients in the adjacent nursing care facility/extended-care facility and detoxification unit.

Emergency Department: includes emergency department and urgent treatment center. Most patients in the emergency department are new to you and are seeking urgent care, but occasionally you arrange to meet there with a known patient who has telephoned you. Also available to you is a full range of social services, including rape crisis intervention, family support, and security assistance backed up by local police.

Clinical Encounter Frames

Step 3 clinical encounter frames encompass several elements that are critical to the definition of a patient-physician encounter. These elements include whether the problem or concern is new or ongoing, the urgency of the need for intervention relative to the underlying problem, the chronology of events, and the degree of familiarity with the patient or the patient's history.

Table 5: Step 3 Clinical Encounter Frames

	INITIAL WORKUP	CONTINUING CARE	URGENT INTERVENTION
PATIENT ENCOUNTERS	Characterized by initial assessment and management of clinical problems among patients seen principally in ambulatory settings for the first time . These encounters may also include new problems arising in patients for whom a history is available.	Characterized by continuing management of previously diagnosed clinical problems among patients known to the physician and seen principally in ambulatory settings . Encounters focused on health maintenance are located in this frame. Also included are encounters characterized by acute exacerbations or complications, principally of chronic, progressive conditions among patients known to the physician. These encounters may occur in inpatient settings .	Characterized by prompt assessment and management of life-threatening and organ-threatening emergencies, usually occurring in emergency department settings . Occasionally, these encounters may occur in the context of hospitalized patients.
CLINICAL PROBLEMS	Include ill-defined signs and symptoms; behavioral-emotional; acute limited; and initial manifestation and presentation of chronic illness.	Include frequently occurring chronic diseases and behavioral-emotional problems. Periodic health evaluations of established patients are included here.	Include severe life-threatening and organ-threatening conditions and exacerbations of chronic illness.
PHYSICIAN TASKS	Include data gathering and initial clinical intervention. Assessment of patients may lead to urgent intervention.	Include recognition of new problems in an existing condition, assessment of severity, establishing prognosis, monitoring therapy, and long-term management.	Include rapid assessment of complex presentations, assessment of patients' deteriorating condition, and prompt decision making.

Primum[®] Computer-based Case Simulations (CCS) Overview

Introduction

This overview, in combination with frequently asked questions (FAQs), software instructions, and practice cases is intended to prepare you for an examination that includes *Primum* Computer-based Case Simulations (CCS) software. You will use the *Primum* software to manage one patient at a time. Each case will be presented in a consistent format and appearance; the patient management options will be the same in all cases.

You will be better prepared to manage CCS cases if you practice with the *Primum* software on the USMLE website (www.usmle.org) prior to taking the examination. **Practice with *Primum* cases can have a positive impact on performance.** It is essential that you become familiar with both the software interface and the background information provided. Cases are allotted varying amounts of maximum real time, but you may not need to use the entire time.

Description

Each *Primum* case is a dynamic, interactive simulation of a patient-care situation designed to evaluate your approach to clinical management, including diagnosis, treatment, and monitoring. The cases provide a means for observing your application of medical knowledge in a variety of patient care situations and settings over varying periods of simulated time. As simulated time passes, a patient's condition may change based on the course of the underlying medical condition(s), or your management, or both. Patients may present with acute problems to be managed within a few minutes of simulated time or with chronic problems to be managed over several months of simulated time.

The cases used in the CCS portion of the Step 3 examination are based upon a CCS examination blueprint. The blueprint defines the requirements for CCS examination forms. The CCS blueprint is used to construct CCS examination forms focusing primarily on presenting symptoms and presenting locations. Presenting symptoms are related to the USMLE Content Outline and include, but are not limited to, problems of the circulatory, digestive, renal/urinary, endocrine/metabolic, behavioral/emotional, respiratory, and reproductive systems. Presenting locations include the outpatient office, emergency department, inpatient unit, intensive care unit, and the patient's home.

Case Interface and Format

You will manage patients using the *Primum* software. Information about a patient's condition will be displayed on the computer screen. At the start of each case, you will receive a brief description of the reason for the encounter and the patient's appearance and status along with the vital signs and history. You must initiate appropriate management and continue care as the patient's condition changes over simulated time. Patient information will be provided to you in response to your requests for interval history and physical examination findings, tests, therapies, and procedures. Requests for interval history and physical examination automatically advance the clock in simulated time. To see results of tests and procedures and to observe effects of treatment, **you must advance the clock in simulated time.**

Physical examination should be ordered if and when you would do the same with a real patient. You can begin management by selecting the desired components of a physical examination, writing orders before examining a patient, changing the patient's location, or advancing the clock in simulated time. If physical examination reveals findings that you believe render selected orders inappropriate, and the orders have not yet been processed, you can cancel those orders by clicking on the order and confirming the cancellation. At subsequent intervals of your choosing, you can also request interval histories, which are analogous to asking the patient, "How are you?"

You will provide patient care and management actions by typing on the order sheet section of the patient chart. The order sheet enables you to request tests, therapies, procedures, consultations, and nursing orders representing a range of diagnostic and therapeutic management options. It is also your means of giving advice or counseling a

patient (eg, "smoking cessation," "low-fat diet," "safe-sex techniques"). The order sheet has a free-text entry format; you can type whatever you want. It is not necessary, however, to type commands (eg, "administer," "draw"). The "clerk" recognizes thousands of different entries typed in different ways. As long as the clerk recognizes the **first three characters** of the name or acronym (eg, "xra," "ECG"), you will be prompted for clarification and shown a list of orders beginning with those three characters.

Note: You can place orders only in the order sheet section of the patient chart. You cannot place orders on any other section of the chart (ie, Progress Notes, Vital Signs, Lab Reports, Imaging, Other Tests, Treatment Record).

In some locations (eg, the office, the inpatient unit), there may be cases where a patient already has orders on the order sheet at the beginning of the case. In these situations, the existing orders will be displayed on the order sheet (eg, "oral contraceptive") with an order time of Day 1 @00:00. You must decide whether to continue or cancel the orders as you deem appropriate for the patient's condition; these orders remain active throughout the case unless canceled.

Advancing the clock is what "makes things happen." You must advance the clock in simulated time to see results of tests and procedures, and to observe effects of treatment. After you enter and confirm all the orders you deem appropriate at a given time, you will see report times displayed on the order sheet. You must advance the clock to the indicated report times or the next time you wish to evaluate the patient in order to receive the study result and observe the effect of therapies. **Note:** In CCS numeric lab tests, normal ranges are included with the results; these normal ranges may differ slightly from those in the MCQ portion of the examination.

As simulated time passes, you might receive notification of change in a patient's condition through messages from the patient or the patient's family or from other health care providers if the patient is in a setting such as the hospital. You decide whether these messages affect your management plan.

Note that if a clock advance to a requested appointment time is stopped for any reason, the requested appointment is canceled. Also note that if you advance the clock in simulated time and no results are pending, the case will advance to the next patient update or to the end of the case.

Cases end under different circumstances and after varying amounts of simulated and real time. A case will end when you reach the maximum allotted real time. Alternatively, a case may end when you have demonstrated your skills sufficiently. Encountering the Case-end Instructions screen before you think you are finished managing a patient does not necessarily mean you did something right or wrong. Once you are prompted with the Case-end Instructions screen, real time permitting, you will have a few minutes to finalize your orders and review the chart. At this point you can cancel orders and add new ones. Note that after receiving the Case-End instructions screen, you cannot order physical examination components, change the patient's location, order a follow-up appointment, or see the results of any pending tests. After finalizing patient care, you **must** select Exit Case to exit the case.

If a case has not ended and you feel you have finished management of the case, you can end it by advancing simulated time. Use the clock as you normally would to receive results of pending tests and procedures. Once there are no longer any pending patient updates, tests, or procedures, use the clock to advance simulated time until the case ends.

The Patient

Simulated patients may be from any age group, ethnicity, or socioeconomic background and may present with well-defined or poorly defined problems. Patients may present with acute or chronic problems, or they may be seeking routine health care or health maintenance with or without underlying conditions. Assume that each patient you are managing has already given his or her consent for any available procedure or therapy, unless you receive a message to the contrary. In the case of a child or an infant, assume the legal guardians have given consent as well.

The Health Care Network and Facility

In the *Primum* CCS health care network, you have an outpatient office shared with colleagues across specialty areas. Your office hours are Monday through Friday from 09:00 to 17:00. The hospital facility, a 400-bed regional referral center with an emergency department, is available 24 hours a day. Standard diagnostic and therapeutic options are available; no experimental options are available. The emergency department is a 24-hour facility, and the intensive care unit is available for medical (including coronary), surgical, obstetric, pediatric, and neonatal patients. At the start of each case, you will be informed of the presenting location. You should change a patient's location as you deem appropriate.

Surgical and labor/delivery facilities are available as well as both inpatient and outpatient laboratory and imaging services; however, you cannot transfer patients to these locations directly. *Primum* CCS staff will arrange for transfer of patients to these locations for you.

Evaluative Objectives and Assessment of Your Performance

Primum CCS measures those skills a physician demonstrates in managing a patient over time with the notable exception of skills that require human interaction (eg, history taking, physical examination, providing emotional support, etc.). Specific measurement objectives, designed as part of each case simulation, assess competency in managing a patient with a particular problem or health care need in the context of a specific health care setting.

The timing and sequencing of indicated actions, as well as the commission of actions that are not indicated or are potentially harmful, are aggregated in your evaluation. Indicated patient management actions are weighted based on degree of appropriateness and may increase your score by different amounts. Actions that are not indicated and pose greater potential risk to a patient decrease your score by greater amounts than do actions of lower risk. Seemingly correct management decisions made in a suboptimal or incorrect sequence or after a delay in simulated time may receive little or no credit. Note that some orders (eg, counseling, diet, ambulation) tend to carry little or no weight in scoring unless they are particularly relevant to the case (eg, specific diet orders for a patient with diabetes).

Management of patients consistent with widely accepted standards of care will achieve a high score, although multiple correct approaches may exist. For example, a very efficient approach such as an expert might take would earn a high score; however, a more thorough approach would not necessarily deduct from your score. Also, taking an innovative but well-documented and accepted approach may achieve the same high score. Note that in some cases there may be very little for you to do to manage a patient. In those instances, you will be scored on your ability to recognize situations in which the most appropriate action is to refrain from, or defer, testing and treatment. You will be scored lower if you take an aggressive approach when restraint and observation are the standard of care. The best overall strategy is to balance efficiency with thoroughness based upon your clinical judgment.

Cost is accounted for indirectly based on the relative inappropriateness of patient management actions. If you order something that is unnecessary and excessive, your score will decrease. In considering various options including the location in which you manage the patient, you need to decide whether the additional cost is warranted for better patient care.

The scoring process uses algorithms that represent codified expert physician-defined criteria. These criteria allow for variations in care protocols among health care settings and systems. The performance criteria are obtained from expert physicians who are experienced in training physicians and in caring for patients. For each case, the input of expert generalists and specialists is obtained to ensure that performance criteria are reasonable for any general, undifferentiated physician practicing medicine in an unsupervised setting.

Responsibilities of the Physician

In the simulation, you should function as a primary care physician who is responsible for managing each simulated patient. Management involves addressing a patient's problem(s) and/or concern(s) by obtaining physical

examination results, diagnostic information, providing treatment, monitoring patient status and response to interventions, scheduling appointments and, when appropriate, attending to health maintenance screenings and patient education. You will manage one patient at a time and should continue to manage each patient until the end-of-case screen is displayed.

In the generalist role, you must manage your patient in both inpatient and outpatient settings. Sometimes this may involve management in more than one location—initially caring for a patient in the emergency department, admitting the patient to the hospital, and discharging and following the patient in the outpatient setting.

You should not assume that other members of the health care team (eg, nurses, consultants) will write or initiate orders for you. Some orders (eg, "vital signs" at the beginning of a case and upon change of location) may be done for you, but you should not make assumptions regarding other orders. For example, orders usually requested to monitor a patient's condition, such as a cardiac monitor and pulse oximetry, are not automatically ordered. You are responsible for determining needs and for making all patient management decisions, whether or not you would be expected to do so in a real-life situation (eg, ordering IV fluids, surgical procedures, or consultations). If you order a procedure for which you are not trained, the medical staff in *Primum* cases will either assist you or take primary responsibility for implementing your request.

As in real life, consultants should be called upon as you deem appropriate. Typically, consultants are not helpful since computer-based case simulations are designed to assess your patient management skills. However, requesting consultation at appropriate times may contribute to your score. In some cases, it may be necessary to implement a course of action without the advice of a consultant or before a consultant is able to see your patient. In other cases, a consultant may be helpful only if called after you have obtained enough information to justify referring the patient to his or her care.

Primum[®] Computer-based Case Simulations (CCS) Frequently Asked Questions (FAQs)

1. What are my responsibilities?

You should function as a primary care physician and maintain responsibility for the patient in all management locations throughout each case.

Do not assume that other members of the health care team (eg, nurses, medical consultants) will write or initiate orders for you when a patient is admitted to a facility or transferred for a surgical procedure. Responsibility for the primary care of the patient may include (but is not limited to) all of the following:

- Ordering laboratory tests, imaging studies, and diagnostic procedures
- Changing management locations as necessary
- Initiating and modifying treatment regimens
- Handling life-threatening emergencies
- Monitoring the patient's condition over simulated time
- Preparatory patient care that, if neglected, might jeopardize the patient (eg, in the preoperative setting, this may mean requesting IV fluids, a blood type and crossmatch, and antibiotics)
- Addressing health maintenance issues. **Note:** The nature of each case dictates whether or not health maintenance issues are relevant within the simulated time frame.

Your responsibilities for each patient are fulfilled when the case has ended.

2. How do I manage a patient?

Primum CCS allows you to manage only one patient at a time. There is no option available to assess or treat anyone other than the patient. However, it is possible to order education or counseling for the patient's family or sexual partner. You manage one patient at a time by:

Reviewing the history

An initial history is given to you at the beginning of each case. Throughout the case, you may periodically ask how a patient feels by ordering an interval/follow-up history or monitor the patient by ordering a physical examination. Any information not included in the history or physical examination is normal or noncontributory for your patient.

Selecting physical examination components

Physical examination should be requested if and when you would do the same with a real patient. Requests for interval history and physical examination automatically advance the clock in simulated time.

Writing orders on the chart

The order sheet is the primary means for implementing your patient management plan. At any time, you may type requests for tests, procedures, and therapies directly on the order sheet.

Advancing simulated time to execute orders, obtain diagnostic information, and observe the effects of treatment by selecting the clock option

To see results of tests and procedures and to observe effects of treatment, you must advance the clock. When you do so, your orders are implemented, test results are returned, and therapies are initiated. As you advance the clock, the patient's condition may change based upon the underlying condition(s), your management, or both. Note that if a clock advance to a requested appointment time is stopped to review results from processed orders, the requested appointment is canceled.

Changing the patient's location

Change the patient's location by selecting the "Change Location" button. You can move the patient to and from home, office, emergency department, inpatient unit, and intensive care unit. **Note:** You will not be able to change the patient's location after the Case-end Instructions screen is presented.

3. How do I write/cancel orders?

You write orders by typing your requests on the order sheet section of the patient chart, one per line. You can place orders **only** in the order sheet section of the patient chart. You cannot place orders while you are in any other section of the chart (eg, Progress Notes, Vital Signs, Lab Reports, Imaging, Other Tests, and Treatment Record).

Order recognition

If the clerk recognizes the first three characters of the name or acronym (eg, "xra," "ECG"), you will be shown a list of options that match your entry. If the clerk does not recognize your order, you may have to type it differently. It is not necessary to type commands (eg, "administer," "give," "do," "get"); simply type the name of a test, therapy, or procedure. You must request drugs by specific trade or generic name. The clerk does not accept drug class names such as "antacids" or "beta-blockers."

Routes of administration

Once you have selected an order from the list presented, you must also specify route and type of administration by selecting those options during the order confirmation process. Assume that "continuous" administration also encompasses periodic administration (eg, every 4 hours) if that is appropriate for the treatment. Note that intravenous fluids are not available as a "One Time/Bolus" order in *Primum* CCS. Available routes of administration include epidural (EP), intra-articular (IA), intramuscular (IM), inhalation (IN), intravenous (IV), ophthalmic (OP), otic (OT), oral (PO), rectal (RE), sublingual (SL), subcutaneous (SQ), topical (TP), and vaginal (VA).

Dosage and administration rates

It is not necessary to specify dosages or administration rates; these will not appear on the order sheet, but you can assume these have been optimized for your patient's condition.

To taper a medication, simply discontinue (cancel) it by clicking on the order and confirming the cancellation.

Medications cannot be administered prn. When a medication is indicated for the patient, order it. When it is no longer indicated, cancel it.

Medication duration is assumed to be optimal.

Canceling an order

To discontinue a therapy or cancel a test or procedure, select it on the order sheet and respond "yes" to the prompt.

The patient's current medication(s)

There may be cases in which a patient is on a medication at the beginning of the case. In these situations, the patient's current medication will be displayed on the order sheet (eg, "oral contraceptive"). These orders appear with an order time of Day 1 @00:00. When current medications are displayed on the order sheet, you must decide whether to continue or cancel the medication, as you deem appropriate for the patient's condition; these orders remain active throughout the case unless canceled.

Reviewing orders

Information that has already been presented can be reviewed at any time on the patient chart in the Progress Notes, Vital Signs, Lab Reports, Imaging, Other Tests, and Treatment Record sections. **Note:** You can write orders **only** in the Order sheet section of the chart.

4. How do I see order results?

After you write orders, you must advance the clock in simulated time to obtain results of diagnostic studies, monitor the patient's progress, or see the patient's response to therapies. Every diagnostic order placed on the order sheet will have a report time (the simulated time at which the result of that order will be displayed). Advancing the clock using the "With next available result" option will automatically advance the clock in simulated time to the next pending result.

5. How do I advance simulated time in a *Primum* CCS case?

Advancing the clock in simulated time in a *Primum* CCS case is what "makes things happen." To see the results of tests and procedures and to evaluate the effect of therapies, you *must* advance the clock in simulated time.

There are various ways to advance simulated time in *Primum* CCS cases. At the top of the chart, select the "Obtain Results or See Patient Later" button. Under the Reevaluate screen, you can advance simulated time by using one of the following options:

- Select a date on the calendar for future evaluation.
- To reevaluate the patient on a specific future date, choose "On" under Reevaluate Case. Select a date on the calendar or enter a future day and time.
- To select a relative time in the future, choose "In" under Reevaluate Case (eg, reevaluate patient in 3 hours).
- To advance the case to the time when your scheduled test result will be available, choose "With next available result" under Reevaluate Case. If no results are pending, the case will advance to the next patient update message or to the end of the case.
- To end the case (once you are satisfied that you have completed all necessary patient management), choose "Call/See me as needed" under Reevaluate Case. This will instruct the patient to call you as needed for future visits. Do not assume this means that the patient will be monitored.

In general, any pending test results or messages from the patient, the patient's family, or another member of the health care team will give you an option to stop simulated time. If there are no pending test results or patient updates, advancing the clock may take you to the end of simulated case time. At that point, you will receive the Case-end Instructions screen and have an opportunity to finalize your orders.

6. Can I change my mind or cancel an order?

You can change your mind at any point in the case by canceling orders and/or writing new orders. However, once you write an order and advance the clock to move forward in simulated time, you cannot go back. Therapies are initiated as soon as the clock is advanced in simulated time. Diagnostic orders and procedures cannot be canceled once the results are seen. As in real life, there is no opportunity to undo what has already been done.

Discontinue a therapy or cancel a test or procedure by selecting it on the order sheet and responding "yes" to the prompt. Canceling a medication, IV fluid, or therapy removes it from the order sheet. Canceling a test or procedure before a result is returned means the test/procedure has not been carried out.

7. When should I order a consultation?

Typically, consultants are not helpful since computer-based case simulations are designed to assess your patient management skills. However, requesting consultation at appropriate times may contribute to your score. In some cases, it may be necessary to implement a course of action without the advice of a consultant or before a consultant is able to see your patient. In other cases, a consultant may be helpful only if called after you have obtained enough information to justify referring the patient to his or her care.

8. What kind of feedback do I get while caring for the patient?

After advancing the clock in simulated time, you will receive results of diagnostic studies you requested and reports of changes in the patient's condition.

You may obtain intermittent reports about the patient's condition through messages from the patient, the patient's family, or other health care providers. You may also directly request information about the patient's current condition by ordering an interval/follow-up history.

It is possible that a patient's condition might worsen despite optimal care on your part. It is also conceivable that a patient's condition might improve with suboptimal care or no care. The effect of an intervention may not be seen until an appropriate amount of simulated time has passed. You can monitor the effect of interventions you order by ordering a diagnostic test or physical examination component that will reflect a change or improvement in the patient's condition. You must order the diagnostic test or physical examination component at a point in simulated time when you would expect a clinical improvement.

9. How long do cases last?

Simulated time

Cases can last from a few minutes to several weeks of **simulated** time. You are not told how much simulated time will elapse in each case. It is your responsibility to manage simulated time based upon your understanding of the urgency of the case. To move forward in simulated time, use the Advance the Clock option.

Real time

Cases will be allotted varying amounts of maximum **real** time to complete each case. Before you begin each case in the examination, you will be informed of the maximum real time allotted. However, you may not need to use the entire amount of available real time. The real time you actually use may vary based on your actions. For example, if you accomplish a case's measurement objectives quickly, that case may end in just a few minutes. Alternatively, if you do not provide appropriate intervention but continue to advance the clock in simulated time, the case may also end before the maximum allotted real time. Please note that if during the examination, you do not use all the allotted real time for a case, the "remaining" real time is **not** added to the allotted real time for any other case. **A case will end when you have demonstrated your skills sufficiently or you have run out of real or simulated time.**

10. How do I end a case?

If you have finished all patient management, you can end the case by advancing simulated time. Use the clock as you normally would to receive results of pending tests and procedures. Once there are no longer any pending patient updates, tests, or procedures, use the clock to advance simulated time until the case ends.

11. What do I do when the case ends?

Near the end of each case, you will be presented with the Case-end Instructions screen, which will notify you that the case will end shortly.

At that time, you will be given a few minutes to:

- Review all previously presented vital signs, test and imaging results, and patient updates using the chart tabs at the top of the screen.
- Write new orders to be done now or in the future.
- Cancel any pending tests or orders that you no longer wish to carry out or active therapies that you want to discontinue at that time.

After the Case-end Instructions screen is presented, you will **NOT** be able to:

- Order a physical exam or interval history
- Change the patient's location
- Receive the results for pending tests and diagnostic studies
- Schedule a follow-up appointment
- Advance the clock in simulated time

After finalizing patient care, you **must** select **Exit Case** to exit the case. You will then see an "END OF CASE" message.

12. What should I do if I have a computer problem?

In the event of a computer problem during a live examination, notify the proctor. A case may be restarted by testing center staff. **Only one restart per case is permitted.** If a case is restarted more than once, the restart restriction will prevent the interrupted case from being completed, and the next case will appear.

13. Where can I find more information about CCS and *Primum*?

A comprehensive overview on CCS and *Primum* can be found at www.usmle.org/practice-materials/index.html under the **Step 3 CCS** section. You can familiarize yourself with this portion of the Step 3 exam in the following ways:

- Watch an **Instructional Video** that illustrates how to run a case using the *Primum* software.
- Watch an **Animated Demo** on *Primum*'s various features and functions.
- Practice with six CCS cases and receive case-related feedback by downloading the **Tutorial and Practice Items for Multiple Choice Questions and *Primum* Computer-based Case Simulations (CCS)** (Windows only).
- Read the Feedback for Step 3 CCS Practice Cases to learn about the different types of management strategies and review examples of actions that would add to, subtract from, or have no effect on an examinee's score for each case.