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EXAMINATION CONTENT FOR DNP CERTIFICATION EXAMINATION

Under the guidance of the Council for the Advancement of Comprehensive Care and the National Board of Medical Examiners, the test questions for the Doctor of Nursing Practice Certification Examination focus on the knowledge and skills deemed important for clinical practice. The examination is constructed from an integrated content outline that organizes material along two dimensions.

Normal Conditions and Disease categories (Dimension 1) form the main axis for organizing the outline. The first section deals with normal development, basic concepts, and general principles. The remaining sections deal with individual organ systems.

Sections focusing on individual organ systems are subdivided according to the following clinical tasks (Dimension 2):

- Obtaining history and performing a physical exam
- Ordering diagnostic studies
- Formulating the most likely diagnosis and making a prognosis
- Caring for the patient, including health maintenance and disease prevention, clinical therapeutics and other interventions, and legal/ethical and health care system
- Understanding mechanisms of disease

A full content outline for the Doctor of Nursing Practice Certification Examination is provided. It describes the scope of the examination in detail. The content outline is not intended as a curriculum development or study guide. It provides a flexible structure for test construction that can readily accommodate new topics, emerging content domains, and shifts in emphasis. Broadly based learning that establishes a strong general foundation for clinical practice is the best preparation for the examination.

Disease Categories

General Principles
- Normal Development from Infancy Through Adulthood
- Ethics & Jurisprudence and Patient Safety
- Applied Biostatistics & Clinical Epidemiology

Disorders of Blood
- Infections
- Toxic Effects
- Malignant Neoplasias
- Anemias & Cytopenias
- Bleeding Disorders
- Splenic Disorders
- Reactions to Blood Components

Disorders of the Nervous System and Special Senses
- Infectious Diseases
- Trauma and Toxic Effects
- Neoplasms
- Cerebrovascular Diseases
- Degenerative/Developmental Disorders
- Neuromuscular/Degenerative Disorders
- Peripheral Nerves Diseases
- Headache & Movement Disorders
- Sleep Disorders
- Disorders of the Special Senses

Mental Disorders
- Disorders Originating in Infancy/Childhood/Adolescence
- Toxic Effects
- Substance Use Disorders
- Psychotic Disorders
- Mood Disorders
- Anxiety Disorders
- Somatoform Disorders
- Personality Disorders
- Eating Disorders & Other Impulse Control Disorders
- Psychosocial Disorders

Disorders of the Skin
- Infections
- Trauma & Toxic Effects
- Lumps/Tumors of the Skin
- Skin Eruptions
- Disorders of Nails/Hair/Sweat Glands

Disorders of the Musculoskeletal System
- Infections
- Traumatic Injuries
- Inflammatory & Immunologic Disorders
- Neoplasms
- Degenerative/Metabolic Disorders
- Hereditary Developmental Disorders

Disorders of the Respiratory System
- Lung Infections
- Trauma & Toxic Effects
- Neoplasms
- Obstructive Airways Disease
- Pneumoconiosis/Fibrosing or Restrictive Pulmonary Disorders
- Failure & Pulmonary Vascular Disorders
- Upper Respiratory Conditions

Cardiovascular Disorders
- Diseases of Myocardium & Pericardium
- Trauma & Toxic Effects
- Dysrhythmias
- Congestive Heart Failure
- Hypertensive Disease
- Ischemic Heart Disease & Atherosclerosis
- Hypotension
- Disorders of the Great Vessels
- Valvular Heart Disease
- Peripheral Arterial Vascular Disease
- Diseases of Veins
- Congenital Disease

Gastrointestinal Disorders
- Infections
- Trauma & Toxic Effects
- Nutritional Disorders
- Mouth, Salivary Glands, & Esophagus
- Stomach
- Gallbladder & Bile Duct
- Liver
- Pancreas
- Small Intestine/Colon & Rectum

Renal and Urinary Disorders
- Infections
- Trauma & Toxic Effects
- Upper Urinary Tract
- Lower Urinary Tract
- Fluid, Electrolyte, & Acid-Base Disorders

Disorders of the Male Reproductive System
- Infections
- Trauma & Toxic Effects

Female Reproductive System and Pregnancy
- Reproductive Disorders
  - Infections
  - Trauma & Toxic Effects
  - Neoplasms
  - Pelvic Relaxation & Urinary Disorders
  - Menstrual Disorders
  - Menopause
  - Female Fertility/Infertility
  - Breast
  - Vagina/Vulva
  - Cervix
  - Uterus
  - Disorders of Ovary, Fallopian Tube, & Broad Ligament

- Pregnancy/Labor & Delivery/Fetus & Newborn
  - Pregnancy: Complicated
  - Pregnancy: Uncomplicated
  - Labor, Delivery, & Postpartum
  - Fetus & Newborn
  - Perinatal Infections

Disorders of the Endocrine System
- Trauma & Toxic Effects
- Diabetes Mellitus
- Pituitary Disorders
- Thyroid Disorders
- Parathyroid Disorders
- Adrenal Disorders

Immunologic Disorders
- Infections
- Immune Deficiency Disorders
- HIV
- Vascular/Arterial Disorders
- Musculoskeletal/Connective Tissue Disorders
- Anaphylaxis/Immunologic Reactions
- Vaccinations/Chemotherapy

Clinical Task Objectives

History and Physical Examination
Diagnostic Studies
Diagnosis and Prognosis
Patient Care
- Health Maintenance and Disease Prevention
- Clinical Interventions
- Pharmacotherapy
- Communication

Mechanisms

Multiple Choice Test Question Formats

The following are strategies for answering one-best-answer questions (eg, Single Items and Multiple Item Sets):

- Read the patient description and question carefully. It is important to understand what is being asked.
- Try to generate an answer and then look for it in the option list.
- Alternatively, read each option carefully, eliminating those that are clearly incorrect.
- Of the remaining options, select the one that is most correct.
- If unsure about an answer, it is better to guess since unanswered questions are automatically counted as wrong answers.

Single Items

This is the traditional, most frequently used multiple-choice format. These items usually include a patient vignette followed by four or five response options. The response options for all questions are lettered (ie, A, B, C, D, E). You are required to select the best answer to the question. Other options may be partially correct, but there is only ONE BEST answer.

Example Question 1

1. A 45-year-old African-American man comes to the office for the first time because he says, "I had blood in my urine when I went to the bathroom this morning." He reports no other symptoms. On physical examination his kidneys are palpable bilaterally and he has mild hypertension. Specific additional history should be obtained regarding which of the following?

A. Chronic use of analgesics
B. Cigarette smoking
C. Family history of renal disease
D. Occupational exposure to carbon tetrachloride
E. Recent sore throats

(Answer C)

Multiple Item Sets

A single patient-centered vignette may be associated with two or three consecutive questions about the information presented. Each question is linked to the initial patient vignette but is testing a different point. Questions are designed to be answered independently of each other. You are required to select the one best answer to each question. Other options may be partially correct, but there is only ONE BEST answer.

Example Questions 2 to 4

A 38-year-old white woman, who is a part-time teacher and the mother of three children, comes to the office for evaluation of hypertension. You have been her physician since the birth of her first child 8 years ago. One week ago, an elevated blood pressure was detected during a regularly scheduled examination for entrance into graduate school. Vital signs on examination today are temperature 37.0°C (98.6°F), pulse 100/min, respirations 22/min, and blood pressure 164/100 mm Hg (right arm, supine).

2. The physical examination is most likely to show which of the following?

A. An abdominal bruit
B. Cardiac enlargement
C. Decreased femoral pulses
D. Thyroid enlargement
E. Normal retinas

(Answer E)

3. The most appropriate next step is to order which of the following?

A. Complete blood count
B. Determination of serum electrolyte and creatinine concentrations
C. Determination of serum glucose concentration
D. Determination of serum thyroxine concentration
E. Urine culture

(Answer B)

4. To assess this patient's risk factors for atherogenesis, the most appropriate test is determination of which of the following?

A. Plasma renin activity
B. Serum cholesterol concentration
C. Serum triglycerides concentration
D. Urinary aldosterone excretion
E. Urinary metanephrine excretion

(Answer B)
End of Set

Example Questions 5 to 7

A 24-year-old man comes to the office because of intermittent chest pain that began a few weeks ago. You have been his physician for the past 2 years and he has been in otherwise good health. He says he is not having pain currently. A review of his medical record shows that his serum cholesterol concentration was normal at a pre-employment physical examination 1 year ago. You have not seen him since that visit and he says he has had no other complaints or problems in the interim. He reminds you that he smokes 1 pack of cigarettes per day. When you question him further, he says that he does not use any alcohol or illicit drugs. Although the details are vague, he describes the chest pain as a substernal tightness that is definitely not related to exertion.

5. Which of the following findings on physical examination would be most consistent with costochondritis as the cause of his chest pain?

A. Crepitans over the second and third ribs anteriorly
B. Deep tenderness to hand pressure on the sternum
C. Localized point tenderness in the parasternal area
D. Pain on deep inspiration
E. Normal physical examination

(Answer C)

6. In light of the patient's original denial of drug use, which of the following is the most appropriate next step to confirm a diagnosis of cocaine use?

A. Ask the laboratory if serum is available for toxicologic screening on a previous blood sample
B. Call his family to obtain corroborative history
C. Obtain a plasma catecholamine concentration
D. Obtain a urine sample for routine analysis but also request toxicologic screening
E. Present your findings to the patient and confront him with the suspected diagnosis

(Answer E)

7. Cocaine use is confirmed. The patient admits a possible temporal relationship between his cocaine use and his chest pain and expresses concern about long-term health risks. The patient should be counseled regarding which of the following?

A. Cocaine-induced myocardial ischemia can be treated with blocking agents
B. Death can occur from cocaine-induced myocardial infarction or arrhythmia
C. The presence of neuropsychiatric sequelae from drug use indicates those at risk for sudden death associated with cocaine use
D. Q wave myocardial infarction occurs only with smoked 'crack' or intravenous cocaine use
E. Underlying coronary artery disease is the principal risk for sudden death associated with cocaine use

(Answer B)

End of Set

Primum® Computer-based Case Simulations Overview

Introduction

This overview, in combination with frequently asked questions (FAQs), software instructions, and the practice case is intended to prepare you for an examination that uses *Primum* Computer-based Case Simulations (CCS) software. You will use the *Primum* program 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 have a more meaningful experience if you practice with the *Primum* software prior to taking the examination. Experience and practice with *Primum* cases can have an impact on performance. It is essential that you become familiar with both the software interface and the background information provided. You will be allotted a maximum of real time for each case (eg, 25 minutes), but you may not need to use the entire time.

Description of *Primum* Computer-based Case Simulations (CCS)

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 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.

Presenting symptoms are related 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.

Physical examination should be requested if and when you would do the same with a real patient. You can select a complete physical examination or parts of a physical examination. You can write orders before examining a patient; if physical examination reveals findings that you believe render the orders inappropriate, and the orders have not yet been processed, you can cancel those orders. At subsequent intervals of your choosing, you can also request interval histories, which are analogous to asking the patient, "How are you?"

You will initiate 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 (ie, you will be shown a list of orders beginning with "xra" or the acronym "ECG" respectively, including different types of x-rays and electrocardiograms). You can only place orders 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 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 contraceptives"). These orders appear with an order time of Day 1 @00:00. 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.

You must advance the clock to see results of tests and procedures, and to observe effects of treatment. (Note that in real life, laboratory values fluctuate a small amount each time they are measured on the same patient; successive *Primum* CCS laboratory test results may reflect this normal variation. The amount of variation is usually very small and should not affect your interpretation of serial values.) In CCS numeric lab tests, normal ranges are included with the results. Note that these normal ranges may differ slightly from those in the MCQ portion of the test.
Advancing the clock is what "makes things happen." You select the appropriate clock option after you have confirmed all the orders you need at a given time. When there is nothing else you wish to do for a patient, advance the clock to the next time you wish to evaluate the patient, check results of previously ordered studies, and observe the effect of therapies. As simulated time passes, you might receive notification of a 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 after reviewing results from processed orders, the requested appointment is canceled. Also note that if no results are pending, the case will advance to the next patient update or 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 "End of Case" 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 "End of Case" screen, real time permitting, you will have a few minutes to finalize your orders and review the chart. You can cancel orders and add new ones. After finalizing patient care, you **must** select Exit Case to enter the final diagnosis and exit the case. If you use the entire 5 minutes allotted at case end, you **will not** be able to enter a final diagnosis.

If a case has not ended and you feel you are finished with 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, continue to use the clock to advance simulated time until the case ends.

The Patient
Simulated patients may be from any age group, ethnic, or socioeconomic background and may present with well-defined or poorly defined problems. Patients may present with acute or chronic problems or 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 that 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. The 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 current setting. 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 healthcare provider employs in managing a patient over time, with the notable exception of skills that require human interaction (eg, history taking, physical examination, education and counseling, 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. Individual appropriate 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 "routine" orders (eg, 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.

Diagnoses and reasons for consultations that you provide in *Primum* CCS will not be used in evaluating your performance at this time, unless needed to investigate unusual test-taking behaviors or response patterns.

The scoring process uses algorithms that represent the codified policies of experienced healthcare providers. These policies allow for wide variations in care protocols among health care settings and systems.

Responsibilities of the Healthcare Provider

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

Assume that you are the primary healthcare provider for each patient you manage. In this role, you must manage your patient in both inpatient and outpatient settings. Sometimes this may involve management in several locations — 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 routine 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 the exam is designed to assess your patient management skills. Nevertheless, you will be evaluated on whether or not you request the appropriate consultation when consultation is indicated. For example, if a surgical procedure is indicated, it may be appropriate for a primary healthcare provider to request consultation. However, 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.

Frequently Asked Questions (FAQs)

1. What is Primum® Computer-based Case Simulations (CCS) software?
Primum Computer-based Case Simulations (CCS) software presents an interactive, dynamic simulation of a patient-care situation designed to evaluate your approach to clinical management, including diagnosis, treatment, and monitoring. After viewing a description of the patient, initial vital signs, and an initial history, you obtain diagnostic information and manage the patient until the computer displays a message that the case has ended.

The key features of *Primum* CCS include:

- simulation of time (eg, minutes, hours, days, or months)
- health system locations (eg, you have an office with admitting privileges to a 400-bed tertiary care center)
- free-text entry of orders
- dynamic patient response based on your actions through simulated time

In this uncued testing environment, you have complete responsibility for your patient's care.

2. What are my responsibilities?
In the simulation, you should function as a primary healthcare provider and maintain responsibility for the patient throughout each case. This may involve management in several locations (eg, initially caring for a patient in the emergency department, admitting the patient to the hospital, and managing the patient in the outpatient setting). You should 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. You are not required to write preoperative anesthesia or related orders when someone else is conducting a procedure for you. However, you should attend to other preparatory patient care that, if neglected, might jeopardize the patient. For example, in the preoperative setting, this may mean requesting IV fluids, a blood type and crossmatch, and antibiotics.
In various cases, your duties may include addressing health maintenance issues, handling life-threatening emergencies, monitoring the effects of treatment, and modifying treatment regimens. The nature of each case dictates whether or not health maintenance issues are relevant within the simulated time frame.
Your responsibilities to each patient are fulfilled when you see a message indicating that the case has ended.

3. How do I manage a patient?
You manage one patient at a time by:

- reviewing the history
- selecting a complete or directed physical examination
- writing orders on the chart
- deciding when, in simulated time, to obtain follow-up history and physical examination or review diagnostic information by selecting the clock option
- changing the patient's location as you deem appropriate. Note: You will not be able to change the patient’s location after the case-end warning screen is presented.

Based upon information you gather and changes in the patient's condition, you continue to manage the patient through these options.

Since *Primum* CCS is not designed to assess your ability to complete a history, much of this information is given to you. You may periodically ask how a patient feels by ordering an interval/follow-up history or monitoring the patient by physical examination. If you believe information is missing from the history or physical examination, assume it is normal or noncontributory for your patient. 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. To see results of tests and procedures, and to observe effects of treatment, you must advance the clock.. You can write orders before examining a patient; if physical examination reveals findings that you believe render the orders inappropriate, and the orders have not yet been processed, you can cancel those orders.

The order sheet is the primary means for implementing your patient management plan. You type requests for tests, procedures, and therapies directly on the order sheet. Each time you confirm orders and want to “make things happen,” use the clock to advance time. 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), or 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.

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.

There are some orders in the cases that are not available in every location. If you request a location change with pending orders that are not available in the new location, you will receive a notification message indicating the order(s) that will be canceled.

Note that *Primum* CCS only allows you to manage one patient at a time. Although in real life you order certain tests or therapies for the relatives or sexual partner of your patient, this option is not available in *Primum* CCS. It is possible, however, to order education or counseling for the patient's family or sexual partner. The timing and sequence of indicated actions, including education and counseling, are evaluated and may affect your score.

4. 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. The *Primum* "clerk" understands more than 12,000 different terms representing about 2,500 unique orders. As long as the clerk recognizes the first three characters of the name or acronym (eg, "xra, " "ECG") you will be prompted for clarification (ie, you will be shown a list of orders beginning with "xra" or the acronym "ECG," respectively, including different types of x-rays and electrocardiograms). You can only place orders 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).

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 (eg, "chest x-ray," "ecg," "pen g," "furosemide," "laparoscopy").

You must request specific drugs by name; the clerk recognizes both generic and trade names. However, the clerk does not accept class names such as "antacids" or "beta-blockers." You must also specify route and type of administration (eg, one-time/bolus or continuous). Assume that "continuous" 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). 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 it. If tapering is optimal, it will be done for you. If you decide that you need to reorder the medication while it is being tapered, assume that the patient has already been tapered from the medication without adverse consequences.

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

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

In some locations (eg, the office, the inpatient unit), there may be cases where 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 contraceptives"). These orders appear with an order time of Day 1 @00:00. 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. The same cancellation steps provided in the previous paragraph also apply to these orders.

5. What am I supposed to do after I write orders?
After you write orders, you advance the clock to obtain results of diagnostic studies and/or to monitor the patient's progress. You are not necessarily finished once you make the diagnosis. In many cases, you must initiate treatment, monitor progress, call consultants, arrange appropriate follow-up, and provide education or other social support.

Once you have managed the patient to your satisfaction, decide when you would like to follow up and advance the clock to that time. If you can think of no other immediate or future care that is relevant to the patient's current condition, schedule an appointment for a time when you would like to reevaluate (eg, a week, a month, or a year from now).

6. Can I change my mind?
You can change your mind at any point in the case by canceling orders and/or writing new orders. However, once you advance the clock and move forward in simulated time, you cannot go back. As in real life, there is no opportunity to undo what has already been done. If previously requested actions or delays in appropriate care cause untoward consequences, your score may be affected adversely.

Discontinue a therapy or cancel a test or procedure by selecting it on the order sheet and responding “yes” to the prompt.

7. Why are consultants usually not helpful?
Typically, consultants are not helpful since the exam is designed to assess your patient management skills. However, requesting consultation at appropriate times may contribute to your score. Consultants often indicate that you should initiate treatment in their absence or directly order the surgical procedure you want. 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 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?
While you care for a patient, you receive results of diagnostic studies you requested and reports of changes in the patient's condition. (Note that in real life, laboratory values fluctuate a small amount each time they are measured on the same patient; successive *Primum* CCS laboratory test results reflect this normal variation. The amount of variation is usually very small and should not affect your interpretation of serial values.) In CCS numeric lab tests, normal ranges are included with the results. Note that these normal ranges may differ slightly from those in the MCQ portion of the test.

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 interval/follow-up histories.

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. Scores will be based upon the diagnostic and therapeutic decisions you make, as well as the timing and sequencing of your actions, and not necessarily on a patient's final disposition.

Note that interventions ordered at the same time as diagnostic studies will not be reflected in the results. Interventions don't take effect until an amount of time has passed appropriate for the intervention.

To be certain that a diagnostic test result reflects the intervention, identify the completion time for the intervention on the order sheet and order the respective diagnostic test at that time. If the completion time is not defined or if the intervention's effect is gradual (eg, antibiotics), you must order the diagnostic test at that time when you would expect a clinical effect.

9. How long do cases last?
Cases can last from a few minutes to several months 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.

The **real** time allotted to manage each patient may vary with the type of case and your actions. You will be allotted a maximum of 25 minutes per case, but you may not need to use the entire time. For example, if you accomplish a case's measurement objectives quickly, it may end in a few minutes. Before you begin each case in the examination, you will be informed of the maximum time allotted.

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.

10. How do I know when I have finished a case?
Near the end of each case, you will be warned that the case is ending shortly. At that time, you will be given a few minutes to cancel existing orders and/or write new orders for the immediate or future care of problems related to the patient's current condition. You will not be able to change the patient's location or order a physical exam after the case-end warning is presented. After finalizing patient care, you **must** select **Exit Case** to enter the final diagnosis and exit the case. If you use the entire 5 minutes allotted at case end, you **will not** be able to enter a final diagnosis. You will then see an "END OF CASE" message.

If a case has not ended and you feel you are finished managing 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, continue to use the clock to advance simulated time until the case ends.

11. Does computer experience matter?
Assuming that you take the time to familiarize yourself with the basic operations of the computer (eg, use of the keyboard, mouse, etc), computer experience should not affect your performance. Experience and practice with *Primum* cases can have an impact on performance. It is essential that you become familiar with both the software interface and the background information provided.

12. How is my performance scored?
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. Individual appropriate 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 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 the importance of the timeliness of your actions varies in nonurgent cases; your score may be affected by the timeliness of your response based on the case. "Routine" orders (eg, 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. Diagnoses and reasons for consultations that you provide in *Primum* CCS will not be used in evaluating your performance at this time, unless needed to investigate unusual test-taking behaviors or response patterns.

The scoring process uses algorithms that represent the codified policies of experienced healthcare providers. These policies allow for wide variations in care protocols among health care settings and systems.

13. Are there differences in practice and live case functionality?

There are no differences between case functionality with the practice *Primum* Computer-based Case Simulations (CCS) software and the cases on the examination. However, there are several differences related to how the case is presented in practice and how they are presented in the examination. These differences are summarized below.

- During the examination, the cases are presented one at a time with a specified and limited amount of real time indicated for each case.
- In the event of a computer problem during a live examination, a case simulation 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 simulation from being completed and the next case will appear.
- During the examination, it may take longer to process history and physical exam requests; order tests, therapies, or procedures; advance the clock; and change location. This is due to increased network computer resource requirements on the examination.
- Prior to the start of **each** case in the examination, a screen is displayed indicating the amount of real time allotted for that case.
- After completion of each case during the examination, a screen is displayed that asks if the examinee would like to take a break.

LABORATORY VALUES

* Included in the Biochemical Profile

BLOOD, PLASMA, SERUM	REFERENCE RANGE	SI REFERENCE INTERVALS
* Alanine aminotransferase (ALT), serum	10-40 U/L	10-40 U/L
* Alkaline phosphatase, serum	Male: 30-100 U/L	Male: 30-100 U/L
	Female: 45-115 U/L	Female: 45-115 U/L
Amylase, serum	25-125 U/L	25-125 U/L
* Aspartate aminotransferase (AST), serum	15-40 U/L	15-40 U/L
* Bilirubin, serum (adult), total // direct	0.1-1.0 mg/dL // 0.0-0.3 mg/dL	2-17 μmol/L // 0-5 μmol/L
Calcium, serum (total)	8.4-10.2 mg/dL	2.1-2.8 mmol/L
* Cholesterol, serum		
Total	150-240 mg/dL	3.9-6.2 mmol/L
HDL	30-70 mg/dL	0.8-1.8 mmol/L
LDL	<160 mg/dL	<4.2 mmol/L
Cortisol, serum	8:00 AM: 5-23 μg/dL // 4:00 PM: 3-15 μg/dL	138-635 nmol/L // 82-413 nmol/L
	8:00 PM: # 50% of 8:00 AM	Fraction of 8:00 AM: # 0.50
Creatine kinase, serum	Male: 25-90 U/L	25-90 U/L
	Female: 10-70 U/L	10-70 U/L
* Creatinine, serum	0.6-1.2 mg/dL	53-106 μmol/L
Electrolytes, serum		
* Sodium (Na^+)	135-146 mEq/L	135-146 mmol/L
* Potassium (K^+)	3.5-5.0 mEq/L	3.5-5.0 mmol/L
* Chloride (Cl^-)	95-105 mEq/L	95-105 mmol/L
* Bicarbonate (HCO_3^-)	22-28 mEq/L	22-28 mmol/L
Magnesium (Mg^{2+})	1.5-2.0 mg/dL	1.5-2.0 mmol/L
Ferritin, serum	Male: 15-200 ng/mL	15-200 μg/L
	Female: 12-150 ng/mL	12-150 μg/L
Follicle-stimulating hormone, serum/plasma	Male: 4-25 mIU/mL	4-25 U/L
	Female: premenopause 4-30 mIU/mL	4-30 U/L
	midcycle peak 10-90 mIU/mL	10-90 U/L
	postmenopause 40-250 mIU/mL	40-250 U/L
Gases, arterial blood (room air)		
P_{O_2}	75-100 mm Hg	10.0-14.0 kPa
P_{CO_2}	35-45 mm Hg	4.4-5.9 kPa
pH	7.35-7.45	$[H^+]$ 36-44 nmol/L
* Glucose, serum	Fasting: 70-110 mg/dL	3.8-6.1 mmol/L
	2-h postprandial: < 120 mg/dL	< 6.6 mmol/L
Immunoglobulins, serum		
IgA	76-390 mg/dL	0.76-3.90 g/L
IgE	0-380 IU/mL	0-380 kIU/L
IgG	650-1500 mg/dL	6.5-15 g/L
IgM	40-345 mg/dL	0.4-3.45 g/L
Iron	50-170 μg/dL	9-30 μmol/L
Lactate dehydrogenase, serum	45-90 U/L	45-90 U/L
Luteinizing hormone, serum/plasma	Male: 6-23 mIU/mL	6-23 U/L
	Female: follicular phase 5-30 mIU/mL	5-30 U/L
	midcycle 75-150 mIU/mL	75-150 U/L
	postmenopause 30-200 mIU/mL	30-200 U/L
Osmolality, serum	275-295 mOsmol/kg H_2O	275-295 mOsmol/kg H_2O
Phosphorus (inorganic), serum	3.0-4.5 mg/dL	1.0-1.5 mmol/L
Proteins, serum		
Total (recumbent)	6.0-7.8 g/dL	60-78 g/L
Albumin	3.5-5.5 g/dL	35-55 g/L
Globulin	2.3-3.5 g/dL	23-35 g/L
Thyroid-stimulating hormone (TSH), serum	0.5-5.0 μU/mL	0.5-5.0 mU/L
Thyroxine (T_4), serum	5-12 μg/dL	64-155 nmol/L
Triglycerides	35-160 mg/dL	0.4-1.81 mmol/L
Triiodothyronine (T_3) resin uptake	25%-35%	0.25-0.35
* Urea nitrogen, serum	7-18 mg/dL	1.2-3.0 mmol/L
Uric acid, serum	3.0-8.2 mg/dL	0.18-0.48 mmol/L

CEREBROSPINAL FLUID	REFERENCE RANGE	SI REFERENCE INTERVALS
Cell count	0-5/mm^3	0-5 x 10^6/L
Chloride	118-132 mEq/L	118-132 mmol/L
Gamma globulin	3%-12% total proteins	0.03-0.12
Glucose	40-70 mg/dL	2.2-3.9 mmol/L
Pressure	70-180 mm H_2O	70-180 mm H_2O
Proteins, total	< 40 mg/dL	< 0.40 g/L
HEMATOLOGIC		
Bleeding time (template)	2-7 minutes	2-7 minutes
CD4 cell count	> 500/mm^3	
Erythrocyte count	Male: 4.3-5.9 million/mm^3	4.3-5.9 x 10^{12}/L
	Female: 3.5-5.5 million/mm^3	3.5-5.5 x 10^{12}/L
Erythrocyte sedimentation rate (Westergren)	Male: 0-15 mm/h	0-15 mm/h
	Female: 0-20 mm/h	0-20 mm/h
Hematocrit	Male: 41%-53%	0.41-0.53
	Female: 36%-46%	0.36-0.46
Hemoglobin, blood	Male: 13.5-17.5 g/dL	2.09-2.71 mmol/L
	Female: 12.0-16.0 g/dL	1.86-2.48 mmol/L
Hemoglobin A_{1c}	# 6%	# 0.06%
Leukocyte count and differential		
Leukocyte count	4500-11,000/mm^3	4.5-11.0 x 10^9/L
Neutrophils, segmented	54%-62%	0.54-0.62
Neutrophils, bands	3%-5%	0.03-0.05
Eosinophils	1%-3%	0.01-0.03
Basophils	0%-0.75%	0-0.0075
Lymphocytes	25%-33%	0.25-0.33
Monocytes	3%-7%	0.03-0.07
Mean corpuscular hemoglobin (MCH)	25-35 pg/cell	0.39-0.54 fmol/cell
Mean corpuscular hemoglobin concentration (MCHC)	31%-36% Hb/cell	4.81-5.58 mmol Hb/L
Mean corpuscular volume (MCV)	80-100 μm^3	80-100 fL
Partial thromboplastin time (activated)	< 28 seconds	< 28 seconds
Platelet count	150,000-400,000/mm^3	150-400 x 10^9/L
Prothrombin time	< 12 seconds	< 12 seconds
Reticulocyte count	0.5%-1.5%	0.005-0.015
Volume		
Plasma	Male: 25-43 mL/kg	0.025-0.043 L/kg
	Female: 28-45 mL/kg	0.028-0.045 L/kg
Red cell	Male: 20-36 mL/kg	0.020-0.036 L/kg
	Female: 19-31 mL/kg	0.019-0.031 L/kg
URINE		
Calcium	100-300 mg/24 h	2.5-7.5 mmol/24 h
Creatinine clearance	Male: 97-137 mL/min Female: 88-128 mL/min	
Osmolality	50-1400 mOsmol/kg H_2O	
Oxalate	8-40 µg/mL	90-445 µmol/L
Proteins, total	< 150 mg/24 h	< 0.15 g/24 h
BODY MASS INDEX	Rec=19-25 kg/m^2	

Answer Form for Sample Multiple Choice DNP Questions

Block 1

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____

Sample Multiple Choice DNP Questions

GENERAL INSTRUCTIONS: Read each question carefully and in the order in which it is presented. Then select the one best response option of the choices offered. There may be either 4 or 5 response options. More than one option may be partially correct. You must select the ONE BEST answer and fill in the corresponding blank on the answer sheet.

Some items are grouped together around a clinical vignette as a set or case; be particularly careful to read and answer these cases or sets of items in the order they are presented.

Block 1
Items 1–23; Time - 30 minutes

ALL ITEMS REQUIRE SELECTION OF ONE BEST CHOICE.

1. A 24-year-old woman comes to the office because of concerns about sexual function. The patient recently has remarried after being divorced from an abusive partner. She is currently unable to complete intercourse with her new husband due to intense vaginal pain on attempts at penetration. She was able to have intercourse successfully early in her first marriage. She is orgasmic with other stimulation but cannot tolerate digital or other penetration. Vital signs are: temperature 37.0°C (98.6°F), pulse 72/min, respirations 18/min and blood pressure 118/64 mm Hg. Physical examination is normal; however, the patient is unable to tolerate the speculum examination because of pain. Which of the following is the most likely mechanism for this condition?

   (A) Change in vaginal flora because of a new partner
   (B) Conversion disorder
   (C) Inadequate lubrication
   (D) Inflammation of vestibular glands
   (E) Vaginal muscle spasm

2. The lesion shown is of a 1-year-old girl who is brought to the office by her parents because they want a second opinion regarding the growth on her leg. The mother notes that it was small and flat at birth and has grown thicker in the past 6 months. The mother says, "My usual physician seems unconcerned, but my mother-in-law says it looks awful and that something should be done." The child is otherwise healthy. At this time it is most appropriate to tell the parents that the best cosmetic result will occur with which of the following?

   (A) Injection with a corticosteroid
   (B) Observation only
   (C) Radiation therapy
   (D) Surgical excision
   (E) Topical application of a corticosteroid

3. A 47-year-old Italian American man comes to the office for the first time for routine medical care. He has been referred to you by his psychiatrist who has informed you that the patient has paranoid personality disorder. The patient has no other medical problems at this time. He is unmarried, lives alone and has no close friends, but he occasionally attends family gatherings. He functions well working alone in a technical position in an engineering firm. Which of the following is the best way to structure the physician-patient relationship with this patient?

(A) Avoid giving him excessive details about possible, but infrequent, side effects and complications in order to avoid triggering his paranoia
(B) Explain the rationale for any diagnostic procedures and treatment regimens in some detail, adopting a professional, but not overly friendly stance
(C) Go out of your way to be warm and friendly so that he can develop trust in you
(D) Have his psychiatrist, with whom he has been working for several years, take the lead in presenting medical treatment options
(E) Try to communicate with his family or medical personnel when he is not present in order to overcome his withholding information because of distrust

Items 4–5

A 45-year-old woman is brought to the emergency department by her husband because of nausea, confusion, chills, fever, flank pain and cloudy urine. She has a history of insulin-dependent diabetes mellitus, poorly controlled hypertension and recurrent urinary tract infections. Her vital signs are:

Temperature	40.0°C (104.0°F)
Pulse	120/min
Respirations	24/min
Blood pressure	110/70 mm Hg

Funduscopic examination shows diabetic retinopathy, which the medical record shows to be unchanged from the patient's previous examination. Neck is supple. Lungs are clear to auscultation and percussion. Examination of the abdomen is normal. Marked pain is present at the right costovertebral angle. Several hemorrhagic bullous lesions are noted on the extremities.

4. Without prompt and aggressive treatment, this patient is most likely to develop which of the following?

(A) Diabetic ketoacidosis
(B) Hyperosmolar coma
(C) Meningitis
(D) Pneumonia
(E) Septic shock

5. If this patient were to develop anuria, which of the following would be the most likely cause?

(A) Acute papillary necrosis
(B) Bladder outlet obstruction
(C) Neurogenic bladder
(D) Renal lithiasis
(E) Tumor encroachment on the ureters

END OF SET

6. A recent, large clinical trial assessed the effect of digoxin on morbidity and mortality in patients with chronic congestive heart failure (CHF). In the trial, more than 7000 patients with left ventricular ejection fractions of 0.45 or less were randomly assigned to receive digoxin or placebo. All patients also were treated with diuretics and an angiotensin-converting enzyme (ACE) inhibitor. The patients were observed for an average of 37 months. During the clinical trial, 34.8% of patients treated with digoxin and 35.1% of patients treated with placebo died (relative risk=0.99; confidence interval 95%=0.91 to 1.07, *p*=0.80). The best interpretation of these data is that in combination with a diuretic and ACE inhibitor, digoxin results in which of the following?

   (A) A beneficial effect on mortality rates
   (B) A beneficial effect on patients with CHF
   (C) No conclusive evidence of effect because of the limited power of the study
   (D) No effect on CHF
   (E) No effect on mortality rates

7. A 33-year-old white woman asks you for a third opinion because two other physicians have been unsuccessful in alleviating her multiple symptoms. She complains of numbness in her face and a pain deep behind her left eye. She describes weakness in her upper extremities and a "clumsy right hand." She says she intermittently wets her pants. She relates her history in an emotional fashion and emphasizes that the symptoms are all worse when the weather is hot. Physical examination discloses increased deep tendon reflexes in both biceps and triceps. There is temporal pallor and partial atrophy of the left optic nerve head. Which of the following studies will most likely confirm the diagnosis?

   (A) Cerebrospinal fluid analysis
   (B) Electromyography
   (C) Minnesota Multiphasic Personality Inventory
   (D) MRI of the head
   (E) Serum protein electrophoresis

8. A 28-year-old woman who is 20 weeks pregnant with her third child comes to the office for a routine prenatal visit. She has two healthy children, ages 7 and 5 years. Her previous pregnancies were uncomplicated except for a cesarean delivery of the first child. She began using cocaine soon after the birth of her second child, and she has been in and out of drug treatment programs for the past 3 years. She has used crack cocaine on and off throughout this pregnancy. You have encouraged her to seek help; however, she has made no attempt to abstain from using cocaine and she refuses to commit herself to another drug treatment program. In your attempt to persuade this patient to stop using cocaine, you advise her that if she continues to use cocaine during the pregnancy, she increases her risk for which of the following?

   (A) Chorioamnionitis
   (B) Gestational diabetes
   (C) Placental abruption
   (D) Placenta previa
   (E) Preeclampsia

9. A 76-year-old woman returns to the office because of aching and weakness in her arms to the point where she cannot lift her arm to brush her hair. Physical examination shows no muscle tenderness or other evidence of joint disease in both arms. The aching improves when she takes the prescribed nonsteroidal anti-inflammatory drug (NSAID). She also describes tenderness over the right parietal area of her scalp. Physical examination of the scalp shows no lesions. Which of the following is the most appropriate next step?

   (A) Increase the dose of the NSAID
   (B) Order determination of erythrocyte sedimentation rate
   (C) Order determination of serum rheumatoid factor
   (D) Order x-rays of the cervical spine
   (E) Refer her for psychiatric counseling

Items 10–11

An 18-year-old white high school student comes to the office in late August because of a stuffy nose for 1 week. He reminds you that he has had severe hay fever in the fall for the past 10 years. Review of his chart shows that he has positive skin tests to ragweed, dust and dust mites and is receiving maintenance immunotherapy with extracts of these antigens. He also takes over-the-counter antihistamines for symptomatic relief. This regimen has not provided relief so far this season. Physical examination is normal, apart from clear rhinorrhea. He is afebrile, and there is normal transillumination of the frontal and maxillary sinuses. In reviewing his medical records you note that smears of his nasal mucus contained large numbers of eosinophils. There is no record of any extensive immunologic work-up. You tell him that he now has either an early viral upper respiratory tract infection or the beginnings of his seasonal allergic rhinitis. You suggest that he use a corticosteroid nasal spray plus his usual antihistamines as needed. The appropriate treatment is undertaken, but 4 days later he returns because of a toothache and fever. He has right facial fullness and pain below his eye when he leans forward. There is tenderness in the region of the upper premolar and molar teeth on the right side. His temperature is 38.7°C (101.6°F), orally. He has bloody, thick, green mucus coming from his right nostril. The remainder of his physical examination is normal. You suspect maxillary sinusitis on the basis of the clinical findings.

10. Before beginning antibiotic treatment in this patient, it is necessary to first do which of the following?

    (A) Confirm the diagnosis with CT films of the sinus
    (B) Confirm the diagnosis with plain x-rays of the sinus
    (C) Confirm the diagnosis with transillumination of the sinus
    (D) Request consultation with a dentist
    (E) No additional steps are necessary

11. He is treated and initially feels much better. However, soon thereafter he develops a headache, right ear pain and painful stiff neck; he spikes a temperature to 39.3°C (102.7°F), orally. Extraocular movements are normal. Which of the following is the most likely explanation for these new symptoms?

    (A) Allergic reaction to the antibiotic(s)
    (B) Associated meningeal inflammation or infection
    (C) Development of cavernous sinus thrombosis
    (D) Direct spread of infection from the maxillary to the mastoid sinus
    (E) Obstruction of the orifice of the maxillary sinus with a mucous plug

END OF SET

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12. A 67-year-old woman who is a regular patient calls the office because she has developed severe muscle weakness, muscle cramps and polyuria. She began treatment 6 weeks ago with 50 mg of chlorthalidone daily for mild-to-moderate essential hypertension. The most likely explanation for her symptoms is the development of which of the following?

    (A) Diabetes mellitus
    (B) Hypokalemia
    (C) Hypomagnesemia
    (D) Hyponatremia
    (E) Metabolic acidosis

13. A 21-year-old man comes to the emergency department because he has become increasingly short of breath and has had a cough for the past week. He appears dyspneic and has a temperature of 38.3°C (101.0°F). On physical examination he has bibasilar rales and generalized lymphadenopathy (1 to 2 cm). Rectal examination shows multiple perianal contusions and a small amount of blood oozing from the anal orifice. Chest x-ray shows bilateral patchy alveolar infiltrates. The most appropriate course of action is to order blood tests and to do which of the following?

(A) Admit him to the hospital and begin administration of trimethoprim-sulfamethoxazole, intravenously
(B) Admit him to the hospital and begin administration of penicillin and gentamicin, intravenously
(C) Begin administration of erythromycin, orally, and recommend follow-up with his primary care physician tomorrow
(D) Prescribe isoniazid and rifampin, orally
(E) Recommend aspirin, fluids and rest at home

14. A 29-year-old Italian American woman comes to the office for her first prenatal visit. Her last menstrual period was 16 weeks ago. This is her first pregnancy; her family history is unremarkable. She has heard that people of Mediterranean ancestry are at risk for carrying a gene for β-thalassemia. She asks to be tested for this. Which of the following is the most appropriate initial diagnostic study?

(A) Complete blood count with red cell indices
(B) Hemoglobin electrophoresis
(C) Red cell osmotic fragility test
(D) Restriction-fragment length polymorphism (RFLP) analysis of her β-globin gene
(E) Reticulocyte count

Items 15–16

A 43-year-old teacher, who is the mother of three children, comes to the office for evaluation of high blood pressure. An elevated blood pressure was first detected 1 week ago during a routine screening at a health fair in a local shopping mall. On examination today her blood pressure is 145/95 mm Hg.

15. Which of the following is the most appropriate next step?

(A) Advise her to monitor her blood pressure twice a day at home and return to the office in 6 months
(B) Ask her to return for reexamination after her next menstrual cycle
(C) Ask her to return for reexamination in 2 weeks
(D) Ask her to return for reexamination in 4 months
(E) Measure her blood pressure after she exercises for 5 minutes

16. Hypertension is confirmed. She is started on a low-sodium diet and an antihypertensive medication. In addition, she should be advised that she should do which of the following?

(A) Maintain ideal body weight
(B) Restrict her physical activities
(C) Seek less stressful employment
(D) Take 300 mg of aspirin, daily
(E) Use a combination oral contraceptive

END OF SET

17. A 15-year-old boy comes to the office for a sports participation physical examination. He has been playing in a summer basketball league and now wants to try out for the high school team. His last physical examination was 2 years ago and, according to him, he has been healthy except for a cold 2 weeks ago. Before you begin the physical examination, the nurse informs you that his routine urinalysis shows:

Color	Tea-colored/dark	WBC	7/hpf
Specific gravity	1.030	RBC	>100/hpf, a few red cell casts
pH	5.5	Bacteria	Negative
Protein	2+	Glucose	Negative
		Ketones	Negative

These laboratory results are most indicative of which of the following?

(A) Cystitis
(B) Glomerulonephritis
(C) Nephrotic syndrome
(D) Pyelonephritis
(E) Renal calculi

18. A 34-year-old laborer comes to the office because of a 2-kg (5-lb) weight loss and an increased appetite. He has type 1 diabetes mellitus and has been taking insulin in divided doses. He says that home monitoring of his serum glucose concentration has shown values from 280 mg/dL to 320 mg/dL. Which of the following is the most appropriate management?

(A) Add metformin
(B) Change to another type of insulin
(C) Increase his caloric intake
(D) Increase his insulin dose
(E) Redistribute his caloric intake

19. A 23-year-old registered nurse comes to the employee health clinic because she says, "I'm too tired to work." She has had increasing fatigue, malaise and anorexia during the past several days. Laboratory studies show:

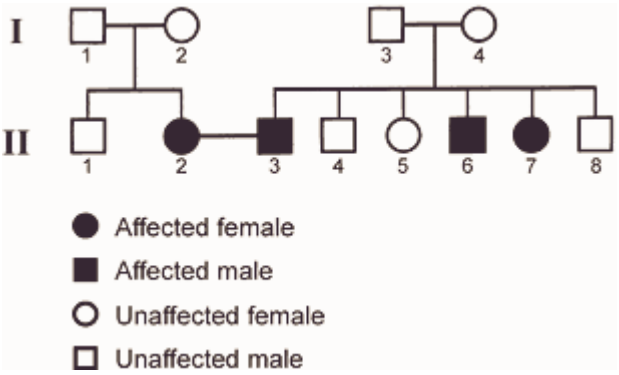
Serum		Blood	
ALT	1160 U/L	PT	13 sec
Bilirubin	1.8 mg/dL		
HBsAg	Positive		

She is instructed to rest at home and return in 3 days if no new symptoms develop. Two days after the visit she calls to say that she has now developed an urticarial rash and swelling of the joints of her fingers. At this time which of the following is the most correct statement about her condition?

(A) The arthritis and rash are the result of an associated immune complex disorder
(B) The arthritis and rash are unrelated to her liver disease
(C) It is unlikely that her blood is infectious
(D) She has a 50% risk for developing chronic liver disease
(E) She should be given hepatitis B immune globulin

20. A 12-month-old boy is brought to the office by his mother for his routine health check-up. She informs you that she has just been diagnosed with hypercholesterolemia. Her fasting serum total cholesterol concentration was 260 mg/dL and her LDL-cholesterol concentration was 130 mg/dL (rec <129 mg/dL). She is unaware of a family history of coronary artery disease because she was raised by her godmother when her parents died in their early 30s in a motor vehicle accident. A special diet has been recommended for her; however, she is very concerned about the risk of hypercholesterolemia for her son. Which of the following is the most appropriate management at this time?

(A) Ask her to reduce the child's fat intake and give him skim milk instead of whole milk
(B) Do nothing until the child is 2 years of age
(C) Have the child return for a fasting lipoprotein analysis
(D) Obtain a random serum total cholesterol concentration for the child today
(E) Refer the child to a lipid specialist



21. A husband and wife, ages 29 years and 34 years, respectively, come to the office for advice regarding their risk for having hearing-impaired children. They are both hearing-impaired and require hearing aids. Their hearing loss is sensorineural and is not associated with any other health problems. The wife tells you, "We have both learned to live with this disability, but we want to take it into account before we decide to have children." Their pedigree is shown with the patients identified as II2 and II3. Which of the following is the most appropriate advice to the couple?

(A) Accurate risk estimation is impossible without further evaluation
(B) Because they are hearing-impaired, all their children will be hearing-impaired
(C) It is unlikely that they will have hearing-impaired children
(D) Only their male children will be hearing-impaired
(E) They can have amniocentesis during pregnancy to test whether the infant will be hearing-impaired

22. A 50-year-old African American man with severe chronic obstructive pulmonary disease returns to the office following a recent evaluation for possible lung transplantation in another city. He says he had been considered a suitable candidate, in all respects, but was rejected by the transplant program when a random urine test was positive for a nicotine metabolite. He had previously told you that he had stopped smoking 3 years ago. He stands by this and is at a loss to explain the positive urine test. He wants to know what he should do now. Which of the following is the most appropriate next step?

(A) Advise him again to stop smoking and refer him to another transplant program
(B) Advise him that the transplant program cannot turn him down on this basis, according to the Americans with Disabilities Act
(C) Contact the transplant program to learn their reasons for turning him down
(D) Explain to the patient that transplantation is out of the question as a result of what has occurred
(E) Write to the transplant program and insist that they give him another opportunity

23. A 22-year-old college student calls your evening answering service because of an itchy, spreading rash over her right wrist and lower arm for the past 2 days. You return her call, and she reports that she just returned from a weekend camping trip in the mountains. She denies any fever, chest pain, dyspnea or red streaks up her arm. She states, "I'm feeling miserable and the itch is killing me. I don't know if I was bitten by some insect or a tick. What should I do?" In counseling the patient over the telephone, which of the following is the most appropriate response?

(A) "From what you describe I think you should go directly to a dermatologist. Please come to my office in the morning for a referral."
(B) "Go to your pharmacist and ask for an over-the-counter antihistamine and Burow's solution, which you should apply with wet compresses, and please come to my office in the morning."
(C) "I will call in antibiotics to the pharmacy so that you can begin treatment tonight. I would like to see you in my office tomorrow."
(D) "Unfortunately I cannot prescribe any treatment without first examining you. Please call my office in the morning for an appointment."
(E) "You should go to the nearest emergency department immediately for treatment and come to my office tomorrow morning for follow-up."

NOTE: THIS IS THE END OF THE BLOCK.
ANY REMAINING TIME MAY BE USED TO CHECK ITEMS IN THIS BLOCK.

Answer Key for Sample Multiple Choice DNP Questions

Block 1

1. E
2. B
3. B
4. E
5. A
6. E
7. D
8. C
9. B
10. E
11. B
12. B
13. A
14. A
15. C
16. A
17. B
18. D
19. A
20. B
21. A
22. C
23. B