N P L E X®

Naturopathic Physicians Licensing Examinations

Part II - Clinical Science Examinations: Blueprint and Study Guide

[Revised September 2026]
Applicable to February 2027 NPLEX Exam Administration

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This *Blueprint and Study Guide* is intended to provide general information to anyone who will be taking the NPLEX Part II - Core Clinical Science Examination (CCSE) and/or Elective Examinations (EE). The NPLEX Board reserves the right to make revisions as necessary. Examinees should consult the latest edition of the *Blueprint and Study Guide* for the most up-to-date information regarding the content of the examination.

NABNE sets and implements the policies that govern the administration of the NPLEX. Examinees should consult the latest edition of the *NABNE Examinee Handbook* at nabne.org/nabne-forms/ for up-to-date information regarding these policies.

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INTRODUCTION

NPLEX, Inc., is an independent, nonprofit organization whose purpose is to prepare valid and reliable board-level licensing examinations for the naturopathic medical profession in the U.S., U.S. Territories, and Canada. Agencies that regulate the practice of naturopathic medicine may use NPLEX results in determining a candidate's eligibility for licensure/registration.

The North American Board of Naturopathic Examiners (NABNE) is responsible for the administration of the NPLEX exams. NABNE verifies applicant eligibility to sit for the NPLEX, administers the NPLEX, and reports NPLEX exam results to the examinees and to regulatory agencies if requested by the examinee.

The Part I - Biomedical Science Examination (BSE) is designed to measure a student's readiness to engage in the clinical phase of training. The purpose of the BSE is to ensure that the student has acquired the foundation in biomedical sciences that is essential to clinical training, as well as for practice as a naturopathic medical doctor.

The Part II - Clinical Science Examination (CCSE) is designed to measure a graduate's readiness to practice naturopathic medicine. The purpose of the CCSE is to ensure that graduates have acquired broad foundational knowledge to practice as minimally competent naturopathic medical doctors. Minimal competence is the term used for professional licensing exams, to gauge the knowledge, skill, and ability necessary to safely practice as a licensed/registered naturopathic medical doctor.

The Part II - Elective Examinations assess minimal competence in additional areas that may not be addressed in the CCSE.

The NPLEX exams are competency based. A competency-based exam is an assessment designed to evaluate ability to perform specific skills or tasks in a profession, focusing on a practical application of knowledge rather than just memorization. The exams utilize clinical scenarios as a framework for demonstrating proficiency in naturopathic medical principles and application.

NPLEX is committed to creating exams that are free from bias. While we recognize the impact of individual identities (including, but not limited to, genetic ancestry, gender identity, sexuality, ability, socioeconomic status, and cultural heritage) on health, every effort has been made to avoid reproducing stereotypes that lead to disparities in healthcare.

THE NPLEX PROCESS

The NPLEX examinations have been developed in accordance with industry standards. The following is an overview of the process.

EXAM DEVELOPMENT: The development of the blueprints includes practice analyses, which are studies that examine the tasks and responsibilities of naturopathic medical doctors. The content of the exams is managed by NPLEX Exam Development Specialists with input by a team of volunteer Subject Matter Experts (SMEs). All questions on the exams have been sourced from at least two professional medical references and undergo a minimum of five rounds of review. Content is reviewed for both medical accuracy as well as grammar and punctuation.

SCORING THE EXAMINATIONS: There are two parts involved in scoring the exams, the Post-Test Analysis and Establishing the Passing Score.

POST-TEST ANALYSIS: After the administration, the psychometrician (an expert in exam statistics) utilizes statistical analysis to identify any "problem" questions on the exam. Each of these is reviewed by a panel of SMEs for both clarity and content. Based on this review, it may be determined that the correct answer should be changed, or credit may be given for more than one answer, or no change in scoring will be made. This process helps ensure that the results are valid and fair.

ESTABLISHING THE PASSING SCORE: There is no predetermined passing score. This is different from academic tests, where, for example, a 70% might be needed in order to pass. There is also no "grading on a curve," for instance, where the top 80% will pass. Instead, the Angoff method, an internationally recognized statistical process, is used to determine the passing score. This method is specifically designed for professional licensing exams where the goal is to determine *minimal competence*. Minimal competence is the term used for professional licensing exams, to gauge the knowledge, skill, and ability necessary to safely practice as a licensed/ registered naturopathic medical doctor. In this method, a panel of SMEs rates each question on the exam, estimating the probability that a minimally competent candidate would be able to answer the question correctly. These ratings are then used to determine the passing score ("cut score"). Exams that are judged to be more difficult will have lower cut scores than less difficult exams (i.e., for a more difficult exam, the examinee will be required to answer fewer questions correctly in order to pass). Because each exam is unique, the cut score will vary somewhat between administrations.

REPORTING THE SCORES: It takes approximately 7 weeks to complete the scoring process. Once the process is complete, the scores are released to NABNE.

SUGGESTIONS FOR A STUDY STRATEGY

The Part II - Clinical Science Examinations are designed to measure entry-level readiness to practice naturopathic medicine by assessing your mastery of the competencies derived from a survey of naturopathic medical doctors who are active in the profession.

- Plan on taking the Core Clinical Science Examination (CCSE) as soon as you are eligible.
  - The more recently you have learned the information, the easier it is to recall.
  - See the *NABNE Examinee Handbook* for details on eligibility.

- Familiarize yourself with the NPLEX competencies.

- Familiarize yourself with the testing format and procedures.
  - The Part II - Core Clinical Science Examination will have 400 multiple-choice questions.
  - The Part II - Elective Examinations will have 75 multiple-choice questions each.
  - Each question has only one best answer.
  - Review the sample questions included in this study guide.

- This blueprint is the only study material produced by NPLEX.
  - Many other sources produce study materials, but NPLEX cannot verify whether those materials accurately represent the content of the NPLEX examination.
  - This does not mean that those materials may not be helpful; it just means that they are not in any way affiliated with NPLEX.

- Study ALL sections, regardless of whether you plan to use all modalities in your clinical practice.
  - The NPLEX Part II covers the broadest scope of naturopathic medical licensure/ registration.
  - In order to pass the NPLEX, you need to demonstrate minimal competency in all General Exam Areas (GEAs).

SUGGESTIONS FOR TAKING AN NPLEX MULTIPLE-CHOICE EXAMINATION

The most important thing to remember is that you MUST mark an answer.

There are many different strategies for how and when to mark an answer. NPLEX recommends the following:

- Mark the answers as you read the exam.
  - Do not wait to mark your answers until the end of the test.
  - Mark each answer as you go through the test. You can go back to change answers, if needed.
  - Do not let yourself fail because you run out of time to mark all of your answers.

- An unanswered question will be scored as incorrect.
  - Marking any answer is better than marking none at all.

- If you don’t know an answer with certainty, try to eliminate some of the response choices.
  - If after eliminating one or two of the choices you still are not sure of the answer, make your best guess from among the remaining choices.

- You will encounter a range of question types and difficulty. Some questions will require simple memory/recall, and some questions will require applied knowledge, for example, applying the content to a clinical scenario.
  - Some questions may seem easy. That's okay!
  - Try not to overthink your answers or talk yourself out of an answer.
  - There are no "trick" questions. Every effort has been made to present questions in a straightforward manner.

EXAMINATION FORMAT

CCSE:

- The CCSE has a total of 400 questions.
- It will be administered in three sessions.
- Each session will consist of approximately 133 questions.
- You will have 3.5 hours to complete each session.
- Each session will be administered on a different day, for example: one session on Wednesday, one session on Thursday, and one session on Friday.
- You will be required to sit for all three sessions.
- The exam will consist of 75-85 clinical summaries, which may include a description of a patient's chief concern, their medical history, and pertinent objective findings.
- You will then be asked a series of four to six questions relating to the clinical summary.
    - For example, you might be asked to
        - identify the conditions that would be included in a differential diagnosis;
        - select an appropriate orthopedic test, lab test, or diagnostic imaging study;
        - evaluate and prescribe treatment options in one of the therapeutic modalities;
        - describe the correct technique for performing a medical procedure;
        - know which botanical medicines should or should not be prescribed given the drugs the patient takes;
        - indicate appropriate responses to patient presentations or concerns.
- There may be some stand-alone questions, but the majority will be case-based as described above.

Elective Examinations:

- Each Elective Examination (EE) will consist of 75 questions.
- You will have 90 minutes to complete each EE.
- Each EE will be administered during separate time slots, so there will be no scheduling conflicts.
- Some of the EEs will have brief clinical summaries followed by a series of questions, and some of the EEs will only have stand-alone questions, or a combination of both.
- Basic math calculations may appear on the Pharmacology (EPE) and the Parenteral Medicine examinations. Approximately 1% of the questions (1 out of 75) may require basic functions such as division or multiplication.
- The specifics for each EE will be discussed in their separate sections in this blueprint.

PASSING STANDARDS

The CCSE is comprised of four General Exam Areas (GEAs): Diagnosis, Materia Medica, Other Modalities, and Medical Interventions. Each of these GEAs will include two or three Specific Exam Areas (SEAs), with the overall percentage of each GEA in parentheses, as follows:

GEA: Diagnosis (30-35%):
- SEA: Physical & Clinical Diagnosis
- SEA: Lab & Imaging Diagnosis

GEA: Materia Medica (18-20%):
- SEA: Botanical Medicine
- SEA: Homeopathy

GEA: Other Modalities (28-30%):
- SEA: Nutrition
- SEA: Physical Medicine
- SEA: Psychology

GEA: Medical Interventions (20%):
- SEA: Emergency Medicine
- SEA: Pharmacology

There will be a total of 400 questions on the exam. In order to pass the exam, you will be required to demonstrate competence in **all four** of the General Exam Areas (GEAs). This means that you will need to earn a minimum cumulative score in each GEA in order to pass. For instance, if the passing standard (cut score) is determined to be 110 for Diagnosis, 45 for Materia Medica, 55 for Other Modalities, and 45 for Medical Interventions, your combined score from Physical and Lab Diagnosis will need to be at least 110, your combined score from Botanical Medicine and Homeopathy will need to be at least 45, your combined score from Nutrition, Physical Medicine, and Psychology will need to be at least 55, and your combined score from Emergency Medicine and Pharmacology will need to be at least 45.

If you do not achieve a passing score in **all four** GEAs, you will not pass and will be required to retake the entire exam.

Each Elective Examination (EE) will have its own separate passing standard (cut score). If you pass one EE and fail a different EE, you will only have to retake the one that was failed.

COMPETENCIES—OVERVIEW

The NPLEX exam is competency based. A competency-based exam is an assessment designed to evaluate ability to perform specific skills or tasks in a profession, focusing on a practical application of knowledge rather than just memorization. The exam utilizes clinical scenarios as a framework for demonstrating proficiency and safety in naturopathic medical principles and application.

The list of competencies is comprehensive, but it is not an outline for what the actual exam will look like. The order in which the competencies are listed does not represent the order of questions on the examination. Not every competency will be represented on every exam.

On the list of CCSE competencies on the following pages, the percentages (in parentheses) are approximate, but provide a reasonable representation for study focus. The Elective Examination competencies can be found later in this document. An overview of the CCSE topics is presented here:

1. **Conditions** that are most frequently seen by a naturopathic medical doctor or which are so critical that the entry-level medical doctor must know what to do when seeing a patient who has the condition;

2. **Orthopedic tests** the entry-level naturopathic medical doctor should be able to perform and interpret;

3. **Types of lab tests and diagnostic imaging** studies the entry-level naturopathic medical doctor should be able to order and interpret appropriately;

4. **Botanical medicines** the entry-level naturopathic medical doctor should be able to prescribe appropriately;

5. **Homeopathic medicines** the entry-level naturopathic medical doctor should be able to prescribe appropriately; and

6. Examples of **pharmacotherapeutic** agents the entry-level naturopathic medical doctor is most likely to see in practice.

CCSE COMPETENCIES--DETAIL

I. <u>DIAGNOSIS</u>: Diagnose conditions using patient history, physical examination, clinical findings, lab test results, and diagnostic imaging results. Apply relevant research findings to patient diagnosis. (Total weighting for DIAGNOSIS general exam area: 34-35%)

A. **Evaluate patients and diagnose common and critical conditions**. (20%)
(see list of conditions, pages 14-19)

1. Take a medical and psychosocial history and interpret findings.
2. Perform a physical examination and interpret findings.
3. Select orthopedic and other tests and interpret findings.
4. Recognize psychiatric disorders. (see list, page 19)
5. Identify the relevant risk factors for common and critical conditions.
6. Identify and prioritize the signs and symptoms of common and critical conditions.
7. Identify other conditions and comorbidities associated with common and critical conditions.
8. Generate a differential diagnosis and prioritize the likelihood of common and critical conditions.
9. Delineate the pathogenesis of diseases and identify possible etiologies of symptoms.
10. Anticipate the possible complications and sequelae of common and critical conditions.
11. Anticipate and appropriately communicate the prognosis for patients who have common and critical conditions.
12. Identify when it is appropriate to refer patients to specialists; work with specialists in the co-management of patients.
13. Appropriately use algorithms to increase accuracy when determining diagnoses.

B. **Use the results of common lab tests and imaging studies to evaluate and diagnose patient conditions**. (12-13%)

1. Select necessary lab tests and imaging studies. (see list, page 21)
2. Select appropriate specimens to collect and prepare specimens for lab evaluation.
3. Identify contraindications for and adverse effects of lab tests and imaging studies.
4. Interpret results of lab tests and imaging studies.
5. Identify factors that could interfere with results of lab tests and imaging studies.
6. Assess patient progress using lab tests and imaging studies.

C. **Interpret, critique, and apply results of research studies in diagnosis and patient care**. (2-3%)

1. Evaluate research methodology (e.g., study design, hypotheses, statistical analysis, etc.).
2. Evaluate the validity of the research source (e.g., book, journal article, seminar, internet source) and the research process (e.g., peer review, potential for conflict of interest, potential for commercial bias, etc.).
3. Evaluate the validity of research conclusions (e.g., sample bias, statistical significance, clinical significance, etc.).
4. Incorporate valid findings into patient management.
5. Apply the principles of evidence-informed clinical decision making in diagnosis and patient care.

II. <u>MATERIA MEDICA</u>: Develop treatment plans using substances from the Materia Medica to manage and co-manage patient care and monitor patient progress. (Total weighting for MATERIA MEDICA general exam area: 19-20%)

A. **Provide safe and effective patient care by applying principles of botanical prescribing.** (12.5%)

1. Evaluate the safety and efficacy of botanical medicine prescriptions. (see list, pages 22-24)
2. Prescribe botanical medicines based on constituents, therapeutic effects, indications, contraindications, mechanisms of action, side effects, potentiators, inhibitors, toxicity, and drug and nutrient interactions.
3. Select the most effective mode of administration of botanical medicines.
4. Select and document appropriate posology.

B. **Provide safe and effective patient care by applying principles of homeopathic prescribing**. (6.5%)

1. Identify when homeopathic medicines are safe and effective as part of the patient's treatment plan.
2. Take a homeopathic case history, identifying characteristic mental, emotional, physical, and general symptoms.
3. Prescribe homeopathic medicines by selecting the indicated remedy based on the materia medica, including the potency and dosage of the remedy. (see list, page 25)
4. Manage acute and chronic homeopathic cases.

III. <u>OTHER MODALITIES</u>: Develop treatment plans using other therapeutic modalities guided by naturopathic philosophy to manage and co-manage patient care and monitor patient progress. (Total weighting for OTHER MODALITIES general exam area: 28-29%)

A. **Manage patient care by applying principles of clinical nutrition.** (10-11%)

1. Assess a patient's nutritional status.
2. Educate patients about general nutrition and food sources of nutrients.
3. Evaluate the safety and efficacy of nutritional interventions.
4. Prescribe nutritional substances based on indications, contraindications, bioavailability, food sources, potential interactions, and requirements for macronutrients, micronutrients, amino acids, prebiotics, probiotics, and accessory nutritional factors.
5. Prescribe therapeutic diets, foods, and supplements to optimize patient well-being.
6. Prescribe therapeutic diets based on indications and contraindications, access to food and supplements, patient preferences, and awareness of cultural, ethnic, and religious impacts on patient care.

B. **Practice safe and effective patient care by applying principles of physical medicine.** (8-9%)

1. Evaluate the safety and efficacy of physical medicine modality prescriptions.
2. Educate patients regarding prevention of musculoskeletal injury and prescription of home treatment for musculoskeletal conditions.
3. Assess structural problems and perform indicated orthopedic tests. (see list, page 20)
4. Identify the indications and contraindications for the use of and apply therapeutic devices including interferential, iontophoresis, phonophoresis, light therapy, pulsed electromagnetic field (PEMF), cold laser, microcurrent, sine wave, therapeutic ultrasound, transcutaneous electrical nerve stimulation (TENS), traction and compression, UV radiation, and diathermy.
5. Identify the indications and contraindications for the use of and perform other physical therapies including osseous and soft tissue manipulation, massage, hydrotherapy, irrigation methods, percussion techniques, postural drainage, and taping techniques.
6. Prescribe therapeutic exercises including aerobic, resistance, stretching, balance, and rehabilitative exercises.
7. Apply principles of physical medicine for pain management.

C. **Apply principles of health psychology and ethical behavior to address the relationship between illness and the mental, emotional, spiritual, and physical aspects of a person**. (8-9%)

1. Apply legal and ethical principles to doctor-patient interactions (e.g., boundaries, confidentiality, informed consent, reporting, etc.).
2. Promote diversity, equity, and inclusion in delivery of patient care (e.g., cultural competency, social determinants of health, accommodations for diverse functionality, overcoming communication barriers, etc.).
3. Provide patient education to promote health and well-being (e.g., lifestyle choices, prevention of chronic disease, treatment adherence, motivational interviewing, etc.).
4. Identify and address concerns related to development through all life stages (including family planning, infancy, childhood, adolescence, adulthood, geriatric, and end of life).
5. Identify and address psychological factors in patient health (e.g., psychological manifestations of physical disease, physical manifestations of psychological conditions, etc.).
6. Use validated psychological testing to assist in determining appropriate psychological interventions (including assessment of depression, anxiety, cognition, personality, substance use, and suicide risk).
7. Apply basic counseling principles and techniques including doctor-patient relationships, use of specific counseling therapies (e.g., cognitive behavioral, person-centered, family systems, marriage & family, etc.), and counseling techniques (e.g., EMDR, play therapy, etc.).
8. Apply, recommend, or prescribe mind-body techniques to address psychological factors (e.g., meditation, biofeedback, mindfulness, breathing techniques, progressive relaxation, etc.).
9. Apply socio-psycho-biological principles of pain management (e.g., pain response, psychoneuroendrocrineimmunology, psychological interventions, etc.).
10. Apply evidence-informed practice in counseling and patient care (e.g., ethical application of placebo and nocebo response, etc.).
11. Recognize and address psychological crisis situations (e.g. suicidal ideation, acute psychiatric episodes, combative patients, domestic violence, etc.).
12. Apply psychosocial management principles in the treatment of addictions or substance abuse (e.g., mechanisms of dependence and addiction, drug-seeking behavior, addiction-recovery programs, etc.).
13. Practice legal risk-reduction behaviors in clinical practice (e.g., charting and documentation, use of chaperones, continuing education, professionalism, telehealth, etc.).

IV. <u>OTHER (MEDICAL) INTERVENTIONS:</u> Apply knowledge of medical interventions as indicated for patient care. (Total weighting for OTHER INTERVENTIONS general exam area: 20%)

A. **Address emergency medical situations, perform acute-care medical procedures, and implement public health policies**. (10%)

1. Assess patients experiencing medical, drug-related, and traumatic acute-care emergencies and treat, refer, or activate EMS as indicated.
2. Perform Basic Life Support/Cardiopulmonary Resuscitation.
3. Apply indicated sterilization, disinfection, and universal precautions.
4. Perform proper technique for venipuncture and apply principles of sterile technique, vein/site selection and preparation, injection technique (using syringe & needle), insertion technique, flow (drip) rate, and IV line patency.
5. Select and administer basic parenteral substances for IV rehydration.
6. Educate patients regarding public health and disease prevention, including prevention of communicable diseases and immunization. Follow and implement public health guidelines for epidemics/pandemics and for reporting communicable diseases and overdose.
7. Administer oxygen and other inhalation therapies.
8. Safely manage hazardous substances and materials including sharps and biohazardous waste disposal.
9. Apply principles of medical disaster preparedness.

B. **Know the pharmacology of commonly prescribed drugs.** (10%)

1. Describe primary actions, indications, contraindications, and adverse effects of pharmaceutical medications (including nutrient deficiencies), and potential interactions with botanical medicines, nutritional supplements, and other pharmaceuticals. (see list, pages 26-28)
2. Identify natural therapeutic interventions that have effects similar to commonly prescribed pharmaceuticals.
3. Identify and address polypharmacy issues including coordination of care between multiple prescribers.
4. Monitor therapeutic drug levels and assess for toxicity.
5. Recognize and address abuse of prescription medications and recreational substances.
6. Refer to and/or co-manage with prescribing practitioners to ensure patient safety.

Conditions

A. Conditions of the blood and lymphatic systems (7%)

1. **cancers** (leukemia [CLL, CML], Hodgkin and non-Hodgkin lymphoma, multiple [plasma cell] myeloma)
2. **infections and inflammations** (babesiosis, malaria, sepsis)
3. **lymphatic system disorders** (lymphadenitis, lymphangitis, lymphedema)
4. **red cell disorders** (glucose-6-phosphate dehydrogenase deficiency, hemochromatosis, sickle cell disease, alpha-thalassemia, beta-thalassemia, acute blood loss anemia, aplastic anemia, hemolytic anemia, anemia of chronic disease, and vitamin deficiency anemias [iron, vitamin B_{12}, folate])
5. **myeloproliferative disorders** (polycythemia vera, secondary polycythemia)
6. **coagulation and platelet disorders** (disseminated intravascular coagulation, hemophilia A/factor VIII deficiency, immune thrombocytopenia, vitamin K deficiency, von Willebrand disease)
7. **porphyrias** (acute intermittent porphyria, erythropoietic protoporphyria, porphyria cutanea tarda)

B. Conditions of the cardiovascular system (9%)

1. **cardiac disorders** (acute coronary syndrome/myocardial infarction, cardiomyopathy [dilated and hypertrophic], congestive heart failure [right-sided, left-sided], endocarditis, pericarditis, rheumatic heart disease)
2. **cardiac rhythm disorders** (atrial fibrillation, atrial flutter, cardiac arrest, heart block, premature atrial and ventricular contractions, sinus bradycardia, supraventricular tachycardia, ventricular fibrillation, ventricular tachycardia)
3. **valvular disorders** (regurgitation [aortic, mitral, pulmonic, and tricuspid], stenosis [aortic, mitral, pulmonic, and tricuspid], mitral valve prolapse)
4. **blood pressure dysregulation** (hypertension, hypertensive urgency/emergency, hypotension)
5. **circulatory system disorders** (aortic aneurysm, chronic venous insufficiency, gangrene, hypovolemic shock & dehydration, phlebitis, primary and secondary Raynaud phenomenon, stasis dermatitis and ulcers)
6. **occlusive vascular disorders** (atherosclerosis, coronary microvascular disease, peripheral vascular disease [peripheral artery disease and intermittent claudication, thromboangiitis obliterans, embolism, thrombosis, thrombophlebitis])
7. **trauma** (chest injuries with cardiovascular implications)

C. Conditions of the endocrine system (7%)

1. **neoplasms** (adrenal, pancreatic, parathyroid, pheochromcytoma [adrenal medulla tumor], pituitary, thyroid)
2. **hypothalamic and pituitary hormone disorders** (hyposecretion [panhypopituitarism, galactorrhea, growth hormone deficiency, diabetes insipidus], hypersecretion [acromegaly, hypercortisolism (Cushing syndrome), syndrome of inappropriate ADH secretion])
3. **thyroid disorders** (autoimmune [Hashimoto] thyroiditis, hyperthyroidism, hypothyroidism [primary, secondary, subclinical], non-toxic goiter)
4. **parathyroid disorders** (hyperparathyroidism, hypoparathyroidism)
5. **adrenal disorders** (primary adrenal insufficiency [Addison disease], hypercortisolism [Cushing syndrome], functional adrenal disorders, hyperaldosteronism)
6. **pancreatic disorders** (diabetes mellitus type 2, reactive hypoglycemia, hyperinsulinemia, insulin resistance, metabolic syndrome)
7. **other** (late-onset hypogonadism, menopause, polyendocrine metabolic ovarian syndrome [PMOS] [polycystic ovary syndrome—PCOS])

D. Conditions of the gastrointestinal and hepatobiliary systems (9%)

1. **neoplasms** (colorectal, esophageal, gallbladder, gastric, hepatic)
2. **infections and inflammation** (GI abscess, pancreatitis, peritonitis)
3. **esophageal disorders** (Barrett esophagus, eosinophilic esophagitis, esophageal motility disorder, esophageal strictures, esophageal varices, GERD, hiatal hernia)
4. **stomach disorders** (gastric ulcer, gastritis)
5. **hepatic disorders** (cirrhosis, hepatitis [A, B, C, non-infectious], metabolic-dysfunction-associated steatohepatitis [non-alcoholic steatohepatitis], primary biliary cholangitis)
6. **gallbladder disorders** (cholecystitis, cholelithiasis)
7. **intestinal disorders** (appendicitis, autoimmune gluten-sensitive enteropathy [celiac disease] and gluten sensitivity, diverticulitis, diverticulosis, duodenal ulcer, inflammatory bowel disease [regional enteritis (Crohn disease), ulcerative colitis], hernia [inguinal, umbilical], ileus, intestinal polyps, Meckel diverticulum, megacolon)
8. **rectal disorders** (anorectal strictures, cryptitis, fissures, fistula, hemorrhoids, polyps, proctitis, rectal prolapse)
9. **functional disorders of the GI and hepatobiliary system** (food allergies/intolerances, hypochlorhydria, intestinal dysbiosis [candidiasis and small intestinal bacterial overgrowth], irritable bowel syndrome)
10. **trauma** (injuries involving the abdominal cavity, poisoning)
11. **other disorders impacting public health** (acute and chronic diarrhea [bacterial and viral gastroenteritis, parasitic infections])

E. Conditions of the head and neck (5%)

1. **neoplasms** (laryngeal, oral [gingival, tongue, tonsillar])
2. **infections** (cytomegalovirus, diphtheria, mastoiditis, mononucleosis/EBV)
3. **eye disorders** (acute closed-angle glaucoma, blepharitis, conjunctivitis, detachments [retinal, vitreous], keratitis, optic neuritis, orbital cellulitis, pterygium, retinal hemorrhage, retinopathy [diabetic, hypertensive], uveitis)
4. **ear disorders** (cholesteatoma, idiopathic endolymphatic hydrops [Ménière disease], otosclerosis, ruptured tympanic membrane)
5. **vertigo due to inner ear disorders** (benign paroxysmal positional vertigo, labyrinthitis, other vestibular disorders)
6. **nose and sinus disorders** (allergic rhinitis, nasal polyps, sinusitis, sinus headache)
7. **mouth and throat disorders** (candidiasis, dental abscess, gingivitis, glossitis, herpangina, laryngitis, leukoplakia, parotitis, peritonsillar abscess, pharyngitis, retropharyngeal abscess, sialolithiasis, stomatitis, tonsillitis)
8. **trauma** (foreign bodies, non-neurological injuries)

F. Conditions of the immune system (7%)

1. **immune deficiency disorders** (HIV/AIDS, IgA deficiency)
2. **autoimmune disorders** (ankylosing spondylitis, myasthenia gravis, polymyositis, reactive arthritis, rheumatoid arthritis, scleroderma, Sjögren syndrome, systemic lupus erythematosus, vasculitis [temporal (giant cell) arteritis, IgA vasculitis (Henoch-Schönlein purpura), necrotizing vasculitis, polyarteritis nodosa])
3. **hypersensitivity disorders** (allergies, anaphylaxis, angioedema, urticaria)
4. **other** (myalgic encephalomyelitis/chronic fatigue syndrome [ME-CFS], disorders of mitochondrial function, fibromyalgia)

G. Conditions of the musculoskeletal system (9%)

1. **neoplasms** (chondroma, osteochondroma, osteoid osteoma, osteoma, osteosarcoma)
2. **infections and inflammations** (arthritis [psoriatic, septic], bursitis, degenerative disc disease, degenerative joint disease, gout, Lyme disease, tendinopathy)
3. **bone disorders** (Paget disease of the bone, osteomalacia, osteomyelitis, osteopenia, osteoporosis)
4. **shoulder and arm disorders** (adhesive capsulitis, rotator cuff injury/tendinopathy, thoracic outlet syndrome)
5. **elbow disorders** (epicondylitis, ulnar nerve entrapment)
6. **hand and wrist disorders** (carpal tunnel syndrome, de Quervain tenosynovitis, Dupuytren contracture, ganglion/synovial cyst)
7. **spinal disorders** (cervical disorders [discogenic pain, spondylosis, torticollis], thoracic disorders [costochondritis, discopathy, facet syndrome], lumbar and sacral disorders [discopathy, sciatica, spondylolisthesis], postural disorders, spinal stenosis)
8. **hip and thigh disorders** (avascular necrosis of the femoral head, iliotibial band syndrome)
9. **knee disorders** (popliteal [Baker] cyst, ligamentous disorders, meniscal disorders, patellofemoral syndrome)
10. **leg and ankle disorders** (medial tibial stress syndrome)
11. **foot disorders** (functional disorders of the foot [pes planus/cavus], hallux malleus, hallux valgus, Morton neuroma, plantar fasciitis)
12. **trauma** (disc herniation, disc rupture, dislocation, fracture, separation, spasm, sprain, strain, tear, tendon rupture, whiplash)
13. **other** (complex regional pain syndrome, muscular dystrophy)

H. Conditions of the nervous system (8%)

1. **neoplasms** (vestibular schwannoma [acoustic neuroma], astrocytoma, glioma, glioblastoma multiforme, meningioma)
2. **infections and inflammations** (acute inflammatory demyelinating neuropathy [Guillain-Barré syndrome], botulism, encephalitis, herpes zoster, meningitis, neuropathy, polio, rabies, radiculitis, tetanus)
3. **vascular disorders** (arteriovenous malformations, cerebral aneurysm, cerebrovascular accident, transient ischemic attacks)
4. **headaches** (cluster, migraine, tension-type, temporomandibular joint disorder)
5. **other neurological head disorders** (acute peripheral facial [Bell] palsy, vertigo not related to inner ear disorders, trigeminal neuralgia)
6. **seizure disorders** (partial/focal, general [absence, myoclonic, tonic, tonic-clonic, atonic])
7. **neurodegenerative diseases** (amyotrophic lateral sclerosis, Huntington disease, multiple sclerosis, Parkinsonism, peripheral neuropathy, post-polio syndrome)
8. **trauma** (causes of neurological injury [chronic traumatic encephalopathy, intracranial hemorrhage, shock, toxic exposure, traumatic brain injury])

I. Conditions of the respiratory system (7%)

1. **neoplasms** (adenocarcinoma, mesothelioma, non-small cell carcinoma, superior sulcus [Pancoast] tumor, small cell [oat cell] carcinoma)
2. **infections and inflammations** (blastomycosis, coccidioidomycosis, coronaviruses, histoplasmosis, influenza)
3. **bronchial disorders** (bronchiectasis, bronchitis)
4. **lung disorders** (abscess, acute respiratory distress syndrome, asthma, atelectasis, chronic obstructive pulmonary disease, empyema, pleural effusion, pleuritis/pleurisy, pneumoconiosis, pneumonia, pneumothorax, pulmonary edema, pulmonary embolism, pulmonary fibrosis, pulmonary hypertension, pulmonary infarction, sarcoidosis, tuberculosis)
5. **trauma** (airway obstruction, thoracic injuries with pulmonary implications)

J. Conditions of the skin and nails (3%)

1. **cancerous and pre-cancerous lesions** (actinic keratosis, basal cell carcinoma, Kaposi sarcoma, melanoma, squamous cell carcinoma)
2. **infections and inflammations** (acne vulgaris, candidiasis, carbuncle/furuncle, cellulitis, cimicosis, felon, folliculitis, herpes simplex type I, lichen planus, molluscum contagiosum, necrotizing fasciitis, onychomycosis, paronychia, pityriasis alba and rosea, rosacea, scabies, seborrheic dermatitis, tinea)
3. **benign skin lesions** (acanthosis nigricans, acrochordons, lichenification, lipoma, sebaceous cysts, seborrheic keratosis, verrucae)
4. **immune-mediated disorders** (bullous pemphigoid, atopic dermatitis, contact dermatitis, dermatitis herpetiformis, erythema multiforme, pemphigus, psoriasis, urticaria, vitiligo)
5. **trauma** (bites, burns, foreign bodies, lacerations)

K. Conditions of the genitourinary and reproductive systems (9%)

1. **neoplasms** (bladder cancer, cervical cancer, ovarian cancer, prostate cancer, seminoma, upper urinary tract cancer, uterine/endometrial cancer and masses [leiomyoma, endometrial adenocarcinoma, sarcoma], vulvar cancer)
2. **infections** (pelvic inflammatory disease, toxic shock syndrome)
3. **urinary tract disorders** (cystitis, glomerulonephritis, interstitial cystitis, nephrosclerosis, nephrosis/nephrotic syndrome, polycystic kidney, pyelonephritis, chronic kidney disease and acute kidney injury, renal glycosuria, urethritis, urolithiasis [cystolithiasis, nephrolithiasis])
4. **uterine and pelvic disorders** (endometrial hyperplasia, endometriosis, endometritis, polyps, uterine prolapse)
5. **vaginal disorders** (vulvar [Bartholin] cyst, colpocele, cystocele, dyspareunia, rectocele, vaginitis [bacterial, candidal, trichomonal])
6. **ovarian disorders** (mittelschmerz/mid-cycle pain, ovarian cysts)
7. **cervical disorders** (cervical dysplasia, nabothian cysts)
8. **vulvar disorders** (lichen sclerosus, vulvitis, vulvodynia)
9. **menstrual disorders** (amenorrhea, dysmenorrhea, menorrhagia, metrorrhagia, oligomenorrhea, pre-menstrual syndrome)
10. **female fertility disorders** (infertility due to cervical and uterine abnormalities, hormonal imbalances, immunologic incompatibility, metabolic abnormalities, nutritional deficiencies, ovarian failure, tubal obstruction)
11. **male fertility disorders** (infertility due to ductal obstruction, ejaculatory abnormalities, hormonal imbalances, sperm and semen abnormalities)
12. **erectile dysfunction** (endocrinologic, neurologic, pharmacologic, psychogenic, vascular)
13. **penile and testicular disorders and benign masses** (balanitis, epididymitis, hematocele, hydrocele, orchitis, paraphimosis, phimosis, testicular torsion, spermatocele, varicocele)
14. **prostatic disorders** (benign prostatic hyperplasia, prostatitis)
15. **sexually transmitted infections** (chancroid, chlamydia, condylomata acuminata, condyloma lata, gonorrhea, herpes simplex type II, human papillomavirus, lymphogranuloma venereum, syphilis)
16. **trauma** (foreign bodies, injuries)

L. Conditions of the breasts and axillae (3%)

1. **neoplasms** (breast cancer [DCIS, LCIS, inflammatory, invasive], fibroadenoma, fibrocystic breast disease, Paget disease of the breast)
2. **infections** (mastitis)
3. **other** (gynecomastia)

M. Conditions related to pregnancy (4%)

1. **masses** (gestational trophoblastic disease/hydatidiform mole)
2. **maternal infections** (group B streptococcus, toxoplasmosis)
3. **general pre- and postnatal care and symptoms commonly associated with pregnancy** (constipation, hemorrhoids, leg cramps, nausea and vomiting, urinary tract infection, vaginitis, varicose veins)
4. **maternal antepartum disorders** (anemia, gestational diabetes, hyperemesis gravidarum, gestational hypertension, polyhydramnios, preeclampsia)
5. **obstetric emergencies** (abruptio placentae, eclampsia, ectopic pregnancy, placenta previa, postpartum hemorrhage, precipitous birth, pre-term labor, prolapsed cord, retained placenta, Rh factor incompatibility, threatened and spontaneous abortion)
6. **maternal postpartum disorders** (depression, lactation disorders, postpartum thyroiditis, symphysis pubis dysfunction)

N. Conditions generally pertaining to pediatrics (5%)

1. **neoplasms** (leukemia [ALL, AML], Ewing sarcoma, neuroblastoma, nephroblastoma, osteosarcoma, retinoblastoma)
2. **infections and inflammations** (childhood exanthems [erythema infectiosum, roseola, rubella, rubeola, scarlet fever], encephalitis, coxsackievirus, herpangina, impetigo, meningitis, mumps, otitis media, pediculosis, pertussis, rheumatic fever, streptococcal pharyngitis, thrush, varicella)
3. **behavioral disorders** (adjustment disorder, attention deficit disorder/attention deficit hyperactivity disorder, conduct disorder, oppositional defiant disorder, pervasive developmental disorder, reactive attachment disorder, separation anxiety disorder, Tourette syndrome)
4. **congenital disorders** (anal stenosis, cerebral palsy, congenital hypothyroidism, Hirschsprung disease)
5. **developmental disorders** (autism spectrum disorders, cryptorchidism, epispadias, failure to thrive [due to atrial septal defect, coarctation of the aorta, neglect, patent ductus arteriosus, tetralogy of Fallot, or ventricular septal defect], hypospadias, learning disorders)
6. **gastrointestinal disorders** (colic, encopresis, functional constipation, functional diarrhea, intussusception, meconium ileus, pyloric stenosis)
7. **musculoskeletal disorders** (femoral anteversion, hip dislocation, internal tibial torsion, juvenile rheumatoid arthritis, osteochondrosis [Legg-Calvé-Perthes disease, Osgood-Schlatter disease], osteogenesis imperfecta, rickets, Scheuermann disease, scoliosis, subluxation of radial head)
8. **respiratory disorders** (asthma, bronchiolitis, laryngotracheobronchitis [croup], cystic fibrosis, epiglottitis, infant respiratory distress syndrome, respiratory syncytial virus)
9. **trauma** (abuse [emotional, physical, sexual])
10. **other** (dacrocystitis, Fanconi syndrome, diabetes mellitus type 1, hemangioma, plumbism, pediatric febrile seizures, trisomy 21)

O. Conditions generally pertaining to geriatrics (5%)

1. **symptoms and concerns commonly associated with aging** (constipation, hearing impairment, iatrogenic illness, immobility, loss of balance and flexibility, muscle and joint pain, polypharmacy, pressure ulcers, undernourishment, malnourishment, urinary incontinence, urinary tract infections, genitourinary syndrome of menopause [vulvovaginal atrophy], vaginal infections, vision impairment, mental health concerns [anxiety, depression, grief, mortality, social isolation])
2. **circulatory disorders** (aneurysm, peripheral vascular disease)
3. **dementia** (Alzheimer disease, non-Alzheimer dementia)
4. **musculoskeletal disorders** (osteoarthritis, osteoporosis, polymyalgia rheumatica)
5. **nervous system disorders** (cerebrovascular accident, Parkinson disease, transient ischemic attacks)
6. **ocular disorders** (cataracts, glaucoma, macular degeneration)
7. **trauma** (elder abuse, falls, fracture)

P. Conditions that have psychiatric, psychological, or behavioral implications (3%)

1. **psychotic disorders** (brief reactive psychosis, delusions, hallucinations, paranoia, schizophrenia)
2. **mood disorders** (bipolar disorder, cyclothymia, depression, dysthymia, mania, seasonal affective disorder)
3. **cognitive mental disorders** (delirium, dementia)
4. **anxiety disorders** (acute stress disorder, agoraphobia, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobias, post-traumatic stress disorder)
5. **somatoform and factitious disorders** (adjustment disorder with physical complaints, conversion disorder, eating disorders, hypochondriasis, malingering, Munchausen syndrome, Munchausen syndrome by proxy, somatic symptom disorder)
6. **sexual disorders** (genito-pelvic pain/penetration disorder, pedophilic disorder, sadism/masochism, voyeuristic disorder)
7. **personality disorders** (antisocial, avoidant, borderline, dependent, histrionic, narcissistic)
8. **substance-related and addictive disorders** (alcohol, cannabis, caffeine, hallucinogens, nicotine, opioids, prescription drugs, recreational drugs)
9. **non-substance-related compulsive disorders** (compulsive buying, gambling, hoarding, kleptomania, sex)
10. **trauma** (domestic violence, child sexual abuse, rape)
11. **life stage issues** (life stage issues in pediatric, adolescent, adult, and geriatric populations)

NOTE: There will also be a few case clusters on the examination that are oriented specifically to responding to emergency medical scenarios.

Orthopedic Tests

A. Orthopedic tests: vertebral column

1. Adam forward-bend test
2. Adson and reverse Adson tests
3. Braggard test
4. Bechterew test
5. cervical spine compression test
6. cervical spine distraction test
7. elevated arm stress test (Roos test)
8. Hoover test
9. hyperabduction test (Wright)
10. Kemp test
11. Lindner test
12. Milgram test
13. Minor test
14. shoulder depression test
15. Soto Hall test
16. straight-leg raise test (Lasegue)
17. Valsalva test for spinal compression
18. vertebral artery test

B. Orthopedic tests: shoulder

1. Apley scratch test
2. drop-arm test (Codman)
3. glenohumeral apprehension tests (posterior and anterior)
4. Hawkins-Kennedy test
5. Lippman test
6. Neer test
7. Speed test
8. Yergason test

C. Orthopedic tests: wrist, hand, and elbow

1. Cozen & reverse Cozen tests
2. Finkelstein test
3. Mill & reverse Mill tests
4. Phalen test
5. retinacular test
6. Tinel test (wrist, elbow)
7. valgus/varus stress test

D. Orthopedic tests: hip and pelvis

1. Ely test
2. FABER (Patrick) test
3. Gaenslen test
4. Hibb test
5. Nachlas test
6. Ober test
7. Ortolani click test
8. pelvic rock test
9. telescoping test
10. Thomas test
11. Trendelenburg test
12. Yeoman test
13. piriformis test

E. Orthopedic tests: knee

1. anterior/posterior drawer test
2. Apley compression test
3. Apley distraction test
4. bulge test
5. Lachman test
6. McMurray test
7. patellar apprehension test
8. patellar ballottement test
9. patellofemoral grind test
10. valgus/varus stress test

F. Orthopedic tests: ankle and foot

1. anterior/posterior drawer test
2. dorsiflexion test
3. forefoot adduction test
4. metatarsal squeeze test (Morton)
5. talar tilt test
6. test for rigid or supple pes planus (flat feet)
7. gastrocnemius-soleus squeeze test (Thompson)
8. tibial torsion test

Types of Laboratory Tests and Diagnostic Imaging Studies

A. Urine
1. routine urinalysis
2. special tests

B. Hematology
1. CBC
2. coagulation studies
3. blood typing
4. erythrocyte sedimentation rate

C. Serum Tests
1. electrolytes
2. chemistry
3. hormones
4. therapeutic drug monitoring
5. antibody testing

D. Stool Analysis
1. collection
2. gross analysis of stool
3. specialty tests

E. Microbiology
1. technique
2. types

F. Pathology (including specimen collection)
1. cytology
2. biopsy

G. Immunology
1. autoimmune
2. infectious diseases
3. immunological response tests

H. Pulmonary Function
1. tests
2. studies

I. Diagnostic Ultrasonography
1. musculoskeletal system
2. vascular system
3. tissue/organ systems

J. Electrodiagnostic Tests
1. cardiac system
2. musculoskeletal system
3. nervous system

K. Radiography
1. orthopedic
2. tissue/organ systems

L. Other Imaging/Viewing Studies
1. studies using radiation
2. nuclear medicine scanning tests
3. fiberoptic studies
4. magnetic resonance imaging (MRI)
5. angiography

M. Toxicology
1. toxic metals
2. pesticides/herbicides/solvents
3. pharmacotherapeutic agents

N. Pregnancy and Neonatology
1. pregnancy
2. neonatology
3. fertility

NOTE: Normal ranges for lab test results will be provided in the Core Clinical Science Examination.

Botanical Medicines

Alternate names for the same genus and/or species are in parenthesis.

Achillea millefolium
Aconitum napellus
Actaea racemosa
(Cimicifuga racemosa)
Aesculus hippocastanum
Allium cepa
Allium sativum
Aloe vera
Althea officinalis
(Althaea officinalis)
Angelica sinensis
Arctium lappa
Arctostaphylos uva-ursi
Arnica montana
Artemisia annua
Artemisia absinthium
Artemisia vulgaris
Asclepias tuberosa
Aspidosperma quebracho
Astragalus membranaceus
Atropa belladonna
Avena sativa
Bacopa monnieri
Baptisia tinctoria
Berberis aquifolium
(Mahonia aquifolium)
Berberis vulgaris
Boswellia serrata
Bryonia alba
Bryonia cretica dioica
Calendula officinalis
Camellia sinensis
Cannabis sativa
Capsella bursa-pastoris
Capsicum frutescens
Cassia angustifolia
(Senna alexandrina)
Caulophyllum thalictroides
Ceanothus americanus
Centella asiatica
Chamaelirium luteum
Chelidonium majus
Chionanthus virginicus
Cineraria maritima
Cinnamomum zeylanicum
Coleus forskohlii
Commiphora mukul
Commiphora myrrha
(Commiphora molmol)
Convallaria majalis
Cordyceps sinensis
Corydalis ambigua and spp.
Crataegus oxyacantha
(Crataegus laevigata)
Curcuma longa
Cynara scolymus
Datura stramonium
Digitalis purpurea
Dioscorea villosa
Echinacea angustifolia
Echinacea pallida
Echinacea purpurea
Eleutherococcus senticosus
Ephedra sinica
Equisetum arvense
Eschscholzia californica
Eucalyptus globulus
Eupatorium perfoliatum
Eupatorium purpureum
Euphrasia officinalis
(Euphrasia stricta)

Foeniculum vulgare
Fucus vesiculosis
Galium aparine
Ganoderma lucidum
Gelsemium sempervirens
Gentiana lutea
Geranium maculatum
Ginkgo biloba
Glycyrrhiza glabra
Grindelia robusta
Gymnema sylvestre
Hamamelis virginiana
Harpagophytum procumbens
Humulus lupulus
Hydrangea arborescens
Hydrastis canadensis
Hyoscyamus niger
Hypericum perforatum
Inula helenium
Iris versicolor
Juglans nigra
Juniperus communis
Larrea tridentata
Leonurus cardiaca
Leptandra virginica
(Veronicastrum virginicum)
Ligusticum porteri
Ligustrum lucidum
Linum usitatissimum
Lobelia inflata
Lomatium dissectum
Lycopus virginicus
Matricaria chamomilla
(Matricaria recutita)
Medicago sativa
Melaleuca alternifolia
Melissa officinalis
Mentha piperita
Mitchella repens
Momordica charantia
Olea europaea
Panax ginseng
Panax quinquefolius
Passiflora incarnata
Pausinystalia yohimbe
Phytolacca americana
Piper methysticum
Piscidia erythrina
(Piscidia piscipula)
Plantago major
Podophyllum peltatum
Prunus serotina
Prunus africana
(Pygeum africanum)
Pulsatilla vulgaris
Quercus rubra
Rauwolfia serpentina
Rhamnus frangula
Rhamnus purshiana
(Frangula purshiana)
Rhodiola rosea
Ricinus communis
Rosmarinus officinalis
Rubus idaeus
Rumex crispus
Salix alba
Salvia officinalis
Sambucus nigra
Sanguinaria canadensis
Schisandra chinensis
Scutellaria baicalensis
Scutellaria lateriflora
Selenicereus grandiflorus
(Cactus grandiflorus)
Serenoa repens
Silybum marianum
Smilax spp.
Solidago spp.

Symphytum officinale
Tanacetum parthenium
Tanacetum vulgare
Taraxacum officinale
Theobroma cacao
Thuja occidentalis
Thymus vulgaris
Tilia europaea
Tribulus terrestris
Trifolium pratense
Tussilago farfara
Ulmus rubra
(Ulmus fulva)
Urtica dioica
Usnea barbata
Vaccinium myrtillus
Valeriana officinalis
Veratrum album
Veratrum viride
Verbascum thapsus
Verbena officinalis
Viburnum opulus
Viburnum prunifolium
Vinca major
Vinca minor
Viscum album
Viscum flavescens
(Phoradendron serotinum)
Vitex agnus-castus
Withania somnifera
Zingiber officinale

Homeopathic Medicines

aconitum napellus
allium cepa
anacardium
antimonium tartaricum
apis mellifica
arnica montana
arsenicum album
aurum metallicum
baryta carbonica
belladonna
bryonia
calcarea carbonica
cantharis
carbo vegetabilis
causticum
chamomilla
cina
cinchona officinalis (china)
colocynthis
conium
drosera
equisetum
eupatorium perfoliatum
euphrasia
ferrum phosphoricum
gelsemium
glonoinum
graphites
hepar sulphuris
hyoscyamus
hypericum
ignatia amara
ipecacuanha
kali bichromicum
kali carbonicum
lachesis
ledum
lycopodium
magnesia phosphorica
medorrhinum
mercurius vivus
natrum muriaticum
natrum phosphoricum
natrum sulphuricum
nitricum acidum
nux vomica
phosphorus
phytolacca
platina
podophyllum
psorinum
pulsatilla
pyrogenium
rhus toxicodendron
rumex crispus
ruta graveolens
sanguinaria
sepia
silicea
spongia tosta
staphysagria
stramonium
sulphur
symphytum
syphilinum
tabacum
thuja occidentalis
tuberculinum
urtica urens
veratrum album

Drugs on the Core Clinical Science Examination

[NOTE: Because brand names in Canada and the United States are frequently different, only generic names will be used on both this blueprint and the examination. Some generic names are also different, and these will be noted as U.S. name (Canadian name).]

5-fluorouracil
acetaminophen
adalimumab
albuterol (salbutamol)
alendronate
allopurinol
alprazolam
amantadine
amiodarone
amitriptyline
amlodipine
amoxicillin
anastrozole
apixaban
aripiprazole
aspirin
atenolol
atezolizumab
atorvastatin
atropine
azithromycin
benzoyl peroxide
bisacodyl
bismuth subsalicylate
bromocriptine
bupropion
buspirone
caffeine
calcipotriol
canagliflozin
cannabis
capsaicin
carbamazepine
carisoprodol
carvedilol
cefepime
ceftriaxone
ceftaroline
cefuroxime
celecoxib
cephalexin
ciprofloxacin
clarithromycin
clindamycin
clonidine
clopidogrel
cocaine
codeine
colchicine
cyclobenzaprine
cyclosporine
deferoxamine
dexamethasone
dextroamphetamine
dextromethorphan
DHEA
diazepam
dicyclomine
digoxin
diphenhydramine
DMPS
DMSA
docusate
dolutegravir
donepezil
doxorubicin
doxycycline
dulaglutide
edetate calcium disodium
emtricitabine/tenofovir alafenamide

epinephrine (adrenaline)
escitalopram
esomeprazole
estradiol
estriol
estrogens, conjugated
estrone
exenatide
famotidine
finasteride
fluconazole
fluoxetine
fluticasone - nasal spray and inhaled
furosemide
gabapentin
gemfibrozil
glyburide
guaifenesin
haloperidol
heparin
hepatitis A and B vaccine
heroin
HPV quadrivalent
hydrochlorothiazide
hydrocodone
hydrocortisone
hydroxychloroquine
hydroxyzine
H. influenza type B conjugate
ibuprofen
imatinib
influenza vaccine
insulin: glargine, lispro, regular
interferon beta 1
ipilimumab
ipratropium bromide
isoniazid
isotretinoin
ketamine
latanoprost - ophthalmic solution
levodopa/carbidopa
levonorgestrel - IUD
levothyroxine
liothyronine
liraglutide
lisinopril
lithium
loperamide
loratadine
lugol solution
mebendazole
medroxyprogesterone acetate
melatonin
meningococcal polysaccharide
metformin
methadone
methotrexate
methimazole
methylphenidate
methylprednisolone
metoclopramide
metoprolol
metronidazole
misoprostol
MMR vaccine
modafinil
mometasone
montelukast
morphine
mupirocin
naloxone
naltrexone
naproxen
nicotine - transdermal
nitrofurantoin
nitroglycerin
norelgestromin/ethinyl estradiol - patch
norgestimate/ethinyl estradiol - oral
nystatin
ondansetron

oseltamivir
oxycodone
oxymetazoline - nasal spray
oxytocin (pitocin)
paclitaxel
pembrolizumab
penicillamine
penicillin
pentoxifylline
permethrin
phenazopyridine
phenelzine
phentermine
phenylephrine
phenytoin
pioglitazone
pneumococcal polyvalent
polio vaccine
potassium chloride
PPD skin test
pramipexole
prednisone
pregabalin
pregnenolone
prochlorperazine
progesterone - oral micronized
propranolol
propylthiouracil
pseudoephedrine
raloxifene
RGE vaccine
rifampin
risperidone
rivastigmine
salmeterol
selenium sulfide
sildenafil
sitagliptin
sodium phosphate enema
spironolactone
sucralfate
sulfasalazine
sumatriptan
tamoxifen
tamsulosin
terbinafine
testosterone
tetanus (DTaP and Tdap) vaccines
thyroid, desiccated USP
tiotropium bromide
tofacitinib
tolterodine
trastuzumab
trazodone
triamcinolone
trimethoprim/sulfamethoxazole
triple antibiotic (bacitracin, neomycin, polymyxin B)
valacyclovir
valsartan
varenicline
varicella vaccine
venlafaxine
vinblastine
warfarin
zidovudine (AZT)
zoster vaccine
zolpidem

NOTE: Although individual fluids (e.g., lactated Ringer's solution, D5-W etc.) are not specified above, the examinee is responsible for understanding principles for using fluids administered parenterally in acute-care interventions.

CCSE: SAMPLE CLINICAL SUMMARIES AND QUESTIONS

Sample Case #1
PATIENT: age: 46; sex assigned at birth: female
height: 5'6" (168 cm); weight: 120 lbs (54.4 kg)
PRESENTATION: The patient presents with tenderness and swelling of the left calf. Onset was 6 days ago, the day after she ran a half-marathon. While she is in your office, she begins to experience dyspnea and sharp, stabbing chest pain that worsens when she breathes deeply or coughs.
MEDICAL HISTORY: LMP was 30 days ago. She has not been sexually active since her divorce earlier this year, but she continues to use oral contraceptives to treat dysmenorrhea and menorrhagia.
PSYCHOSOCIAL: She lives with her dog. She is a loan processor at a bank. As a result of the stress associated with the divorce, she has experienced increasingly frequent episodes of anxiety.
HEALTH HABITS: Her vegan diet consists primarily of whole foods, but recently she has developed cravings for simple carbohydrates. She drinks a glass of wine two or three evenings every week. She has never smoked cigarettes or used drugs recreationally. She usually walks her dog twice per day and runs 4 miles (6.4 km) per day, 6 days per week; however, when she is training for a marathon, she runs 10 miles (16.1 km) per day.
SUPPLEMENTS: a daily multivitamin, Eleutherococcus senticosus, and for the past 5 days a topical homeopathic analgesic cream applied to the calf tid
MEDICATIONS: loratadine for seasonal allergies; ethinyl estradiol/norgestimate, which she has used for 6 years
ALLERGIES: seasonal pollens and cat dander
VITAL SIGNS: Her temperature is 99.1°F (37.3°C), BP is 102/60 mmHg, HR is 96 bpm, RR is 18/min., and SpO_2 is 93%.
PHYSICAL EXAMINATION: She appears anxious. You note mild right-sided pedal edema. The right calf is slightly warm to the touch and tender to palpation. Pedal pulses are intact. On auscultation, you hear ectopic beats, decreased breath sounds, and mild crackles bilaterally.
PRELIMINARY LAB RESULTS: Results of lab tests are pending.
DIAGNOSTIC IMAGING: Results of imaging studies are pending.

1. Given her presentation, which finding would most likely be evident on physical examination?
   A. a negative Trendelenburg test
   B. absence of a pleural friction rub
   C. an abnormal ankle-brachial index
   D. an elevated ankle blood pressure reading

2. The most likely diagnosis is _____, but _____ must also be included in the differential.
   A. pulmonary embolism; atelectasis and gastrocnemius tear
   B. pulmonary embolism; myocardial infarction and superficial thrombophlebitis
   C. myocardial infarction; atelectasis and gastrocnemius tear
   D. myocardial infarction; myocardial infarction and superficial thrombophlebitis

3. Which aspect of her clinical picture most likely predisposed her to this condition?
   A. her use of loratadine
   B. her recent onset of anxiety
   C. her marathon training regimen
   D. her long-term use of oral contraceptives

4. You activate EMS. While you await their arrival, which action is most important?
   A. starting an IV line
   B. administering oxygen
   C. monitoring her vital signs
   D. applying heat packs to her calf

5. EMS has still not arrived, and you determine that a homeopathic medicine would be appropriate adjunctive care. The pain in the chest is worse with any movement, and the calf pain is better when you gently palpate it. She has become increasingly irritable during the medical interview. Given the information in her case and these additional aspects of her clinical picture, which homeopathic medicine best fits her presentation?
   A. bryonia
   B. lycopodium
   C. apis mellifica
   D. arnica montana

6. Is a 4 oz tincture that contains Crataegus oxyacantha, Ginkgo biloba, Viburnum prunifolium, and Tilia europaea, to be taken bid, indicated to treat her condition at this time, and if not, why not?
   A. Yes.
   B. Maybe, but only if the results of a lipid panel are WNL.
   C. No, the combination is indicated to treat vascular pain only.
   D. No, the current condition requires emergency assessment and treatment.

7. After she has been treated and the condition has stabilized, she returns for a follow-up. Which nutrient is indicated as part of her treatment plan?
   A. menaquinone (vitamin K_2) 5 mg po
   B. citrus bioflavonoids 300 mg po
   C. vitamin B_6 100 mg and magnesium 500 mg IV
   D. topical vitamin E 400 IU massaged into her calf

8. To prevent recurrence of her condition, the most important change she should make would be to:
   A. regularly practice deep breathing exercises.
   B. use a different medication to treat her gynecological symptoms.
   C. eat a more balanced diet that includes animal protein and anti-inflammatory foods.
   D. begin a more comprehensive stretching and warm-up routine whenever she exercises.

Sample Case # 2

PATIENT: age: 67; sex assigned at birth: male
height: 5'10" (178 cm); weight: 154 lbs (70 kg)

PRESENTATION: The patient presents with severe abdominal pain. Onset was gradual over the past 3 days, but the pain has been especially intense for the past 36 hours. During the past 6 days, he has had only two bowel movements.

MEDICAL HISTORY: He has a 40-year history of constipation and was diagnosed with BPH 2 years ago. He gets up three or four times every night to urinate.

PSYCHOSOCIAL: He lives with his wife and new puppy. He recently retired from an accounting firm where he was employed for 45 years.

HEALTH HABITS: His omnivorous diet consists primarily of sandwiches and microwaveable meals. He drinks a cup of coffee at breakfast and a glass of red wine with dinner. He drinks 1 liter of water every day, mostly in the morning, but he does not drink any liquids after 5 p.m. in order to reduce the number of times he awakens to urinate at night. He does not have a regular exercise regimen, but he walks the puppy for 10 minutes five or six times per day.

SUPPLEMENTS: Serenoa repens 640 mg qd, and for the past 5 days Rhamnus purshiana and Podophyllum peltatum (1:1) 20 gtt bid

MEDICATIONS: none

ALLERGIES: none known

FAMILY HISTORY: His father died of a CVA at age 91, his mother died from breast cancer at age 82, and his younger sister has osteopenia.

VITAL SIGNS: His temperature is 99.3°F (37.4°C), BP is 140/88 mmHg, HR is 96 bpm, and RR is 18/min and shallow.

PHYSICAL EXAMINATION: The abdomen is slightly distended and tympanic to percussion. Palpation elicits LLQ guarding and tenderness to light pressure, and a small tender mass is evident in the LLQ near the midline. There is no rebound tenderness, and obturator and psoas signs are negative.

PRELIMINARY LAB RESULTS:

TEST	U.S. VALUE	U.S. RANGE	IU VALUE	IU RANGE
RBC	$4.6 \times 10^6/\mu L$	$4.6 - 6.2 \times 10^6/\mu L$	$4.6 \times 10^{12}/L$	$4.6 - 6.2 \times 10^{12}/L$
WBC	$15.2 \times 10^3/\mu L$	$4.5 - 11 \times 10^3/\mu L$	$15.2 \times 10^9/L$	$4.5 - 11 \times 10^9/L$
eosinophils	$1.0 \times 10^3/\mu L$	$0 - 0.5 \times 10^3/\mu L$	$1.0 \times 10^9/L$	$0 - 0.5 \times 10^9/L$

DIAGNOSTIC IMAGING: Results of imaging studies are pending.

1. The most likely diagnosis is _____, but _____ must also be included in the differential.
   A. bowel obstruction; diverticulitis and appendicitis
   B. bowel obstruction; toxic megacolon and inflammatory bowel disease
   C. diverticulitis; bowel obstruction and appendicitis
   D. diverticulitis; toxic megacolon and inflammatory bowel disease

2. Which diagnostic procedure is most indicated to confirm the most likely diagnosis?
   A. abdominal CT scan
   B. colonoscopy with biopsy
   C. abdominal ultrasonography
   D. barium enema with radiograph

3. He should discontinue the botanical formula because:
   A. it could aggravate the nocturia.
   B. it could aggravate the pain in the abdomen.
   C. given his family medical history, it would not be safe for him.
   D. it might alleviate the nocturia, but it is unlikely to reduce the pain in the abdomen.

4. Is a prescription for Ricinus communis indicated at this time, and if so, how should it be administered?
   A. No
   B. Yes; cold pack qd
   C. Yes; warm pack qd
   D. Maybe, but only if the liver function tests are WNL.

5. Which drugs are indicated to treat this condition?
   A. prednisone and loperamide
   B. loperamide and ciprofloxacin
   C. ciprofloxacin and metronidazole
   D. metronidazole and prednisone

6. Which dietary recommendation is indicated for him at this time?
   A. a bland diet for 2 weeks, with a gradual return to his typical diet
   B. a high-protein diet for 2 weeks, followed by a moderate-protein diet
   C. a soft, low-fiber diet for 1 month, followed by a high-fiber, whole-foods diet
   D. a diet rich in complex carbohydrates for 1 month, followed by a high-fiber diet

7. After he has recovered from this episode, he returns for a follow-up. Which supplements are indicated as part of his treatment plan?
   A. niacin and potassium
   B. L-arginine and calcium
   C. pyridoxine and wheat germ
   D. L-glutamine and ground flax seed

Sample Case #3
PATIENT: age: 8; sex assigned at birth: male
PRESENTATION: The patient's mother calls you at 11:30 p.m. because the child has developed a loud barking cough and is struggling to breathe. You can hear the child coughing in the background. Onset of the cough was several hours ago, after he played outside in the cold wind. His mother noticed that the day before, he was pale and had copious clear nasal discharge.
MEDICAL HISTORY: He is well-developed and was in good health at his well-child checkup a month ago.
ALLERGIES: none known
VITAL SIGNS: His mother says that his temperature is 101.5°F (38.6°C), HR is 120 bpm, and RR is 60/min.

1. To focus a diagnosis, which question is most important to ask his mother?
   A. When he is coughing, does he vomit?
   B. Is he holding his neck rigidly?
   C. Is there a rash on the abdomen?
   D. What is his breathing like when he is not coughing?

2. The most likely diagnosis is _____, but _____ must also be included in the differential.
   A. pertussis; bronchitis and epiglottitis
   B. pertussis; epiglottitis and foreign object in the airway
   C. laryngotracheobronchitis; bronchitis and pneumonia
   D. laryngotracheobronchitis; pertussis and foreign object in the airway

3. His mother tells you that while he was playing outside, he jumped off a swing at the wrong moment, tripped, and scraped his knee. He became extremely distraught and frightened, and his symptoms started soon after this event. Accidents and injuries frighten him because he has a fear of dying. Given the information in his case and these additional aspects of his clinical picture, which homeopathic medicine best fits his presentation?
   A. drosera
   B. belladonna
   C. aconitum napellus
   D. eupatorium perfoliatum

4. Which home treatment would offer the most immediate relief?
   A. steam inhalation
   B. a nutritive enema
   C. effleurage over the rib area
   D. being wrapped in hot blankets

5. You recommend that he be brought to your clinic the next day. While you are drawing a blood sample for a CBC, a phlebotomy tube filled with blood falls onto the floor and breaks. The most important action to take is:
   A. wipe the area of the spill with alcohol.
   B. have office staff tested for possible exposure to blood-borne pathogens.
   C. immediately remove the broken tubing and place it in a sharps container.
   D. provide the staff who clean up the spill with personal protective equipment.

Sample Case #4
PATIENT: age: 55; sex assigned at birth: female
height: 5'4" (162.6 cm); weight: 155 lbs (70.3 kg)
PRESENTATION: The patient presents with left shoulder pain. Onset was 2 months ago. When she is at rest, the pain is a continuous, diffuse ache, but 10 days ago she noticed that use of the left arm and sleeping on the left side increased the severity of the pain. She has no history of trauma to the shoulder or any prior episodes of the pain.
MEDICAL HISTORY: Two years ago, she was diagnosed with hypothyroidism.
PSYCHOSOCIAL: She is single and lives with her dog. She is a writer.
HEALTH HABITS: Her omnivorous diet is high in simple carbohydrates such as bread and pasta. She does not drink alcohol or smoke cigarettes. She uses psilocybin occasionally. She spends 4 to 8 hours seated at her computer every day. She walks her dog for 15 minutes, two times per day. For the past month, she has been unable to hold the dog's leash in the left hand.
SUPPLEMENTS: a daily multivitamin
MEDICATIONS: thyroid USP 30 mg qd, acetaminophen 1,000 mg qid since the pain began
ALLERGIES: none known
VITAL SIGNS: Her temperature is 97.6°F (36.4°C), BP is 130/84 mmHg, HR is 80 bpm, and RR is 18/min.
PHYSICAL EXAMINATION: She is right-hand dominant. Palpation elicits point tenderness deep to the anterior deltoid of the left shoulder. Active and passive ROM of the left shoulder girdle are moderately diminished in all directions. ROM of the cervical spine is within normal limits, and DTRs are 2+ bilaterally. Valsalva test is negative. Cardiopulmonary auscultation and abdominal examination are unremarkable.
PRELIMINARY LAB RESULTS: Lab tests were not ordered at this appointment.
DIAGNOSTIC IMAGING: Imaging studies were not ordered at this appointment.

1. The PE suggests inflammation or injury to the _____, which would be confirmed by a positive _____.
   A. biceps tendon; Neer test
   B. biceps tendon; Speed test
   C. glenohumeral capsule; Neer test
   D. glenohumeral capsule; Speed test

2. The most likely diagnosis is _____, but _____ must also be included in the differential.
   A. adhesive glenohumeral capsulitis; shoulder dislocation and thoracic outlet syndrome
   B. adhesive glenohumeral capsulitis; bicipital tendonitis and partial thickness rotator cuff tear
   C. bicipital tendinopathy; shoulder dislocation and thoracic outlet syndrome
   D. bicipital tendinopathy; adhesive glenohumeral capsulitis and partial thickness rotator cuff tear

3. A diagnosis of _____ would be supported if the symptoms were most aggravated by _____.
   A. bicipital tendinopathy; abduction and external rotation
   B. bicipital tendinopathy; resisted flexion and supination of the arm
   C. adhesive capsulitis; resisted flexion and supination of the arm
   D. adhesive capsulitis; adduction and pronation of the arm

4. She receives in-office hydrotherapy, and you provide her with recommendations for home treatment. Which botanical medicine is indicated to treat her condition, and why?
   A. Avena sativa, for its analgesic effect
   B. Curcuma longa, for its anti-inflammatory effect
   C. Piscidia erythrina, for its anti-inflammatory effect
   D. Harpagophytum procumbens, for its analgesic effect

5. A prescription of _____ is indicated because it will _____.
   A. glucosamine; increase IL-6
   B. glucosamine; reduce inflammation
   C. bromelain; increase IL-6
   D. bromelain; reduce inflammation

6. She returns for a follow-up 2 weeks later. Is an exercise regimen indicated at this time, and if so, what is the best exercise plan?
   A. No, exercise is contraindicated at this stage in her recovery.
   B. Yes; shoulder ROM exercises
   C. Yes; isometric shoulder exercises
   D. Yes; overhead exercises with light free weights

7. Six weeks later, the symptoms have significantly improved. You determine that she would benefit from naturopathic manipulative therapy to the affected shoulder to prevent recurrence, but first it is important to make sure she does not have _____.
   A. scoliosis
   B. breast implants
   C. an osteolytic bone lesion
   D. a history of autoimmune (Hashimoto) thyroiditis

8. If the symptoms return, which diagnostic study should be done?
   A. MRI
   B. radiography
   C. ultrasonography
   D. a nerve conduction study

Sample Case #5
PATIENT: age: 10; sex assigned at birth: female
height: 60" (152.4 cm) [98th percentile]; weight: 93 lbs (42.2 kg) [91st percentile]
PRESENTATION: The patient presents with two pruritic lesions on the right arm. She noticed the lesions 1 week ago, and during this time they have not changed.
MEDICAL HISTORY: She has always been in good health, and she has had all scheduled vaccinations.
PSYCHOSOCIAL: She lives with her parents and two kittens who were adopted 1 week ago. She is in the 5th grade.
HEALTH HABITS: She refuses to eat most vegetables, although she loves fruit, chicken, and pasta. She is an active child and enjoys playing tennis.
SUPPLEMENTS: a children's daily multivitamin
MEDICATIONS: none
ALLERGIES: none known
VITAL SIGNS: Her temperature is 98.4°F (36.9°C), HR is 100 bpm, and RR is 22/min.
PHYSICAL EXAMINATION: Lymphadenopathy is not evident, but two 2.5 cm erythematous annular plaques are visible on the right upper arm. The plaques are not painful to palpation. The advancing borders of the lesions are slightly raised and scaling, and a few pinpoint pustules are present around the edge. No other similar lesions are evident, although there are a few small excoriations around the wrist. PE is otherwise unremarkable.
PRELIMINARY LAB RESULTS: The results of lab tests are pending.
DIAGNOSTIC IMAGING: Imaging studies were not ordered at this appointment.

1. The most likely diagnosis is _____, but _____ must also be included in the differential.
   A. impetigo; pemphigus and scabies
   B. impetigo; contact dermatitis and varicella
   C. tinea corporis; impetigo and insect bites
   D. tinea corporis; pityriasis rosea and varicella

2. To determine the cause of the symptoms, you collect a skin scraping. What needs to be done to prepare the specimen for evaluation?
   A. Use a Gram stain process.
   B. Apply 10% KOH to the specimen.
   C. Fix the specimen in formaldehyde.
   D. Culture the specimen on blood agar.

3. What do you expect the specimen to show?
   A. mites
   B. hyphae
   C. hemolytic colonies
   D. hyperproliferation of epidermal cells

4. Which drug is indicated to treat the condition?
   A. acyclovir
   B. penicillin
   C. terbinafine
   D. doxycycline

5. Her father says he does not want her to take any drugs. Which botanical medicine will have a similar action to the indicated drug?
   A. Passiflora incarnata po
   B. Selenicereus grandiflorus po
   C. topical Melaleuca alternifolia
   D. topical Podophyllum peltatum

A DIFFERENT FORMAT FOR THIS TYPE OF QUESTION WOULD BE:

6. You consider topical treatment with Melaleuca alternifolia and decide that:
   A. it would be safe for her, and it is indicated to treat the condition.
   B. it would be safe for her, but it is not indicated to treat the condition.
   C. although it is indicated to treat the condition, it would not be safe for a patient of her age.
   D. it would not be safe for her, and it is not indicated to treat the condition.

7. The lesions itch and burn intensely after she bathes in hot water and when she is in bed. She prefers to be barefoot, and she sticks one foot out of the covers at night. Given the information in her case and these additional aspects of her clinical picture, which homeopathic medicine best fits her presentation?
   A. sulphur
   B. pulsatilla
   C. chamomilla
   D. calcarea carbonica

Sample Case #6
PATIENT: age: 28; sex assigned at birth: male
height: 5'10" (177.8 cm); weight: 168 lbs (76.2 kg)
PRESENTATION: Four weeks after a 3-month trip to the Middle East, Africa, and Europe, the patient presents with fever, malaise, mild nausea, and occasional watery diarrhea. Onset was 1 week ago. He has been experiencing night sweats, and this week he has had several episodes of chills, followed by fever, headache, and diaphoresis. The episodes occur in the afternoon and last several hours, after which he feels better. Before he left for the trip, he received all recommended vaccinations and took a prophylactic antimalarial drug. While he was traveling, he noticed several insect bites on his forearms, but he says these quickly resolved on their own.
MEDICAL HISTORY: He had varicella and strep pharyngitis infections when he was a child.
PSYCHOSOCIAL: He lives alone and is not in a long-term relationship. He graduated from university 1 month ago and is currently looking for a job in hotel management.
HEALTH HABITS: His omnivorous diet includes fresh organic fruits and vegetables, and he enjoys preparing the Cuban foods he ate while growing up. When he is in a hurry, he skips meals and eats protein bars. He drinks coffee in the mornings. While he attended university, his alcohol consumption was sometimes excessive, but now he drinks only one or two bottles of beer with his friends on weekends. Occasionally he has unprotected sex. He typically uses the elliptical and weight machines at a gym for 1 hour, three times per week, but since he returned home, he has had less energy for exercise.
SUPPLEMENTS: He takes sublingual vitamin B_{12} before he exercises.
MEDICATIONS: loratadine prn
ALLERGIES: pollens
FAMILY HISTORY: His parents both have hypertension, and his mother has migraines.
VITAL SIGNS: His temperature is 99.3°F (37.3°C), BP is 110/60 mmHg, HR is 88 bpm, and RR is 12/min.
PHYSICAL EXAMINATION: He appears lethargic, and his hands are diaphoretic. Palpation elicits tenderness in the RUQ, LUQ, and descending colon.
PRELIMINARY LAB RESULTS:

LAB TEST	U.S. VALUE	U.S. RANGE	IU VALUE	IU RANGE
RBC	$4.2 \times 10^6/\mu L$	$4.6 - 6.2 \times 10^6/\mu L$	$4.2 \times 10^{12}/L$	$4.6 - 6.2 \times 10^{12}/L$
hgb	12.0 g/dL	13.8 - 17.2 g/dL	120 g/L	130 - 170 g/L
hct	38%	41 - 50%	0.38	0.41 - 0.50

Thick and thin Giemsa-stained smears under oil immersion magnification (1000x) show oval-shaped erythrocytes containing trophozoites with Schüffner dots and schizonts, indicating infection with Plasmodium ovale.
Chemistry panel is WNL.
Urine is dark in color. Urinalysis is WNL.
HIV testing is negative.
DIAGNOSTIC IMAGING: Imaging studies were not ordered at this appointment.

1. The most likely diagnosis is gastroenteritis caused by Plasmodium ovale, and the results of his urinalysis are indicative of _____.
   A. precipitated urates in an acid urine
   B. dehydration subsequent to watery stools
   C. an abnormal concentration of urine during episodes of high fever
   D. free hemoglobin produced by hemolysis, and possible renal failure

2. He prefers to treat the condition naturopathically, without the use of drugs. You prescribe a botanical and a homeopathic medicine. Which botanical medicine is indicated to treat his condition, and for which action?
   A. Artemisia annua; antiparasitic
   B. Artemisia annua; immune system support
   C. Artemisia absinthium; antiparasitic
   D. Artemisia absinthium; immune system support

3. For the past few weeks, he has had an aversion to being touched. This morning, a neighborhood cat rubbed against his legs. the sensation disturbed him and he felt frightened, which bothered him because the cat has always been friendly and he loves animals. Given the information in his case and these additional aspects of his clinical picture, which homeopathic medicine best fits his presentation?
   A. nux vomica
   B. podophyllum
   C. china officinalis
   D. arsenicum album

4. One week later, he returns to your clinic and tells you that because his symptoms have not resolved, he is willing to add a drug to his treatment plan. Which drug is indicated to treat his infection?
   A. isoniazid
   B. mebendazole
   C. metronidazole
   D. hydroxychloroquine

Sample Case #7
PATIENT: age: 34; sex assigned at birth: male
height: 6'1" (185.4 cm); weight: 210 lbs (95.3 kg), which is 15 lbs (6.8 kg) less than he weighed 2 months ago
PRESENTATION: The patient presents while he is having an episode of palpitations, dyspnea, and mild chest pain. Onset of the episodes was 2 months ago. During these episodes, he becomes diaphoretic, he develops an occipital headache, and his heart beats faster.
MEDICAL HISTORY: Two years ago, he was diagnosed with hypertension. Despite treatment, he continues to experience hypertensive episodes.
PSYCHOSOCIAL: He lives with his girlfriend. He works as a computer programmer, and he volunteers as a youth mentor every Saturday. He has an active social life.
HEALTH HABITS: His vegetarian diet is well balanced. On weekends, he drinks two or three bottles of beer. He does not smoke cigarettes. He smokes cannabis occasionally. He jogs 3 miles (5 km), 3 days per week.
SUPPLEMENTS: a daily multivitamin, CoQ_{10} 100 mg qd, fish oil 3 g qd
MEDICATIONS: lisinopril 20 mg qd, amlodipine 10 mg qd
ALLERGIES: cat dander, ragweed
FAMILY HISTORY: unremarkable
VITAL SIGNS: His temperature is 98.9°F (37.2°C), BP is 150/100 mmHg, HR is 110 bpm, and RR is 18/min.
PHYSICAL EXAMINATION: He is pale and diaphoretic, and the hands and feet are cold to the touch. Fundoscopic examination reveals an increased retinal arteriolar light reflex and flame hemorrhages bilaterally. Auscultation reveals a regular tachycardic rhythm with no rubs, gallops, or murmurs. The point of maximal cardiac impulse is at the 6th intercostal space.
PRELIMINARY LAB RESULTS:

LAB TEST	U.S. VALUE	U.S. RANGE	IU VALUE	IU RANGE
TSH	1.2 IU/mL	0.5 – 5.0 IU/mL	1.2 mIU/L	0.5 – 5.0 mIU/L
glucose (fasting)	105 mg/dL	< 100 mg/dL	5.8 mmol/L	< 5.6 mmol/L

DIAGNOSTIC IMAGING:
Imaging studies were not ordered at this appointment.

1. Which diagnostic procedure is indicated to establish the most likely diagnosis?
   A. A serum aldosterone test and CRP would be used to diagnose cardiomyopathy.
   B. A serum aldosterone test and CRP would be used to diagnose pheochromocytoma.
   C. 24-hour urine catecholamine and metanephrine tests would be used to diagnose cardiomyopathy.
   D. 24-hour urine catecholamine and metanephrine tests would be used to diagnose pheochromocytoma.

2. During the physical examination, he develops a sudden, severe headache and mild dyspnea, and he becomes very anxious. His BP is now 196/122 mmHg. You assess _____, and the most appropriate action is to _____.
   A. hypertension stage I; administer intravenous D5W, then arrange for his girlfriend to drive him to the ED
   B. hypertension stage II; activate EMS for immediate transport to the ED
   C. hypertensive urgency; administer intravenous D5W, then arrange for his girlfriend to drive him to the ED
   D. hypertensive emergency; activate EMS for immediate transport to the ED

3. He loses consciousness, but he is breathing and you are able to detect a weak pulse. Are chest compressions indicated at this time, and if so, where should you place your hands?
   A. No
   B. Maybe, but only if he becomes apneic.
   C. Yes; over the upper half of his sternum
   D. Yes; over the lower half of his sternum

4. EMS arrives and he is transported to the ED. Which drug is indicated to address his acute presentation?
   A. aspirin
   B. atenolol
   C. amlodipine
   D. amiodarone

5. His acute condition is treated, and he returns to your clinic 2 months later for adjunctive care of his chronic hypertension. You prescribe a botanical medicine and provide dietary recommendations. He says that now he feels energetic enough to resume his exercise regimen. Is exercise safe for him at this time, and if so, which initial exercise plan is indicated?
   A. No, it would not be safe for him to resume his exercise regimen at this time.
   B. Maybe, but a stress ECG should be done first, and the results must be WNL.
   C. Yes, he should begin with stretching and strengthening exercises.
   D. Yes, he should begin with 10 minutes of walking at a moderate pace and increase the duration by 5 minutes every day until he is walking for 60 minutes per day.

Sample Case #8
PATIENT: age: 4; sex assigned at birth: male
height: 3'5" (104.2 cm) [65th percentile]; weight: 40 lbs (18.2 kg) [80th percentile]
PRESENTATION: The patient presents with fever, malaise, sore throat, and a cough. The symptoms began yesterday evening with a mild sore throat, but they had worsened by the morning.
MEDICAL HISTORY: He has been in good health except for an occasional URI. Two months ago, he had an adverse reaction to his most recent routine vaccinations, and his parents have not continued with the immunization schedule.
PSYCHOSOCIAL: He lives with his parents and his 2-year-old sister. He attends preschool and has many friends.
HEALTH HABITS: His family's omnivorous diet includes fresh fruits and vegetables with each meal. He is not a picky eater and likes most vegetables. He plays outside every day and participates in a preschool soccer program every Sunday afternoon.
SUPPLEMENTS: none
MEDICATIONS: none
ALLERGIES: penicillins
FAMILY HISTORY: unremarkable
VITAL SIGNS: His temperature is 101.6°F (38.7°C), BP is 100/62 mmHg, HR is 130 bpm, and RR is 30/min.
PHYSICAL EXAMINATION: He is pale and listless, and he has marked halitosis. When you ask him questions, he hesitates to answer. When he does speak, his voice is hoarse. Bilateral submandibular lymphadenopathy is evident on palpation. The pharyngeal mucosa is erythematous, and the tonsils are covered by an adherent grey pseudomembrane. Auscultation reveals soft expiratory wheezing, but no stridor or use of accessory muscles for breathing are evident.
PRELIMINARY LAB RESULTS: Results of lab tests are pending.
DIAGNOSTIC IMAGING: Imaging studies were not ordered at this appointment.

1. Can a diagnosis of diphtheria be made based on the PE findings alone, and if not, which result will confirm the diagnosis?
   A. Yes
   B. No; positive biopsy of the pseudomembrane
   C. No; Gram stain of nasopharyngeal and pharyngeal samples that shows club-shaped bacilli
   D. No; lateral radiograph of the neck that shows an enlarged epiglottis protruding from the anterior wall of the hypopharynx (thumb sign)

2. His mother asks if you can prescribe a homeopathic medicine that would provide rapid relief. You take his homeopathic case and learn that when he swallows, he winces in pain. Since he became ill, he has been easily irritated when someone interrupts whatever he is doing. Given the information in his case and these additional aspects of his clinical picture, which homeopathic medicine best fits his presentation?
   A. lachesis
   B. euphrasia
   C. hypericum
   D. hepar sulphuris

3. If _____ is prescribed, he would be expected to have improved immune function within 2 days; however, too high a dosage could _____.
   A. Curcuma longa; cause a rash
   B. Curcuma longa; exacerbate the malaise
   C. Lomatium dissectum; cause a rash
   D. Lomatium dissectum; exacerbate the malaise

4. His mother uses steam inhalations as a home treatment when he or his sister contract uncomplicated URIs. Are steam inhalation treatments indicated to treat the current condition, and why or why not?
   A. Yes, steam inhalation would help loosen the bronchial congestion.
   B. Yes, but treatments should not last longer than 15 seconds to avoid fluid accumulation in the lungs.
   C. Yes, steam inhalation would relax the smooth muscle of the respiratory passages and suppress the cough.
   D. No, steam inhalation is not indicated for the treatment of diphtheria.

5. His sister is currently asymptomatic and she has had all her scheduled immunizations. What is the standard of care to prevent transmission of the infection to her?
   A. She should receive prophylactic antibiotics.
   B. The patient should be hospitalized and quarantined throughout the acute course of the illness.
   C. Her parents should observe her closely, and at the first signs of illness, she should be scheduled for an appointment.
   D. No special precautions are required, as she is up-to-date on her vaccinations.

6. His parents tell you that since he has contracted diphtheria, they believe he does not need to receive the rest of the scheduled diphtheria booster vaccinations. The correct response is:
   A. he should be vaccinated, as the illness does not confer immunity.
   B. he does not need additional vaccinations for diphtheria, as the illness has conferred immunity.
   C. he does not need additional vaccinations for diphtheria, but anyone who has had close contact with him, has never been vaccinated, and has not previously had diphtheria will need to be vaccinated.
   D. he does not need additional vaccinations for this condition, and others who have had close contact with him will also have acquired immunity from exposure to him, whether or not they contract diphtheria.

7. Are the parents at risk of contracting diphtheria, and if not, why not?
   A. Yes, they can expect to be infected and because they are adults, they are likely to experience severe illness.
   B. Maybe,if it has been more than 10 years since their last Tdap vaccination, they should receive a booster.
   C. No, diphtheria causes symptoms only in children.
   D. No, and at this point, it is too late for a vaccination to protect them from infection.

Sample Case #9
PATIENT: age: 54; sex assigned at birth: female
height: 5'4" (162.6 cm); weight: 158 lbs (71.7 kg)
PRESENTATION: The patient presents with episodes of heartburn, diaphoresis, fatigue, and heavy, squeezing chest pain. Onset was 2 days ago. The symptoms are worse with exertion and improve with rest. She does not experience dyspnea. She thinks she might have food poisoning because she has not felt well since she ate in a restaurant 2 nights ago.
MEDICAL HISTORY: At her last appointment 5 years ago, her BP was 142/92 mmHg. She chose to treat her borderline hypertension with lifestyle modifications. Because of her busy schedule, she has not seen a healthcare provider since then.
PSYCHOSOCIAL: She lives with her wife and two cats. She is a landscape architect and works 40 to 50 hours every week.
HEALTH HABITS: Her omnivorous diet consists primarily of organic meats, whole grains, and fresh fruits and vegetables. She does not drink alcohol, smoke cigarettes, or use drugs recreationally. Her work requires a moderate degree of physical activity and she does not have time for additional exercise. For the past 5 days, she has been walking longer distances than usual at the job site.
SUPPLEMENTS: a daily multivitamin, calcium 1,000 mg qd
MEDICATIONS: none
ALLERGIES: none known
FAMILY HISTORY: Her father died of an MI at age 60, and her mother has hypertension.
VITAL SIGNS: Her temperature is 98.4°F (36.9°C), BP is 162/90 mmHg, HR is 90 bpm, and RR is 16/min.
PHYSICAL EXAMINATION: The skin is cool and clammy. Neurological examination is unremarkable. Peripheral edema is not evident and the lungs are clear. On cardiac auscultation, a grade II/VI systolic murmur is audible, and a soft S4 is heard over the apex.
PRELIMINARY LAB RESULTS:

TEST	U.S. VALUE	U.S. RANGE	IU VALUE	IU RANGE
cholesterol (total)	250 mg/dL	< 200 mg/dL	6.0 mmol/L	< 5.2 mmol/L
LDL	165 mg/dL	< 100 mg/dL	4.1 mmol/L	< 2.6 mmol/L
HDL	30 mg/dL	> 40 mg/dL	0.85 mmol/L	> 1.3 mmol/L

DIAGNOSTIC IMAGING:
Imaging studies were not ordered at this appointment.

1. The most likely diagnosis is _____ but _____ must also be included in the differential.
   A. pleurisy; costochondritis and GERD
   B. pleurisy; esophageal motility disorder and costochondritis
   C. acute coronary syndrome; GERD and costochondritis
   D. acute coronary syndrome; esophageal motility disorder and pleurisy

2. You activate EMS and she is transported to the ED. The most appropriate first step would be to order a(n) _____ to assess for _____.
   A. echocardiogram; pleurisy
   B. CPK-MB; pleurisy
   C. ECG; acute coronary syndrome
   D. chest radiograph; acute coronary syndrome

A DIFFERENT FORMAT FOR THIS TYPE OF QUESTION WOULD BE:

3. You activate EMS and she is transported to the ED. If an ECG showed _____, it would indicate that she has _____.
   A. premature beats; myocardial ischemia
   B. wide QRS complex; a 2nd degree heart block
   C. prolonged PR interval; a 3rd degree heart block
   D. elevated ST segments; myocardial ischemia

4. Which drug is indicated to treat her acute condition?
   A. aspirin
   B. atropine
   C. acetaminophen
   D. hydrochlorothiazide

5. She is released from the hospital and calls you the next day. The symptoms have remitted except for a single episode of chest pain that awakened her at 1:00 a.m. She got up and drank hot tea, which relieved the pain. Given the information in her case and these additional aspects of her clinical picture, which homeopathic medicine best fits her presentation?
   A. phosphorus
   B. arnica montana
   C. arsenicum album
   D. aconitum napellus

Sample Case #10
PATIENT: age: 3; sex assigned at birth: male
height: 3'2" (96.5 cm) [63rd percentile]; weight: 30 lbs (13.6 kg) [31st percentile]
PRESENTATION: The patient presents with periumbilical pain. For the past 3 days he has eaten very little, and this morning he vomited. He has not passed a stool in 4 days, and the last bowel movement contained a small amount of bright red blood.
MEDICAL HISTORY: As an infant, he was treated for patent ductus arteriosus. He has a history of constipation with rectal bleeding.
PSYCHOSOCIAL: He lives with his parents and two older siblings. He attends preschool.
HEALTH HABITS: He dislikes many foods and prefers to eat pizza, macaroni and cheese, and breakfast cereals with added sugar. He likes to play outside, and he just learned to ride a tricycle.
SUPPLEMENTS: a daily children's multivitamin
MEDICATIONS: none
ALLERGIES: none known
FAMILY HISTORY: unremarkable
VITAL SIGNS: His temperature is 98.0°F (36.7°C), BP is 100/60 mmHg, HR is 106 bpm, and RR is 18/min.
PHYSICAL EXAMINATION: On auscultation, bowel sounds are diminished, and a high-pitched "ping" sound is audible to the right of the umbilicus. Palpation of this region reveals a tender sausage-shaped mass.
PRELIMINARY LAB RESULTS: CBC and urinalysis are WNL.
DIAGNOSTIC IMAGING: Results of imaging studies are pending.

1. The most likely diagnosis is _____, but _____ must also be included in the differential.
   A. toxic megacolon; appendicitis and biliary colic
   B. toxic megacolon; intussusception and constipation
   C. Meckel diverticulum; intussusception and appendicitis
   D. Meckel diverticulum; acute gastroenteritis and biliary colic

2. Which imaging study would definitively diagnose this condition?
   A. PET scan
   B. endoscopy
   C. flexible sigmoidoscopy
   D. radionuclide imaging

3. He feels better when he lies down in a fetal position with a heating pad pressed to the abdomen. Given the information in his case and this additional aspect of his clinical picture, which homeopathic medicine best fits his presentation?
   A. colocynthis
   B. lycopodium
   C. nux vomica
   D. staphysagria

4. Is a prescription for a botanical tincture indicated to help prevent esophageal irritation caused by vomiting, and if so, which one?
   A. No, botanical medicine is contraindicated because he should not receive anything by mouth.
   B. Yes; aloe vera gel, for its anti-inflammatory effect
   C. Yes; Zingiber officinale tincture, for its anti-nausea effect
   D. Yes; Mentha piperita infusion, for its antispasmodic effect

A DIFFERENT FORMAT FOR THIS TYPE OF QUESTION WOULD BE:

5. Is Aloe vera indicated to treat his condition, and if so, what part of the plant should be used?
   A. Yes; the gel, for its vulnerary effect
   B. Yes; the leaf, for its anti-inflammatory effect
   C. Maybe, the root will provide a laxative effect, but it should be used only if his electrolyte levels are WNL.
   D. No, Aloe vera in any form is contraindicated for him.

6. Is a physiotherapeutic modality indicated to treat his condition, and if so, which one?
   A. Yes; high-volt galvanism
   B. Yes; Ricinus communis warm packs
   C. Yes; visceral manipulation of the descending colon
   D. No, he should be referred to a pediatric surgeon.

Sample Research Question (a standalone question unrelated to the previous cases)

You have prescribed Hydrangea arborescens for patients who have urolithiases, and their conditions have all improved with this treatment. The most recent issue of the *New Zealand Journal of Botanical Medicine* included a randomized, controlled clinical trial on the effect of Hydrangea arborescens in the treatment of urolithiases. Results are $t(1, 28) = 2.50$, $p = 0.06$. What does this mean, and how should the information be used?

A. H. arborescens will be effective for 94% of patients who have urolithiases. It can be prescribed for patients who have this condition with the expectation that it will benefit them.
B. Research results are significant if $p = 0.05$; the additional 0.01 in this study can undoubtedly be accounted for by some methodological flaw in the study. H. arborescens can be prescribed for patients who have urolithiases with the expectation that it will benefit them.
C. Because this study was reported in a peer-reviewed journal, it can be assumed that H. arborescens is not effective in the treatment of urolithiases, and it should not be expected to help patients who have this condition.
D. The failure of the results to reach statistical significance despite your experience with H. arborescens may indicate that the study failed to control for some important factor. More research results are needed before discontinuing to prescribe the botanical for the treatment of urolithiases.

CCSE: ANSWER KEY

Case #1:	1. C	2. B	3. D	4. B	5. A	6. D	7. B	8. B
Case #2:	1. C	2. A	3. B	4. C	5. C	6. C	7. D	
Case #3:	1. D	2. D	3. C	4. A	5. D			
Case #4:	1. B	2. D	3. B	4. B	5. D	6. B	7. C	8. A
Case #5:	1. C	2. B	3. B	4. C	5. C	6. A	7. A	
Case #6:	1. B	2. A	3. C	4. D				
Case #7:	1. D	2. D	3. A	4. B	5. C			
Case #8:	1. C	2. D	3. C	4. A	5. A	6. A	7. B	
Case #9:	1. C	2. C	3. D	4. A	5. C			
Case #10:	1. C	2. D	3. A	4. A	5. D	6. D		

Research Question: D

NPLEX PART II - CLINICAL ELECTIVE EXAMINATIONS

There are currently four Part II Elective Examinations available. They are called “elective” because not every licensing/registration jurisdiction requires these additional exams. You can register to take any or all of them. The NABNE website or the most up-to-date copy of the *NABNE Examinee Handbook* has information regarding which jurisdictions require passage of any or all of these examinations.

There is some overlap on the drug lists for the CCSE and the Elective Pharmacology Examination (EPE). However, the lists are not identical, and you should review both lists carefully.

Even if you are not currently planning on practicing in a jurisdiction that requires one of the elective exams, in the future you may move to another jurisdiction that does require one or all of the electives, or your current jurisdiction may choose to add it to licensure/registration requirements. Consider taking the elective exams when you take the CCSE.

ELECTIVE EXAMINATION: MINOR SURGERY

A minimally competent entry-level naturopathic medical doctor who will be using in-office minor surgical procedures as part of a naturopathic practice should be able to demonstrate knowledge in the following competencies:

I. <u>DIAGNOSIS:</u> Assess and diagnose common conditions (see list below) that can be treated in-office with minor surgical procedures. When appropriate, make referrals for procedures that are beyond the naturopathic scope of practice.

A. Take a medical and psychosocial history and interpret findings.
B. Perform a physical examination and interpret findings.
C. Recognize the signs and symptoms of the condition and characteristics of a typical lesion.
D. Make a diagnosis and generate a differential diagnosis.
E. Delineate the pathogenesis of conditions and determine possible etiologies.
F. Collect and prepare specimens for lab evaluation, select necessary lab tests, and interpret results.
G. Identify relevant risk factors.
H. Determine the prognosis and potential sequelae.
I. Identify high-risk patients and know when referral is necessary.

II. <u>TREATMENT SELECTION</u>: Treat common conditions using the most appropriate therapeutic interventions.

A. Identify the indications for and contraindications to biopsy of superficial skin lesions.
B. Identify the indications for and contraindications to excision and removal of superficial skin lesions.
C. Identify the indications for and contraindications to incision and drainage of superficial skin lesions.
D. Identify the indications for and contraindications to cryosurgery of superficial skin lesions.
E. Identify the indications for and contraindications to chemical cautery or electrocautery of superficial skin lesions.
F. Identify the indications for and contraindications to electrodesiccation (with or without curettage) of superficial skin lesions.
G. Identify the indications for and contraindications to lift-and-snip of superficial skin lesions.
H. Identify the indications for and contraindications to nail trephination, removal, and ablation.
I. Identify treatment options for traumatic wound care and laceration repair.
J. Know topical, injectable, or oral treatments for skin conditions.
K. Know other treatment options for skin lesions that would be performed upon referral to specialty practitioners.
L. Ensure patient safety by identifying patient characteristics that would influence selection of treatment and procedures.

III. PROCEDURES Apply principles for safe performance of minor surgical procedures to patient care.

A. Identify common infectious agents, understand the infective process, and treat infections that result from breach of the dermal barrier.
B. Apply the principles of pre-operative procedures and site preparation (including pre-operative instructions to patients).
C. Apply the principles of anesthesia selection and administration, including different types of injectable, topical, and cryo-anesthetics.
D. Select the most appropriate instruments and materials required for minor surgical procedures.
E. Know how to correctly perform: biopsy; excision and removal; incision and drainage; cryosurgery; chemical cautery or electrocautery; electrodesiccation with or without curettage; nail trephination, removal, and ablation; and laceration repair.
F. Apply principles of hemostasis, including patient positioning, choice of anesthesia, topical hemostatic agents, and electrocautery.
G. Apply the principles of wound care, including irrigation and debridement.
H. Apply the principles of wound closure, including selection of sutures, tissue adhesives, staples, tapes, and appropriate application techniques.
I. Manage complications that arise during surgical procedures.
J. Employ precautionary methods to protect the practitioner from infection and injury.

IV. POSTOPERATIVE CARE: Manage postoperative patient care.

A. Provide appropriate postoperative care.
B. Communicate appropriate postoperative instructions to patients.
C. Apply the principles of postoperative pain management.
D. Identify and treat postoperative complications.
E. Provide appropriate monitoring and follow-up.

Conditions

A. **Pustular Lesions** (14%)
abscess, carbuncle, furuncle
B. **Cystic Formations** (14%)
cysts (dermoid, epidermoid, sebaceous, ganglion, trichilemmal), milia
C. **Skin Lesions** (33%)
acrochordon, actinic keratosis, cherry hemangioma, cutaneous horn, keratoacanthoma, lentigine, molluscum contagiosum, nevus, pyogenic granuloma, sebaceous hyperplasia, seborrheic keratosis, telangiectasia, verruca
D. **Nail Conditions** (14%)
felon, ingrown nail, paronychia, subungual hematoma
E. **Anal and Genital Conditions** (5%)
anal fistula, condylomata acuminata, pilonidal cyst
F. **Masses and Neoplasms** (14%)
basal cell carcinoma, dermatofibroma, lipoma, melanoma, squamous cell carcinoma
G. **Traumatic Injuries** (6%)
bites, foreign bodies, lacerations

MINOR SURGERY: SAMPLE QUESTIONS

Sample Case #1
PATIENT: age: 25; sex assigned at birth: female
The patient presents with a painful swelling in the left axilla that began as a pimple 4 days ago. She has no prior history of these symptoms and no known allergies to drugs or medications. Her vital signs are all within normal limits. Physical examination reveals a single, erythematous, edematous 3.0 cm lesion in the recently shaved left axilla that is exquisitely painful to palpation.

1. Based on this presentation, a diagnosis of _____ would be appropriate if physical examination revealed _____.
   A. abscess; a soft fluctuant mass
   B. abscess; an indurated nodular mass
   C. sebaceous cyst; a palpable fixed mass
   D. sebaceous cyst; a discrete palpable nodule

2. Which procedure is indicated to treat this lesion, and what would be the best technique for administering anesthesia?
   A. incision and drainage; field block
   B. excision and removal; nerve block
   C. incision and drainage; a topical anesthetic
   D. excision and removal; direct injection into the lesion

3. To perform the procedure on this lesion, which instruments should be included in the surgical pack?
   A. a #11 scalpel and forceps
   B. a #11 scalpel and hemostat
   C. a #15 scalpel and hemostat
   D. a #15 scalpel and iris scissors

4. After the procedure, the doctor should:
   A. close the wound with steri-strips.
   B. pack the site with iodoform gauze.
   C. close the wound with cutaneous removable sutures.
   D. close the wound with subcutaneous absorbable sutures.

5. She returns 1 week after the procedure with purulent drainage from the operative site. What is the most likely reason?
   A. There was trauma to the wound site.
   B. The drainage is part of the normal healing response.
   C. The surgical wound became infected from an exogenous source.
   D. The original lesion was multilocular and was not drained completely.

Sample Case #2
PATIENT: age: 37; sex assigned at birth: male
The patient presents with a bump behind the right ear. He says the bump has been present for at least 1 year but has become larger in the past month. He wants it removed for cosmetic reasons. He has no known drug allergies. Physical examination reveals a single, round, 2.0 cm mass that is nontender to palpation.

1. An appropriate diagnosis would be _____ if the mass was _____.
   A. sebaceous cyst; fluctuant
   B. nevus; indurated and fixed
   C. nevus; indurated and mobile
   D. sebaceous cyst; soft and mobile

2. The most appropriate treatment of this mass would be _____.
   A. lift and snip
   B. excision and biopsy
   C. incision and drainage
   D. incision and removal of the entire mass

3. Is anesthesia indicated for this procedure, and if so, which anesthetic is indicated?
   A. No, anesthesia is not required for this procedure.
   B. Yes; 1% lidocaine with epinephrine
   C. Yes; 2% procaine without epinephrine
   D. Yes; 0.5% bupivacaine with epinephrine

4. What is the most effective method to prevent recurrence of the mass?
   A. Remove the entire capsule.
   B. Pack the cavity with iodoform gauze.
   C. Allow the wound to heal without suturing.
   D. Make the incision along skin-tension lines.

5. If the surgical procedure required suturing, and he has no postoperative complications, when should the sutures be removed?
   A. in 3 to 4 days
   B. in 4 to 6 days
   C. in 7 to 9 days
   D. in 12 to 14 days

Sample Case #3
PATIENT: age: 41; sex assigned at birth: female
The 8-week pregnant patient presents with a lesion located at the bra line. Over the past few months it has become larger, raised, and occasionally painful. She wants to have it removed. She is allergic to penicillins and sulfonamides. Physical examination reveals a single, brownish-black, round, 3 mm papule that has a notable margin of erythema.

1. The lesion is most likely benign if it _____.
   A. is friable
   B. has regular borders
   C. has mottled coloring
   D. has irregular borders

2. To enable confirmation of the diagnosis, which procedure is indicated?
   A. cryosurgery
   B. shave biopsy
   C. electrodesiccation
   D. chemical cauterization

3. Which anesthetic is generally safe during the first trimester of pregnancy?
   A. lidocaine without epinephrine
   B. lidocaine with epinephrine
   C. bupivacaine without epinephrine
   D. bupivacaine with epinephrine

4. Adding 8.4% sodium bicarbonate to the anesthetic will _____.
   A. reduce the pain of the injection
   B. decrease bleeding by vasoconstrictive action
   C. increase the numbing effect of the anesthetic
   D. increase clearance of the anesthetic by the liver

MINOR SURGERY: ANSWER KEY

Case #1:	1. A	2. A	3. B	4. B	5. D
Case #2	1. D	2. D	3. A	4. A	5. C
Case #3	1. B	2. B	3. A	4. A	

ELECTIVE EXAMINATION: PHARMACOLOGY (EPE)

A minimally competent entry-level naturopathic medical doctor who will be prescribing drugs as part of a naturopathic practice should be able to demonstrate knowledge in the following competencies:

I. PRINCIPLES: Understand the principles of pharmaceutical prescribing.

A. Know indications for prescription of drugs.
B. Understand the mechanisms of action of drug classes and of specific drugs.
C. Know the principles of pharmacodynamics and pharmacokinetics.

II. PATIENT SAFETY: Evaluate drug prescriptions for patient safety.

A. Know contraindications for drugs.
B. Know common and/or critical adverse effects of drugs.
C. Identify factors that affect drug toxicity.
D. Know potential drug-drug interactions (including the OTC drugs at the end of the drug list).
E. Be able to perform physical assessments and/or know appropriate lab tests to monitor drug efficacy and assess drug toxicity.

III. PRESCRIBING: Provide appropriate and effective patient care.

A. Diagnose conditions and select drug prescriptions to address those conditions.
B. Instruct patients on appropriate use and administration of prescription drugs.
C. Know appropriate dosing procedures (e.g., indicated routes of administration, principles of titrating and tapering, adjusting dosages in response to monitoring results, etc.).
D. Know multidrug protocols for common conditions (e.g., diabetes, CAD, etc.).
E. Identify and manage polypharmacy issues.
F. Identify and manage opportunities for deprescribing.
G. Recognize characteristics of drug-seeking behavior.
H. Demonstrate knowledge of the abuse potential of prescription and recreational drugs: identify commonly abused drugs, know their mechanisms of action and dangerous adverse effects, and demonstrate ability to safely and effectively utilize prescription pain medications.
I. Identify conditions and treatments most appropriately managed by referral to a specialist.

ELECTIVE PHARMACOLOGY DRUG CATEGORIES & WEIGHTINGS

A. **Drugs acting on the cardiovascular system** (8-10%)

B. **Drugs acting on the endocrine system** (8-10%)

C. **Drugs acting on the blood and lymph system** (3-4%)

D. **Drugs acting on the dermatologic system** (3-4%)

E. **Drugs used to treat disorders of the eye, ear, and nose** (2-3%)

F. **Drugs acting on the gastrointestinal/hepatic system** (6-8%)

G. **Drugs acting on the genitourinary system** (4-6%)

H. **Drugs acting on the musculoskeletal system** (3-4%)

I. **Drugs acting on the nervous system** (7-9%)

J. **Drugs acting on the respiratory system** (4-5%)

K. **Drugs used to treat psychological and cognitive disorders** (7-9%)

L. **Drugs used to manage pain, drug addiction, and drug overdose** (7-9%)

M. **Drugs used as antimicrobials; vaccines** (10-12%)

N. **Drugs used for chemotherapy and immunosuppression** (8-9%)

O. **Pharmacodynamics and pharmacokinetics** (7-8%)

Drugs on the Elective Pharmacology Examination

[NOTE: Because brand names in Canada and the United States are frequently different, only generic names will be used on both this blueprint and the examination. Some generic names are also different, and these will be noted as U.S. name (Canadian name.)]

5-fluorouracil
acetylcysteine
acyclovir
adalimumab
albendazole
albuterol (salbutamol) - inhaled
alendronate
allopurinol
alprazolam
alprostadil
amantadine
amiodarone
amitriptyline
amlodipine
amoxicillin
amoxicillin/clavulanate
ampicillin
anastrozole
aripiprazole
atenolol
atomoxetine
atorvastatin
azithromycin
baclofen
beclomethasone
benzonatate
benztropine
bethanechol
bicalutamide
botulinum toxin
bromocriptine
budesonide-oral
bupivacaine
buprenorphine
bupropion
buspirone
calcipotriene
calcitonin
canagliflozin
cannabis
carvedilol
cefdinir
ceftriaxone
cefuroxime
celecoxib
cephalexin
cholera vaccine
ciprofloxacin
cisplatin
clarithromycin
clindamycin
clobetasol propionate
clomiphene
clonidine
clopidogrel
clozapine
cocaine
codeine
colchicine
colesevelam
cromolyn sodium - nebulized
cyclobenzaprine
cyclophosphamide
cyclosporine
cyclosporine-ophthalmic
dabigatran
denosumab
desmopressin
dexamethasone
dextroamphetamine
DHEA
diazepam
diclofenac - gel
digoxin
diltiazem
diphenoxylate/atropine

donepezil
doxazosin
doxorubicin
doxycycline
drospirenone/ethinyl estradiol
duloxetine
emtricitabine/tenofovir alafenamide
enoxaparin
entecavir
epinephrine (adrenaline)
epoetin alfa
erythromycin
escitalopram
esomeprazole
estradiol
estriol
eszopiclone
etanercept
ezetimibe
famotidine
fentanyl
finasteride
fingolimod
flecainide
fluconazole
fludrocortisone
fluocinonide
fluoxetine
fluticasone
furosemide
gabapentin
gemfibrozil
gentamicin drops
glatiramer acetate
glucagon
glyburide
Haemophilus influenzae (Hib) vaccine
haloperidol
heparin
HAV vaccine
HBV vaccine
heroin
HPV quad vaccine
human chorionic gonadotropin
hydralazine
hydrochlorothiazide
hydrocodone
hydrocortisone
hydroxychloroquine
hydroxyzine
hyoscyamine
imiquimod
indomethacin
infliximab
influenza vaccine
insulin glargine
insulin lispro
insulin regular
interferon beta
ipratropium bromide
irbesartan
isoniazid
isosorbide mononitrate
isotretinoin
ivermectin
ketamine
ketoconazole
ketorolac
lamotrigine
latanoprost
leuprolide
levodopa/carbidopa
levofloxacin
levonorgestrel
levothyroxine
lidocaine
liothyronine
liraglutide
lisinopril
lithium
losartan
meclizine
medroxyprogesterone acetate
megestrol acetate
meloxicam
memantine

meningococcal conjugate vaccine
mesalamine (mesalazine)
metformin
methadone
methimazole
methocarbamol
methotrexate
methylphenidate
methylprednisolone
metoclopramide
metoprolol
metronidazole
minocycline
mirtazapine
measles, mumps, rubella vaccine (MMR)
modafinil
montelukast
morphine
mupirocin
naloxone
naltrexone
neomycin/polymyxin B/hydrocortisone
nepafenac
nicotine - transdermal
nitrofurantoin
nitroglycerin
norelgestromin/ethinyl estradiol - transdermal
norethindrone
octreotide
olopatadine - ophthalmic
ondansetron
oseltamivir
oxybutynin
oxycodone
paclitaxel
pantoprazole
paroxetine
penicillin VK
pentoxifylline
permethrin
phenelzine
phenytoin
pilocarpine
pioglitazone
pneumococcal polysaccharide (polyvalent) vaccine
polio vaccine, inactivated (IPV)
potassium chloride
pramipexole
prednisolone
prednisone
pregabalin
pregnenolone
procaine
progesterone - oral micronized
promethazine
propranolol
propylthiouracil
quetiapine
raloxifene
ramipril
rifampin (rifampicin)
rifaximin
rivaroxaban
rivastigmine
salmeterol
scopolamine
selenium disulfide
sildenafil
simvastatin
sitagliptin
solifenacin
somatropin
spironolactone
sulfacetamide
sulfasalazine
sumatriptan
tacrolimus
tamoxifen
tamsulosin
Tdap and DTaP vaccine
terazosin
terbinafine
testosterone
thalidomide

thyroid, dessicated USP
timolol
tiotropium
tizanidine
tofacitinib
tolterodine
topiramate
tramadol
trastuzumab
trazodone
tretinoin - topical
triamcinolone
triamterene
trimethoprim/sulfamethoxazole
ursodeoxycholic acid (ursodiol)
valacyclovir
valproate (divalproex)
vancomycin
varenicline
varicella vaccine and zoster vaccine
venlafaxine
verapamil
warfarin
zolpidem
zoster vaccine recombinant, adjuvanted

Over-the-Counter (OTC) Drugs

The following OTC drugs might appear on the examination to test knowledge of potential interactions of these common drugs with the prescription drugs on the list. For example, the prescription you select might be different if a patient is taking an H2 receptor antagonist.

aspirin
acetaminophen
cetirizine
cimetidine
diphenhydramine
fexofenadine
guaifenesin
ibuprofen
lansoprazole
loperamide
naproxen sodium
omeprazole
oral osmotics
vitamin K_1

PHARMACOLOGY (EPE): SAMPLE QUESTIONS

Unlike other NPLEX examinations, the questions on the Elective Pharmacology Examination are "standalone" questions: they will not be presented in the context of a case.

Sample Question #1

PATIENT: age: 57; sex assigned at birth: male

The patient presents with chronic prostatitis. He has a history of claudication for which he is currently taking pentoxifylline. Is it appropriate to prescribe ciprofloxacin for his prostatitis, and if not, why not?

A. No, the two drugs should not be taken concomitantly, as pentoxifylline increases the toxicity of ciprofloxacin.
B. No, ciprofloxacin would not effectively treat this infection, although it would enhance the efficacy of the pentoxifylline.
C. No, the two drugs should not be taken concomitantly, as pentoxifylline decreases ciprofloxacin levels by speeding drug metabolism.
D. Yes, but the pentoxifylline dosage should be decreased, because ciprofloxacin increases pentoxifylline levels by slowing drug metabolism.

Sample Question #2

PATIENT: age: 63; sex assigned at birth: male

The patient has experienced multiple seizures and was diagnosed with epilepsy. His medical history includes a sinoatrial (SA) block and compromised kidney function. Which drug is ***CONTRAINDICATED*** for his seizures, and why?

A. valproate; it could exacerbate the SA block
B. phenytoin; it could exacerbate the SA block
C. valproate; it could further impair his kidney function
D. phenytoin; it could further impair his kidney function

Sample Question #3

PATIENT: age: 19; sex assigned at birth: female

The patient is diagnosed with depression and bulimia nervosa. What first-line drug treatment is indicated for her?

A. fluoxetine
B. bupropion
C. mirtazapine
D. ondansetron

Sample Question #4

Drug X has a half-life of 3 hours. If the initial plasma level after a single dose of the drug is 3600 mg/L, what will its plasma level be after 9 hours?

A. 450 mg/L
B. 600 mg/L
C. 900 mg/L
D. 1800 mg/L

PHARMACOLOGY (EPE): ANSWER KEY

Question #1: D
Question #2: B
Question #3: A
Question #4: A

ELECTIVE EXAMINATION: ACUPUNCTURE

Conventions in terminology used in the NPLEX Acupuncture examination are from the publication *A Proposed Standard International Acupuncture Nomenclature*, World Health Organization, Geneva, 1991.

BL = Bladder	**KI** = Kidney	**SI** = Small Intestine
CV = Conception Vessel	**LI** = Large Intestine	**SP** = Spleen
GB = Gall Bladder	**LR** = Liver	**ST** = Stomach
GV = Governing Vessel	**LU** = Lung	**TE** = Triple Energizer/Triple Burner/Triple Warmer
HT = Heart	**PC** = Pericardium	

On this examination, **point locations** will be designated in **cun**, as is traditional. **Point depths**, although designated in cun in some texts, will be designated on this examination in **inches**, to reflect the greater precision required for the sake of patient safety.

A minimally competent entry-level naturopathic medical doctor who will be providing acupuncture as part of a naturopathic practice should be able to demonstrate knowledge in the following competencies:

I. **<u>DIAGNOSIS:</u> Diagnose Zang-Fu syndromes (see list below) by means of:**

A. **Physical examination**
1. Palpation of pulse characteristics (positions, quality at each position, and the significance of the findings)
2. Observation of tongue characteristics (body color, shape, coating, moisture, and the significance of the findings)
3. Observation of the patient's appearance, vitality, and other indicators of constitution.

B. **History taking using the Ten Questions regarding:**
1. Temperature (hot/cold, fever/chills)
2. Sweating (quantity/quality/time of day/location on body)
3. Head and face (quality of head pain, dizziness, location of symptoms, eye symptoms, ear symptoms)
4. Pain (severity, quality, location on body, chronicity or acuteness, time of day, aggravating factors, ameliorating factors, distension)
5. Urine and stool (incontinence, retention, incomplete urination or evacuation, color and quality, consistency, amount, size, frequency, chronicity, urgency, timing, discomfort or relief)
6. Digestion
   a. Thirst (intensity of thirst, dryness of mouth)
   b. Appetite (intensity of appetite, distension after eating, preferences and cravings)
   c. Tastes (bitter/sweet/sour/salty/pungent/metallic/absent)
7. Sleep (characteristics of insomnia, quality of sleep, nightmares)
8. Thorax and abdomen (pain by location, quality of pain)
9. Gynecological issues (menstrual symptoms, timing of menses, characteristics of blood)
10. Medical history, lifestyle, and habits (significant illnesses and procedures, family history and genetic conditions, prescription and recreational drug use, emotional states, and other predisposing factors)

C. **Identification of the pattern of Zang-Fu disharmony according to:**
   1. Eight principles (Interior/Exterior, Hot/Cold, Deficiency/Excess, Yin/Yang)
   2. Vital substances (Qi, Blood, Body Fluids, Jing/Essence, Shen/Mind)
   3. Five elements (Earth, Fire, Metal, Water, Wood)
   4. Channels/meridians (Lung, Large Intestine, Stomach, Spleen, Heart, Small Intestine, Bladder, Kidney, Pericardium, Triple Energizer, Gall Bladder, Liver, Conception Vessel, and Governing Vessel)
   5. Organ Functions
      a. Zang/Yin (Solid) Organs (Heart, Liver, Lungs, Spleen, Kidney, Pericardium)
      b. Fu/Yang (Hollow) Organs (Stomach, Small Intestine, Large Intestine, Gall Bladder, Triple Energizer)

II. **<u>TREATMENT:</u> Treat patients by applying principles of acupuncture.**

A. **Understand treatment principles and select treatments that address Zang-Fu syndromes.**

B. **Identify the function, apply the principles of point combining, and know which point protocols are indicated for the following acupuncture points:**
   1. LU 1,5,7,9,10,11
   2. LI 1,4,10,11,15,20
   3. ST 1,7,17,25,30,36,37,38,40,42,44,45
   4. SP 1,3,4,6,9,10,15,21
   5. HT 1,3,5,7,8,9
   6. SI 1,3,8,9,10,11,12,13,19
   7. BL 1,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,40, 44,52,57,60,62,67
   8. KI 1,3,6,7,10,16,27
   9. PC 1,3,6,7,9
   10. TE 1,4,5,6,10,14,17,21,23
   11. GB 1,2,12,14,20,21,24,25,30,34,39,40,41,44
   12. LR 1,2,3,5,8,13,14
   13. CV 1,2,3,4,6,8,12,13,14,17,22,24
   14. GV 1,2,4,9,14,20,24,28
   15. Extra points
      a. Head and neck: Shi Shen Cong, Yin Tang, Tai Yang, Bi Tong/ShangYing Xiang, Anmian, Ding Chuan, Jia Ji/Hua Tuo Jia Ji
      b. Abdomen, chest, and back: Zi Gong
      c. Arm and hand: Shi Xuan, Ba Xie, Jiagian/Jianneling, Yaotongxue
      d. Leg and foot: Baichongwo, He Ding, Xi Yan, Dan Nang Xue, Lan Wei Xue, Ba Feng

C. **Identify when it is appropriate to use a treatment modality other than needling; know indications and contraindications for and use of moxibustion, cupping, gua sha, and electroacupuncture.**

D. **Refer patients to other practitioners when appropriate.**

III. **<u>TECHNIQUE</u>: Ensure treatment effectiveness by using correct technique.**

A. **Needling**
   1. Know location of points.
   2. Employ correct insertion angles, depths, and techniques.

On this examination, **point locations** will be designated in **cun**, as is traditional. **Point depths**, although designated in cun in some texts, will be designated on this examination in **inches**, to reflect the greater precision required for the sake of patient safety.

B. **Moxibustion**
   1. Know which points are safe for moxibustion.
   2. Employ correct technique to avoid complications from the use of moxibustion.

C. **Electroacupuncture**
   1. Know principles of using electricity with needling.
   2. Employ correct technique in application of electroacupuncture.

D. **Acupressure**
   1. Know which points respond best to acupressure.
   2. Know when acupressure would be a good alternative to acupuncture.

E. **Cupping**
   1. Know which points are appropriate for cupping.
   2. Employ correct cupping technique.

IV. **<u>SAFETY</u>: Ensure positive patient outcomes by applying safety principles**.

A. **Practice universal precautions, including techniques to prevent exposure to bloodborne pathogens, correct procedures for managing spills of blood and body fluids, and principles of disinfection and disposal of contaminated materials.**
B. **Practice safe needle handling and disposal.**
C. **Employ clean needle technique.**
D. **Identify general contraindications for needling, moxibustion, and use of electrical current.**
E. **Know contraindications for needling and moxibustion of specific points.**
F. **Know risks of incorrect needling technique to underlying anatomical structures.**
G. **Respond to nonmedical complications that occur during treatment (stuck needles, broken needles, etc.).**
H. **Respond to medical complications that occur during treatment (anxiety, pain at the insertion site, chest pain, dyspnea, bleeding, fainting, shock, nausea, vomiting, pneumothorax, muscle spasm, organ puncture, artery puncture, cartilage puncture, etc.).**
I. **Respond to post-treatment complications (hematoma, infection at an insertion site, cellulitis, neuropathy, moxa burns, cupping bruises, etc.).**
J. **Educate patient regarding possible adverse effects of treatment (e.g., moxa burn, cupping hematoma, pain at insertion site, infection, etc.).**
K. **Know when to refer for urgent or emergency care.**

Syndromes

A. **Lung** (10-15%)
   1. Empty: Qi Deficiency, Yin Deficiency, Dryness
   2. Full Exterior: Wind-Cold Invasion, Wind-Heat Invasion, Wind-Water Invasion (a.k.a. Wind-Damp Invasion)
   3. Full Interior: Heat, Damp-Phlegm, Cold-Phlegm, Phlegm-Heat, Dry-Phlegm, Phlegm Fluid Obstruction

B. **Large Intestine** (5-10%)
   1. Full: Damp-Heat, Heat, Heat Obstruction, Cold Invasion, Qi Stagnation
   2. Empty: Dryness, Cold, Collapse

C. **Stomach** (5-10%)
   1. Empty: Qi Deficiency, Yin Deficiency
   2. Full: Qi Stagnation, Fire (or Phlegm-Fire), Cold Invasion, Stomach Qi Rebelling Upward, Damp-Heat, Food Retention, Blood Stasis

D. **Spleen** (5-10%)
   1. Empty: Qi Deficiency, Yang Deficiency, Qi Sinking, Spleen not Controlling Blood, Blood Deficiency
   2. Full: Cold-Damp Invasion, Damp-Heat Invasion

E. **Heart** (10-15%)
   1. Empty: Qi Deficiency, Yang Deficiency, Yang Collapse, Blood Deficiency, Yin Deficiency
   2. Full: Fire Blazing, Phlegm-Fire Harassing the Heart, Phlegm Misting the Mind, Qi Stagnation, Vessel Obstruction
   3. Empty/Full: Blood Stasis

F. **Small Intestine** (5-10%)
   1. Empty: Deficiency and Cold
   2. Full: Full-Heat, Qi Pain, Qi Tied (Qi Obstruction)

G. **Bladder** (5-10%)
   1. Empty: Deficiency and Cold (Kidney Yang Deficiency)
   2. Full: Damp-Heat, Damp-Cold

H. **Kidney** (10-15%)
   1. Empty: Yang Deficiency, Yin Deficiency, Qi not Firm, Failing to Receive Qi, Essence Deficiency
   2. Empty/Full: Yin Deficiency with Empty-Heat Blazing

I. **Pericardium** (0-5%)
   1. Full: Heat, Qi Stagnation, Blood Stasis

J. **Gallbladder** (5-10%)
   1. Empty: Qi Deficiency
   2. Full: Damp-Heat, Dampness

K. **Liver** (10-15%)
   1. Empty: Blood Deficiency, Yin Deficiency
   2. Full: Qi Stagnation, Qi Rebelling, Blood Stasis, Fire Blazing, Damp-Heat, Cold Stagnation
   3. Full/Empty: Yang Rising, Wind Agitation

ACUPUNCTURE: SAMPLE QUESTIONS

Sample Case #1
PATIENT: age: 36; sex assigned at birth: female
The present presents with dizziness, fatigue, palpitations, poor memory, and decreased appetite. Onset was 2 months ago. The dizziness is worse when she is fatigued, and especially after menstrual periods, which resumed 6 months after the birth of the third child 1 year ago. She is a full-time parent and continues to breastfeed the youngest child. Her menses have resumed and are regular, but the flow is now scanty. She sleeps well at night, and she does not experience joint pain. She is always thirsty. Her skin is dry and her face, lips, and fingernails appear pale. Her tongue is pale. Her pulse is thin and weak.

1. What is the most likely diagnosis?
   A. Yin Deficiency
   B. Phlegm Stagnation
   C. Qi and Blood Deficiency
   D. Essence Deficiency

2. Her fatigue and decreased appetite indicate a disorder of the _____.
   A. Spleen
   B. Stomach
   C. Small Intestine
   D. Large Intestine

3. What treatment principles are indicated for her condition?
   A. tonify Qi and Blood
   B. tonify Kidney Yin and Blood
   C. tonify Kidney Essence and Qi
   D. dissolve Phlegm and tonify Qi

4. To address her clinical picture, which points are indicated for needling?
   A. BL 23, CV 4, CV 6, GV 20, KI 3
   B. BL 13, BL 23, CV 4, GV 20, KI 3
   C. BL 13, BL 20, CV 4, SP 6, ST 36
   D. BL 12, BL 15, BL 20, CV 12, ST 40

5. As you are removing the needles after treatment, one appears to be stuck. Which action will most safely and effectively facilitate the removal of the needle?
   A. application of a cold wet cloth to the needle site
   B. gentle massage in the area that surrounds the point
   C. insertion of another needle directly next to the stuck needle
   D. referral to ED for surgical removal

Sample Case #2

PATIENT: age: 14; sex assigned at birth: male

The patient presents with wheezing, a weak voice, shallow rapid breathing, a cough that produces a white watery sputum, and perspiration on exertion. He frequently experiences URI symptoms, and his mother tells you that he has always been frail. He is a student in secondary school. He is sensitive to cold, damp weather. His complexion appears pale. His pulse is thin and weak.

1. Consistent with his presentation, on physical examination the tongue is expected to appear _____.
   A. red, with a midline fissure
   B. pale, with a thin white coating
   C. red, with a thick yellow coating
   D. pale and swollen, with scalloping on the sides

2. Which organ is primarily responsible for protecting against invasion of exterior pathogenic factors?
   A. Lung
   B. Spleen
   C. Kidney
   D. Stomach

3. Which syndrome is he most likely exhibiting?
   A. Lung Qi Deficiency
   B. Spleen Qi Deficiency
   C. Kidney Yin Deficiency
   D. Phlegm-Heat Obstructing the Lung

4. What treatment principle(s) is (are) indicated for his condition?
   A. tonify Lung Qi
   B. tonify Spleen Qi
   C. tonify Kidney Yin
   D. dissolve Phlegm, and dispel Heat

5. To address his clinical picture, which points are indicated for needling?
   A. BL 13, BL 23, CV 4, KI 6
   B. BL 13, CV 6, LU 7, LU 9, ST 36
   C. BL 20, BL 21, CV 12, SP 6, ST 36
   D. GV 20, LI 4, LU 5, ST 8, ST 40

ACUPUNCTURE: ANSWER KEY

Case #1:	1. C	2. A	3. A	4. C	5. C
Case #2:	1. B	2. A	3. A	4. A	5. B

ELECTIVE EXAMINATION: PARENTERAL MEDICINE

A minimally competent entry-level naturopathic medical doctor who will be administering parenteral medicine as part of a naturopathic practice should be able to demonstrate knowledge in the following competencies:

I. **GENERAL PRINCIPLES** (17-19%)

A. **Know and apply the general principles of parenteral medicine to patient care, including:**
1. fluid and electrolyte balance
2. pH, acid-base balance
3. osmolality, osmolarity, and tonicity
4. water solubility vs. fat solubility
5. flow (drip) rate
6. pharmacodynamics/kinetics
7. first- and second-pass metabolism and phase I & II detoxification pathways

II. **PATIENT ASSESSMENT** (19-21%)

A. **Evaluate whether parenteral medicine is indicated, contraindicated, or must be used with caution for patients in the following populations:**
1. pediatric patients
2. adult patients
3. geriatric patients
4. special populations (pregnant and lactating patients, patients who have G6PD, MTHFR, or other polymorphisms, etc.)

B. **Evaluate whether parenteral therapy is indicated, contraindicated, or must be used with caution for an individual patient, based on:**
1. patient history, presentation, and working diagnosis
2. physical examination and vital signs
3. lab tests, including:
   a. kidney, liver, and cardiac function
   b. nutritional assessment
   c. testing for special risks (polymorphisms, etc.)

C. **Assess the patient to evaluate appropriateness of parenteral therapy prior to administering each treatment.**

D. **Recognize the indications for referral to a specialist for continuation of care or to urgent care prior to administering a treatment.**

III. **TREATMENT SELECTION** (16-18%)

A. **Select and know how to parenterally administer therapeutic agents, including:**
   1. amino acids and amino acid compounds [e.g., arginine, carnitine, glutathione (GSH), etc.]
   2. botanicals
      a. artemisinin/artesunate
      b. curcumin
      c. epigallocatechin gallate (EGCG)
      d. glycyrrhizic acid
      e. quercetin
      f. resveratrol
      g. silymarin
      h. viscum album (Mistletoe)
   3. chelation agents
      a. DMPS
      b. DMSA
      c. edetate disodium (EDTA)
      d. edetate calcium disodium (CaNa2EDTA)
   4. drugs
      a. dexamethasone
      b. emergency
         i. atropine
         ii. diphenhydramine
         iii. epinephrine (adrenaline)
      c. ibuprofen
      d. ketorolac
      e. ondansetron
   5. fluids and solutions
      a. 5%/D5W
      b. 10%/D10W
      c. 50%/D50W
      d. 0.45% saline (half-normal/hypotonic saline)
      e. 0.9% saline (normal/isotonic saline)
      f. lactated Ringer's solution
      g. sterile water
   6. hormones
      a. HCG
      b. testosterone
   7. nutrients
      a. acetylcysteine
      b. alpha-lipoic acid
      c. minerals (e.g., calcium gluconate, iron dextran, zinc chloride, etc.)
      d. Myers'-type infusion
      e. nicotinamide adenine dinucleotide (NAD)
      f. ubiquinol
      g. vitamins A–K

8. other
    a. heparin
    b. hydrochloric acid (HCl)
    c. hydrogen peroxide
    d. methylene blue

B. **Determine appropriate parameters of prescription.**
1. dosage of drugs/nutrients
2. frequency of treatment

C. **Provide post-treatment instructions to patients.**

D. **Recognize adverse effects of treatment observed in clinical presentation and lab test results and modify treatment plan accordingly.**

E. **Evaluate effectiveness of treatment by assessing clinical presentation and lab test results and modify treatment plan accordingly.**

F. **Select adjunctive nutrition and lifestyle practices that complement parenteral therapy.**

G. **Demonstrate ability to clearly communicate with other healthcare providers in the co-management of patients.**

IV. **PROCEDURES AND TECHNIQUES** (16-18%)

A. **Know standard protocols for maintaining a cleanroom.**

B. **Formulate safe and effective infusible solutions.**
1. Identify appropriately certified and legally compliant compounding pharmacies.
2. Verify that the agents used are of appropriate identity, strength, quality, purity, and consistency according to U.S. and/or Canadian regulatory standards**.**
3. Select appropriate carrier solutions.
4. Recognize contraindications to combining certain therapeutic substances.
5. Know how to minimize particulates and airborne contaminants in in-office compounded infusible solutions.
6. Know how to accurately label in-office compounded infusible solutions.
7. Know appropriate protocols for substance storage and stale-dating.

C. **Select appropriate equipment for each mode of administration:**
1. injections (IM, SubQ, intradermal, etc.)
2. IV pushes
3. IV drips

D. **Know how to safely and correctly administer treatments via injection, IV push, and IV drip, using principles of:**
   1. sterile technique
   2. vein/site selection
   3. site preparation
   4. injection technique (using syringe & needle)
   5. insertion technique (butterfly, angiocatheter, etc.)
   6. port or peripherally inserted central catheter access
   7. flow (drip) rate
   8. IV line patency

E. **Evaluate patient tolerance of treatment by monitoring:**
   1. vital signs
   2. systemic signs and symptoms during and immediately after infusion (hypoglycemia, allergic reaction, arrhythmia, cardiac arrest, etc.)
   3. insertion site reactions during and immediately after infusion (infiltration, extravasation, etc.)

V. **SAFETY** (19-21%)

A. **Apply principles of patient risk assessment based on medical history, clinical presentation, mental status, lab values, medications, and disease progression or regression.**

B. **Recognize and know how to address complications of parenteral treatment, including:**
   1. local (phlebitis, local infection, etc.)
   2. systemic (septicemia, embolism, etc.)
   3. interactions with other nutrients and drugs the patient is taking

C. **Know how to respond to events requiring first aid or emergency protocols using:**
   1. emergency medications (epinephrine HCl, diphenhydramine chloride, calcium gluconate/chloride, glucagon, etc.)
   2. oxygen administration
   3. CPR, basic cardiac life support
   4. emergency equipment (pulse oximeter, AED, etc.)

D. **Know how to apply universal precautions required in treatment setting, including equipment disposal measures.**

E. **Know when and how to deploy practitioner safety measures required in the treatment setting (use of PPE, prevention of needle sticks, etc.)**

F. **Know standard protocols for appropriate facility cleaning.**

VI. **ETHICAL AND LEGAL CONSIDERATIONS** (7-9%)

A. **Recognize and appropriately respond to potential ethical issues, including:**
   1. permission to access an implanted line when not in the original provider's facility
   2. use of substances for which there is insufficient evidence of efficacy
   3. how a practice administering parenteral medicine is advertised to the public

B. **Demonstrate knowledge of legally sound administrative practices, including:**
   1. informed consent forms and procedures, including PARQ (Procedures, Alternatives, Risks, and Questions)
   2. comprehensive charting/documentation
   3. document retention requirements
   4. reporting of incidents or communicable diseases

Conditions

A. **dehydration**
B. **nutrient deficiencies** (iron-deficiency anemia, etc.)
C. **digestive compromise** (IBS, IBD, autoimmune gluten-sensitive enteropathy, post-GI surgery, etc.)
D. **hepatic and pancreatic impairment**
E. **acute infections** (pneumonia, influenza, COVID-19, etc.)
F. **chronic infections** (Lyme disease, MRSA, HPV, herpes, hepatitis, etc.)
G. **immune compromise** (HIV, autoimmune, etc.)
H. **chronic health conditions** (CFS/ME, peripheral neuropathy, fibromyalgia, post-COVID syndrome, etc.)
I. **adjunctive care for cancer, adverse effects of cancer treatment**
J. **wellness support** (immune boosts, performance enhancement, sports recovery, etc.)
K. **heavy metal overload**

PARENTERAL MEDICINE: SAMPLE QUESTIONS

Sample #1

As you prepare to withdraw an injectable product from a multidose vial, you notice that the vial has been previously opened. This product is only safe to administer for a maximum of _____ after the vial has been opened.

A. 1 day
B. 14 days
C. 28 days
D. 45 days

Sample #2

When assessing a patient's peripheral IV site, you observe a streak of red along the vein path and palpate a 4.0 cm venous cord. What is the most accurate documentation of this finding?

A. infection at IV site
B. infiltration at IV site
C. grade 3 phlebitis at IV site
D. thrombosed area at IV site

Sample #3

Shortly after the start of an IV infusion in the cephalic vein, your patient reports a "pins and needles" sensation in the wrist and hand below the IV site. What is the correct action?

A. Discontinue the IV and start it at another site.
B. Check for the presence of a strong blood return.
C. Elevate the extremity above the level of the heart.
D. Document the finding and continue to monitor the IV site.

Sample #4

In an older adult receiving IV therapy, infection can be prevented by _____.

A. shaving the skin before attempting venipuncture
B. using maximum friction when cleansing the skin
C. avoiding the use of alcohol pads when removing tape
D. applying a skin protectant before applying the dressing

PARENTERAL MEDICINE: ANSWER KEY

Question #1: C
Question #2: C
Question #3: A
Question #4. D

ACRONYMS & ABBREVIATIONS THE EXAMINEE IS EXPECTED TO KNOW

In addition to basic standard nomenclature (e.g., CO_2, HCl), examinees are expected to know what the following abbreviations mean.

5-HTP	5-hydroxytryptophan
ABC/CAB	airway, breathing, circulation circulation, airway, breathing (new standards)
ABI	ankle brachial index
ACE	angiotensin converting enzyme
ACTH	adrenocorticotropic hormone
AD(H)D	attention deficit (hyperactivity) disorder
ADH	antidiuretic hormone (vasopressin)
ADL	activities of daily living
AED	automated external defibrillator
AFP	alpha-fetoprotein
AIDS	acquired immunodeficiency syndrome
AKI	acute kidney injury
ALL	acute lymphoblastic (lymphocytic) leukemia
ALP	alkaline phosphatase
ALS	amyotrophic lateral sclerosis
ALT	alanine aminotransferase
AML	acute myeloid (myelogenous) leukemia
ANA	anti-nuclear antibody
ANS	autonomic nervous system
ARDS	acute respiratory distress syndrome
AREDS	OTC nutritional supplement prescribed for macular degeneration (stands for Age-Related Eye Disease Study)
ASO	antistreptolysin-O titer
AST	aspartate aminotransferase
ATP	adenosine triphosphate
AV	atrioventricular node
BLS/BCLS	basic life support/basic cardiac life support
BMI	body mass index
BNP	brain natriuretic peptide
BPH	benign prostatic hyperplasia
BP	blood pressure
bpm	beats per minute
BPPV	benign paroxysmal positional vertigo
BUN	blood urea nitrogen
CA	cancer
CAD	coronary artery disease
CBC	complete blood count
CDSA	comprehensive digestive stool analysis
CEA	carcinoembryonic antigen
CHF	congestive heart failure
CK	creatine kinase
CKD	chronic kidney disease
CMV	cytomegalovirus
CNS	central nervous system
COPD	chronic obstructive pulmonary disease
COVID-19	coronavirus disease 2019
CPAP	continuous positive airway pressure
CPK	creatine phosphokinase
CPK-MP	creatine phosphokinase-myocardial bands
CLL	chronic lymphocytic leukemia
CML	chronic myelogenous leukemia
CPR	cardiopulmonary resuscitation
CRH	corticotropin-releasing hormone
CRP	C-reactive protein
CSF	cerebrospinal fluid
CSP	comprehensive stool profile
CT	computerized tomography
CVA	cerebrovascular accident (stroke)
CVAD	central venous access device
CVD	cardiovascular disease
CYP	cytochrome P450 enzyme system
D&C	dilation and curettage
D5W	5% dextrose in water
D10W	10% dextrose in water
DCIS	ductal carcinoma in situ
DES	diethylstilbestrol
DEXA	(DXA) dual energy X-ray absorptiometry
DGL	deglycyrrhizinated licorice
DHA	docosahexaenoic acid
DHEA	dehydroepiandrosterone
DIC	disseminated intravascular coagulation
DJD	degenerative joint disease
DM	diabetes mellitus
DMAE	dimethylaminoethanol
DMSO	dimethyl sulfoxide
DNR	do not resuscitate
DOE	dyspnea on exertion
DTaP/Tdap	diphtheria-tetanus-acellular pertussis vaccine/tetanus-diphtheria-acellular pertussis vaccine
DSM	diagnostic statistical manual
DT	delirium tremens
DTR	deep tendon reflexes
DUI	driving under the influence (DWI)
DVT	deep vein thrombosis
EAST	elevated arm stress test (Roos)
EBV	Epstein-Barr virus
ECG/EKG	electrocardiogram
Echo	echocardiogram

E. coli	Escherichia coli
ED/ER	emergency department/emergency room
EDMR	eye movement desensitization and reprocessing
EEG	electroencephalograph
EFA	essential fatty acids
ELISA	enzyme linked immunosorbent assay
EMG	electromyogram
EMS	emergency medical services/ electronic muscle stimulation
EOM	extraocular movements
EPA	eicosapentaenoic acid
EPI	epinephrine
EPMS	extrapyramidal motor system
EPO	erythropoietin
ESR	erythrocyte sedimentation rate
ETOH	ethyl alcohol
FBAO	foreign body airway obstruction
FEV	forced expiratory volume
FOS	fructooligosaccharide
FSH	follicle-stimulating hormone
FTI	free thyroxine index
FVC	forced vital capacity
G6PD	glucose-6-phosphate-dehydrogenase deficiency
G#P#	gravida para (pregnancies/live births)
GABA	gamma-aminobutyric acid
GALT	gut-associated lymphoid tissue
GC	gonorrhea/gonococcus
GCS	Glasgow Coma Scale
GDM	gestational diabetes mellitus
GERD	gastroesophageal reflux disease
GFR	glomerular filtration rate
GGT	gamma-glutamyl transferase
GI	gastrointestinal
GnRH	gonadotropin-releasing hormone
GU	genitourinary
HA	headache
HAV	hepatitis A virus
HbA1c	hemoglobin A1c
HBV	hepatitis B virus
hCG	human chorionic gonadotropin
hct	hematocrit
hgb	hemoglobin
HCV	hepatitis C virus
HDL	high density lipoprotein
HEENT	head, eyes, ears, nose, throat
HIDA scan	hepatobiliary iminodiacetic acid scan
HIV	human immunodeficiency virus
HLA	human leukocyte antigen
HPA	hypothalamic-pituitary-adrenal (axis)
HPV	human papillomavirus
HRT	hormone replacement therapy
HSV	herpes simplex virus
HTN	hypertension
HUS	hemolytic uremic syndrome
IBD	inflammatory bowel disease
IBS	irritable bowel syndrome
IDDM	insulin dependent diabetes mellitus
IgA	immunoglobulin A
IgD	immunoglobulin D
IgE	immunoglobulin E
IgG	immunoglobulin G
IgM	immunoglobulin M
IM	intramuscular
INR	international normalized ratio
IR	infrared
ITP	immune thrombocytopenia
IU	international units
IUD	intrauterine device
IV	intravenous
IVP	intravenous pyelogram
IVU	intravenous urogram
JVD	jugular venous distension
KOH	potassium hydroxide
KUB	kidneys, ureter, and bladder radiograph
LCIS	lobular carcinoma in situ
LDH	lactate dehydrogenase
LDL	low density lipoprotein
LFT	liver function tests
LGBTQ+	lesbian/gay/bisexual/transgender/ questioning+
LH	luteinizing hormone
LLQ	left lower quadrant
LoC	level of consciousness
LOC	loss of consciousness
LUQ	left upper quadrant
LMP	last menstrual period
LP(a)	lipoprotein (a)
MAOI	monoamine oxidase inhibitor
MCH	mean corpuscular hemoglobin
MCHC	mean corpuscular hemoglobin concentration
MCV	mean corpuscular volume
MI	myocardial infarction
MMPI	Minnesota Multiphasic Personality Inventory
MMR	measles, mumps, and rubella vaccine
MMSE	mini mental state exam
MPV	mean platelet volume
MRA	magnetic resonance angiography
MRI	magnetic resonance imaging
MRSA	methicillin-resistant Staph aureus
MS	multiple sclerosis
MSM	methylsulfonylmethane
MTHFR	methylenetetrahydrofolate-reductase deficiency
MVA/MVC	motor vehicle accident/collision
NAAT	nucleic acid amplification test

NAC	N-acetyl cysteine
NIDDM	non-insulin dependent diabetes mellitus
NKDA	no known drug allergy
NMT	naturopathic manipulative therapy
npo	nil per os (nothing by mouth)
NS	normal saline (or non significant)
NSAID	non-steroidal anti-inflammatory drug
O2 sat	oxygen saturation
OA	osteoarthritis
OC	oral contraceptive
OGTT	oral glucose tolerance test
OTC	over-the-counter
O&P	ova and parasites
PABA	para-aminobenzoic acid
PAC	premature atrial contractions
Pap	Papanicolaou (test for cervical pathology)
PAT	paroxysmal atrial tachycardia
PCR	polymerase chain reaction
PE	physical examination
PERRLA	pupils equal, round, reactive to light and accommodation
PET	positive emission tomography
PMOS (PCOS)	polyendocrine metabolic ovarian syndrome (polycystic ovary syndrome—PCOS)
PDW	platelet distribution width
PFT	pulmonary function tests
PID	pelvic inflammatory disease
PIP/DIP	proximal/distal interphalangeal joints
PKU	phenylketonuria
PMI	point of maximal impulse
PMN	polymorphonuclear lymphocyte
PMS	premenstrual syndrome
PPE	persoanal protective equipment
prn	pro re nata (as needed)
PSA	prostate specific antigen
PSVT	paroxysmal supraventricular tachycardia
PT	prothrombin time
PTSD	post traumatic stress disorder
PTT	partial thromboplastin time
PUFA	polyunsaturated fatty acids
PVC	premature ventricular contractions
RA	rheumatoid arthritis
RAI	radioactive iodine (uptake test)
RAST	radio allergen sorbent test
RBC	red blood cells
RDA	recommended daily allowance
RDW	red cell distribution width
RF	rheumatoid factor
Rh	rhesus factor
RICE	rest, ice, compression, elevation
RLQ	right lower quadrant
ROM	range of motion
RPR	rapid plasma reagin
RSV	respiratory syncytial virus
RUQ	right upper quadrant
SA	sinoatrial node
SAB	spontaneous abortion
SAD	standard (North) American diet (omnivorous and refined-food diet)
SAMe	S-adenosyl methionine
sl	sublingual/sublingually
SLE	systemic lupus erythematosus
SOB	shortness of breath
SOD	superoxide dismutase
SPECT	single photon emission CT
SSRI	selective serotonin re-uptake inhibitor
stat	statim (immediately)
STI/STD	sexually transmitted infection
sTSH	sensitive thyroid-stimulating hormone
SQ/SubQ	subcutaneous
T3	triiodothyronine
T4	thyroxine
TAB	therapeutic abortion
TB	tuberculosis
TENS	trans electrical nerve stimulation
TIA	transient ischemic attack
TIBC	total iron binding capacity
TKO	to keep open (IV)
TMD	temporomandibular disorder
TPN	total parenteral nutrition
TPO	thyroid peroxidase
TRH	thyroid-releasing hormone
TSH	thyroid-stimulating hormone
UA	urinalysis
URI	upper respiratory infection
USP	United States Pharmocopeia
UTI	urinary tract infection
UV	ultraviolet (including UVA, UVB, UVC)
VDRL	venereal disease research laboratory test
VLDL	very low density lipoprotein
VMA	vanillylmandelic acid
VO2	(ventilatory) oxygen consumption
VRSA	vancomycin-resistant Staph aureus
WBC	white blood cells
WNL	within normal limits