N P L E X®

Naturopathic Physicians Licensing Examinations

Part II - Clinical Science Examinations: Blueprint and Study Guide

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This *Blueprint and Study Guide* is intended to provide general information to anyone who will be taking NPLEX Part II - Clinical Science Examinations. The NPLEX Board reserves the right to make revisions as necessary. Examinees should consult the latest edition of the NPLEX Part II *Blueprint and Study Guide* for the most up-to-date information regarding the examinations. NABNE sets and implements the policies that govern the administration of the NPLEX. Examinees should consult the latest edition of the NABNE *Bulletin of Information* at www.nabne.org for up-to-date information regarding these policies.

INTRODUCTION

NPLEX, Inc., is an independent, nonprofit organization whose purpose is to prepare valid and reliable board-level licensing examinations for the naturopathic profession in the U.S. and Canada. Agencies that regulate the practice of naturopathic medicine use NPLEX results in determining a candidate's eligibility for licensure. The exam development process is overseen by the NPLEX Council of Exam Chairs. NABNE (the North American Board of Naturopathic Examiners) verifies applicant eligibility to sit for the NPLEX, administers the NPLEX examinations, and reports NPLEX exam results to examinees and regulatory authorities.

Knowledge of both the biomedical sciences and the clinical sciences is necessary to ensure that the candidate for licensure has the knowledge necessary to practice safely. NPLEX prepares one Part I (Biomedical Science) examination and three Part II (Clinical Science) examinations. The Part I - Biomedical Science Examination is designed to measure a student's readiness to enter the clinical phase of training, assessing mastery of the competencies identified by biomedical science faculty from the accredited naturopathic medical colleges. The Part II - Clinical Science Examination(s) are designed to measure a graduate's readiness to practice naturopathic medicine, assessing mastery of the competencies derived from a job analysis of practicing naturopathic physicians. This *Blueprint and Study Guide* incorporates the results of the latest (2011) naturopathic practice analysis.

The NPLEX *Blueprint and Study Guide* contains the competencies and topics that the entry-level naturopathic doctor is expected to have mastered. Separate competencies and topics are provided for the Core Clinical Science Examination, the Minor Surgery Elective Examination, and the Acupuncture Elective Examination. Other sections provide information on the structure of exam items with some examples of items, suggestions on how to study for and take an NPLEX examination, the post-examination scoring process, a list of abbreviations the examiness is required to know, and a list of some of the books from which items are written or reviewed.

This document is provided to help you create a study strategy for preparing to take the NPLEX Part II - Clinical Science Examinations. The list of competencies is not meant to be a literal structure for the examination. Questions might be asked on the examination which do not fit into a single body system, and items on the examination will not be in the same order as on the list of competencies.

PART II - CORE CLINICAL SCIENCE EXAMINATION
OVERVIEW

In 2007, NPLEX combined what were nine individual examinations into a single case-based, integrated examination. Several factors led to the decision to move to this format, not the least of which is that it is impossible to test the holistic conceptual model of naturopathic medicine using a reductionist examination approach. Naturopathic medicine recognizes that the patient is a complex being with complex issues (physical, social, environmental, mental, emotional, spiritual). An ND must be able to address this multifaceted nature of the patient's health. Clinical examinations must assess the ND candidate's ability to *treat a patient*, not merely to *analyze a disease state*.

The competencies on the following pages, derived from the latest (2011) practice analysis of the naturopathic profession, provide the basis of items on the Core Clinical Science Examination. Pages 3 though 5 list the competencies that the graduate is expected to have mastered. The NPLEX Board has limited the numbers of conditions, tests, botanical medicines, remedies, and pharmacotherapeutic agents the examinee is required to know in order to pass the Core Clinical Science Examination to a representative sample. These "topics" are listed in Pages 6 though 20, and include:

1. The **conditions** frequently seen by a naturopathic doctor or which are so critical that the entry-level physician must know what to do when s/he sees a patient who has the condition;

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

3. The **types of lab tests and diagnostic imaging studies** the entry-level naturopathic physician should be able to order and interpret;

4. The **botanical medicines** the entry-level naturopathic physician should be able to prescribe appropriately;

5. The **homeopathic preparations** an entry-level naturopathic physician should be able to prescribe appropriately; and

6. Examples of the **pharmacotherapeutic agents** an entry-level naturopathic doctor can expect her/his patients to be taking.

The percentages provided (in parentheses) for the competencies and categories of conditions listed on the following pages are approximations but provide a valid representation for study focus.

NPLEX PART II - CORE CLINICAL SCIENCE COMPETENCIES

A minimally competent, entry-level naturopathic physician is expected to:

1.0 **Diagnose patients using patient history, physical and clinical findings, and lab test and imaging results**. (Total weighting for DIAGNOSIS general exam area: 32.5%)

1.01 **Evaluate patients and diagnose common and critical conditions.** (20%)
(see list of conditions, pages 6 through 11)
1.01.01 Take a medical and psychosocial history, and interpret findings.
1.01.02 Perform a physical examination and interpret findings.
1.01.03 Perform orthopedic tests and interpret findings. (see list, page 12)
1.01.04 Recognize psychiatric disorders. (see list, page 11)
1.01.05 Identify the relevant risk factors for common and critical conditions.
1.01.06 Recognize the signs and symptoms of common and critical conditions.
1.01.07 Identify other conditions associated with common and critical conditions.
1.01.08 Generate a differential diagnosis of common and critical conditions.
1.01.09 Delineate the pathogenesis of diseases, and determine possible etiologies of symptoms.
1.01.10 Predict the complications and sequelae of common and critical conditions.
1.01.11 Determine the prognosis for patients who have common and critical conditions.
1.01.12 Identify high risk patients, and refer when necessary.

1.02 **Use the results of common lab tests and imaging studies to evaluate, diagnose, and manage patient care.** (12.5%)
1.02.01 Select necessary lab tests and imaging studies. (see list, page 13)
1.02.02 Interpret results of lab tests and imaging studies.
1.02.03 Collect and prepare specimens for lab evaluation.
1.02.04 Identify factors that may interfere with lab results.
1.02.05 Monitor patient progress using lab tests and imaging studies.
1.02.06 Identify contraindications for and adverse effects of lab tests.

2.0 **Develop treatment plans using substances from the Materia Medica to manage patient care; monitor patient progress.** (Total weighting for MATERIA MEDICA general exam area: 19%)

2.01 **Manage patient care by applying principles of botanical prescribing.** (12.5%)
2.01.01 Evaluate the safety and efficacy of botanical medicine prescriptions. (see list, page 14)
2.01.02 Prescribe botanical medicines based on pharmacognosy, therapeutic effects, indications, contraindications, mechanisms of action, side effects, potentiators, inhibitors, toxicity, and other interactions.
2.01.03 Select the most effective mode of administration of botanical medicines.
2.01.04 Determine and document appropriate posology.

2.02 **Manage patient care by applying principles of homeopathic prescribing.** (6.5%)
2.02.01 Take a homeopathic case history.
2.02.02 Prescribe homeopathic preparations. (see list, page 17)
2.02.03 Manage acute and chronic homeopathic cases.

3.0 **Develop treatment plans using other therapeutic modalities guided by naturopathic philosophy to manage patient care; monitor patient progress.** (Total weighting for OTHER MODALITIES general exam area: 28.5%)

3.01 **Manage patient care by applying principles of clinical nutrition.** (10 to 11%)
- 3.01.01 Assess nutritional status.
- 3.01.02 Evaluate the safety and efficacy of nutritional interventions.
- 3.01.03 Prescribe nutritional substances based on indications, contraindications, bioavailability, food sources, and requirements for macronutrients, micronutrients, amino acids, and accessory nutritional factors.
- 3.01.04 Prescribe therapeutic diets based on indications and contraindications.
- 3.01.05 Educate patients about general nutrition and food sources of nutrients.

3.02 **Manage patient care by applying principles of physical medicine.** (8 to 9%)
- 3.02.01 Evaluate the safety and efficacy of physical medicine modality prescriptions.
- 3.02.02 Perform osseous and soft tissue manipulation.
- 3.02.03 Treat patients using therapeutic devices (diathermy, sine wave and TENS, galvanism, interferential and microcurrent, traction and compression, light therapy, and therapeutic ultrasound).
- 3.02.04 Administer hydrotherapy treatments and other methods of external application.
- 3.02.05 Treat patients using irrigation methods.
- 3.02.06 Prescribe therapeutic exercise.
- 3.02.07 Educate patients regarding prevention of and home treatment for musculoskeletal conditions.

3.03 **Apply principles of health psychology in developing management plans that address the relationship between illness and the mental, emotional, spiritual, and physical aspects of a person.** (7 to 8%) **Apply research findings to patient management.** (1.25 to 2.5%)
- 3.03.01 Apply ethical principles to physician-patient interactions.
- 3.03.02 Apply basic counseling principles, and use counseling techniques to provide patient care.
- 3.03.03 Educate patients regarding lifestyle choices, health promotion, and the prevention of chronic disease.
- 3.03.04 Use or prescribe mind-body techniques to help patients manage the stress associated with acute, chronic, and terminal conditions.
- 3.03.05 Apply psychological principles of pain management.
- 3.03.06 Identify and address lifespan/developmental issues.
- 3.03.07 Appropriately use psychological testing.
- 3.03.08 Intervene in psychological crisis situations.
- 3.03.09 Interpret, critique, and apply results of research studies.
  - 3.03.09.01 Evaluate research methodology.
  - 3.03.09.02 Determine validity of research conclusions.
  - 3.03.09.03 Incorporate valid findings into patient management.

4.0 **Incorporate knowledge of medical interventions and apply as appropriate to case management**. (Total weighting for MEDICAL INTERVENTIONS general exam area: 20%)

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

- 4.01.01 Assess, treat, refer, and/or transport patients in medical and traumatic acute-care emergencies.
- 4.01.02 Perform Basic Life Support/Cardiopulmonary Resuscitation.
- 4.01.03 Apply principles of sterilization, disinfection, and universal precautions.
- 4.01.04 Perform venipuncture.
- 4.01.05 Administer parenteral substances.
- 4.01.06 Educate patients and the public on the principles of immunization.
- 4.01.07 Administer oxygen and other inhalation therapeutics.
- 4.01.08 Manage hazardous substances and materials.
- 4.01.09 Educate patients regarding communicable diseases.
- 4.01.10 Report communicable diseases to public health authorities.
- 4.01.11 Apply principles of medical disaster preparedness.

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

- 4.02.01 Describe primary actions, adverse effects, indications, contraindications, and potential interactions with botanical medicines, nutritional supplements, and other drugs. (see list, page 18)
- 4.02.02 Identify natural therapeutic interventions that have effects similar to commonly prescribed pharmaceuticals.
- 4.02.03 Monitor and assess for therapeutic drug levels and toxicity.

TOPICS TESTED ON THE CORE CLINICAL SCIENCE EXAMINATION

Conditions

1. **Conditions of the blood and lymphatic systems (7%)**
   A. **cancers** (leukemia [CLL, CML], Hodgkin and non-Hodgkin lymphoma, multiple myeloma)
   B. **infections and inflammations** (babesiosis, malaria, septicemia)
   C. **lymphatic system disorders** (lymphadenitis, lymphangitis, lymphedema)
   D. **red cell disorders** (glucose-6-phosphate dehydrogenase deficiency, hemochromatosis, sickle cell disease, alpha-thalassemia, beta-thalassemia, acute blood loss anemia, aplastic anemia, hemolytic anemia, and vitamin deficiency anemias [iron, vitamin B12, folate])
   E **myeloproliferative disorders** (polycythemia vera, secondary polycythemia)
   F. **coagulation and platelet disorders** (disseminated intravascular coagulation, hemophilia A/factor VIII deficiency, idiopathic thrombocytopenic purpura, vitamin K deficiency, von Willebrand disease)
   G. **porphyrias** (acute intermittent porphyria, erythropoietic protoporphyria, porphyria cutanea tarda)

2. **Conditions of the cardiovascular system (9%)**
   A. **cardiac disorders** (acute coronary syndrome/myocardial infarction, cardiomyopathy, congestive heart failure [right-sided, left-sided], endocarditis, pericarditis, rheumatic heart disease)
   B. **cardiac rhythm disorders** (atrial fibrillation, cardiac arrest, heart block, premature atrial and ventricular contractions, sinus bradycardia, supraventricular tachycardia, ventricular fibrillation, ventricular tachycardia)
   C. **valvular disorders** (regurgitation [aortic, mitral, pulmonic, and tricuspid], stenosis [aortic, mitral, pulmonic, and tricuspid], mitral valve prolapse)
   D. **blood pressure dysregulation** (hypertension, hypertensive crisis, hypotension)
   E. **circulatory system disorders** (aortic aneurysm, chronic venous insufficiency, gangrene, hypovolemic shock, phlebitis, primary and secondary Raynaud phenomenon, stasis dermatitis)
   F. **occlusive vascular disorders** (atherosclerosis, peripheral vascular disease [peripheral artery disease and intermittent claudication, thromboangiitis obliterans, embolism, thrombosis, thrombophlebitis])
   G. **trauma** (chest injuries with cardiovascular implications)

3. **Conditions of the endocrine system (7%)**
   A. **neoplasms** (adrenal, pancreatic, parathyroid, pituitary, thyroid)
   B. **hypothalamic and pituitary hormone disorders** (hyposecretion [panhypopituitarism, growth hormone deficiency, diabetes insipidus], hypersecretion [acromegaly, Cushing disease, syndrome of inappropriate ADH secretion])
   C. **thyroid disorders** (Hashimoto thyroiditis, hyperthyroidism, hypothyroidism [primary, secondary, subclinical], non-toxic goiter)
   D. **parathyroid disorders** (hyperparathyroidism, hypoparathyroidism)
   E. **adrenal disorders** (Addison disease, Cushing syndrome, functional adrenal disorders, hyperaldosteronism)
   F. **pancreatic disorders** (diabetes mellitus type 2, hyperinsulinemia and insulin resistance, metabolic syndrome)
   G. **other** (late-onset hypogonadism, menopause, PCOS)

4. **Conditions of the gastrointestinal and hepatobiliary systems (9%)**
   A. **neoplasms** (colorectal, esophageal, gallbladder, gastric, hepatic)
   B. **infections and inflammation** (GI abscess, pancreatitis, peritonitis)
   C. **esophageal disorders** (Barrett esophagus, eosinophilic esophagitis, esophageal motility disorder, esophageal strictures, esophageal varices, GERD, hiatal hernia)
   D. **stomach disorders** (gastric ulcer, gastritis)
   E. **hepatic disorders** (cirrhosis, hepatitis [A, B, C, non-infectious], non-alcoholic steatohepatitis)
   F. **gallbladder disorders** (cholecystitis, cholelithiasis)
   G. **intestinal disorders** (appendicitis, celiac disease and gluten enteropathy, diverticulitis, diverticulosis, duodenal ulcer, inflammatory bowel disease [Crohn disease, ulcerative colitis], hernia [inguinal, umbilical], ileus, intestinal polyps, Meckel diverticulum, megacolon)
   H. **rectal disorders** (anorectal strictures, cryptitis, fissures, fistula, hemorrhoids, polyps, proctitis, rectal prolapse)
   I. **functional disorders of the GI and hepatobiliary system** (food allergies/intolerances, hypochlorhydria, intestinal dysbiosis [candidiasis and small intestinal bacterial overgrowth], irritable bowel syndrome)
   J. **trauma** (injuries involving the abdominal cavity, poisoning)
   K. **other disorders impacting public health** (bacterial and viral gastroenteritis, parasitic infections)

5. **Conditions of the head and neck (5%)**
   A. **neoplasms** (laryngeal, oral [gingival, tongue, tonsillar])
   B. **infections** (cytomegalovirus, diphtheria, mastoiditis, mononucleosis/EBV)
   C. **eye disorders** (acute closed-angle glaucoma, blepharitis, conjunctivitis, detachments [retinal, vitreous], keratitis, optic neuritis, orbital cellulitis, pterygium, retinal hemorrhage, retinopathy [diabetic, hypertensive], uveitis)
   D. **ear disorders** (cholesteatoma, Ménière disease, otosclerosis, ruptured tympanic membrane, vertigo due to inner ear disorders [benign paroxysmal positional vertigo, labyrinthitis], vestibular disorders)
   E. **nose and sinus disorders** (allergic rhinitis, nasal polyps, sinusitis, sinus headache)
   F. **mouth and throat disorders** (candidiasis, dental abscess, gingivitis, glossitis, herpangina, laryngitis, leukoplakia, parotitis, peritonsillar abscess, pharyngitis, retropharyngeal abscess, sialolithiasis, stomatitis, tonsillitis)
   G. **trauma** (foreign bodies, non-neurological injuries)

6. **Conditions of the immune system (7%)**
   A. **immune deficiency disorders** (HIV/AIDS, IgA deficiency)
   B. **autoimmune disorders** (ankylosing spondylitis, myasthenia gravis, polymyositis, reactive arthritis, rheumatoid arthritis, scleroderma, Sjögren syndrome, systemic lupus erythematosus, vasculitis [giant cell/temporal arteritis, Henoch-Schönlein purpura, necrotizing vasculitis, polyarteritis nodosa])
   C. **hypersensitivity disorders** (allergies, anaphylaxis, angioedema, urticaria)
   D. **other** (chronic fatigue syndrome, disorders of mitochondrial function [fibromyalgia])

7. **Conditions of the musculoskeletal system (9%)**
   A. **neoplasms** (chondroma, osteochondroma, osteoid osteoma, osteoma, osteosarcoma)
   B. **infections and inflammations** (arthritis [psoriatic, septic], bursitis, degenerative disc disease, degenerative joint disease, gout, Lyme disease, tendinopathy)
   C. **bone disorders** (Paget disease of the bone, osteomalacia, osteomyelitis, osteopenia, osteoporosis)
   D. **shoulder and arm disorders** (adhesive capsulitis, rotator cuff injury, tendinopathy, thoracic outlet syndrome)
   E. **elbow disorders** (epicondylitis, ulnar nerve entrapment)
   F. **hand and wrist disorders** (carpal tunnel syndrome, de Quervain tenosynovitis, Dupuytren contracture, ganglion/synovial cyst)
   G. **spinal disorders** (cervical disorders [discopathy, spondylosis, torticollis]; thoracic disorders [costochondritis, discopathy, facet syndrome]; lumbar and sacral disorders [discopathy, sciatica, spondylolisthesis]; postural disorders; spinal stenosis)
   H. **hip and thigh disorders** (avascular necrosis of the femoral head, iliotibial band syndrome)
   I. **knee disorders** (Baker cyst, ligamental disorders, meniscal disorders, patellofemoral syndrome)
   J. **leg and ankle disorders** (medial tibial stress syndrome)
   K. **foot disorders** (functional disorders of the foot [pes planus/cavus], hallux malleus, hallux valgus, Morton neuroma, plantar fasciitis)
   L. **trauma** (disc herniation, disc rupture, dislocation, fracture, separation, spasm, sprain, strain, tear, tendon rupture, whiplash)
   M. **other** (complex regional pain syndrome, muscular dystrophy)

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

9. **Conditions of the respiratory system (7%)**
   A. **neoplasms** (adenocarcinoma, mesothelioma, non-small cell carcinoma, Pancoast tumor, small cell/oat cell carcinoma)
   B. **infections and inflammations** (blastomycosis, coccidioidomycosis, histoplasmosis, influenza)
   C. **bronchial disorders** (bronchiectasis, bronchitis)
   D. **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)

E. **trauma** (airway obstruction, thoracic injuries with pulmonary implications)

10. **Conditions of the skin and nails (3%)**
    A. **cancerous and pre-cancerous lesions** (actinic keratosis, basal cell carcinoma, Kaposi sarcoma, melanoma, squamous cell carcinoma)
    B. **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)
    C. **benign skin lesions** (acanthosis nigricans, acrochordons, lichenification, lipoma, sebaceous cysts, seborrheic keratosis, verrucae)
    D. **immune-mediated disorders** (bullous pemphigoid, atopic dermatitis, contact dermatitis, dermatitis herpetiformis, erythema multiforme, pemphigus, psoriasis, urticaria, vitiligo)
    E. **trauma** (bites, burns, foreign bodies, lacerations)

11. **Conditions of the genitourinary and reproductive systems (9%)**
    A. **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)
    B. **infections** (pelvic inflammatory disease, toxic shock syndrome)
    C. **urinary tract disorders** (cystitis, glomerulonephritis, interstitial cystitis, nephrosclerosis, nephrosis/nephrotic syndrome, polycystic kidney, pyelonephritis, renal failure, renal glycosuria, urethritis, urolithiasis [cystolithiasis, nephrolithiasis])
    D. **uterine and pelvic disorders** (endometrial hyperplasia, endometriosis, endometritis, polyps, uterine prolapse)
    E. **vaginal disorders** (Bartholin cyst, colpocele, cystocele, dyspareunia, rectocele, vaginitis [bacterial, candidal, trichomonal])
    F. **ovarian disorders** (mittelschmerz, ovarian cysts)
    G. **cervical disorders** (cervical dysplasia, nabothian cysts)
    H. **vulvar disorders** (lichen sclerosus, vulvitis, vulvodynia)
    I. **menstrual disorders** (amenorrhea, dysmenorrhea, menorrhagia, metrorrhagia, oligomenorrhea, pre-menstrual syndrome)
    J. **female fertility disorders** (infertility due to cervical and uterine abnormalities, hormonal imbalances, immunologic incompatibility, metabolic abnormalities, nutritional deficiencies, ovarian failure, tubal obstruction)
    K. **male fertility disorders** (infertility due to ductal obstruction, ejaculatory abnormalities, hormonal imbalances, sperm and semen abnormalities)
    L. **erectile dysfunction** (endocrinologic, neurologic, pharmacologic, psychogenic, vascular)
    M. **penile and testicular disorders and benign masses** (balanitis, epididymitis, hematocele, hydrocele, orchitis, paraphimosis, phimosis, testicular torsion, spermatocele, varicocele)
    N. **prostatic disorders** (benign prostatic hyperplasia, prostatitis)
    O. **sexually transmitted infections** (chancroid, chlamydia, condylomata acuminata, condyloma lata, gonorrhea, herpes simplex type II, human papillomavirus, lymphogranuloma venereum, syphilis)
    P. **trauma** (foreign bodies, injuries)

12. **Conditions of the breasts and axillae (3%)**
    A. **neoplasms** (breast cancer [DCIS, LCIS, inflammatory, invasive], fibroadenoma, fibrocystic breast disease, Paget disease of the breast)
    B. **infections** (mastitis)
    C. **other** (gynecomastia)

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

14. **Conditions generally pertaining to pediatrics (5%)**
    A. **neoplasms** (leukemia [ALL, AML], Ewing sarcoma, neuroblastoma, nephroblastoma, osteosarcoma, retinoblastoma)
    B. **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)
    C. **respiratory disorders** (asthma, bronchiolitis, laryngotracheobronchitis (croup), cystic fibrosis, epiglottitis, infant respiratory distress syndrome, respiratory syncytial virus)
    D. **congenital disorders** (anal stenosis, cerebral palsy, congenital hypothyroidism, Hirschsprung disease)
    E. **gastrointestinal disorders** (colic, encopresis, functional constipation, functional diarrhea, intussusception, meconium ileus, pyloric stenosis)
    F. **musculoskeletal disorders** (femoral anteversion, hip dislocation, internal tibial torsion, juvenile rheumatoid arthritis, osteochondrosis [Legg-Calvé-Perthes disease, Osgood-Schlatter disease], osteogenesis imperfecta, rickets, scoliosis, subluxation of radial head)
    G. **developmental disorders** (autism spectrum disorders, cryptorchidism, epispadias, failure to thrive [due to atrial septal defect, coarctation of the aorta, patent ductus arteriosus, tetralogy of Fallot, or ventricular septal defect], hypospadias, learning disorders)
    H. **behavioral disorders** (attention deficit disorder/attention deficit hyperactivity disorder, conduct disorder, oppositional defiant disorder, pervasive developmental disorder, reactive attachment disorder, separation anxiety disorder, Tourette syndrome)
    I. **trauma** (abuse [emotional, physical, sexual])
    J. **other** (dacrocystitis, Fanconi syndrome, diabetes mellitus type 1, hemangioma, plumbism, pediatric febrile seizures, Trisomy 21)

15. **Conditions generally pertaining to geriatrics (5%)**
    A. **dementia** (Alzheimer disease, non-Alzheimer dementia)
    B. **musculoskeletal disorders** (osteoarthritis, osteoporosis, polymyalgia rheumatica)
    C. **nervous system disorders** (cerebral vascular accident, Parkinson disease, transient ischemic attacks)
    D. **circulatory disorders** (aneurysm, peripheral vascular disease)
    E. **ocular disorders** (cataracts, glaucoma, macular degeneration)
    F. **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, vaginal atrophy, vaginal infections, vision impairment, mental health concerns [anxiety, depression, grief, mortality, social isolation])
    G. **trauma** (elder abuse, falls, fracture)

16. **Conditions that have psychiatric, psychological, or behavioral implications (3%)**
    A. **psychotic disorders** (brief reactive psychosis, delusions, hallucinations, paranoia, schizophrenia)
    B. **mood disorders** (bipolar disorder, cyclothymia, depression, dysthymia, mania, seasonal affective disorder)
    C. **cognitive mental disorders** (delirium, dementia)
    D. **anxiety disorders** (agoraphobia, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobias, post-traumatic stress disorder)
    E. **somatoform and factitious disorders** (adjustment disorder with physical complaints, conversion disorder, eating disorders, hypochondriasis, malingering, Munchausen syndrome, Munchausen syndrome by proxy, somatic symptom disorder)
    F. **sexual disorders** (genito-pelvic pain/penetration disorder, pedophilia, sadism/masochism, voyeurism)
    G. **personality disorders** (avoidant, borderline, dependent, histrionic, narcissistic)
    H. **substance-related and addictive disorders** (alcohol, gambling, over-the-counter drugs, prescription drugs, street drugs, tobacco)
    I. **trauma** (domestic violence, incest, rape)
    J. **lifespan issues** (lifespan 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

1. **Orthopedic tests: vertebral column**
   - A. Adam sign
   - B. Adson test
   - C. Braggard test
   - D. Bechterew test
   - E. Burns bench test
   - F. cervical spine compression test
   - G. cervical spine distraction test
   - H. East test (Roos test)
   - I. Hoover test
   - J. Kemp test
   - K. Kernig test
   - L. Lasegue test (straight-leg raise)
   - M. Lindner test
   - N. Milgram test
   - O. Minor sign
   - P. shoulder depression test
   - Q. Soto Hall test
   - R. Valsalva test
   - S. vertebral artery test
   - T. Wright (hyperabduction) test

2. **Orthopedic tests: shoulder**
   - A. Apley scratch test
   - B. drop-arm test (Codman)
   - C. glenohumeral apprehension test
   - D. impingement test (Hawkins-Kennedy, Neer)
   - E. Lippman test
   - F. Speed test
   - G. Yergason test

3. **Orthopedic tests: wrist, hand, and elbow**
   - A. Cozen test
   - B. Finkelstein test
   - C. Mill test
   - D. Phalen test
   - E. retinacular test
   - F. Tinel sign
   - G. valgus/varus stress test

4. **Orthopedic tests: hip and pelvis**
   - A. Ely test
   - B. Gaenslen test
   - C. Hibb test
   - D. Nachlas test
   - E. Ober test
   - F. Ortolani click
   - G. Patrick test (Patrick-FABERE)
   - H. pelvic rock test
   - I. telescoping test
   - J. Thomas test
   - K. Trendelenburg test
   - L. Yeoman test

5. **Orthopedic tests: knee**
   - A. anterior/posterior drawer sign
   - B. Apley compression test
   - C. Apley distraction test
   - D. apprehension test (for patellar dislocation)
   - E. bounce home test
   - F. Lachman test
   - G. McMurray test
   - H. patella femoral grinding test (including Clark test)
   - I. reduction click
   - J. valgus and varus stress test
   - K. knee joint effusion tests (ballotable patella test [major effusion]; bulge test [minor effusion]

6. **Orthopedic tests: ankle and foot**
   - A. anterior/posterior drawer test
   - B. dorsiflexion test
   - C. forefoot adduction test
   - D. forefoot squeeze test (Morton test)
   - E. Homans sign
   - F. talor tilt test
   - G. test for rigid or supple flat feet
   - H. Thompson (squeeze) test
   - I. tibial torsion test

Types of Laboratory Tests and Diagnostic Imaging Studies

1. **Urine**
   A. routine urinalysis
   B. special tests

2. **Hematology**
   A. CBC
   B. coagulation studies
   C. blood typing
   D. erythrocyte sedimentation rate

3. **Serum Tests**
   A. electrolytes
   B. chemistry
   C. hormones
   D. therapeutic drug monitoring
   E. antibody testing

4. **Stool Analysis**
   A. collection
   B. gross analysis of stool
   C. speciality tests

5. **Microbiology**
   A. technique
   B. types

6. **Pathology** (including specimen collection)
   A. cytology
   B. biopsy

7. **Immunology**
   A. autoimmune
   B. infectious diseases
   C. immunological response tests

8. **Pulmonary Function**
   A. tests
   B. studies

9. **Diagnostic Ultrasonography**
   A. musculoskeletal system
   B. vascular system
   C. tissue/organ systems

10. **Electrodiagnostic Tests**
    A. cardiac system
    B. musculoskeletal system
    C. nervous system

11. **Radiography**
    A. orthopedic
    B. tissue/organ systems

12. **Other Imaging/Viewing Studies**
    A. studies using radiation
    B. nuclear medicine scanning tests
    C. fiberoptic studies
    D. magnetic resonance imaging (MRI)
    E. angiography

13. **Toxicology**
    A. toxic metals
    B. pesticides/herbicides/solvents
    C. pharmacotherapeutic agents

14. **Pregnancy and Neonatology**
    A. pregnancy
    B. neonatology
    C. 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 europea
Panax ginseng
Panax quinquefolium
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

Schizandra 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 europa
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 Preparations

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

Pharmacotherapeutic Agents

[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. Also, because some drugs are used for conditions in more than one body system, drugs are no longer listed by categories, but are listed alphabetically.]

5-fluorouracil
acetaminophen
acyclovir
adalimumab
adefovir
albuterol/salbutamol
alendronate
alprazolam
amantadine
amiodarone
amitriptyline
amlodipine
amoxicillin
anastrozole
androstenedione
aspirin
atenolol
atorvastatin
atropine
azithromycin
bisacodyl
bismuth subsalicylate
bromocriptine
bupropion
buspirone
caffeine
cannabis
capsaicin
carbamazepine
carisoprodol
carvedilol
cefdinir
celecoxib
cephalexin
ciprofloxacin
clindamycin
clonidine
clopidogrel
cocaine
codeine
colchicine
cyclobenzaprine
cyclosporine
cyproheptadine
deferoxamine
desmopressin
dexamethasone
dextroamphetamine
dextromethorphan
DHEA
diazepam
dicyclomine
digoxin
diphenhydramine
DMPS
DMSA
docusate
donepezil
doxorubicin
doxycycline
DPT vaccine
edetate calcium disodium

epinephrine/adrenalin
epoetin
esomeprazole
estradiol
estriol
estrogens (conjugated)
estrogen cream
estrone
finasteride
fluconazole
fluoxetine
fluticasone
furosemide
gabapentin
gemfibrozil
glyburide
guiafenesin
Haemophilus influenza type B conjugate
hepatitis A vaccine
hepatitis B vaccine
heroin
HPV quadrivalent
hydrochlorothiazide
hydrocodone
hydrocortisone
hydroxychloroquine
hydroxyzine
ibuprofen
influenza vaccine
insulin
interferon
isoniazid
isotretinoin
ketamine
latanoprost
levodopa-carbidopa
levonoregestrel
levothyroxine
lisinopril
lithium
loperamide
loratadine
MDMA
mebendazole
medroxyprogesterone
melatonin
metformin
methadone
methocarbamol
methotrexate
methyl salicylate
methylphenidate
metoclopromide
metronidazole
misoprostol
MMR vaccine
modafinil
momentasone
montelukast
morphine
meningococcal polysaccharide vaccine
mupirocin
naloxone
naltrexone
naproxen
nicotine patch
nitrofurantoin
nitroglycerin
norelgestromin/ethinyl estradiol (patch)
norgestimate/ethinyl estradiol (oral)
nystatin
oseltamivir
oxycodone
oxymetazoline
oxytocin
paclitaxel

penicillamine
penicillin
pentoxifylline
permethrins
phenazopyridine
phenelzine
phenobarbital
phentermine
phenylephrine
phenytoin
pneumococcal polyvalent
polio vaccine
PPD skin test
pramipexole
prednisone
pregnenolone
prochlorperazine
progesterone
propranolol
propylthiouracil
pseudoephedrine
raloxifene
ranitidine
RGE vaccine
rifampin
risperidone
rivastigmine
rosiglitazone
salmeterol
sildenafil
silver nitrate
sodium phosphate enema
spironolactone
sucralfate
sulfamethoxazole/trimethoprim
sulfasalazine
sumatriptan
tamsulosin
terbinafine
testosterone
tiotropium bromide
tolterodine
trazodone
triple antibiotic (bacitracin, neomycin, polymyxin B)
USP thyroid
valacyclovir
valsartan
vinblastine
warfarin
zidovudine
zolpidem

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

THE NPLEX PART II - CORE CLINICAL SCIENCE EXAMINATION FORMAT

The 400-item NPLEX Part II - Core Clinical Science Examination will be administered in three sections over the course of 3 days (approximately 130 items - 3½ hours per day). The examination will consist of 75 to 85 case clusters in which you will be presented with a clinical summary of the case, then asked four to six questions pertaining to that case. For example, you might be asked to identify the conditions that would be included in a differential diagnosis; to select an appropriate orthopedic test, lab test, or diagnostic imaging study; to evaluate and prescribe treatment options in one of the therapeutic modalities; to describe the correct technique for performing a medical procedure; to know which botanical medicines you should not prescribe given the drugs the patient takes; or to indicate appropriate responses to patient presentations or concerns.

Approximately 30 to 35% of the questions on the Part II - Core Clinical Science Examination will test your ability to diagnose the common conditions listed on pages 6 through 11 of this guide, using the results of physical, clinical, and lab diagnosis techniques as well as imaging studies. Approximately 18 to 20% of the questions will test your knowledge of Materia Medica (see list of botanical medicines beginning on page 14 and list of homeopathic preparations on page 17). Approximately 28 to 30% of the questions will test your knowledge of other modalities applied using naturopathic principles, including clinical nutrition, physical medicine (see list of orthopedic tests on page 12), and psychology and interpretation of research studies. Approximately 20% of the questions will test your knowledge of medical interventions, including emergency medicine and basic medical procedures, and pharmacotherapeutic agents (see list of drugs beginning on page 18). Within these percentage breakdowns, questions will test the general knowledge needed to practice safely as a naturopathic doctor. The list of competencies begins on page 3.

The examples on the following pages do not reflect the percentages indicated above; they are intended only to give you an idea of the types of questions you may expect to encounter. Sometimes the diagnosis question will be the first question after the clinical presentation. However, because the treatment questions are designed to be answered based on the presentation and not on the correct naming of the condition, for some case clusters the diagnosis question will not be asked until some other point in the case cluster. The examples of case clusters are neither inclusive, nor are they exhaustive of item formats; however, a review of all the item examples will provide a good indication of the types of questions that may be asked on the examination. An examination can test only a sample of your knowledge. The sample of items on an NPLEX examination is a stratified sample, meaning that it has been designed to be representative of the knowledge an entry-level physician must have. However, on the actual examination, not every case will have every type of question associated with it.

NOTE: A “SAD diet” refers to an omnivorous diet that includes high amounts of simple carbohydrates, saturated fats, and refined foods.

Case #1

PATIENT: 28-year-old male; 5'10" (177.8 cm), 168 lbs (76.2 kg)

PRESENTATION: Four weeks after an extended 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 afternoon episodes of chills, followed by fever, headache, and diaphoresis. The episodes last several hours, then he feels better. Before his trip, he received all recommended vaccinations and took a prophylactic antimalarial drug. While he was traveling, he had several insect bites on his forearms, but he says these quickly resolved on their own.

MEDICAL HISTORY: His health history is unremarkable other than for minor childhood illnesses, including varicella and strep pharyngitis.

PSYCHOSOCIAL: He lives alone and is not in a long-term relationship. He is a college graduate and is currently looking for a job.

HEALTH HABITS: He eats an omnivorous diet that includes fresh organic fruits and vegetables, but he often eats sandwiches made from processed meats. When he is in a hurry, he skips meals and eats protein bars. He drinks coffee only in the mornings. He normally works out three times per week, but since he returned home, he has had less energy for exercise. When he was in college, his alcohol consumption was sometimes excessive, but now he has only one or two drinks when he goes out on weekend nights. He admits that on occasion, he has unprotected sex.

SUPPLEMENTS: He takes sublingual vitamin B_{12} before he works out.

MEDICATIONS: loratadine, which he uses only occasionally

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, heart rate is 88 bpm and respiratory rate is 12/min.

PHYSICAL EXAMINATION: He appears lethargic, and his hands feel clammy to the touch. On palpation, he has 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 x 10^6/μL	4.6 - 6.2 x 10^6/μL	4.2 x 10^{12}/L	4.6 - 6.2 x 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 with oil immersion magnification (1000x) show oval-shaped erythrocytes containing trophozoites with Schüffner dots and schizonts, indicating infection with Plasmodium ovale.

Chemistry panel is WNL.

Urinalysis is WNL.

HIV testing is negative.

DIAGNOSTIC IMAGING: Diagnostic imaging was not performed at this appointment.

1. Plasmodium infection affects which of the following cell types?
   A. RBCs only
   B. lymphocytes
   C. RBCs and hepatocytes
   D. goblet cells of the stomach and villi of the small intestine

2. The dark colored urine that is sometimes seen in patients being treated for Plasmodium infection is indicative of _____.
   A. precipitated urates in an acid urine
   B. relative dehydration due to watery stools
   C. abnormal concentration of the urine during episodes of high fever
   D. free hemoglobin produced by hemolysis, and possible renal failure

3. Which botanical medicine would be most indicated for his condition?
   A. Smilax spp.
   B. Viscum album
   C. Artemisia annua
   D. Asclepius tuberosa

4. He says that for the past few weeks he has had an aversion to being touched, and even light touch irritates him. This morning, a cat rubbed against his legs, and not only was the sensation distressing, but he found the presence of the cat frightening. Given the information in his case and these additional symptoms, which of the following homeopathic preparations would best fit his presentation?
   A. nux vomica
   B. podophyllum
   C. china officinalis
   D. arsenicum album

5. Prior to treatment with hydroxychloroquine, he should be evaluated for _____, as his use of this drug could cause _____.
   A. factor X deficiency; hemorrhage
   B. G6PD deficiency; hemolytic anemia
   C. intrinsic factor deficiency; macrocytic anemia
   D. the presence of anti-endomysial antibodies; severe gastritis

Case #2

PATIENT: 46-year-old female; 5'6" (168 cm), 120 lbs (54.4 kg)
PRESENTATION: The patient presents with tenderness and swelling of her 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 shortness of breath and sharp, stabbing chest pain. Her chest pain is worse when she breathes deeply or coughs.
MEDICAL HISTORY: She has a long history of amenorrhea. For the past 3 months, she has experienced periods of increasing anxiety.
PSYCHOSOCIAL: She went through a difficult divorce 3 months ago and now lives alone. She works as a loan processor at a bank.
HEALTH HABITS: She eats a vegan diet. She usually 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) every day.
SUPPLEMENTS: a daily multivitamin supplement, Eleutherococcus senticosus, and for the past 5 days, a topical homeopathic analgesic cream for her calf pain
MEDICATIONS: a combination oral contraceptive for the past 6 years, loratadine for seasonal allergies
ALLERGIES: seasonal pollens and cat dander
VITAL SIGNS: Her temperature is 99.1°F (37.3°C), BP is 102/60 mmHg, heart rate is 96 bpm, and respiratory rate is 18/min.
PHYSICAL EXAMINATION: She appears anxious. You note mild right-sided pedal edema. Her 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. Oxygen saturation on room air is 93%.
PRELIMINARY LAB RESULTS: Lab tests were not ordered at the time of the initial evaluation.
DIAGNOSTIC IMAGING: Diagnostic imaging studies were not ordered at the time of the initial evaluation.

1. Given her presentation, what would most likely be found on physical examination?
   A. a positive Homans sign
   B. absence of a pleural rub
   C. a negative Trendelenburg test
   D. an elevated ankle blood pressure

2. The most likely diagnosis is _____, but you must also consider _____.
   A. pulmonary embolism; atelectasis
   B. pulmonary embolism; myocardial infarction
   C. myocardial infarction; peripheral vascular disease
   D. myocardial infarction; gastrocnemius muscle partial tear

3. What is the most appropriate first step?
   A. Refer her to the hospital for Doppler studies.
   B. Activate EMS, and apply heat packs to her calf.
   C. Administer oxygen and continue to observe her closely.
   D. Activate EMS, and while waiting for paramedics to arrive, administer oxygen.

4. Which of the following most likely predisposed her to this condition?
   A. her use of loratadine
   B. her recent increased anxiety
   C. her long-term use of oral contraceptives
   D. her excessive marathon training regimen

5. Which botanical medicine would be the most effective treatment for her calf pain?
   A. Crataegus oxyacantha
   B. Viburnum prunifolium
   C. Gelsemium sempervirens
   D. None of the above; botanical medicine would only mask her symptoms and would not address the cause.

6. Her chest pain is worse with any movement, and her calf pain is better when she presses on it (which you discourage her from doing). She is becoming increasingly irritable. Given the information in her case and these additional symptoms, which of the following homeopathic preparations would best fit her presentation?
   A. bryonia
   B. lycopodium
   C. apis mellifica
   D. arnica montana

7. After she has been treated for her acute presentation and her condition has stabilized, which nutrient would be most indicated for her?
   A. 5 mg of vitamin K, administered po
   B. 300 mg of citrus bioflavonoids, administered po
   C. 400 IU of topical vitamin E, massaged into her calf
   D. 100 mg vitamin B6 and 500 mg of magnesium, administered IV push

8. To prevent recurrence of her condition, the most important lifestyle change she should make would be to:
   A. engage in deep breathing exercises.
   B. use a different form of birth control.
   C. eat a more balanced diet that includes animal protein.
   D. begin a more comprehensive stretching and warm-up routine when she exercises.

Case # 3

PATIENT: 67-year-old male, 5'10" (178 cm), 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 4 to 6 days, he has had only two bowel movements.

MEDICAL HISTORY: He has been relatively healthy most of his life, but for the past 2 years he has had to get up three or four times per night to urinate. He has a long-standing history of constipation,

PSYCHOSOCIAL: He lives with his wife, to whom he has been happily married for 41 years. He recently retired from an accounting firm where he was employed for 45 years.

HEALTH HABITS: He eats pancakes or whole wheat toast for breakfast, sandwiches made with processed meats for lunch, and fish or chicken with potatoes or pasta for dinner. He loves cheese. He drinks one cup of coffee at breakfast and one glass of red wine with dinner. So he can sleep at night without needing to get up to urinate, he drinks little water**.** His only exercise is walking his small dog twice per day.

SUPPLEMENTS: Serenoa repens 640 mg qd

MEDICATIONS: none

ALLERGIES: none known

FAMILY HISTORY: His father died of a stroke 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, heart rate is 96 bpm, and respiratory rate is 18/min and shallow.

PHYSICAL EXAMINATION: His abdomen is slightly distended and tympanic to percussion. You note LLQ guarding and tenderness to light pressure, and you palpate a small tender mass in his LLQ near the midline. There is no rebound tenderness, and obturator and psoas signs are negative.

PRELIMINARY LAB RESULTS:

TEST	US VALUE	US RANGE	IU VALUE	IU RANGE
RBC	4.6 x 10^6/µL	4.6 - 6.2 x 10^6/µL	4.6 x 10^{12}/L	4.6 - 6.2 x 10^{12}/L
WBC	15.2 x 10^3/µL	4.5 - 11 x 10^3/µL	15.2 x 10^9/L	4.5 - 11 x 10^9/L
eosinophils	1.0 x 10^3/µL	0 - 0.5 x 10^3/µL	1.0 x 10^9/L	0 - 0.5 x 10^9/L

DIAGNOSTIC IMAGING: The results of diagnostic imaging studies are pending.

1. Which diagnostic imaging procedure is most indicated?
   A. CT scan of his abdomen
   B. MRI of his lower abdomen
   C. abdominal ultrasonography
   D. barium enema with radiograph

2. The most likely diagnosis is _____, but you must also consider _____ in your differential.
   A. bowel obstruction; gluten enteropathy and appendicitis
   B. bowel obstruction; toxic megacolon and intussusception
   C. diverticulitis; bowel obstruction and appendicitis
   D. diverticulitis; toxic megacolon and inflammatory bowel disease

3. A clerk at a health food store recommended that he take Rhamnus purshiana and Podophyllum peltatum (1:1) 20 gtt bid for his constipation. What do you tell him regarding this formula?
   A. It could aggravate his abdominal pain.
   B. It would be safe for him, but it would not address any of his symptoms.
   C. It would alleviate his nocturia, but would not address his abdominal pain.
   D. It would not be safe for him, as these two botanical medicines should not be used together.

4. To treat his pain, you prescribe _____ in the form of _____.
   A. Ulmus rubra (fulva); lozenges pc
   B. Mentha piperita; a cold infusion ac
   C. Ricinis communis; a warm pack qd
   D. Rhamnus purshiana; a tincture 30 gtt tid

5. Which of the following drugs would be commonly prescribed to treat his condition?
   A. prednisone and ciprofloxacin
   B. loperamide and ciprofloxacin
   C. ciprofloxacin and metronidazole
   D. esomeprazole and metronidazole

6. Which dietary recommendation would be most appropriate?
   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 fully recovered from the acute stage of his condition, which of the following supplements would be most indicated?
   A. niacin and potassium
   B. L-arginine and calcium
   C. pyridoxine and wheat germ
   D. L-glutamine and flax seed meal

Case #4

PATIENT: 4-year-old male; 3'5" (104.2 cm) [65th percentile], 40 lbs (18.2 kg) [80th percentile]
PRESENTATION: The patient presents with fever, malaise, sore throat, and a barking cough. His mother says his symptoms began yesterday evening with a mild sore throat, but that this morning he is much worse.
MEDICAL HISTORY: He has been generally healthy except for an occasional URI. He had an adverse reaction to his first round of vaccinations, so his parents have not continued with the immunization schedule.
PSYCHOSOCIAL: He lives with his parents and his 2-year-old sister, and he attends preschool. He has many friends. He is very athletic for his age and likes to play soccer.
HEALTH HABITS: He eats a SAD diet, but he is not a picky eater and likes most vegetables.
SUPPLEMENTS: none
MEDICATIONS: none
ALLERGIES: penicillin
FAMILY HISTORY: unremarkable
VITAL SIGNS: His temperature is 101.6°F (38.7°C), BP is 100/62 mmHg, heart rate is 130 bpm, and respiratory rate is 30/min.
PHYSICAL EXAMINATION: He is pale and listless. When you ask him questions, he seems to not want to answer; when he does speak, his voice is hoarse. He has bilateral submandibular lymphadenopathy. On visual inspection of his oropharynx, you observe erythematous mucosa and the presence of a grey membrane covering his tonsils, and his breath is fetid. You hear soft expiratory wheezing, but there is no stridor or use of accessory muscles for breathing.
PRELIMINARY LAB RESULTS: The results of lab testing are pending.
DIAGNOSTIC IMAGING: Diagnostic imaging was not performed at this appointment.

1. A presumptive diagnosis of diphtheria is made based on the tonsillar inflammation and the adherent grayish pseudomembrane. Diagnosis of diphtheria would best be confirmed by _____.
   A. positive biopsy of the pseudomembrane
   B. isolation of Corynebacterium diphtheriae from people who have been in close contact with the patient
   C. Gram stain of a sample obtained from nasopharyngeal and pharyngeal swabs showing club-shaped bacilli
   D. lateral radiograph of the neck indicating an enlarged epiglottis protruding from the anterior wall of the hypopharynx (thumb sign)

2. When he swallows, he complains of sharp splintering pains in his throat. His mother says that since he became ill, he has been extremely irritable when disturbed. Given the information in his case and these additional symptoms, which of the following homeopathic preparations would best fit his presentation?
   A. lachesis
   B. euphrasia
   C. hypericum
   D. hepar sulphuris

3. If you prescribed _____, you would expect him to have improved immune function within 2 days; however, an excessive dosage could _____.
   A. Curcuma longa; cause a rash
   B. Curcuma longa; exacerbate his malaise
   C. Lomatium dissectum; cause a rash
   D. Lomatium dissectum; exacerbate his malaise

4. In the recovery phase, would steam inhalation treatments be appropriate for him, and why or why not?
   A. Yes; steam inhalation would help loosen his bronchial congestion.
   B. Yes; steam inhalation would relax the smooth muscle of his respiratory passages and suppress his cough.
   C. No; steam inhalation would lead to fluid accumulation in his lungs.
   D. No; steam inhalation is not indicated for the treatment of diphtheria.

5. He has had close contact with his sister, who is currently asymptomatic. She has had all her scheduled immunizations. What the standard of care to prevent transmission of infection to her?
   A. His sister should receive prophylactic antibiotics.
   B. As his sister is up-to-date on her vaccinations, no special precautions are required.
   C. The patient should be hospitalized and placed under quarantine for the remainder of the acute course of his illness.
   D. Close surveillance should be maintained, and at the first signs of illness, his sister should be scheduled for an appointment.

6. His parents tell you that since he has contracted diphtheria, they see no reason for him to receive the rest of the scheduled vaccinations. What should you tell them?
   A. The child should be vaccinated, as the illness does not confer immunity.
   B. The child does not need to have the remainder of the scheduled vaccinations for this condition, as having the illness has conferred immunity.
   C. The child does not need to have the remainder of the scheduled vaccinations for this condition, 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. The child does not need to have the remainder of the scheduled 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. What do you tell the parents regarding their risk of infection?
   A. They will not become ill, as diphtheria causes symptoms only in children.
   B. If it has been more than 10 years since their last Tdap vaccination, they should receive a booster.
   C. As long as the child is immediately hospitalized under quarantine, they are not at risk of infection.
   D. At this point, vaccination would serve no purpose; they should expect to experience a mild form of the illness.

Case #5

PATIENT: 55-year-old female, 5'4" (162.6 cm), 155 lbs (70.3 kg).
PRESENTATION: The patient presents with left shoulder pain. The pain is a continuous, diffuse aching in her shoulder when she is at rest; use of her left arm increases the severity of the pain. She cannot sleep on her left side due to the pain. The restricted movement in the arm has made dressing and grooming increasingly difficult. She denies trauma to her shoulder or any prior episodes. Onset of the diffuse aching was 2 months ago, but the increase in severity of the pain with use of the arm began 10 days ago.
MEDICAL HISTORY: She has a history of hypothyroidism, which was diagnosed 2 years ago.
PSYCHOSOCIAL: She is single and lives alone with her dog. She is a self-employed author.
HEALTH HABITS: She eats a high-carbohydrate diet and particularly loves bread and pasta. She spends 4 to 6 hours per day at her computer. She does not exercise except to take her dog for a walk for 15 minutes, twice per day. For the past month, she has been unable to hold the dog's leash in her left hand.
SUPPLEMENTS: a daily multivitamin supplement
MEDICATIONS: USP thyroid 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, heart rate is 80 bpm, and respiratory rate is 18/min.
PHYSICAL EXAMINATION: She is right-handed. Physical examination reveals point tenderness deep to the anterior deltoid of her left shoulder. She has moderately decreased active and passive ROM of her left shoulder girdle in all directions. Her cervical spine has normal ROM and her deep tendon reflexes are normal bilaterally. Valsalva test is negative. Cardiopulmonary auscultation and abdominal examination are unremarkable.
PRELIMINARY LAB RESULTS: Lab testing was not performed at this appointment.
DIAGNOSTIC IMAGING: Diagnostic imaging was not performed at this appointment.

1. Her point tenderness suggests that there may be inflammation or injury to the _____. You confirm this by performing _____.
   A. bicipital tendon; Neer test
   B. bicipital tendon; Speed test
   C. glenohumeral capsule; Neer test
   D. glenohumeral capsule; Speed test

2. The most likely diagnosis is _____, but you must also consider _____ in your differential.
   A. adhesive glenohumeral capsulitis; shoulder dislocation and pancreatitis
   B. adhesive glenohumeral capsulitis; thoracic outlet syndrome and shoulder dislocation
   C. bicipital tendonitis; and thoracic outlet syndrome and cholecystitis
   D. bicipital tendonitis; adhesive glenohumeral capsulitis and partial thickness rotator cuff tear

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

4. Which of the following home exercise regimens would most safely and effectively improve her range of motion?
   A. isometric shoulder exercises
   B. over-the-head free-weight lifting
   C. "wall climbing" shoulder exercises
   D. None of the above; exercise is contraindicated for her condition.

5. Which botanical medicine would you consider, and why?
   A. Avena sativa, for its potent analgesic effect
   B. Curcuma longa, for its anti-inflammatory effect
   C. Piscidia erythrina, for its high bioflavonoid content
   D. Harpagophytum procumbens, for its analgesic effect

6. Which supplements would be most indicated to address her presentation?
   A. glucosamine, to increase IL-6
   B. selenium, to regenerate connective tissue
   C. bromelain, to act as an anti-inflammatory
   D. probiotics, to enhance proteoglycan chemotaxis

7. She returns for a follow-up appointment 6 weeks later, and you determine that manipulation of her shoulder would be indicated to prevent recurrence of her condition. Before you perform thrust manipulation of the shoulder, you must make sure that she does not have _____.
   A. scoliosis
   B. breast implants
   C. an osteolytic bone lesion
   D. a history of Hashimoto thyroiditis

8. If her condition does not improve after 2 months of treatment, which diagnostic imaging study should be done?
   A. MRI
   B. CT scan
   C. ultrasonography
   D. radiographic studies

Case #6

PATIENT: 3-year-old male; 3'2" (96.5 cm) [63rd percentile], 30 lbs (13.6 kg) [31st percentile]
PRESENTATION: The patient presents with periumbilical pain. For the past 3 days he has complained of nausea, and this morning he vomited. He has not passed a stool in 4 days, and his 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, which seems to occur in conjunction with the bleeding.
PSYCHOSOCIAL: He is a well-adjusted preschooler who lives with his parents and two older siblings.
HEALTH HABITS: He is a fussy eater and prefers to eat pizza, macaroni and cheese, and sugary breakfast cereals. He likes to play outside, and he has been learning to ride a tricycle.
SUPPLEMENTS: a daily children's multivitamin supplement
MEDICATIONS: none
ALLERGIES: none known
FAMILY HISTORY: unremarkable
VITAL SIGNS: His temperature is 98.0°F (36.7°C), BP is 100/60 mmHg, heart rate is 106 bpm, and respiratory rate is 18/min.
PHYSICAL EXAMINATION: On auscultation, bowel sounds are diminished, and you hear a high-pitched "ping" to the right of the umbilicus. On palpation of this region, you detect a tender sausage-shaped mass.
PRELIMINARY LAB RESULTS: CBC and urinalysis are WNL.
DIAGNOSTIC IMAGING: Diagnostic imaging was not performed at this appointment.

1. The most likely diagnosis is _____, but you must also consider _____ in your 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 be used to definitively diagnose his condition?
   A. PET scan
   B. endoscopy
   C. flexible sigmoidoscopy
   D. plain-film abdominal radiography with IV contrast

3. He feels better when he is lying in a fetal position with a heating pad pressed to his abdomen. Given the information in his case and this additional symptom, which of the following homeopathic preparations would best fit his presentation?
   A. colocynthis
   B. lycopodium
   C. nux vomica
   D. staphysagria

4. Which of the following botanicals would most effectively help prevent esophageal irritation caused by his vomiting?
   A. Aloe vera sap, due to its anti-inflammatory effect
   B. Zingiber officinale tincture, due to its anti-nausea effect
   C. Mentha piperita infusion, due to its anti-spasmodic effect
   D. None of the above; he should not receive anything by mouth.

OR A DIFFERENT FORMAT FOR THIS TYPE OF QUESTION WOULD BE:

5. Would Aloe vera be an appropriate botanical medicine to treat his condition, and if so, what part of the plant should be used?
   A. Yes; Aloe vera gel, due to its vulnerary effect.
   B. Yes; Aloe vera saponins, due to their laxative effect.
   C. Yes; Aloe vera sap, due to its anti-inflammatory effect.
   D. No; Aloe vera in any form is contraindicated for him.

6. Which of the following physical medicine treatments would be most appropriate for his condition?
   A. high-volt galvanism
   B. castor oil fomentations
   C. visceral manipulation of the descending colon
   D. None of the above; he should be referred to a pediatric surgeon.

Case #7

PATIENT: 34-year-old male; 6'1" (185.4 cm), 210 lbs (95.3 kg), which is 15 lbs (6.8 kg) less than he weighed 2 months ago.

PRESENTATION: The patient presents with episodes of palpitations, SOB, and mild chest pain. During these episodes, he becomes diaphoretic, develops an occipital headache, and his heart rate and blood pressure become elevated. Onset was 2 months ago.

MEDICAL HISTORY: Two years ago, he was diagnosed with hypertension. Despite drug treatment, he continues to experience hypertensive episodes.

PSYCHOSOCIAL: He lives in a condominium with his girlfriend. He works as a computer programmer, and does volunteer work with troubled youth 1 day per week. He has an active social life.

HEALTH HABITS: He eats a balanced vegetarian diet. He jogs 3 miles (5 km), 3 days per week. On weekend nights, he usually drinks two or three alcoholic beverages.

SUPPLEMENTS: a daily multivitamin supplement, coenzyme Q10 100 mg qd, fish oil 3 g qd

MEDICATIONS: lisinopril 20 mg qd, amlodipine 10 mg qd

ALLERGIES: cat dander and ragweed

FAMILY HISTORY: unremarkable

VITAL SIGNS: His temperature is 98.9°F (37.2°C), BP is 150/100 mmHg, heart rate is 110 bpm, and respiratory rate is 18/min.

PHYSICAL EXAMINATION: He is pale and diaphoretic, and his hands and feet are cold to the touch. Fundoscopic examination reveals an increased retinal arteriolar light reflex and flame hemorrhages, bilaterally. On cardiac auscultation, you hear 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 IU/mL	1.2 mIU/L	0.5 - 5 mIU/L
glucose (fasting)	105 mg/dL	< 100 mg/dL	5.8 mmol/L	< 5.6 mmol/L

DIAGNOSTIC IMAGING:

Diagnostic imaging was not performed at this appointment.

1. Which diagnostic procedure would be most helpful to confirm the most likely diagnosis?
   A. A radioactive iodine uptake test would be used to confirm the most likely diagnosis of hyperthyroidism.
   B. A urinary 5-hydroxyindoleacetic acid (5-HIAA) test would be used confirm the most likely diagnosis of carcinoid tumor.
   C. 24-hour urinary catecholamine and metanephrine tests would be used to confirm the most likely diagnosis of pheochromocytoma.
   D. 24-hour urinary aminolevulinic acid (ALA) and porphobilinogen (PBG) tests would be used to confirm the most likely diagnosis of porphyria.

2. During the physical examination, he suddenly develops a severe headache, mild SOB, and becomes very anxious. His BP is now 196/122 mmHg. You assess _____. The most appropriate action would be to _____.
   A. hypertension stage I; administer intravenous D5W, then send him home with an appropriate botanical prescription
   B. hypertension stage II; activate EMS and administer an appropriate homeopathic preparation while you await transport
   C. hypertensive urgency; administer intravenous D5W, then arrange for his girlfriend to immediately 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 pulse. Is it appropriate to begin chest compressions, and if so, what would be the correct technique for hand placement?
   A. No.
   B. Yes; place the heel of one hand over the upper half of his sternum, place the heel of the other hand directly on top, and interlace the fingers of both hands.
   C. Yes; place the heel of one hand over the lower half of his sternum, place the heel of the other hand directly on top, and interlace the fingers of both hands.
   D. Yes; place the heel of one hand over the sternum at the xiphoid process, place the heel of other hand directly on top, and interlace the fingers of both hands.

4. He is stabilized and referred to a specialist, but he returns 2 days later with his girlfriend, who says that he has not seemed at all like himself for the past few mornings. He awakens several hours earlier than normal, and seems full of nervous energy. When you interview him, he is easily distracted, and you note that his speech is pressured and he rapidly switches from topic to topic. His mood is elevated until he becomes aware of your concern, at which point he abruptly becomes irritable. Would you diagnose him as having a manic episode according to the DSM-IV, and why or why not?
   A. Yes; his moods are rapidly cycling between periods of elevated mood and depressed mood every few hours.
   B. No; his symptoms are probably related to his medical condition.
   C. No; if he were having a manic episode, he would be showing signs of paranoia and inflated self-esteem.
   D. No; if he were having a manic episode, he would be likely to show signs of disassociation, and he would not be irritated by your concern.

5. One month after you prescribed a well-indicated homeopathic remedy, he returns for a follow-up appointment and says he felt much better within a few days after taking the remedy, but 1 week later he developed a painless urethral discharge that lasted for 3 days. He experienced a similar discharge in his youth. You interpret this to mean that the discharge is _____.
   A. due to suppression
   B. due to a recent infection
   C. part of a curative reaction
   D. not the result of the homeopathic treatment

Case #8

PATIENT: 10-year-old female, 60" (152.4 cm) [98th percentile], 93 lbs (42.2 kg) [91st percentile]
PRESENTATION: The patient presents with two pruritic lesions on her right arm. Her mother says she noticed the lesions 1 week ago, and that during this time they have not changed.
MEDICAL HISTORY: The patient's annual well-child appointments to your office have been unremarkable, and she has had all her scheduled vaccinations.
PSYCHOSOCIAL: She lives with her parents and her new kitten. She is in the 5th grade.
HEALTH HABITS: She is a picky eater; she refuses to eat most vegetables, although she loves fruit. She is an active child, and enjoys playing tennis.
SUPPLEMENTS: a children's daily multivitamin supplement
MEDICATIONS: none
ALLERGIES: none known
VITAL SIGNS: Her temperature is 98.4°F (36.9°C), heart rate is 100 bpm, and respiratory rate is 22/min.
PHYSICAL EXAMINATION: She has no lymphadenopathy. You note two reddish annular 2.5 cm plaques on her right upper arm that are not painful to palpation. The advancing borders of the lesions are slightly raised and scaling, and there are a few pinpoint pustules around the edge. There are no other similar lesions. She has a few small excoriations around her wrist. Physical examination is otherwise unremarkable.
PRELIMINARY LAB RESULTS: The results of lab testing are pending.
DIAGNOSTIC IMAGING: Diagnostic imaging was not performed at this appointment.

1. The most likely diagnosis is _____, but you must also consider _____ in your differential.
   A. impetigo; pemphigus and scabies
   B. impetigo; bedbug bites and varicella
   C. tinea corporis; impetigo and insect bites
   D. tinea corporis; pityriasis rosea and varicella

2. To focus your diagnosis, which diagnostic procedure should be performed first?
   A. IgG testing for viral antibodies
   B. microscopic examination of skin scraping to detect hyphae
   C. culture of skin scrapings on blood agar to detect hemolytic colonies
   D. macroscopic examination of the skin and clothing to look for small insects

3. What needs to be done to prepare a specimen for evaluation?
   A. Gram stain the collected cells.
   B. Apply 10% KOH to the skin scraping.
   C. Grow the collected cells on blood agar.
   D. Illuminate the lesion and clothing with a Wood's Lamp.

4. Which drug would be most indicated for her condition?
   A. acyclovir
   B. penicillin
   C. terbinafine
   D. doxycycline

5. Which of the following botanical medicines would most effectively treat her condition?
   A. oral Passiflora incarnata
   B. oral Selenicereus grandiflorus
   C. topical Melaleuca alternifolia
   D. topical Podophyllum peltatum

OR 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 for her condition.
   B. it would be safe for her, but it is not indicated for her condition.
   C. it would not be safe for her due to her age, although it is indicated for her condition.
   D. it would not be safe for her, and it would not be indicated for a patient who has this condition.

7. The lesions itch and burn intensely when she is in bed and after she bathes in hot water. 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 symptoms, which of the following homeopathic preparations would best fit her presentation?
   A. sulphur
   B. pulsatilla
   C. chamomilla
   D. calcarea carbonica

Case #9

PATIENT: 54-year-old female, 5'4" (162.6 cm), 158 lbs (71.7 kg)

PRESENTATION: The patient presents with episodes of heartburn, diaphoresis, and heavy, squeezing chest pain. She becomes extremely fatigued when she experiences these symptoms, but she denies shortness of breath. Her symptoms are worse with exertion and improve with rest. She thinks she may have food poisoning because she ate in a restaurant 2 nights ago, and has not felt well since that time.

MEDICAL HISTORY: At her last appointment 5 years ago, the time was spent addressing menopausal symptoms. At that time, her BP was 142/92 mmHg, and she chose to treat her borderline hypertension with lifestyle modifications. She says that due to her busy schedule, she has not had time to follow-up with you.

PSYCHOSOCIAL: She is a landscape architect and says that for the past 5 days, she has been doing relatively strenuous work.

HEALTH HABITS: She eats an omnivorous diet, and emphasizes that the fresh food she buys is usually organically grown. Because her work is physically challenging, she does not follow a regular exercise regimen. She does not drink alcoholic beverages or smoke cigarettes.

SUPPLEMENTS: a daily multivitamin supplement, 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, heart rate is 90 bpm, and respiratory rate is 16/min.

PHYSICAL EXAMINATION: Her skin is cool and clammy. Neurological examination is unremarkable. There is no evidence of peripheral edema. Her lungs are clear. On cardiac auscultation, soft S4 is heard over the apex, and a new II/VI systolic murmur is heard.

PRELIMINARY LAB RESULTS:

TEST	US VALUE	US RANGE	IU VALUE	IU RANGE
cholesterol	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:

Diagnostic imaging was not performed at this appointment.

1. The most likely diagnosis is _____ but you must also consider _____ in your 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. Your first step would be to order a(n) _____ to assess for _____.
   A. echocardiogram; pleurisy
   B. CPK with MB bands; pleurisy
   C. ECG; acute coronary syndrome
   D. chest radiograph; acute coronary syndrome

OR, A DIFFERENT FORMAT TO TEST THIS COMPETENCY WOULD BE:

3. If an ECG showed _____ , it would indicate _____.
   A. premature beats; myocardial ischemia
   B. wide QRS complex; a 2nd degree block
   C. prolonged PR interval; a 3rd degree block
   D. elevated ST segments; myocardial ischemia

4. Which drug is most indicated for her condition?
   A. aspirin
   B. atropine
   C. acetaminophen
   D. hydrochlorothiazide

5. Sometimes she is awakened at 1:00 a.m. by the pain, which is relieved if she sips a hot beverage. Given the information in her case and these additional symptoms, which of the following homeopathic preparations would best fit her presentation?
   A. phosphorus
   B. arnica montana
   C. arsenicum album
   D. aconitum napellus

Case #10

PATIENT: 28-year-old female; 5'5" (165 cm), 120 lbs (54.4 kg)

PRESENTATION: The patient presents for her third appointment to receive general wellness counseling. As in previous visits, she is dressed in a tight-fitting, leopard-skin outfit, with exposed cleavage and midriff. Her makeup and hairstyle are theatrical, her gestures are exaggerated, she is flirtatious, and she frequently touches you as she speaks. She effusively praises you, and alternately laughs and cries as she discusses her feelings toward you. She describes her numerous previous doctors as "inept fools".

MEDICAL HISTORY: G5P0, TAB 5; her first pregnancy occurred at age 13. She has a history of cocaine abuse, which also began at that age. Her past medical records include notations of provocative clothing and inappropriate and flirtatious behavior toward the medical staff. She participated in group therapy for her cocaine addiction, and was noted to be loud, disruptive, and demanding to be the center of attention.

PSYCHOSOCIAL: She is unemployed and changes jobs often. She cries as she tells you that women eventually become jealous of her and betray her friendship. She dropped out of secondary school in her sophomore year, as she felt that she was more mature than the other students and they were envious of her. She says she had many "best friends" in secondary school, but the relationships eventually disappointed her because the girls did not care enough about her.

HEALTH HABITS: She eats a whole foods diet, and works out at a gym 2 or 3 times per month. She has not used cocaine for 2 years, and she frequently uses detoxification and liver cleanse products.

SUPPLEMENTS: She is currently on a self-prescribed detoxification protocol that includes a laxative, probiotics, multivitamin, protein drink, EFAs, and a liver support formula.

MEDICATIONS: none

ALLERGIES: none known

FAMILY HISTORY: unremarkable

VITAL SIGNS: Her temperature is 98.6°F (37°C), BP is 124/76 mmHg, heart rate is 68 bpm, and respiratory rate is 14/min.

PHYSICAL EXAMINATION: Her neck is supple, there is no lymphadenopathy, and her thyroid is of normal size and contour. Tympanic membranes and external auditory canals are clear. On cardiac auscultation, you hear a regular rate and rhythm, with no rubs, gallops, or murmurs. Bowel sounds are heard in all quadrants, and abdominal examination is unremarkable.

PRELIMINARY LAB RESULTS:

CBC, metabolic panel, lipid panel, and thyroid function tests are all WNL.

DIAGNOSTIC IMAGING:

Diagnostic imaging was not performed at this appointment.

1. Her _____ would be most suggestive of a _____ personality disorder.
   A. identity disturbance; narcissistic
   B. highly suggestible nature; narcissistic
   C. inappropriate seductive behavior; histrionic
   D. frantic efforts to avoid abandonment; histrionic

2. What would be the most appropriate initial pharmacological approach to treat her condition?
   A. trazodone
   B. fluoxetine
   C. alprazolam
   D. None of the above; counseling would be the most appropriate treatment.

3. You prescribe a nervine tonic that contains Scutellaria lateriflora, Passiflora incarnata, Melissa officinalis, and Verbena officinalis (1:1:1:1), to be taken 1 tsp tid. At a 2-week follow-up appointment, she says she has been feeling great, has been sleeping well, and has a couple of job interviews scheduled. The main problem now is that she is very fatigued in the afternoon. What is the most appropriate course of action?
   A. Add Panax ginseng to the formula.
   B. Recommend that she only take the formula hs.
   C. Recommend that she continue taking the same formula, but decrease the dose to ½ tsp tid.
   D. Recommend that she continue taking the same formula and dosage until her next 2-week follow-up appointment.

4. Two weeks later, she calls in tears to tell you that she discovered she was not hired for a job that she had very much wanted. She is sure it was because the interviewer was intimidated by her intelligence. She says she has had "enough", and tells you that she intends to kill herself by taking all the herbs and supplements in her medicine chest. What is the most appropriate course of action?
   A. Realize that this a manipulative and unrealistic plea for attention. Reassure her that you hear her distress, and encourage her to use some stress management tools.
   B. Reassure her that you hear her distress, and that her safety is of the utmost importance to you. Make her commit to come in for a follow-up appointment as soon as possible.
   C. Inform her that her safety is of the utmost importance to you. Let her know you believe she would be best served by receiving immediate emergency attention, and that you will call the local crisis intervention team.
   D. None of the above; you do not take this suicide plan seriously, as no real harm can come from taking the herbs and supplements that she has in her home.

5. You recommend that she _____, because research has shown that this lifestyle change can reduce anxiety, cause the release of endogenous opioids, and enhance immune function.
   A. eat a raw-foods diet
   B. sleep 9 to 10 hours per night
   C. begin an aerobic exercise regimen
   D. begin systematic desensitization therapy

Case #11

PATIENT: 8-year-old male

PRESENTATION: The anxious mother of the patient 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. The mother noticed that he was pale and had a runny nose the day before.

MEDICAL HISTORY: At his well-child checkup 1 month ago, you examined the child and found him to be a healthy child with normal development.

ALLERGIES: none known

VITAL SIGNS: The mother says that his temperature is 101.5°F (38.6°C), heart rate is 120 bpm, and respiratory rate is 60/min.

1. What is the most important question to ask the mother?
   A. "Has he been vomiting?"
   B. "Is he holding his neck rigid?"
   C "Is there a rash on his abdomen?"
   D. "What is his breathing like between coughing spells?"

2. The most likely diagnosis is _____, you must also consider _____ in your 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 the child was playing outside, he was nearly hit by a car. He became extremely distraught and frightened, and his symptoms started soon after this event. She says that he has always had a fear of dying. Given the information in his case and these additional symptoms, which of the following homeopathic preparations would best fit his presentation?
   A. drosera
   B. belladonna
   C. aconitum napellus
   D. eupatorium perfoliatum

4. Which of the following home treatments would offer the most immediate relief?
   A. steam inhalation
   B. a nutritive enema
   C. effleurage over the rib area
   D. wrapping the child in hot blankets

5. The child is brought to your office 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. As part of the hazardous materials management plan in your office, it is most important to:
   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.

Example Research Item (a stand-alone item unrelated to the previous cases)

You were taught in several courses that Hydrangea arborescens is effective in treating urolithiases. Your experience in the clinic has borne this out. The latest issue of the *New Zealand Journal of Botanical Medicine* reports a randomized, controlled clinical trial on the effect of H. arborescens in the treatment of urolithiases. Results are reported with a p=0.06. What does this mean, and how should you use the information?

A. H. arborescens will be effective in 94% of patients who have urolithiases. Continue to use the botanical as before.
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. Continue to use the botanical as before.
C. Because this study was reported in a prestigious journal, you can assume that H. arborescens is not effective in the treatment of urolithiases. Discontinue its use for treatment of urolithiases.
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. Wait for more research results before you stop using the botanical for the treatment of urolithiases.

Answers to Core Clinical Case Cluster Example Items

Case #1:	1. C	2. D	3. C	4. C	5. B			
Case #2:	1. A	2. B	3. D	4. C	5. D	6. A	7. B	8. B
Case #3:	1. A	2. C	3. A	4. C	5. C	6. C	7. D	
Case #4:	1. C	2. D	3. C	4. A	5. A	6. A	7. B	
Case #5:	1. B	2. D	3. D	4. C	5. B	6. C	7. C	8. A
Case #6:	1. C	2. D	3. A	4. D	5. A	6. D		
Case #7:	1. C	2. D	3. A	4. B	5. C			
Case #8:	1. C	2. B	3. B	4. C	5. C	6. A	7. A	
Case #9:	1. C	2. C	3. D	4. A	5. C			
Case #10:	1. C	2. D	3. C	4. C	5. C			
Case #11:	1. D	2. D	3. C	4. A	5. D			

Research Item: D

NPLEX CORE CLINICAL SCIENCE EXAMINATION (CCSE)
PASSING STANDARDS AND EXAM RESULTS

The NPLEX Part II - Core Clinical Science Examination is a single, integrated examination that tests your knowledge of diagnosis, Materia Medica, other treatment modalities, and medical interventions. To pass the examination, you must be able to demonstrate concurrent[1] competence in four *general* exam areas[2]: *Diagnosis, Materia Medica, Other Modalities*, and *Medical Interventions*.

The report of your Part II - Core Clinical Science Examination results will provide information regarding your overall passing status and will include a visual scale that illustrates your performance in each of the four *general* exam areas relative to the minimum percentage of items you must correctly answer to pass that *general* exam area.

Comprehensive Mastery indicates, with either a "P" (pass) or "F" (fail) designation, whether or not you have passed the NPLEX Part II - Core Clinical Science Examination.

You have passed the NPLEX Part II - Core Clinical Science Examination when you have achieved a "P" (pass) in all four *general* exam areas (as indicated by the competencies listed on pages 3 to 5):

Diagnosis, which reflects the result you achieved on the exam items that relate to physical and clinical diagnostic methods, and lab tests and imaging studies

Materia Medica, which reflects the result you achieved on the exam items that relate to botanical medicine and homeopathy

Other Modalities, which reflects the result you achieved on the exam items that relate to nutrition, physical medicine, and psychology

Medical Interventions, which reflects the result you achieved on the exam items that relate to emergency medicine and pharmacology

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[1] That is, passing two general exam areas in one exam administration and the other two on another exam administration does not constitute a passing result. You must pass all four general exam areas on the same exam administration.

[2] You have passed the Part II - Core Clinical Science Examination when you have correctly answered at least the number of questions that NPLEX subject matter experts (licensed/registered NDs) have determined are required to demonstrate competence in each of the four *general* exam areas. (NPLEX uses a modified Angoff method)

NPLEX PART II - CLINICAL ELECTIVE EXAMINATION
MINOR SURGERY COMPETENCIES AND TOPICS (75 items)

In general, a minimally competent entry-level naturopathic physician is expected to:

1.0 **DIAGNOSIS: Assess, diagnose, and make appropriate referrals for common conditions that require minor surgical interventions: (see list of conditions, page 48)**

- 1.01 Take a medical and psychosocial history, and interpret findings.
- 1.02 Perform a physical examination and interpret findings.
- 1.03 Collect and prepare specimens for lab evaluation, select necessary lab tests, and interpret results.
- 1.04 Identify relevant risk factors.
- 1.05 Recognize the signs and symptoms of the condition, and characteristics of a typical lesion.
- 1.06 Make a diagnosis and generate a differential diagnosis.
- 1.07 Delineate the pathogenesis of conditions, and determine possible etiologies.
- 1.08 Determine the prognosis and potential sequelae.
- 1.09 Identify high risk patients, and know when referral is necessary.

2.0 **TREATMENT SELECTION: Treat common conditions using the most appropriate therapeutic interventions:**

- 2.01 Identify the indications for and contraindications to biopsy of superficial skin lesions.
- 2.02 Identify the indications for and contraindications to excision and removal of superficial skin lesions.
- 2.03 Identify the indications for and contraindications to incision and drainage of superficial skin lesions.
- 2.04 Identify the indications for and contraindications to cryosurgery of superficial skin lesions.
- 2.05 Identify the indications for and contraindications to chemical cautery or electrocautery of superficial skin lesions.
- 2.06 Identify the indications for and contraindications to electrodesiccation (with or without curettage) of superficial skin lesions.
- 2.07 Identify the indications for and contraindications to lift-and-snip of superficial skin lesions.
- 2.08 Identify the indications for and contraindications to nail trephination, removal, and ablation.
- 2.09 Identify treatment options for traumatic wound care and laceration repair.
- 2.10 Know topical or oral treatments for skin conditions.
- 2.11 Know other treatment options for skin lesions that would be performed upon referral to specialty practitioners.
- 2.12 Ensure patient safety by identifying patient characteristics that would influence selection of treatment and procedures.

3.0 **PROCEDURES Apply principles of minor surgical procedures.**

- 3.01 Identify common infectious agents, understand the infective process, and treat infections that result from breach of the dermal barrier.
- 3.02 Apply the principles of pre-operative procedures and site preparation (including pre-operative instructions to patients).
- 3.03 Apply the principles of anesthesia selection and administration.
- 3.04 Select the most appropriate instruments and materials required for minor surgical procedures.
- 3.05 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.
- 3.06 Apply the principles of wound care, including irrigation and debridement.
- 3.07 Apply the principles of wound closure, including suture selection and technique.
- 3.08 Manage complications that arise during surgical procedures.
- 3.09 Employ precautionary methods to protect the practitioner from infection and bodily injury.

4.0 **POST-OPERATIVE CARE: Manage post-operative patient care**.

- 4.01 Provide appropriate post-op instructions to patients.
- 4.02 Know appropriate post-op wound care procedures.
- 4.03 Apply the principles of post-op pain management.
- 4.04 Identify and treat post-op complications.
- 4.05 Provide appropriate monitoring and followup.

CONDITIONS TESTED ON THE NPLEX MINOR SURGERY EXAMINATION

Know the conditions on the clinical blueprint (pages 6 through 11) for diagnostic purposes.

1. **Pustular Lesions** (14%)
   abscess, carbuncle, furuncle
2. **Cystic Formations** (14%)
   cysts (dermoid, epidermal, pilonidal, sebaceous, synovial/ganglion), milia
3. **Skin Lesions** (33%)
   acrochordon, actinic keratosis, cherry hemangioma, cutaneous horn, keratoacanthoma, lentigine, molluscum contagiosum, nevus, pyogenic granuloma, sebaceous hyperplasia, seborrheic keratosis, telangectasia, verruca
4. **Nail Conditions** (14%)
   felon, ingrown nail, paronychia, subungual hematoma
5. **Anal and Genital Conditions** (5%)
   anal fistula, condylomata acuminata
6. **Masses and Neoplasms** (14%)
   basal cell carcinoma, dermatofibroma, lipoma, melanoma, squamous cell carcinoma
7. **Traumatic Injuries** (6%)
   bites, foreign bodies, lacerations

Case #1

A 25-year-old female presents with a painful swelling in her left axilla that first began as a pimple 4 days ago. She has no prior history of these symptoms, she has no known allergies to drugs or medications. Her vital signs are all within normal limits. Physical examination reveals a single, erythematous, swollen, 3.0 cm lesion in her recently shaved left axilla that is exquisitely painful to palpation.

1. Based on this presentation, you would diagnose _____ 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 discreet palpable nodule

2. Which procedure would be most appropriate to treat her 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 surgical procedure on her lesion, which instruments should you choose for your 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 physician 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 post-op with a 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 extraneous source.
   D. The original lesion was multilocular and was not drained completely.

Case #2

A 37-year-old male presents with a bump behind his right ear. He says the bump has been present for at least 1 year, but has become larger in the past month and 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. You would diagnose _____ 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 his mass would be _____.
   A. lift and snip
   B. excision and biopsy
   C. incision and drainage
   D. incision and removal of the entire mass

3. If anesthesia were indicated, which anesthetic would be most appropriate to administer?
   A. 1% lidocaine with epinephrine
   B. 2% procaine without epinephrine
   C. 0.5% bupivacaine with epinephrine
   D. topical application of EMLA cream

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 post-operative complications, when should the sutures be removed?
   A. in 3 to 4 days
   B. in 4 to 7 days
   C. in 7 to 10 days
   D. in 12 to 14 days

Case #3
A 41-year-old 8-week pregnant female presents with a brown lesion located at her 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 penicillin and sulfonamides. Physical examination reveals a single, brownish-black, round, 3 mm papule that has a notable margin of erythema.

1. You would suspect that the lesion is benign if it _____.
   A. is friable
   B. has regular borders
   C. has mottled coloring
   D. has irregular borders

2. Which technique will most appropriately remove the lesion for biopsy?
   A. cryosurgery
   B. shave biopsy
   C. electrodesiccation
   D. chemical cauterization

3. Which pharmaceutical is generally safe during the first trimester of pregnancy??
   A. lidocaine
   B. epinephrine
   C. bupivacaine
   D. mepivacaine

Answers to Example Items

Minor Surgery:
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

NPLEX PART II - CLINICAL ELECTIVE EXAMINATION
ACUPUNCTURE COMPETENCIES AND TOPICS (75 items)

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	

In general, a minimally competent entry-level naturopathic physician who plans to practice acupuncture is expected to:

1.0 **Diagnose Zang-Fu syndromes (see Syndromes list, page 55) by observation, interrogation, and palpation** through the means of:

- 1.01 **Physical Examination**
  - 1.01.01 Palpation of pulse characteristics (positions, quality at each position, and the significance of the findings)
  - 1.01.02 Observation of tongue characteristics (body color, shape, coating, moisture and the significance of the findings)
  - 1.01.03 Observation of the patient's appearance, vitality, and other indicators of constitution.
- 1.02 **Interrogation using the Ten Questions** regarding:
  - 1.02.01 Temperature (hot/cold, fever/chills)
  - 1.02.02 Sweating (quantity/quality/time of day/location on body)
  - 1.02.03 Head and face (quality of head pain, dizziness, location of symptoms, eye symptoms, ear symptoms)
  - 1.02.04 Pain (severity, quality, location on body, chronicity or acuteness, time of day, aggravating factors, ameliorating factors, distension)
  - 1.02.05 Urine and stool (incontinence, retention, incomplete urination or evacuation, color & quality, consistency, amount, size, frequency, chronicity, urgency, timing, discomfort or relief)
  - 1.02.06 Digestion
    - 1.02.06.01 Thirst (intensity of thirst, dryness of mouth)
    - 1.02.06.02 Appetite (intensity of appetite, distension after eating, preferences and cravings)
    - 1.02.06.03 Tastes (bitter/sweet/sour/salty/pungent/metallic/absent)
  - 1.02.07 Sleep (characteristics of insomnia, quality of sleep, nightmares)
  - 1.02.08 Thorax and abdomen (pain by location, quality of pain)
  - 1.02.09 Gynecological issues (quality of menses, timing of menses, characteristics of blood)

1.02.10 Medical history, lifestyle, and habits (major illnesses and procedures, family history and genetic illnesses, prescription and recreational drug use, emotional states, and other predisposing factors)

1.03 **Identification of the pattern of Zang-Fu disharmony according to:**

1.03.01 Eight principles (Interior/Exterior, Hot/Cold, Deficiency/Excess, Yin/Yang)

1.03.02 Vital substances (Qi, Blood, Body Fluid, Jing/Essence, Shen/Mind)

1.03.03 Five elements (Earth, Fire, Metal, Water, Wood)

1.03.04 Channels/meridians (Lung, Large Intestine, Stomach, Spleen, Heart, Small Intestine, Bladder, Kidney, Pericardium, Triple Energizer, Gall Bladder, Liver, Conception Vessel, and Governing Vessel)

1.03.05 Organ Functions

1.03.05.01 Zang/Yin (Solid) Organs (Heart, Liver, Lungs, Spleen, Kidney, Pericardium)

1.03.05.02 Fu/Yang (Hollow) Organs (Stomach, Small Intestine, large Intestine, Gall Bladder, Triple Burner)

2.0 **Treat patients by applying principles of acupuncture.**

2.01 Understand treatment principles, and select treatments that address Zang-Fu syndromes.

2.02 Identify the function, apply the principles of point combining, and know which point protocols are indicated for the following acupuncture points:

2.02.01 LU 1,5,7,9,10,11

2.02.02 LI 1,4,10,11,15,20

2.02.03 ST 1,7,17,25,30,36,37,38,40,42,44,45

2.02.04 SP 1,3,4,6,9,10,15,21

2.02.05 HT 1,3,5,7,8,9

2.02.06 SI 1,3,8,9,10,11,12,13,19

2.02.07 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

2.02.08 KI 1,3,6,7,10,16,27

2.02.09 PC 1,3,6,7,9

2.02.10 TE 1,4,5,6,10,14,17,21,23

2.02.11 GB 1,2,12,14,20,21,24,25,30,34,39,40,41,44

2.02.12 LR 1,2,3,5,8,13,14

2.02.13 CV 1,2,3,4,6,8,12,13,14,17,22,24

2.02.14 GV 1,2,4,9,14,20,24,28

2.02.15 Extra points

2.02.15.01 Head and neck: Shi Shen Cong,Yin Tang, Tai Yang, Bi Tong/ ShangYing Xiang, Anmien, Ding Chuan, Jia Ji/Hua Tuo Jia Ji

2.02.15.02 Abdomen, chest, and back: Zi Gong

2.02.15.03 Arm and hand: Shi Xuan, Ba Xie, Jiagian/Jianneling, Yaotongxue

2.02.15.04 Leg and foot: Baichongwo, He Ding, Xi Yan, Dan Nang Xue, Lan Wei Xue, Ba Feng

2.03 Identify when it is appropriate to use a different (non-acupuncture) treatment modality; know indications and contraindications for, and use of moxibustion, cupping, and electricity.
2.04 Refer patients to other practitioners when appropriate.

3.0 **Ensure treatment effectiveness by using correct technique.**
- 3.01 Needling
  - 3.01.01 Know location of points.
  - 3.01.02 Employ correct needling insertion angles, depths, and techniques.
- 3.02 Moxibustion
  - 3.02.01 Know which points are safe for moxibustion.
  - 3.02.02 Employ correct technique to avoid complications from the use of moxibustion.
- 3.03 Electroacupuncture
  - 3.03.01 Know principles of using electricity with needling.
  - 3.03.02 Employ correct technique in application of electroacupuncture.
- 3.04 Acupressure
  - 3.04.01 Know which points respond best to acupressure.
  - 3.04.02 Know when acupressure would be a good alternative to acupuncture.
- 3.05 Cupping
  - 3.05.01 Know which points are appropriate for cupping.
  - 3.05.01 Employ correct cupping technique.

4.0 **Ensure positive patient outcomes by applying safety principles**.
- 4.01 Practice universal precautions, including the use of 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.
- 4.02 Practice safe needle handling and disposal.
- 4.03 Employ clean needle technique.
- 4.04 Identify general contraindications for needling, moxibustion, and use of electrical current.
- 4.05 Know contraindications for needling and moxibustion of specific points.
- 4.06 Respond to non-medical complications that occur during treatment (stuck needles, broken needles, etc.).
- 4.07 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.).
- 4.08 Respond to post-treatment complications (hematoma, infection at an insertion site, cellulitis, neuropathy, moxa burns, cupping bruises, etc.).
- 4.09 Educate patient regarding possible adverse effects if treatment (e.g., moxa burn, cupping hematoma, pain at insertion site, infection, etc.).
- 4.10 Know when to refer for urgent or emergency care.

SYNDROMES TESTED ON THE NPLEX ACUPUNCTURE EXAMINATION

1. **Lung (LU):**
   Empty: Qi Deficiency, Yin Deficiency, Dryness
   Full Exterior: Invasion by Wind-Cold, Invasion by Wind-Heat, Invasion by Wind-Water (a.k.a. Invasion by Wind-Damp)
   Full Interior: Heat, Damp-Phlegm, Cold-Phlegm, Phlegm-Heat, Dry-Phlegm, Phlegm Fluids Obstructing
2. **Large Intestine (LI):**
   Full: Damp-Heat, Heat, Heat Obstructing, Cold Invasion, Qi Stagnation
   Empty: Dry, Cold, Collapse
3. **Stomach (ST):**
   Empty: Qi Deficiency, Yin Deficiency
   Full: Qi Stagnation, Fire (or Phlegm-Fire), Cold Invasion, Stomach Qi Rebelling Upward, Damp-Heat, Food Retention, Blood Stasis
4. **Spleen (SP):**
   Empty: Qi Deficiency, Yang Deficiency, Qi Sinking, Spleen not Controlling Blood, Blood Deficiency
   Full: Cold-Damp Invasion, Damp-Heat Invasion
5. **Heart (HT):**
   Empty: Qi Deficiency, Yang Deficiency, Yang Collapse, Blood Deficiency, Yin Deficiency
   Full: Fire Blazing, Phlegm-Fire Harassing Heart, Phlegm Misting the Mind, Qi Stagnation, Vessel Obstructed
   Empty/Full: Blood Stasis
6. **Small Intestine (SI):**
   Empty: Deficient and Cold
   Full: Full-Heat, Qi Pain, Qi Tied (Qi Obstruction)
7. **Bladder (BL):**
   Empty: Deficient and Cold (Kidney Yang Deficiency)
   Full: Damp-Heat, Damp-Cold
8. **Kidney (KI):**
   Empty: Yang Deficiency, Yin Deficiency, Qi not Firm, Failure to Receive Qi, Essence Deficiency
   Empty/Full: Yin Deficiency with Empty-Heat Blazing
9. **Pericardium (PC):**
   Full: Heat, Qi Stagnation, Blood Stasis
10. **Gall Bladder (GB):**
    Empty: Deficient Qi
    Full: Damp-Heat, Dampness
11. **Liver (LR):**
    Empty: Blood Deficiency, Yin Deficiency
    Full: Qi Stagnation, Rebellious Qi, Blood Stasis, Fire Blazing, Damp-Heat, Cold Stagnation
    Full/Empty: Yang Rising, Wind Agitating

Case #1

A 36-year-old female presents with dizziness, fatigue, palpitations, poor memory, and decreased appetite. Onset was 2 months ago. Her dizziness is worse when she is fatigued, and especially after her menstrual periods, which resumed 6 months after the birth of her third child 1 year ago. She is a stay-at-home mother, and she is still breastfeeding the youngest child. Her menses have resumed and are regular, but the flow is now scanty. She sleeps well at night, and she denies having any 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. Which one of the following syndromes is most likely?
   A. Yin Deficiency
   B. Phlegm Stagnation
   C. Qi and Blood Deficiency
   D. Kidney Essence Deficiency

2. What principles of treatment are most appropriate for her?
   A. tonify Qi and Blood
   B. tonify Kidney Yin and Blood
   C. tonify Kidney Essence and Qi
   D. dissolve Phlegm, tonify Qi

3. Needling which acupuncture points will best address her presentation?
   A. CV 4, CV 6, CV 12, BL 23, KI 3, GV 20
   B. CV 4, CV 6, BL 23, BL 13, BL 15, BL 20, GV 20, KI 3
   C. BL 13, BL 15, BL 20, ST 36, SP 6, CV 4, CV 12, GV 20
   D. ST 40, ST 36, CV 6, CV 12, BL 12, BL 15, BL 20, GV 20

4. As you are removing the needles after treatment, one appears to be stuck. Which of the following actions will best 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. None of the above; the needle must be removed surgically.

Case #2
A 14-year-old male 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. On physical examination, how would you expect his tongue 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. According to eight principle theory, how would you assess this case?
   A. Interior/Hot/Excess/Yang
   B. Exterior/Heat/Excess/Yin
   C. Interior/Cold/Deficient/Yang
   D. Exterior/Cold/Deficient/Yin

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

4. 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

5. What are the most appropriate treatment principles for this case?
   A. tonify Lung Qi
   B. tonify Spleen Qi
   C. tonify Kidney Yin
   D. dissolve the Phlegm, dispel the Heat

6. Which set of points would you needle?
   A. BL 23, CV 4, KI 6, BL 13
   B. LU 7, LU 9, CV 6, BL 13, ST 36
   C. LU 5, LU 7, ST 40, LI 4, ST 8, GV 20
   D. ST 36, SP 3, SP 6, BL 20, BL 21, CV 12

Answers to Example Items

Acupuncture:
Case #1: 1. C 2. A 3. C 4. B
Case #2: 1. B 2. C 3. A 4. A 5. A 6. B

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)
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
ALP	alkaline phosphatase
ALS	amyotrophic lateral sclerosis
ALT	alanine aminotransferase
ANA	anti-nuclear antibody
ANS	autonomic nervous system
ARDS	adult respiratory distress syndrome
ASO	antistreptolysin-O titer
AST	aspartate aminotransferase
ATP	adenosine triphosphate
AV	atrioventricular node
BLS	basic life support
BMI	body mass index
BNP	brain natriuretic peptide
BPH	benign prostatic hypertrophy
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
CMV	cytomegalovirus
CNS	central nervous system
COPD	chronic obstructive pulmonary disease
CPAP	continuous positive airway pressure
CPK	creatine phosphokinase
CPR	cardiopulmonary resuscitation
CRH	corticotropin-releasing hormone
CRP	C-reactive protein
CSF	cerebrospinal fluid
CT	computerized tomography
CVA	cerebrovascular accident (stroke)
CVD	cardiovascular disease
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
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
EBV	Epstein-Barr virus
ECG/EKG	electrocardiogram
Echo	echocardiogram
E. coli	Escherichia coli
ED/ER	emergency department/emergency room
EEG	electroencephalograph
EFA	essential fatty acids
ELISA	enzyme linked immunosorbent assay
EMG	electromyogram
EMS	emergency medical services/ electronic muscle stimulation
EOM	extraocular movements
EPI	epinephrine
EPMS	extrapyramidal motor system
EPO	erythropoietin
ESR	erythrocyte sedimentation rate
ETOH	ethyl alcohol
FBAO	foreign body airway obstruction
FEV	forced expiratory volume
FSH	follicle-stimulating hormone
FTI	free thyroxine index
FVC	forced vital capacity
G#P#	gravida para (pregnancies/live births)
GABA	gama-aminobutyric acid
GALT	gut-associated lymphoid tissue
GC	gonorrhea/gonococcus

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	glycosolated hemoglobin
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
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	idiopathic thrombocytopenic purpura
IU	international units
IUD	intrauterine device
IV	intravenous
IVP	intravenous pyelogram
IVU	intravenous urogram
JVD	jugular venous distension
KOH	potassium hydroxide
KUB	kidney-ureter-bladder
LCIS	lobular carcinoma in situ
LDH	lactic dehydrogenase
LDL	low density lipoprotein
LFT	liver function tests
LGBT	lesbian/gay/bisexual/transgender
LH	luteinizing hormone
LLQ	left lower quadrant
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 status exam
MPV	mean platelet volume
MRA	magnetic resonance angiography
MRI	magnetic resonance imaging
MRSA	methicillin-resistant Staph aureus
MS	multiple sclerosis
MSM	methylsulfonylmethane
MVA/MVC	motor vehicle accident/collision
NAC	N-acetyl cysteine
NIDDM	non-insulin dependent diabetes mellitus
NKDA	no known drug allergy
npo	nothing per orum (nothing by mouth)
NS	normal saline (or non significant)
NSAID	non-steroidal anti-inflammatory drug
O2 sat	oxygen saturation
OA	osteoarthritis
OC	oral contraceptive
OTC	over-the-counter
O&P	ova and parasite
PABA	para-aminobenzoic acid
PAC	premature atrial contractions
Pap	Papanicolaou (test for cervical pathology)
PAT	paroxysmal atrial tachycardia
PE	physical examination
PERRLA	pupils equal, round, reactive to light and accommodation
PET	positive emission tomography
PCOD/PCOS	polycystic ovary disease
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
prn	pro re nata (as needed)
PSA	prostatic 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
RRR	regular rate and rhythm
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
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	veneral disease research laboratory test
VLDL	very low density lipoprotein
VMA	vanillymandelic acid
VO2	(ventilatory) oxygen consumption
VRSA	vancomycin-resistant Staph aureus
WBC	white blood cell
WNL	within normal limits

SUGGESTIONS FOR A STUDY STRATEGY

1. **Begin your review early.**
   Expect to spend 6 - 8 hours per day studying during the months before the exam administration.

2. **Budget additional study time for weak areas.**
   Begin your studies by identifying your areas of weakness within the competencies. Distribute your allotted study time by beginning with areas of particular weakness and then returning to these topics right before the testing date.

3. **Familiarize yourself with the testing format and procedures.**
   Questions are all multiple choice with one **best** answer and three incorrect responses (distractors). If you have not taken multiple-choice tests before, take some practice tests. Study guides produced by individuals or organizations not affiliated with NPLEX can be useful in preparing to take the examination, but NPLEX does not warrant that the information contained in these materials is representative of the content of the NPLEX examinations.

4. **Expect the examinations to be challenging**.
   NPLEX examinations are developed in accordance with national testing standards. NPLEX trains item writers in the principles of writing clear items. Every item is reviewed by at least 11 NDs and edited to ensure that it is as straightforward as possible. You should, however, expect the items to be intellectually challenging.

5. **Approach the exam process with a positive attitude**.
   If you approach your study time with the attitude that this is your chance to synthesize what you have learned in the past 4 years of school (instead of having the attitude that this is just one more hurdle you must clear), you will minimize the impact that a negative attitude can have on your performance. NABNE suggests that you prepare for the NPLEX not merely to pass the examination, but to reinforce the base of your knowledge, allowing you to enter the naturopathic profession with confidence. Board-level examination is one of the factors that sets you apart from "naturopaths" who have received training through correspondence schools. The privilege of being eligible to take national board-level examinations that are accepted by regulatory authorities is part of what sets you apart from graduates of correspondence and non-accredited schools.

SUGGESTIONS FOR
TAKING AN NPLEX MULTIPLE-CHOICE EXAMINATION

The NPLEX Part II - Clinical Science Examinations are designed to assess your technical knowledge in critical areas of naturopathic medicine. If you take these examinations soon after you graduate from naturopathic college, the information will be fresh in your mind.

The first step in preparing to take the examinations is to look at the examples of case clusters and note how they are formatted. Questions relate to the preceding case, and all questions on NPLEX examinations follow one format: multiple-choice with one correct answer and three distractors.

In preparing to take the NPLEX, there is no quick substitute for years of study. Cramming the night before the examination will usually not improve your score. It is more important to relax and get a good night's sleep. Expect to have some anxiety; this can actually add to mental alertness.

To avoid two common errors associated with filling out the NPLEX exam answer sheet, keep these guidelines in mind:

- First, the bubbles must be filled in **darkly** and **completely**. If a mark is too light or only fills part of the bubble, the scanner might score that item as unanswered and you will not be given credit for it. Erasures should be made completely. If there is still a mark in the bubble, the optical scanner might be unable to interpret which mark you intended, and you will not receive credit for any answer.
- Second, make sure that the line on the answer sheet corresponds to the question being answered. For example, if the answer to item 4 is put on the line on the answer sheet for number 5, all the rest of your answers will be entered on the wrong line.

You may write on your exam booklets, but **ALL ANSWERS MUST BE ENTERED ON THE ANSWER SHEET**.

When responding to a question on the NPLEX Part II - Clinical Science Examinations, you will be required to use your clinical judgement. Choose the **best** answer from those given, based on only the information given in the clinical presentation. Do not overthink your answer; usually your first impulse will be the best. If you overthink a question, you might recall information from specific cases that will lead you away from the response alternative that will be true in **most** cases. You might never encounter a classic textbook case in your naturopathic practice.

There are no "trick" questions. Item writers have made every effort to write items in a straightforward manner. When you come to an item for which you do not know the answer with absolute certainty, try to eliminate some of the responses. If after eliminating one or two of the responses you still are not sure of the answer, make your best guess from among the remaining choices. Some of the items will be very challenging. You are not expected to be able to answer every question correctly. Usually you only need to answer 60 to 70% of the items correctly in order to pass.

Pace yourself. Some items are more time-consuming than others, and while you should have no trouble completing the entire examination in the time allotted, spending too much time on one item might make you feel pressured to speed through the rest. **If you skip an item, be sure you skip the corresponding line on your answer sheet.** As the penalty for an unanswered item is the same as that for an incorrect response, you might want to mark your best guess on a difficult item and return to it later if you have time.

Finally, remember that not everyone will pass the examination on the first attempt. You should have a contingency plan for what you will do if you cannot be licensed immediately after you take the examinations the first time. Knowing that you MUST pass the examination (e.g., because a practice opportunity is waiting for you) will add pressure and anxiety and might cause you to perform below your true level of ability. Having a contingency plan will ease some of that pressure and allow you to function at your best.

THE NPLEX PROCESS

EXAM DEVELOPMENT: Exam items are written and referenced by NDs and other qualified professionals in the US and Canada. Items are screened, reviewed, and rewritten as necessary by Local Exam Committee members who are practicing NDs. New items are added to a computer item bank for each exam administration. Several committees review the individual items and the compiled cases. Before it is used on an examination, every item is reviewed by at least 11 NDs for accuracy, relevance, and appropriateness. The examinations are edited and proofread. After corrections are made, exam booklets are produced and sent to the test sites for administration.

ESTABLISHING THE PASSING SCORE: Because NPLEX examinations are criterion-referenced, each examination has a passing score that is independent of the passing scores of other examinations. The Angoff method (a nationally accepted testing standard) is used to establish this score. Naturopathic physicians rate the difficulty of each exam item by answering the question, "What percentage of minimally competent entry-level naturopathic physicians should be able to answer this item correctly?" These ratings are averaged to determine the cut score for each exam item. Then the cut scores for every item relating to each general exam area (GEAs: *Diagnosis, Materia Medica, Other Modalities,* and *Medical Interventions*) are averaged to determine the cut score for that exam area. Examinations that are judged to be difficult have lower cut scores than easy examinations (i.e., for a difficult examination, the examinee will be required to answer fewer questions correctly in order to pass). Cut scores are set before answer sheets are scored.

SCORING THE EXAMINATIONS: Due to an extensive post-test analysis process, it takes approximately 6 weeks to complete the scoring process. Exam answer sheets are scanned by an optical scanner using the latest technology. Reports and statistics are calculated without reference to any individual's scores. Item analyses and exam summary information are prepared for use in the post-test analysis (PTA).

POST-TEST ANALYSIS: The purpose of the post-test analysis (PTA) is to review exam items that do not perform as expected on the item analysis. Using standard reference texts, the Exam Chair reviews these items to verify that the keyed answer is correct and that there is only one correct answer. Items are reviewed for clarity. The Exam Chair submits her/his recommendations to the PTA Committee, who makes the final decision regarding disposition of the item. Credit may be given for more than one answer, or the item may be deemed valid and appropriate in which case no key changes are made. After a decision has been made about every item in question, changes are made to the scoring key and all examinations are re-scored. This process is done to ensure that the items on which the examinee's results are based are appropriate and fair.

CUT SCORE ANALYSIS AND BOARD REVIEW OF RESULTS: Before the exam results are sent out, the NPLEX Board reviews individual exam results and the scoring process to ensure that pass/fail decisions are appropriate.

BOOKLIST

The following books represent **some** of the texts which are used in preparation of items for the NPLEX Clinical Science Examinations. Please note that item writers are not limited to these reference sources but those listed here provide some basis for review.

DIAGNOSIS

Bates' Guide to Physical Examination and History Taking (Bickley and Szilagi)
Cecil Textbook of Medicine
Current Medical Diagnosis and Treatment (Lange Books)
DeGowin's Diagnostic Examination (LeBlond, Brown, & DeGowin)
Davidson's Principles and Practice of Medicine
Differential Diagnosis of Common Complaints (Seller)
Ferri's Clinical Advisor (Ferri)
Fitzpatrick's Color Atlas of Dermatology (Fitzpatrick)
Harrison's Principles of Internal Medicine
Integrative Medicine 2nd Ed (Rakel)
Manual of Pediatric Physical Diagnosis (Barness)
Office Practice of Medicine (Branch)
Physical Examination of the Spine and Extremities (Hoppenfeld)
Practical Strategies in Outpatient Medicine (Reilly)
Problem-Oriented Medical Diagnosis (Friedman)

LAB DIAGNOSIS and DIAGNOSTIC IMAGING

A Manual of Laboratory and Diagnostic Tests (Fischbach)
Bakerman's ABC's of Interpretive Laboratory Data (Bakerman, Bakerman, and Strausbauch)
Blood Chemistry and CBC Analysis: Clinical Laboratory Testing from a Functional Perspective (Weatherby and Ferguson)
Clinical Imaging (Marchiori)
Clinical Laboratory Medicine: Clinical Applications of Laboratory Data (Ravel)
Clinical Radiology: The Essentials (Daffner)
Interpretation of Diagnostic Tests (Wallach)
Laboratory Tests and Diagnostic Procedures (Chernecky and Berger)
Mosby's Diagnostic and Laboratory Test Reference (Pagana and Pagana)
Mosby's Manual of Diagnostic and Laboratory Tests (Pagana and Pagana)
Paul and Juhl's Essentials of Radiologic Imaging
Rapid Interpretation of EKG's (Dubin)

BOTANICAL MEDICINE

Chinese Herbal Medicine Materia Medica (Bensky and Gamble)
Complex Herbs-Complete Medicines 2004 (Brinker)
Herbal Medicine(Weiss)
Herbal Medicine from the Heart of the Earth (Tilgner)
Herb Contraindications and Drug Interaction (Brinker)
Herbs: Everyday Reference for Health Professionals (Chandler ed.)
King's American Dispensatory (Felter and Lloyd)
Medical Herbalism 2003 (Hoffman)
Plant Medicines in Practice: Using the Teachings of John Bastyr 2003 (Mitchell)
Principles and Practice of Naturopathic Botanical Medicine 2010 (Godfrey and Saunders)
Principles and Practice of Phytotherapy (Mills and Bone)
Rational Phytotherapy (Schultz, Hänsel, Blumenthal, and Tyler)
Specific Medication and Specific Medicines (Scudder)
The Complete Botanical Prescriber (Sherman)
The Toxicology of Botanical Medicine (Brinker)
Trease and Evans' Pharmacognosy (Evans)

HOMEOPATHY

Concordant Materia Medica (Vermeulen)
Desktop Companion to Physical Pathology (Morrison)
Desktop Guide to Keynotes and Confirmatory Symptoms (Morrison)
Homeopathic Remedy Guide (Murphy)
Introduction to Homeopathic Medicine (Boyd)
Kent's Lectures on Homeopathic Materia Medica (Kent)
Materia Medica with Repertory (Boericke)
Materia Medica of Homeopathy (Phatak)
Organon of the Medical Art (Hahnemann)
Principles and Practices of Drugless Therapeutics (Johnson)
Synoptic Materia Medica I and II (Vermeulen)
Synthesis 9.1 Homeopathic Repertory (Schroyens)
The Science of Homeopathy (Vithoulkas)

NUTRITION

A-Z Guide to Drug-Herb-Vitamin Interactions (Lininger)
Williams' Essentials of Nutrition and Diet Therapy (Williams)
Environmental Nutrition (Levin)
Foundations of Nutritional Medicine (Werbach)
Healing With Whole Foods: Asian Traditions and Modern Nutrition (Pitchford)
Krause's Food, Nutrition and Diet Therapy 2nd Ed (Mahan and Stump)
Medical Nutrition from Marz (Marz)
Naturopathic Nutrition 2006 (Hoffer and Prousky)
Nutritional Biochemistry and Metabolism: With Clinical Applications (Linder)
Nutritional Influences on Illness (Werbach)
Nutritional Medicine: A Textbook (Gaby)
Present Knowledge in Nutrition (Bowman and Russell)
Preventive Nutrition: The Comprehensive Guide
Staying Healthy with Nutrition (Haas)
Textbook of Natural Medicine (Pizzorno and Murray)
Textbook of Nutritional Medicine (Werbach and Moss)

PHYSICAL MEDICINE
Fundamentals of Orthopedics (Gartland)
Illustrated Orthopedic Physical Assessment (Evans)
Orthopedic Physical Assessment (Magee)
Palpation Skills (Chaitow)
Photographic Manual of Regional Orthopedic Tests (Cipriano)
Physical Exam of the Spine and Extremities (Hoppenfeld)
Applied Physiotherapy (Jaskoviak and Shaffer)
Critical Pathways in Therapeutic Intervention (Saidoff and McDonough)
Evidence-Based Guide to Therapeutic Physical Agents (Belanger)
Instructions for Sports Medicine Patients (Safran)
Lectures in Naturopathic Hydrotherapy (Boyle and Saine)
Manual of Physical Agents (Hayes)
Modern Neuromuscular Techniques (Chaitow)
Myofascial Pain and Dysfunction: The Trigger Point Manual (Travel and Simons)
Principles of Manual Medicine (Greenman)
Tappan's Handbook of Healing Massage Techniques (Tappan and Benjamin)
Therapeutic Modalities (Starkey)

PSYCHOLOGY
Anxiety and Stress Disorders (Michelson, et al.)
Behavioral Medicine in Primary Care (Feldman and Christiansen)
Clinical Ethics (Jonsen-Siegler)
Crisis Intervention: Theory and Methodology (Aguileva)
Current Psychotherapies (Corsini and Wedding)
DSM-5 (American Psychiatric Association)
Health Psychology (Taylor)
The Medical Interview: Mastering Skills for Clinical Practice (Coulehan and Block)
Messages: The Communications Skills Book (McKay, Davis, and Fanning)
Mind Matters (Millinson)
Motivational Interviewing (Miller and Rollnick)
The Nature of Suffering (Cassell)
Preventing Misdiagnosis in Women (Klonoff and Landrine)
Psychophysiology (Hugdahl)
Stress and Health (Lovallo)
Why Zebras Don’t Get Ulcers (Sapolsky)

RESEARCH
Clinical Research in Complementary Therapies (ed. Lewith, Jonas, and Walach)
Evaluating Research Articles from Start to Finish (Girden)
Making Sense of Research (Brown Menard)
Studying a Study and Testing a Test: How to Read the Medical Evidence (Riegelman)

EMERGENCY MEDICINE
A Little Book of Emergency Medicine Rules (Slovis, Wrenn, and Meador)
AMA Handbook of First Aid and Emergency Care
American Red Cross First Aid and Safety Handbook
American Red Cross Emergency Response
Brady Emergency Care
Current Emergency Diagnosis and Treatment (Saunders and Ho)
Emergency Medicine on Call (Keim)
Emergency Medicine: Just the Facts (Cline et al.)
Office Emergencies (Bowman and Baxt)
Rosen and Barkin's 5-Minute Emergency Medicine Consult (Schneider ed.)

PUBLIC HEALTH
Control of Communicable Diseases Manual (Chin)
Epidemiology (Gordis)
Introduction to Public Health (Schneider)

MEDICAL PROCEDURES
Nurses' Guide to Clinical Procedures (Smith-Temple and Johnson)
Mosby's Pocket Guide to Nursing Skills and Procedures 2011 (Potter)

PHARMACOLOGY
A-Z Guide to Drug-Herb-Vitamin Interactions 2nd Ed (Gaby)
Canadian Pharmaceuticals and Specialties (Canadian Pharmacists Society)
Essential Guide to Prescription Drugs (Long)
Drug Facts and Comparisons 2011 (Lippincott et al.)
Herb Contraindications and Drug Interactions (Brinker)
Interactions Between Drugs and Natural Medicines (Meletis)
Lexi-Comp's Drug Information Handbook (Lacy et al.)
Physicians Drug Handbook (Lippincott)

MINOR SURGERY
Ambulatory Surgery (Wolcott)
Atlas of Minor Surgery (Cracknell)
Clinical Dermatology: A Color Guide to Diagnosis and Therapy 3rd Ed (Habif)
The Essential Guide to Primary Care Procedures (Maycaux)
Lippincott, Williams, and Wilkins Handbook of Primary Care Procedures
Minor Surgery in Practice (Sodera)
Minor Surgery: A Text and Atlas (Brown)
Principles and Practices of Dermatology (Sams)
Procedures for Primary Care Physician (Pfenninger and Fowler)
Sauer's Manual of Skin Diseases (Hall)
Skin Disease Diagnosis and Treatment (Habif)
Skin Surgery: A Practical Guide (Usatine et al.)
Surgery of the Skin: Procedural Dermatology (Robinson et al.)

ACUPUNCTURE
A Manual of Acupuncture (Deadman and Al-Khafaji)
Acupuncture, A Comprehensive Text (Bensky and O'Connor)
Chinese Acupuncture and Moxibustion (Foreign Language Press)
Clean Needle Technique Manual for Acupuncturists (National Acupuncture Foundation)
Foundations of Chinese Medicine: A Comprehensive Text (Maciocia)
Fundamentals of Chinese Acupuncture (Ellis, Wiseman, and Boss)
Pocket Atlas of Acupuncture 2006 (Thieme)
Pocket Manual of Chinese Medicine (Lee)