ASPPB
Association of State and Provincial Psychology Boards

# The Psychopharmacology Examination for Psychologists® (PEP) Candidate Handbook

## November 2026

**MISSION**

To support member jurisdictions in fulfilling their responsibility of public protection.

**VISION**

Consistent standards that ensure the competent practice of psychology.

**VALUES**

ASPPB is committed to quality, respect, responsiveness, accountability, and transparency.

# Introduction

The Association of State and Provincial Psychology Boards® (ASPPB) administers and maintains the Psychopharmacology Examination for Psychologists (PEP) for use by U.S. and Canadian jurisdictional boards that offer licensure/certification of psychologists for prescription privileges. The PEP assists the boards in assessing the qualifications of psychologists seeking prescriptive privileges. The PEP measures foundational knowledge associated with the safe and effective practice of psychology involving prescribing psychotropic medications and collaborating with those who prescribe such medications.

The Candidate Handbook contains a description of the PEP, including what it measures, how it is developed, how it is administered, and how it is scored. General exam-taking strategies are provided along with sample questions.

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# Examination

## Development of the PEP

The PEP was originally developed by the American Psychology Association (APA) Practice Organization, College of Professional Psychology. In 2017, ownership and management of the exam were transferred to ASPPB. A large-scale review and a new Job Task Analysis (JTA) of the content of the exam were conducted to update the Blueprint of the examination to reflect the current practice of psychology of those with prescriptive privileges. Similar to previous JTAs, the process was a multi-step process that involved analyzing data from a large-scale survey of Subject Matter Experts (SMEs) with knowledge and training in the area of prescribing psychology to determine the areas that should be assessed on the PEP. The blueprint establishes and supports the content validity of the PEP, and therefore, its defensibility for use in a regulatory setting. Using the validated, practice-based content outline, psychologist item writers are encouraged to draw upon actual treatment experience to ensure item relevance. All items are carefully reviewed to ensure validity, fairness, relevance, and clarity.

A new JTA is currently underway to develop the next exam forms due to be implemented in 2028.

## General Information

The PEP is a standardized exam administered by ASPPB for licensed psychologists pursuing prescriptive authority. The PEP measures foundational knowledge and the application of that knowledge for the safe and effective practice of psychology involving prescribing of psychotropic medications. In keeping with testing-industry standards, ASPPB thoroughly reviews and revises the PEP to keep pace with advances in the area of clinical psychopharmacology.

Eligible candidates, doctoral level psychologists licensed as health service providers with additional training that qualifies for a master's degree in clinical psychopharmacology, complete the exam as part of the application for prescriptive privileges in jurisdictions that require or accept it.

Prescriptive authority offers a distinct set of additional treatment interventions and adds another layer of risk and responsibility to the practice of psychology. Ultimately, it falls to independent licensing boards to ensure that prescriptive authority is used appropriately and delivers the best possible patient outcomes.

### PEP Administration

The PEP is a four-hour computer-based exam administered at centers within the Kryterion Testing Network (KTN). There are  200 multiple-choice items. Of those, 150 items are scored and 50 items are unscored (pretest) items that may be used on future exams. These pretest items do not count toward the candidate's final score. Items and typical practice situations may be presented requiring recall of information, analysis, and judgment such as next steps, best choices, most appropriate first step, most important considerations, etc.

Before the PEP begins, a simple tutorial will guide the candidate through the process of selecting answers. If the candidate has any questions about how to work with the computer, a proctor will be available at the center to help.

# Knowledge-Based Content Outline

The knowledge sampled by the PEP is organized into 10 Knowledge-Based Content Areas (i.e., Domains) with associated knowledge statements. The 10 content areas are represented by questions on the PEP that reflect knowledge of that content area. The proportion of questions on the exam related to each of the Domain areas are indicated by the percentages listed after the title for the area. For example, 7.3% of the items (11 items out of the 150) are drawn from Content Area 1, 6.7% of the items (10 items out of the 150) are drawn from Content Area 2, etc. Percentages reflect the relative importance of each content area for safe and effective practice as well as the amount of knowledge each content area contains as determined by SMEs.

Please keep in mind that the PEP sample items and exam questions relate to the content areas. Thus, not every knowledge statement, nor each and every possible aspect of any specific content area, may be represented by a question on the PEP.

# Content Areas

For a detailed breakdown of the PEP Content Areas, please see Appendix B.

| Content Area | Content Area Title | Percent of Exam |
|---|---|---|
| 1 | Integrating Clinical Psychopharmacology with the Practice of Psychology | 7.3% |
| 2 | Neuroscience | 6.7% |
| 3 | Nervous System Pathology | 11.3% |
| 4 | Physiology and Pathophysiology | 16% |
| 5 | Biopsychosocial and Pharmacologic Assessment and Monitoring | 6% |
| 6 | Differential Diagnosis | 10% |
| 7 | Pharmacology | 12.7% |
| 8 | Clinical Psychopharmacology | 16% |
| 9 | Research | 7.3% |
| 10 | Professional, Legal, Ethical, and Interprofessional Issues | 6.7% |

# Requirements for Admission to the PEP

The requirements for admission to the PEP are that the applicant:

- Obtain verification from ASPPB of a passing score on the EPPP,
- Possess a current, active license or registration to practice psychology at the independent level in an ASPPB member jurisdiction for a minimum of two (2) years, where such license or registration is based on receipt of a doctoral degree in psychology with demonstrated training and experience as a health services provider as defined in the ASPPB Model Act.
- Submit a self-attestation that the psychologist's licensure is in good standing with no current or pending disciplinary actions.
- Present a transcript demonstrating successful completion of a post-doctoral psychopharmacology training program from a regionally accredited institution in the U. S. or a provincially or territorially chartered institution in Canada. The psychopharmacology program must be APA designated or demonstrate coursework that meets the APA's established criteria for designation.
- Provide the name of a doctoral-level licensed psychologist who can provide an attestation that the candidate has been a health service provider for a period of at least two years. That attesting psychologist must have reasonable knowledge of the candidate's practice and been licensed during the same time period for which they are providing the attestation. A completed attestation must be submitted within the application.

# Registration and Scheduling the PEP

To apply and register for the PEP, **eligible** candidates must go through PSY|PRO. Once a candidate creates an account, ASPPB will email instructions outlining the requirements for the PEP and the documentation that must be submitted as part of the application process. Candidates who have previously accessed ASPPB's PSY|PRO system for score transfers, the credentials bank, or applications for an ASPPB mobility certificate or PLUS already have an existing username (email address) and password. Candidates who have forgotten their password may reset it using the password recovery feature.

Once the candidate has met all the requirements and is approved to take the PEP, ASPPB will create a candidate account in Kryterion's registration system, Webassessor. The candidate will receive a welcome email from Kryterion/Webassessor containing information regarding the candidate's Kryterion account information and instructions to **schedule the PEP.**

PLEASE NOTE: ASPPB does not have access to applications of candidates who previously registered with APA. Therefore, those candidates must register with ASPPB in order to apply to take the PEP. The registration process is typically not long, but it does require documentation.

# Exam Fees

A candidate's initial application to take the PEP within PSY|PRO includes the exam fees for the first administration. However, subsequent exam administration fees are paid through the Kryterion/Webassessor website at the time of scheduling.

| | |
|---|---|
| Exam Fee | $700 |
| Test Center Fee | $125 |
| Sample Exam Fee | $30 |

# Exam Accommodations

ASPPB is committed to providing all qualified candidates an equal opportunity to successfully complete the PEP while assuring validity and security of the Examination. Candidates with documented disabilities or impairments recognized by the Americans with Disabilities Act (ADA) who wish to be tested under nonstandard conditions must request accommodations directly from ASPPB. Most exam accommodation requests can be implemented by Kryterion Test Centers. However, authorization from ASPPB is required. The following guideline applies to candidates seeking exam accommodations:

Candidates requesting exam accommodations due to impaired sensory, manual, or speaking skills, or other disabilities must submit a request through the ASPPB application process. A written request must include a description of the requested accommodation. The request must also be accompanied by supporting documentation from an appropriately qualified, licensed professional providing a qualifying description of the condition and an explanation of the need for the requested accommodation. Alternatively, documentation may be submitted from appropriate educational or regulatory officials indicating that special accommodation has historically been provided for the candidate's condition.

The request for exam accommodations must be submitted to ASPPB at least **45 days in advance of the desired testing date.** ASPPB will evaluate each request on its own merit in accordance with the Americans with Disabilities Act.

For more information, please email pep@asppb.org.

# Taking the PEP

All PEP exams will be offered on-site, in person, at a Kryterion Testing Center. The exam is not offered online. A photo ID will be required when checking into the testing center to sit for the exam. To locate a testing facility, visit: www.kryteriononline.com

Once a candidate has registered, any changes to demographic information, such as name or address, must be made through ASPPB. Please call or email pep@asppb.org. Additional documentation may be required to verify the requested change.

Remember:

- Read the instructions carefully and complete the tutorial. Make sure to understand how to mark the responses before beginning.
- Read each question and all the answers carefully and completely before selecting the most appropriate answer.
- When an answer has been chosen, resist changing it without being absolutely certain that it is not the best answer.
- Answer all questions on the PEP.
- The 4-hour time limit should be more than sufficient to answer all questions. However, check the time periodically and budget the time carefully.

- If there is time remaining after reaching the end of the exam, return to any skipped items to review and complete them.

- If there is enough time, go through all the items to make sure that the responses are recorded correctly.

# PEP Score Report

Upon completion of the PEP, candidates will receive an email confirmation that will include exam results and information about the re-take process, if required, within a week of the exam administration. ASPPB has access to scores from exams taken under APA. For an official score transfer please email pep@asppb.org.

PEP scores are maintained in a secure and confidential databank and are reported to state and provincial psychology licensing authorities or other entities upon a candidate's written request.

# Establishing the Passing Score

The Passing Score is determined using a criterion-referenced methodology referred to as a modified Angoff approach to setting a standard (i.e., cut-off score). Based on this methodology, the examinee's score is determined to fall above or below the standard rather than comparing the examinee's score to other candidates.

Using the modified Angoff approach, items are evaluated based on the probability that a minimally competent practitioner will correctly answer the item on the exam. The Passing Score (i.e., cut-off score) represents the minimum level of knowledge that must be demonstrated by the psychologist to be considered competent to prescribe at the entry level of practice. An examinee's score on the PEP is simply the number of items answered correctly represented as a percentage. All items receive identical weights. "Passing" the PEP requires a score at or above this set (i.e., cut-off) score. The passing score is a standard that ASPPB recommends for use by state and provincial psychology licensing/registration authorities in awarding prescriptive authority. To ensure exam security, there is no provision for failing or passing candidates to review their examinations. However, comments about the PEP may be addressed directly to ASPPB.

# Retake Policy

If a candidate does not achieve a passing score on the exam, the following waiting periods apply before retesting:

- 60 days before a 2nd attempt may be taken
- 90 days after the 2nd attempt before a 3rd attempt may be taken
- The exam may not be taken more than 3 times in any given 365 day period
- Retakes are purchased and scheduled through Kryterion/Webassessor.

# PEP Sample Exam

ASPPB offers an optional PEP Sample Exam. The Sample Exam is purchased and administered through Kryterion's online restristation portal, Webassessor. Candidates will receive a Webassessor account once they have been approved to take the PEP. Unlike the actual PEP Exam, the Sample Exam is only offered online. Candidates will need to download and run the exam using a secure browser. Webassessor will provide instructions for the installation.

The PEP Sample Exam includes 100 questions and a total time of 120 minutes to complete. Logging out of Webassessor will save the candidates' exam progress and pause the timer. When candidates log back into Webassessor and re-launch their exam, they will be able to continue where they stopped.

Please note the Sample Exam is meant only to demonstrate question formats and wording of the PEP, and provide an opportunity to experience the test delivery platform. The Sample Exam is NOT predictive of how candidates will perform on the PEP. Upon copmleteion, candidates will receive a performance breakdown and a percentage of correctly answered questions.

# Sample Questions

Following are several sample test items that are illustrative of the types of items that comprise the PEP. These sample items are not meant to illustrate the diversity of subject areas. The correct answer for each is indicated by an asterisk (*).

All preganglionic fibers of the autonomic nervous system use the neurotransmitter:

A. acetylcholine *

B. dopamine

C. gaba-aminobutyric acit (GABA)

D. norepinephrine

Monoamine oxidase inhibitors (MAOIs) produce their effects by:

A. inhibiting the degradation of norepinephrine*

B. inhibiting the reuptake of norepinephrine

C. inhibiting the reuptake of acetylcholine

D. decreasing the amount of norepinephrine available at the synapse

A 45-year-old female on an inpatient unit who has been recently treated with haloperidol (Haldol) develops hyperthermia, rapid heart rate, pallor (paleness), and muscular rigidity. These symptoms MOST likely indicate the onset of:

A. spinal meningitis

B. neuroleptic malignant syndrome (NMS)*

C. agranulocytosis

D. a condition unrelated to the medication

The double-blind, placebo-controlled design in psychopharmacology research has been criticized because:

A. reports of side effects may clue clinicians to the experimental group assignment of the patient.*

B. placebos are too variable in the effects they produce.

C. clinicians may subtly convey to their patients their expectations for improvement depending on whether the patient is receiving the experimental drug or the placebo.

D. patients become aware of their experimental group assignment because placebos have no side effects.

# Appendix A

## PEP Candidate Acknowledgement Statement

Candidates are reminded that they have an ethical and legal duty not to divulge the content of the PEP. The Candidate Acknowledgment Statement reproduced below, is presented on-screen as part of the online application process. Candidates are required to acknowledge their understanding of this Statement to complete the application process. This text also appears on the computer screen at the testing centers prior to the commencement of the Exam, and by proceeding with the Exam, each candidate acknowledges that they understand its meaning. The statement reads as follows:

**By taking this exam, I hereby acknowledge that I have read and understand the following:**

1. I have an ethical duty to protect the security and validity of the PEP.
2. This examination and the items contained therein are the exclusive property of the ASPPB.
3. This examination and the items contained therein are protected by copyright law and constitute valuable trade secret information, the disclosure of which will cause injury to the ASPPB. No part of this examination may be copied or reproduced in part or whole by any means whatsoever, including memorizing and/or reporting items, item topics, or exam content unless previously authorized by the ASPPB.
4. The theft or attempted theft of an examination or examination items is punishable as a felony and may result in civil penalties or professional sanction. I recognize that the breach of my obligations under this candidate acknowledgment may expose me to liability for damages caused to the ASPPB and to legal fees incurred by the ASPPB in preserving its rights.
5. The dissemination of the content of the PEP to any person, organization, company, or other entity in any manner shall constitute a breach of professional ethics and theft of the exam. Any person found guilty of such violation may have his/her score voided. The Association of State and Provincial Psychology Boards (ASPPB) may prohibit the candidate from future access to the PEP.

6. My participation in any irregularity occurring prior to, during, or subsequent to this examination, such as giving or obtaining unauthorized information or aid, as evidenced by observation or subsequent statistical analysis, may result in termination of my participation, invalidation of the results of my examination, or other appropriate action.

7. My demographic information and test scores will be used in aggregate with information from other candidates for research and reporting purposes. ASPPB, the association that owns and creates the PEP, and Kryterion, the organization that provides testing centers and scores the PEP, will not share any information that could identify me personally to any parties conducting research.

# Appendix B

# Content Area Definitions and Knowledge Statements

Validated for Inclusion in the Psychopharmacology Examination for Psychologists (PEP)

### Content Area 1: Integrating Clinical Psychopharmacology with the Practice of Psychology (7.3%)

This content area refers to integrating clinical psychopharmacology with the practice of psychology.

- Knowledge of biopsychosocial variables as determinants of medication utilization and effects (e.g., age, gender, family history, patient belief systems/ culture, economics/ poverty, social support, current environmental circumstances).

- Knowledge of limitations and benefits, patient perceptions (including help-seeking attitudes), and treatment expectations regarding psychopharmacological and psychological interventions as sole, additive, or interactive treatments for given disorders and functional impairments.

- Knowledge of practitioner-patient partnership for case and medication management, including the impact on patient education, medication adherence, the effectiveness of treatment, adverse effects and response to side effects, and implications for the relationship when psychosocial and pharmacological interventions are utilized (e.g., ethnicity/culture, sexual orientation, gender identity, socio-economic factors, religion, refugee status).

### Content Area 2: Neuroscience (6.7%)

This content area refers to the anatomy, physiology, and biochemistry of the nervous system and its interfaces with other major body systems.

- Knowledge of cellular and molecular nervous system biology and regulatory processes (e.g., neurotransmitter and neuromodulator systems, up and down-regulation, tolerance/cross-tolerance) needed to understand the pharmacological effect of medications.

- Knowledge of the structure and function of the central and peripheral nervous systems.

- Knowledge of neurodevelopment and neuroplasticity.

- Knowledge of the major neuronal pathways and their functions, and associated messenger systems.

### Content Area 3: Nervous System Pathology (11.3%)

This content area refers to disorders of the nervous system resulting in abnormal function or behavioral/ mood disruption. Includes biochemical, structural (congenital or acquired), or neurophysiological abnormalities and their impact on other body systems.

- Knowledge of etiological factors and diagnosis of dementia, delirium, and other cognitive and neurological disorders.

- Knowledge of etiological factors and diagnosis of chronic pain, including headache (e.g., migrainous vs. non-migrainous headache), neuropathic pain, fibromyalgia; and the role of the CNS in pain experience and management.

- Knowledge of etiological factors and diagnosis of sleep disorders.

- Knowledge of common idiopathic movement disorders, their etiological factors, signs, symptoms, and diagnosis (e.g., Parkinson's, Huntington's, Tourette's syndrome).

- Knowledge of common iatrogenic or drug-induced movement disorders, their etiological factors, signs, symptoms, and diagnosis (e.g., extrapyramidal symptoms, dystonias, dyskinesias, akathisia, Dystonic Tremors (DTs)).

- Knowledge of etiological factors and categories of seizure disorders.

- Knowledge of traumatic brain injury and post-concussive or post-concussion syndrome and its impact on prescriptive decisions.

- Knowledge of nervous system pathology (e.g., multiple sclerosis, infectious diseases, exposure to environmental neurotoxins, neoplasms, intellectual/developmental disabilities).

- Knowledge of basic indications for neurodiagnostic imaging and testing (e.g., EEG, CT, MRI, neuropsychological).

### Content Area 4: Physiology and Pathophysiology (16.0%)

This content area refers to normal physiology and pathophysiology across the life span, and their impact on psychological functioning and psychopharmacology.

- Knowledge of indications for referral to other health care providers for assessment or treatment when organ system pathology is indicated.

- Knowledge at a functional level of cardiovascular system physiology and pathophysiology across the life span (e.g., rhythm and rate disorders such as prolonged QT interval), and their relationship to psychopharmacology and psychopathology (e.g., blood pressure changes secondary to psychotropic medication; mitral valve prolapse related to panic disorder).

- Knowledge at a functional level of pulmonary system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., beta blockers and asthma, respiratory suppression with CNS depressants).

- Knowledge of etiological factors and diagnosis of central nervous system vascular disorders (e.g., cerebral vascular accidents, transient ischemic attacks).

- Knowledge at a functional level of renal/genitourinary system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., the effect of psychotropic substances on urinary/sexual functioning; role in excretion of wastes and medications; valproic acid and polycystic ovary syndrome (PCOS); lithium and renal functioning).

### Content Area 5: Biopsychosocial and Pharmacologic Assessment and Monitoring (6.0%)

This content area refers to a range of biopsychosocial (psychological, neurological, behavioral, physical, biomedical) and pharmacologic assessment techniques and procedures for baseline and ongoing evaluation of the individual's physical and psychological health status as well as the assessment of therapeutic efficacy, adverse effects, contraindications for drug usage, drug interactions, and appropriateness for medication continuation, modification, or discontinuation.

- Knowledge of individual and family history-taking procedures and psychological assessments that provide information relevant to prescribing (e.g., review of systems, dietary habits, mental status, behavioral observations, developmental history, social history, academic history, family medical and psychiatric history (including knowledge of diversity-related variations in the incidence/ prevalence of disorders), history of sexually transmitted disease and history of the general level of functioning).

- Knowledge of basic physical and neurological examination procedures (e.g., history and physical examination (HPE); review of systems (ROS)) and variations in these procedures for special populations (e.g., ethnicity and estimated glomerular filtration rate (EGFR)).

- Knowledge of appropriate laboratory tests and assessment procedures before prescribing particular medications (e.g., the implication of disease states, gender, ethnicity, sample timing, and potential effects of medications on those values) and ongoing during treatment (e.g., therapeutic drug monitoring (TDM) for lithium blood levels, white blood cell monitoring with clozapine use).

- Knowledge of behavioral assessment methods (e.g., rating scales, direct observation of behaviors, parent/ teacher/self-report) at baseline and ongoing monitoring for therapeutic effectiveness, quality of life, and adverse effects of psychopharmacological agents (e.g., akathisia with antipsychotics and SSRIs; rating scales for ADHD; Mini Mental Status Examination (MMSE) for cognitive function; Clinical Global Impression (CGI) scale for global response to treatment).

### Content Area 6: Differential Diagnosis (10.0%)

This content area refers to the use of comprehensive diagnostic information about a patient to establish an accurate diagnosis from among possible medical and psychological diagnoses to select appropriate treatment modalities and determine the appropriateness of referral to other health care providers.

- Knowledge of medical disorders and their most common symptoms that may also present with psychological symptoms (e.g., ADHD versus PKU versus autism, anxiety versus Graves' disease, dementia versus depression in the elderly; depression as a primary disorder vs. a prodromal sign of underlying cancer; personality changes in the elderly vs. dementia).

- Knowledge of psychological signs and symptoms (e.g., mental status changes, memory dysfunction, depression, psychosis) secondary to substances of abuse, prescribed and over-the-counter (OTC) medications, most commonly used herbal remedies that have psychological effects, and dietary supplements.

- Knowledge of the psychopharmacological treatment implications related to mental health disorders with multiple symptoms (e.g., one disorder with multiple symptoms vs. comorbid disorders with related symptoms: major depressive disorder with psychotic features vs. major depressive disorder and schizophrenia; anxious depression vs. anxiety disorder and dysthymia; bipolar vs. psychotic depression; behavioral health disorders and substance use disorders).

- Knowledge of iatrogenic effects of medication versus primary symptoms of disease course (e.g., akathisia versus anxiety; anticholinergic effects versus dementia; medication-induced tremor versus idiopathic movement disorders).

### Content Area 7: Pharmacology (12.7%)

This content area refers to the interactions of drugs with biophysiological systems; encompasses pharmacokinetics, pharmacodynamics, pharmacogenetics, and the epidemiology of various medications such as psychotropics, adjunctive agents, and other medications used in the practice of medicine, as well as substances of abuse, OTC products, and food and dietary supplements. The influence of cultural/ethnic factors, environmental factors, and responses of special populations are considered.

- Knowledge of drug classifications for psychotropic and adjunctive medications (e.g., stimulants, sedatives, antidepressants, anticholinergics), major drug categories used to treat common medical disorders (e.g., antibiotics), OTC medications, herbals, and substances of abuse.

- Knowledge of pharmacokinetic parameters (e.g., absorption, distribution, metabolism, and elimination) and how each phase affects drug action (e.g., delayed-release preparations, routes of administration, area under the curve, lipophilicity and drug transit across membrane barriers, CYP enzymes, drug/drug and drug/food interactions, routes of clearance).

- Knowledge of pharmacodynamic changes caused by medications (receptor up/down regulation; transcription).

- Knowledge of the importance of biological half-life in determining steady state drug concentrations, dosing schedules, accumulation, and toxicity.

- Knowledge of drug properties and characteristics (e.g., therapeutic index, therapeutic blood levels/ prescription doses, potency, bioavailability, efficacy, cognitive and behavioral manifestations of toxicity, dose response relationships).

- Knowledge of types of drugs/receptor interactions (e.g., direct and indirect agonists, antagonists, partial agonists, inverse agonists, competitive vs. non-competitive antagonism and agonism).

- Knowledge of the relationship between neurotransmitters and their receptor targets and the behavioral effects of stimulation vs. inhibition (e.g., 5HT1A and anxiety, beta blockers and performance anxiety, D2 and psychosis; histamine and sedation; ACh and memory).

- Knowledge of the mechanism of action of common therapeutic agents (e.g., receptor stimulation/inhibition; receptor up/down regulation; tolerance, dependence, and withdrawal).

- Knowledge of the theoretical relationship between neurotransmitter systems and psycho-pathological conditions (e.g., serotonin and norepinephrine in depression, dopamine in psychosis and substance abuse; dopamine in Parkinson's disease; acetylcholine in Alzheimer's disease).

- Knowledge of the factors (e.g., biological, ethnic, pharmacodynamic, genetic, pharmacokinetic) related to intra- and inter-individual responses to medications (e.g., variation of blood levels to the same dose across individuals, change in responsiveness within the same individual across administrations of same drug [e.g., pregnancy, obesity, age]).

- Knowledge of drug-induced disease, dysfunction, and adverse reactions (e.g., hepatotoxicity, agranulocytosis, dystonias).

## Content Area 8: Clinical Psychopharmacology (16.0%)

This content area refers to the application of pharmacology to the management of psychological/behavioral disorders. This includes indications, contradictions, dosing, adverse effects and toxicities of psychotropic and adjunctive medications, interactions with other medications (including other drugs used in medicine for recreational purposes, and available for OTC purchase) as well as the management of adverse reactions, overdoses, and toxicities.

- Knowledge of indications and contraindications for various psychotropic medications, including use of multiple medications both on and off label.
- Knowledge of decision-making strategies for psychotropic medication selection (e.g., risk-benefit analysis, practice guidelines, genetics, ethnicity, cost, pregnancy, disease status, limitations of current diagnostic systems [e.g., DSM, ICD]).
- Knowledge of dosing, time course of therapeutic action, and adverse effects of medication based on patient factors (e.g., weight, gender, ethnicity, culture, age, trauma, pregnancy, concurrent disease).
- Knowledge of dosing strategies (e.g., augmentation, titration, cross taper, discontinuation).
- Knowledge of common signs and symptoms of drug toxicity and the management of adverse reactions to drugs (e.g., referral for appropriate medical care, use of appropriate medications).
- Knowledge of the management of at-risk patients (e.g., relapse prevention, adherence, suicide prevention, patients seeking medication inappropriate or inconsistent with treatment plan).
- Knowledge of potential adverse psychological and physiological signs of drugs used for common medical conditions (e.g., steroids, beta blockers, antibiotics, antivirals), OTCs, and herbals/dietary supplements.
- Knowledge of psychological and physiological signs of common recreational substances and the management of intoxication or addiction, including strategies for assisted withdrawal, maintenance, and relapse prevention.

- Knowledge of how to recognize and manage tolerance, cross-tolerance, dependence, and abstinence syndromes, sensitization/cross-sensitization with respect to specific medications.

- Knowledge of the patient factors (e.g., culture, literacy, stage of change) that need to be considered when informing patients about drug utilization, risks, benefits, potential complications, and alternatives to pharmacotherapy.

### Content Area 9: Research (7.3%)

This content area refers to the methodology, standards, and conduct of research on psychoactive substances. The knowledge base facilitates research design and implementation, accurate data interpretation and communication, effective utilization of findings, the accumulation of scientific knowledge, and the improvement of the practice of clinical psychology.

- Knowledge of research designs and analytic techniques used in psychopharmacological research (e.g., open label, single vs double blind, random assignment, placebo control, drug washout, dose response relationships, intent-to-treat analyses, within-subject and group designs, concurrent administration of other drugs, FDA drug development process).

- Knowledge of how to critically review clinical research data including non-evidence-based therapies and emerging research methodologies and use the information for making treatment decisions (e.g., Number needed to treat (NNT), Number needed to harm (NNH), Odds ratio (OR), Risk ratio (RR), effect size).

- Knowledge of influential, non-industry sponsored multi-site research studies relating to psychopharmacology (e.g., CATIE, STAR-D, CUTLASS, MTA).

- Knowledge of evidence-based research regarding complementary and alternative medicines (e.g., Omega-3, folate, dehydroepiandrosterone (DHEA), St. John's Wort, melatonin).

## Content Area 10: Professional, Legal, Ethical, and Interprofessional Issues (6.7%)

This content area refers to the knowledge of ethics, standards of care, laws, and regulations relevant to the practice of psychology involving psychopharmacology.

- Knowledge of relevant legal and ethical codes and standards that pertain to pharmacological practice; and laws and statutes for prescribing psychotropic medications (e.g., DEA regulations, telehealth).

- Knowledge of practice guidelines and standards of care for prescribing psychotropic medications (including a relationship with referring psychologist).

- Knowledge of patients' rights related to medication treatments and therapy (e.g., informed consent, right to refuse treatment, right to treatment within the least restrictive environment, inappropriate psychotropic restraints, duty to warn, privileged communication, alternative decision maker, living will, durable power of attorney, advance directives).

- Knowledge of ethical issues regarding relationships with pharmaceutical companies (e.g., acceptance of gifts and samples, revealing sources of funding and affiliations, interactions with pharmaceutical reps).