OVERVIEW

The goal of this CE course is to provide participants with our current understanding of the molecular sites and mechanisms of action by which the major drugs used to treat psychiatric disorders act in the brain. The course will review the principles of electrical and chemical signaling in the central nervous system (CNS) and will cover the neurotransmitter receptors, ion channels and associated synaptic proteins that are the targets of the most widely utilized psychotropic agents. The underlying neuropathological changes in brain structure and neurotransmitter pathways implicated in psychiatric disorders, such as depression and psychoses will be presented and discussed. Finally, the clinical benefits and unwanted (or adverse) side-effects of the different classes of psychopharmacological agents will be compared in relation specific patient groups.

COURSE DIRECTORS

Robert F. Halliwell, BSc, MSc, PhD.
Professor of Pharmacology and Neuroscience

William A. Kehoe, Pharm.D., MA, FCCP, BCPS
Professor of Pharmacy Practice and Psychology
Director, Office of Academic Success and Instructional Support

Thomas J. Long School of Pharmacy and Health Sciences
University of the Pacific, Stockton, California

REQUIRED MATERIALS


Note: Participants should purchase the Preston text from the vendor of your choice immediately after registration. Neuroscience Education Institute provides membership at discount for Military personnel and students with active student ID cards. On the assigned and optional readings: Participants will need to read all the assigned chapters in the Preston text. Where appropriate we have supplemented the text with articles or other resources that we feel will expand on the text. These are indicated as “recommended” in the Modules. We have attempted to limit the amount of reading required to what we think is essential. But we also would encourage participants to consider the optional readings as they will provide a deeper understanding of the use of drugs in the mentally ill.
DURATION, WORKLOAD, CREDITS

This is a 15-week online educational program that combines text readings, supplemental discussion questions and student-instructor interactions via the online discussion board. The course is divided into 9 modules. The DistanCE program expects that a minimum workload of 3-4 hours of work is necessary to keep up with the course.

Students who successfully complete all course requirements are eligible to receive 30 CE credits for psychologists. The National Academy of Neuropsychology is approved by the American Psychological Association to offer continuing education for psychologists. The National Academy of Neuropsychology maintains responsibility for the program.

COURSE FEES:
NAN Members: $450
Non-members: $750

OBJECTIVES

Upon completion of the course, the learner will be able to:

1. Describe the structure and function of neurons and glia, as well as key elements of synaptic neurotransmission.

2. Recognize the key elements of signal transduction, receptor and neurotransmitter transporter function and appreciate the pharmacodynamics and pharmacokinetics of psychotropic agents.

3. Identify the receptors, ion channels and enzymes that are the primary targets of psychopharmacological drug actions.

4. Describe the contribution of genetic factors to the neuropathological and neurochemical changes associated with psychiatric disorders.

5. Examine key psychopharmacological circuits and be able to “deconstruct” psychiatric syndromes to introduce rationale treatment strategies

6. Describe current medication strategies for psychiatric disorders based on evidence-based treatment guidelines or algorithms and future directions of novel treatments for the following mental disorders:
   a. Major depressive disorder
   b. Psychoses & Bipolar disorder
   c. Anxiety disorders
      i. Generalized anxiety disorder
      ii. Social anxiety disorder
      iii. Post-traumatic stress disorder
      iv. Panic disorder
   d. Insomnia
   e. Attention Deficit/Hyperactivity Disorder
   f. Dementias
   g. Substance use disorders

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7. Recognize warnings, precautions, and appropriate referrals for medical interventions for side effects as they relate to the use of psychotropic medications.

8. Formulate a monitoring plan for patients receiving psychotropic medications.

9. Compare and contrast the pharmacological mechanisms of action, clinical efficacy, side effect profiles and role in therapy of medications in the following psychotropic classes:
   a. Antipsychotics (typical and atypical agents)
   b. Antidepressants (all classes including MAO inhibitors)
   c. Mood stabilizers (anticonvulsants and lithium)
   d. Anxiolytics
   e. Sedative hypnotics
   f. Psychostimulants and atomoxetine
   g. Acetylcholinesterase inhibitors and memantine
   h. Medications used to treat substance use disorders (naltrexone, acamprosate, buprenorphine, methadone, disulfiram)

**COURSE REQUIREMENTS**

To pass course requirements and earn continuing education credits or a certificate of completion, students must 1) complete all multiple choice post-test examinations, earning a cumulative percentage >74% correct and 2) participate in assigned course discussions and activities as judged by the instructor.

The DistanCE online system automatically records performance on our multiple-choice exams, which may be taken multiple times.
COURSE OUTLINE AND SCHEDULE

Introduction to Course
Review of Course Syllabus and Requirements
Technology Issues/Getting on the DistanCE Website
Obtaining Materials

Modules:

Module 1: Functional Neuroanatomy & Principals of Signaling in the Nervous System
Assignments (Required)
1. Read *Preston et al.*, chapters 1-3, pages 3-43.
2. Review Power Point
3. Module 1 quiz

Module 2: Fundamental Principles in Psychopharmacology
Assignments (Required)
1. Read *Preston et al.*, chapter 4, pages 45-56; Appendix A, pages 275-279.
2. Review Power Point
3. Module 2 quiz

Module 3: Psychoses, Schizophrenia and Pharmacotherapy
Assignments
1. Aetiology, Signs & Symptoms, Clinical Pharmacology of Antipsychotics (Dr. Halliwell)
   a. Required Reading
      i. *Preston et al.*, chapter 11, pages 127-136
      iii. Psychoses and anti-psychotic drug pharmacology Power Point
2. Pharmacotherapy (Dr. Kehoe)
   a. Readings
      i. *Preston et. al.*, chapters listed above for schizophrenia
      ii. Texas Medication Algorithm Project Clinician’s Manual pages 7-16, 20, 23-26, Appendices C and D (optional but recommended)
      iii. Study Guide on Schizophrenia from Dr. Kehoe
      iv. Review the treatment of schizophrenia in the Harvard Psychopharmacology Algorithm Project (http://psychopharm.mobi)
3. Module 3 quiz
Module 4: Mood disorders: depression, bipolar disorders and their treatment

Assignments
1. Signs, symptoms, aetiology and clinical pharmacology (Dr. Halliwell)
   a. Required reading
      i. Preston et al., chapter 7, pages 75-93
      ii. Preston et al., chapter 16, pages 173-196.
      iii. Preston et al., chapter 17, pages 197-211.
      iv. Mood disorders and anti-depressant drug pharmacology Power Point

2. Pharmacotherapy (Dr. Kehoe)
   a. Readings
      i. Preston et. al., chapters listed above (Required)
      ii. Preston et. al. chapter 8, pages 93-104 (Required)
      iii. Texas Medication Algorithm Project (Depression) Clinician’s Manual
           pages 4-29, Appendices A, C, D, and E (optional but recommended)
      iv. Texas Medication Algorithm Project (Bipolar Disorder) Clinician’s
          Manual pages 5-20, 23-24, Appendices C, D, and E (optional but recommended)
      v. Study Guides on Depression and Bipolar Disorder from Dr. Kehoe
      vi. Review the treatment of bipolar mania and depression in the Harvard
          Psychopharmacology Algorithm Project (http://psychopharm.mobi)

3. Module 4 quiz

Module 5: Anxiety disorders: GAD, SAD, PTSD, Panic disorders and their treatment

Assignments
1. Signs & Symptoms, Aetiology & Clinical Pharmacology of Anxiolytics (Dr. Halliwell)
   i. Required Reading From Preston et al.,:
      Chapter 9, pages 105-120
      Chapter 10, pages 121-125
      Chapter 12, pages 137-144
      Chapter 18, pages 213-221
   ii. Anxiety disorders and anxiolytic drug pharmacology Power Point

2. Pharmacotherapy (Dr. Kehoe)
   a. Readings
      i. Preston et. al. chapters listed above.
          Dialogues Clin Neurosci 2011; 13: 423-37. Available at: 
      iii. Study Guide on Anxiety Disorders from Dr. Kehoe
      iv. Review the treatment of PTSD and social anxiety disorder in the Harvard 
          Psychopharmacology Algorithm Project (http://psychopharm.mobi)
   b. Optional
      i. IPAP guidelines for GAD and PTSD (available at: www. IPAP.org)

3. Module 5 quiz
Module 6: Insomnia
Assignments
1. Pharmacotherapy (Dr. Kehoe)
   a. Required

2. Module 6 quiz

Module 7: Childhood disorders: ADHD and its treatment
Assignments
1. Pharmacotherapy (Dr. Kehoe)
   a. Required
      i. Preston et al. chapter 23, pages 251-258.
      ii. Implementing the key action statements: An algorithm and explanation for Process of Care for the evaluation, diagnosis, treatment, and monitoring of ADHD in children and adolescents. *American Academy of Pediatrics*, 2011. Available at http://www.cdc.gov/ncbddd/adhd/guidelines.html. If you go to this site you will see a link to a pdf of the AAP guide to the implementation of these recommendations. You should read this guideline.
      iii. Study Guide on ADHD by Dr. Kehoe

2. Module 7 quiz

Module 8: Geropsychiatry: dementias and their treatment
Assignments
1. Alzheimer’s disease, Neuropathology, Diagnosis and Clinical Pharmacology of Antidementia Agents (Dr. Halliwell)
   a. Required
      i. Preston et al., Appendix E, pages 309-312.
      ii. Power Point by Dr Halliwell

2. Pharmacotherapy (Dr. Kehoe)
   a. Readings
      i. Preston et al. pages listed above
      iii. Study Guide on Geropsychiatry from Dr. Kehoe

3. Module 8 quiz
Module 9: Substance abuse and its treatment

Assignments

1. Drugs of Abuse and Clinical Pharmacology (Dr. Halliwell)
   a. Required
      i. *Preston et al.*, chapter 14, pages 151-158.
      ii. Power Point on Drugs of Abuse

2. Pharmacotherapy (Dr. Kehoe)
   a. Readings
      i. *Preston et al.*, pages listed above.
         1. Required: pages 3-7, Modules P and S
         2. Optional: Modules A, B, C, and Appendices
      iii. Study Guide on Substance Abuse (Alcoholism)

3. Module 9 quiz

Course Evaluation