
MODULE 55

The Biomedical Therapies

Module Preview

Administration of antipsychotic, antianxiety, and antidepressant drugs and mood-stabilizing medications constitutes the most widely used biomedical therapy. Electroconvulsive therapy (ECT), although controversial, continues to be an effective treatment for many severely depressed people who do not respond to drug therapy. Gentler alternatives to ECT are now being used.

Psychosurgery is rarely used to alleviate specific problems largely because the effects are irreversible and potentially drastic.

The biopsychosocial approach acknowledges that effective treatment of psychological disorders must consider biological, psychological, and social-cultural factors. Therapeutic life-style change recognizes these factors in a training program that treats depression through aerobic exercise, adequate sleep, social connections, and positive thinking.

Preventive mental health experts aim to change oppressive, esteem-destroying environments into more benevolent, nurturing environments that foster individual growth and self-confidence.

Module Guide

Drug Therapies

► Video: Module 33 of *The Mind* series, 2nd ed.: *Mood Disorders: Medication and Talk Therapy*

55-1. *Define psychopharmacology, and explain how double-blind studies help researchers evaluate a drug's effectiveness.*

With a few exceptions, only psychiatrists offer **biomedical therapies**. **Psychopharmacology**, the study of the effects of drugs on mind and behavior, has revolutionized the treatment of people with severe disorders. To evaluate the effects of any new drug, researchers use the *double-blind technique*, in which half the patients receive the drug while the other half receive a placebo. Because neither staff nor patients know who gets which, this research strategy eliminates bias that results from therapists' and patients' expectations of improvement. Using this approach, several types of drugs have proven effective in treating psychological disorders.

► Lectures: SSRI Antidepressants; Cosmetic Psychopharmacology; A Pill for Stage Fright (Anxiety)

► ActivePsych: *Digital Media Archive*, 2nd ed.: *The Therapeutic Effect of Antipsychotic Drugs; Schizophrenia: New Definitions, New Therapies; Undesired Effects of Conventional Antipsychotic Drugs*

► Videos: Module 28 of *The Brain* series, 2nd ed.: *Schizophrenia: Pharmacological Treatment*; Video Clip 34 of *Digital Media Archive: Psychology*, 1st ed.: *Schizophrenia*

- 55-2. Describe the characteristics of antipsychotic, antianxiety, antidepressant, and mood-stabilizing drugs, and discuss their use in treating psychological disorders.

Antipsychotic drugs, such as chlorpromazine (sold as Thorazine), provide help to people experiencing the positive symptoms of auditory hallucinations and paranoia by dampening their responsiveness to irrelevant stimuli. Newer *atypical antipsychotics*, such as clozapine (sold as Clozaril), help reanimate schizophrenia patients with the negative symptoms of apathy and withdrawal. Long-term use of some of these drugs block dopamine receptors and can produce **tardive dyskinesia**, which is marked by involuntary movements of facial muscles, tongue, and limbs. Many of the newer antipsychotics have fewer such side effects, but they may increase the risk of obesity and diabetes.

Antianxiety drugs, such as Xanax and Ativan, depress central nervous system activity. A new antianxiety drug, the antibiotic D-cycloserine, acts upon a receptor that facilitates the extinction of learned fears. Used in combination with other therapy, antianxiety drugs can help people learn to cope with frightening stimuli. However, they can produce both psychological and physiological dependence.

Antidepressant drugs aim to lift people up, typically by increasing the availability of the neurotransmitters norepinephrine and serotonin. For example, fluoxetine (Prozac) partially blocks the reabsorption and removal of serotonin from the synapses, and so Prozac and its cousins Zoloft and Paxil are called *selective-serotonin-reuptake-inhibitors* (SSRIs). They also are increasingly being used to treat anxiety disorders such as obsessive-compulsive disorder. Other dual-action antidepressants work by blocking the reabsorption or breakdown of both norepinephrine and serotonin. Although no less effective, these dual-action drugs have more potential side effects, such as dry mouth, weight gain, hypertension, or dizzy spells. Administering them by means of a patch helps reduce such side effects. Although antidepressants influence neurotransmitter systems almost immediately, their full psychological effects may take weeks. The delay may occur because increased serotonin seems to promote *neurogenesis*. The risk of suicide for those taking these drugs has probably been overestimated.

The simple salt *lithium* is often an effective *mood stabilizer* for those suffering the emotional highs and lows of bipolar disorder. Although lithium significantly lowers the risk of suicide, we do not fully understand how it works.

Brain Stimulation

- ▶ Lecture: Electroconvulsive Therapy
- ▶ Videos: Module 34 of *The Mind* series, 2nd ed.: *Treating Depression: Electroconvulsive Therapy (ECT)*; Video Clip 37 of *Digital Media Archive: Psychology*, 1st ed.: *Electroconvulsive Therapy*

- 55-3. Describe the use of brain stimulation techniques and psychosurgery in treating specific disorders.

Electroconvulsive therapy (ECT), or shock treatment, is used for severely depressed patients. A brief electric current is sent through the brain of an anesthetized patient. Although ECT is credited with saving many from suicide, no one knows for sure how it works. Some patients with chronic depression have found relief through a chest implant that intermittently stimulates the vagus nerve, which sends signals to the brain's mood-related limbic system. **Repetitive transcranial magnetic stimulation (rTMS)** is performed on wide-awake patients. Magnetic energy penetrates only to the brain's surface (although tests are under way with a higher energy field that penetrates more deeply). Unlike ECT, the rTMS procedure produces no seizures, memory loss, or other side effects. Several very recent studies have confirmed its therapeutic effect. Deep brain stimulation has shown potential in calming a brain area that appears active in people who are depressed or sad.

- ▶ Lecture: Cingulotomy

Psychosurgery removes or destroys brain tissue in an effort to change behavior. For example, the **lobotomy** was once used to calm uncontrollably emotional or violent patients. The nerves that con-

nect the frontal lobes to the emotion-controlling centers of the inner brain are cut. The lobotomy usually produced a permanently lethargic, immature, impulsive personality. Because of these effects and the introduction of drug treatments in the 1950s, the procedure has been abandoned. Other psychosurgery is used only in extreme cases. For example, for patients who suffer uncontrollable seizures, surgeons may deactivate the specific nerve clusters that cause or transmit the convulsions. MRI-guided precision surgery may also be used to cut the circuits involved in severe obsessive-compulsive disorder.

Therapeutic Life-Style Change

► Lecture: Therapeutic Life-Style Change

55-4. *Explain how therapeutic life-style change reflects the idea that humans are integrated biopsychosocial systems.*

Training seminars promoting *therapeutic life-style change* assume that human brains and bodies were designed for physical activity and social engagement. Recognizing that a human being is an integrated biopsychosocial system, Stephen Ilardi and his colleagues designed a 12-week program for depression that included the goals of aerobic exercise, adequate sleep, light exposure, social connection, anti-rumination, and nutritional supplements. In one study, 77 percent of those who completed the program experienced relief from depressive symptoms, compared with a 19 percent rate in those assigned to a treatment-as-usual control condition. Future research will seek to replicate this result and identify the specific components that produce the therapeutic effect.

