a. Before a person can be forcibly committed, the state must provide clear and convincing evidence that he or she is not only mentally ill, but also gravely disabled or poses an imminent danger to self or others.
b. Most states now require a periodic review of every committed person to determine whether he or she should be released.
c. The person has the right to receive treatment while hospitalized, not just confinement.
d. People have the right to refuse certain forms of treatment and to be subjected to as little restriction of their freedom as possible.

4. Kendras Law is a New York statute requiring outpatient treatment for people who are dangerous when not medicated. This is an attempt to strike a balance between the rights of mental patients and those of the public.

VIII. BIOLOGICAL TREATMENTS
Hippocrates was among the first to propose that psychological problems have physical causes. In Europe and America during the sixteenth through eighteenth centuries, treatment consisted mainly of physical restraints, laxative purges, bleeding of excess blood, and induced vomiting. Physical discomforts were used to shock patients back to normality. Today, biological treatments for psychological problems mainly involve psychoactive drugs.

A. ELECTROCONVULSIVE THERAPY
1. In the 1930s, a Hungarian physician named Von Meduna used a drug to induce convulsions in people with schizophrenia. He believed (incorrectly) that because schizophrenia and epilepsy rarely occurred in the same person, epileptic-like seizures might combat schizophrenia.
2. In 1938, Italian physicians Ugo Cerletti and Lucio Bini created seizures more easily by passing an electric current through the brains of people with schizophrenia. In the next 20 years or so electroconvulsive therapy, or ECT, was a routine treatment for schizophrenia, depression, and mania. Patients typically remembered nothing about events before the shock and experienced confusion. Many patients improved, but the benefits were sometimes outweighed by negative side effects including memory loss, speech disorders, and even some deaths. 
   NOTE: The treatment methods were relatively crude and patients often received dozens, even hundreds, of shock treatments.
3. Today, patients are given an anesthetic so they are unconscious before the shock is delivered, along with a muscle relaxant to prevent bone fractures during convulsions. The shock is applied to only one side of the brain for about a half a second, and patients receive only about 6–12 shocks, one every two days. Magnetic seizure therapy (MST) and repetitive transcranial magnetic stimulation (rTMS) are being investigated as potentially safer alternatives to ECT.
   NOTE: About 100,000 people a year in the U.S. receive ECT and about 200,000 in England.
4. Today, ECT is used primarily to treat patients with severe depression that does not respond to antidepressant drugs, and occasionally with manic patients.
5. No one knows for sure how ECT works.  
*NOTE:* It appears that the convulsions, not the shock itself, are important.  
a. It may be that it somehow improves neurotransmitter functions and thereby alters mood.  
b. It may be that the neurotransmitters that help the brain recover from the convulsions also reduce activity in areas of the brain associated with depression, thus relieving it.  
*NOTE:* ECT remains one of the most controversial methods of biological treatment.  
*NOTE:* Critics argue that ECT's effects are often temporary and that it creates memory loss and other problems, including intense fear by patients and their families.

B. PSYCHOSURGERY.  
**Psychosurgery** involves the destruction of brain tissue for the purpose of treating mental disorder.  
1. In 1935, Egas Moniz developed a surgical technique called *prefrontal lobotomy*. This was a procedure in which small holes were drilled in the skull and a sharp instrument was inserted and moved from side to side to destroy brain tissue.  
a. It was hoped that this procedure would disrupt exaggerated emotional responses in the frontal lobes.  
2. During the 1940s and 1950s, psychosurgery became almost routine in the treatment of schizophrenia, depression, anxiety, aggressiveness, and obsessive-compulsive disorder.  
3. Brain surgery is risky and sometimes fatal. Its benefits uncertain, and its side effects and complications, including epilepsy, are irreversible. Therefore, these operations are only done in rare cases in which all else has failed, and it focuses on only small amounts of brain tissue.  
The use of psychosurgery and ECT declined after the 1950s because of the development of psychoactive drugs.

C. PSYCHOACTIVE DRUGS  
1. **Neuroleptics** (*Antipsychotics*) reduce psychotic symptoms such as hallucinations, delusions, paranoid suspiciousness, incoherence, and disordered thinking, especially in schizophrenia. These drugs allow many mental patients to take care of themselves and be more responsive to their environments.  
*NOTE:* In the 1940s it was discovered that *reserpine* alleviated mania, schizophrenia, and other severe forms of psychological disorder through the inhibition of certain chemical functions in the central nervous system.  
a. The most widely used neuroleptics are the *phenothiazines*, of which *chlorpromazine* (*Thorazine*), is the most popular.  
b. Another neuroleptic is *haloperidol* (*Haldol*), which relieves symptoms but does not sedate as much. These drugs help 60% to 70% of patients. However, fewer than 30% respond well enough to live entirely on their own.  
c. Neuroleptics cause many side effects, including dry mouth, blurred vision, urinary retention, dizziness, and skin pigmentation changes. Others include muscle rigidity,
restlessness, tremors, and slowed movement. A permanent side effect in some long-term users is tardive dyskinesia, a syndrome of grotesque, uncontrollable, repetitive movements of the body and face that results only after years of neuroleptic use. About 25% of those who take chlorpromazine or haloperidol develop tardive dyskinesia.

d. Clozapine (Clozaril) does not cause movement disorders and is a very effective schizophrenia treatment. Unfortunately, in about 1 or 2% of patients it causes a potentially fatal blood disease, agranulocytosis, in which the immune system loses its white blood cells. Weekly blood tests are required to detect early signs of this disease, thus greatly increasing the cost of this treatment.

e. Several other drugs have been introduced recently, including risperidone (Risperdal), olanzapine (Zyprexa), quetiapine (Seroquel), ziprasidone (Geodon), and aripiprazole (Abilify), which show improvement in the negative symptoms of schizophrenia, such as lack of emotion, social withdrawal, and reduced speech.

2. Antidepressants help relieve the symptoms of depression.
   a. Antidepressants have almost immediate effects on neurotransmitters (usually increasing serotonin or norepinephrine availability), but symptom relief requires several weeks of continued use. The time lag suggests that the effects occur through some sort of long-term compensatory process in the nervous system.
   b. Monoamine oxidase inhibitors (MAO-I) effectively treat depression and some cases of panic disorder, but these drugs cause severe hypertension if users also eat tyramine-rich foods (e.g., aged cheese, red wine, chicken livers). A new class is now available that does not carry this side-effect risk.
   c. Tricyclic antidepressants (TCAs) are more effective than the MAO-I s. The side-effects, which are milder and less frequent, include sleepiness, dry mouth, dizziness, blurred vision, low blood pressure, constipation, and urinary retention. Alcohol and TCAs can fatally augment each others effects. TCAs are also effective in treating panic attacks and some cases of panic disorder.
   d. A second generation of antidepressants affects serotonin rather than norepinephrine. Included is Prozac (fluoxetine), introduced in 1986, now the most prescribed antidepressant in the U.S. It has the fewest side effects and may also help in panic disorder and obsessive-compulsive disorder. An improved version is being developed called R-fluoxetine. Other, newer antidepressants are venlafaxine (Effexor), nefazodone (Serzone), and bupropion (Wellbutrin).
      1. Fluoxetine and other serotonin-related drugs, such as clomipramine (Anafranil) and fluvoxamine (Luvox) are also effective in treating panic disorder and obsessive-compulsive disorder.