



The HIV genome (genetic code) is compact, composed of 9,700 nucleotides (chemical subunits that make up DNA and RNA). Each virus particle contains two identical copies of the RNA genome. HIV contains nine different genes (called *pol*, *gag*, *tat*, *env*, *vpu*, *vpr*, *vpx*, *nef*, and *vif*) that give rise to 15 different proteins. These proteins arise from the cleavage of bigger proteins by enzymes called proteases. For example, the *pol* gene produces the reverse transcriptase and integrase enzymes. Proteins encoded by the HIV genome serve as structural components of the virus particle as well as accessory proteins involved in developing the disease. HIV uses the host's cellular machinery to make multiple copies of its

RNA genome. The termini of the HIV genome are flanked by repeated sequences called LTRs (long terminal repeats) that contain regulatory sequences important in the life cycle of the virus.

HIV enters host lymphocyte cells in the bloodstream through interactions between the *env* proteins on the surface of the virus and proteins on the surface of the host cell. The primary protein that HIV uses to enter the host cell is the CD4+ protein on the surface of lymphocytes. Fusion with the cell membrane occurs as a result of a tight attachment between the viral particle and the host cell. After attachment, the viral contents, including viral RNAs, are emptied into the cell's cytoplasm.

Progression from the symptomless state of infection varies from individual to individual. Some people may exhibit additional symptoms within months of being infected, while others may have no additional symptoms for 10 years or more after the

HIV exposure. Additional symptoms include swollen lymph nodes, weight loss, a fever that comes and goes, fatigue, recurring diarrhea, anemia, severe herpes infections, and thrush (a fungal infection); all of these are signs that the immune system is worsening. Drugs

Crack Cocaine

Crack cocaine is an impure form of the freebase of cocaine. It is manufactured from powder cocaine by chemical transformation that makes it more volatile than cocaine. Crack smoking is a highly dependence-forming habit.

Crack or rock cocaine is quite a recent development in the cocaine trade, having been available on the streets only since around 1984. Prior to its introduction, the volume of the illegal cocaine trade had been dwindling. The more intense high of crack smoking compared with cocaine snorting reversed the trend and created a new type of addict with a strong craving for the drug and a determination to obtain supplies regardless of consequences.

There is a minor chemical difference between powder and crack cocaine that makes a big difference in how the two drugs are used. Powder cocaine is a hydrochloride—a salt formed by reacting cocaine alkaloid with hydrochloric acid. It vaporizes at 383°F (195°C) but also decomposes at that temperature. Crack cocaine contains the freebase of cocaine, rather than the salt, and this form of cocaine vaporizes at 208°F (98°C) with little decomposition.

Traffickers first produced freebase cocaine in the 1970s when checking the quality of their supplies. The process started by dissolving cocaine hydrochloride in water to leave behind any water-insoluble impurities. Addition of an alkali such as sodium hydroxide then produced water-insoluble base cocaine that was dissolved in ether to leave behind

This picture shows “rocks” of crack cocaine approximately 0.5 to 2 inches in width seized by agents of the U.S. Drug Enforcement Administration.



KEY FACTS

Classification

Schedule II (USA), Schedule I (Canada), Class A (UK), Schedule I (INCB). Stimulant.

Street names

Bopper, basa, crack, CDs, eightball, freebase, ice cubes, jums, rock, soap, soup, stones

Active ingredient

Cocaine base (60–80 percent) with baking soda or other impurities. Composition varies widely.

Short-term effects

Almost immediate feeling of intense exhilaration and stimulation. This phase subsides rapidly and is followed by a compulsion to repeat the high.

Long-term effects

Mood disorders and irritability, risk of heart disease, strokes, and seizures. Added risk of lung complaints caused by inhalation of crack smoke. Also, the great addictive potential of crack increases the likelihood of heavier and more frequent use compared with cocaine powder. Use increases the chance of developing cocaine-related psychosis and other mental problems.

Signs of abuse

Alternating periods of euphoria and depression; intense agitation and paranoia. Signs of weight loss and malnourishment. Strong chemical smell where used. Pipe may be discovered.

Dangers

Attempts to make crack can lead to fire, injury, or death due to the use of highly flammable solvents. Extremely high potential for developing dependence.