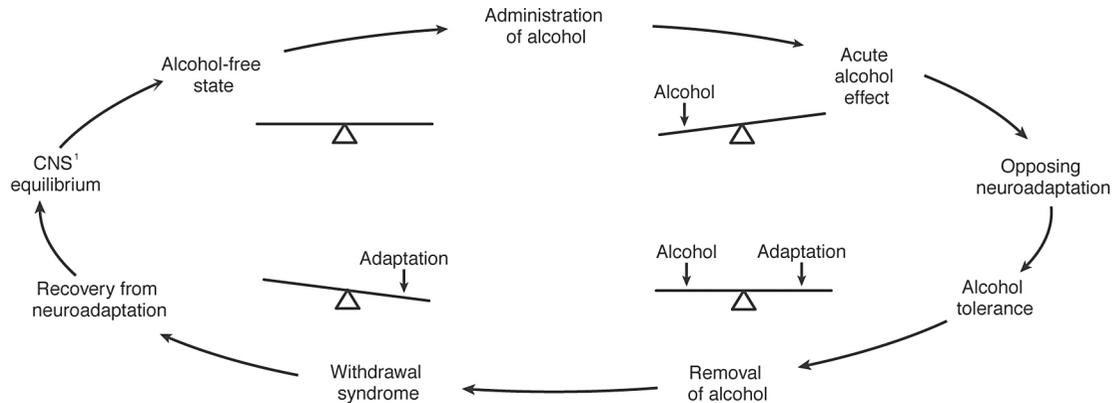


Pictorial representation of the Himmelsbach hypothesis as it applies to alcohol use



The balanced seesaw on the upper left side of the cycle represents brain neurochemistry in an alcohol-free state (i.e., before the brain has been exposed to alcohol). Consuming alcohol initially unbalances brain chemistry to produce the acute effects associated with alcohol use (e.g., sedation and incoordination). The brain then responds to this disruption by inducing an opposing chemical adaptation that tends to restore the neurochemical balance. At this stage, the effects of a given dose of alcohol are diminished (i.e., tolerance exists). If alcohol is removed, the adaptation is exposed, unbalancing the brain's neurochemistry in the opposite direction. The result is a withdrawal syndrome that includes signs and symptoms (e.g., agitation and seizures) that are opposite to alcohol's initial effects. These disturbances will continue until the adaptation can be removed from the brain (or until alcohol is consumed again), restoring equilibrium. NOTE: CNS=central nervous system.

Source: Littleton, J. Neurochemical mechanisms underlying alcohol withdrawal. *Alcohol Health & Research World* 22(1):13–24, 1998.

Updated: October 2000