DEFINITION OF “ADDICTION”

The term "addiction" is used in many contexts to describe an obsession, compulsion, or excessive physical dependence or psychological dependence, such as: drug addiction, crime, alcoholism, compulsive overeating, problem gambling, computer addiction, etc. In these kinds of common usages, the term addiction is used to describe a recurring compulsion by an individual to engage in some specific activity, despite harmful consequences to the individual's health, mental state or social life.

In medical terminology, an addiction is a state in which the body relies on a substance for normal functioning and develops physical dependence, as in drug addiction. When the drug or substance on which someone is dependent is suddenly removed, it will cause withdrawal, a characteristic set of signs and symptoms. Addiction is generally associated with increased drug tolerance. In physiological terms, addiction is not necessarily associated with substance abuse since this form of addiction can result from using medication as prescribed by a doctor.

Physical dependence on a substance is defined by the appearance of characteristic withdrawal symptoms when the substance is suddenly discontinued. Opiates, Amphetamines, benzodiazepines, barbiturates, alcohol and nicotine induce physical dependence. On the other hand, some categories of substances share this property and are still not considered addictive: cortisone, beta-blockers and most antidepressants are examples. So, while physical dependency can be a major factor in the psychology of addiction and most often becomes a primary motivator in the continuation of an addiction, the initial primary attribution of an addictive substance is usually its ability to induce pleasure, although with continued use the goal is not so much to induce pleasure as it is to relieve the anxiety caused by the absence of a given addictive substance, causing it to become used compulsively. An example of this is nicotine; A cigarette can be described as pleasurable, but is in fact fulfilling the physical addiction of the user, and therefore, is achieving pleasurable feelings relative to his/her previous state of physical withdrawal. Further, the physical dependency of the nicotine addict on the substance itself becomes an overwhelming factor in the continuation of use. Some substances induce physical dependence or physiological tolerance - but not addiction - for example many laxatives, which are not psychoactive; nasal decongestants, which can cause rebound congestion if used for more than a few days in a row; and some antidepressants, most notably venlafaxine, paroxetine and sertraline, as they have quite short half-lives, so stopping them abruptly causes a more rapid change in the neurotransmitter balance in the brain than many other antidepressants. Many non-addictive prescription drugs should not be suddenly stopped, so a doctor should be consulted before abruptly discontinuing them.

Psychological dependency

Psychological dependency is a dependency of the mind, and leads to psychological withdrawal symptoms (such as cravings, irritability, insomnia, depression, anorexia, etc). Addiction can in theory be derived from any rewarding behaviour, and is believed to be strongly associated with the dopaminergic system of the brain's reward system (as in the case of cocaine and amphetamines). Some claim that it is a habitual means to avoid undesired activity, but typically it is only so to a clinical level in individuals who have
emotional, social, or psychological dysfunctions (psychological addiction is defined as such), replacing normal positive stimuli not otherwise attained. A person who is physically dependent, but not psychologically dependent can have their dose slowly dropped until they are no longer dependent. However, if that person is psychologically dependent, they are still at serious risk for relapse into abuse and subsequent physical dependence.

Addiction and drug control legislation: Most countries have legislation which brings various drugs and drug-like substances under the control of licensing systems. Typically this legislation covers any or all of the opiates, amphetamines, cannabinoids, cocaine, barbiturates, hallucinogens (tryptamines, LSD, phencyclidine (PCP), psilocybin) and a variety of more modern synthetic drugs, and unlicensed production, supply or possession may be a criminal offense. Usually, however, drug classification under such legislation is not related simply to addictiveness. The substances covered often have very different addictive properties. Some are highly prone to cause physical dependency, whilst others rarely cause any form of compulsive need whatsoever. Typically nicotine (in the form of tobacco) is regulated extremely loosely, if at all, although it is well-known as one of the most addictive substances ever discovered.

Also, although the legislation may be justifiable on moral grounds to some, it can make addiction or dependency a much more serious issue for the individual. Reliable supplies of a drug become difficult to secure as illegally produced substances may have contaminants. Withdrawal from the substances or associated contaminants can cause additional health issues and the individual becomes vulnerable to both criminal abuse and legal punishment. Criminal elements that can be involved in the profitable trade of such substances can also cause physical harm to users.

Addiction medicine is a medical specialty that deals with the treatment of addiction. The specialty often crosses over into other areas, since various aspects of addiction fall within the fields of public health, psychiatry, and internal medicine, among others. Incorporated within the specialty are the processes of detoxification, rehabilitation, harm reduction, abstinence-based treatment, individual and group therapies, acute intervention, and long term therapies designed to reduce likelihood of relapse. Some specialists, primarily those who also have expertise in family medicine or internal medicine, also provide treatment for disease states commonly associated with substance use, such as hepatitis and HIV infection.

Physicians specializing in the field are in general agreement concerning applicability of treatment to those with addiction to drugs, such as alcohol and heroin, and to gambling, which has similar characteristics and has been well described in the scientific literature. There is less agreement concerning definition or treatment of other so-called addictive behavior such as sexual addiction and internet addiction, such behaviors not being marked generally by physiologic tolerance or withdrawal.

Doctors focusing on addiction medicine are medical specialists who focus on addictive disease and have had special study and training focusing on the prevention and treatment of such diseases. There are two routes to specialization in the addiction field: one via a psychiatric pathway and one outside of psychiatry. The American Society of Addiction Medicine notes that approximately 40% of its members are psychiatrists while the remainder have received medical training in other fields.
**Self-medication** is the use of drugs, alcohol, or self-soothing forms of behavior, to treat a perceived or real malady, often of a psychological nature.

Over-the-counter drugs are a form of self medication. The buyer diagnoses his/her own illness and buys a specific drug to treat it. The World Self-Medication Industry (WSMI) define self-medication as *the treatment of common health problems with medicines especially designed and labeled for use without medical supervision and approved as safe and effective for such use.*

A person may also self-medicate by taking more or less than the recommended dose of a drug. Some mental illness sufferers attempt to correct their illnesses by use of certain drugs. Depression, for example, is notorious for being a trigger of alcohol, tobacco, cannabis, or other mind-altering drug use. While this may provide immediate relief of some symptoms such as anxiety, it may evoke and/or exacerbate some symptoms of several kinds of mental illnesses that are already latently present, and may lead to addiction/dependence, among other side effects of long-term use of the drug.

**Neurobiological basis**: the human body has a natural tendency to maintain homeostasis, and the central nervous system is no exception. Chronic elevation of dopamine will result in a decrease in the number of dopamine receptors available in a process known as downregulation. The decreased number of receptors changes the permeability of the cell membrane located post-synaptically, such that the post-synaptic neuron is less excitable—i.e.: less able to respond to chemical signaling with an electrical impulse, or action potential. It is hypothesized that this dulling of the responsiveness of the brain's reward pathways contributes to the inability to feel pleasure, known as anhedonia, often observed in addicts. The increased requirement for dopamine to maintain the same electrical activity is the basis of both physiological tolerance and withdrawal associated with addiction.

**Downregulation** can be classically conditioned. If a behavior consistently occurs in the same environment or contingently with a particular cue, the brain will adjust to the presence of the conditioned cues by decreasing the number of available receptors in the absence of the behavior. It is thought that many drug overdoses are not the result of a user taking a higher dose than is typical, but rather that the user is administering the same dose in a new environment. In cases of physical dependency on depressants of the central nervous system such as opioids, barbiturates, or alcohol, the absence of the substance can lead to symptoms of severe physical discomfort. Withdrawal from alcohol or sedatives such as barbiturates or benzodiazepines (valium-family) can result in seizures and even death. By contrast, withdrawal from opioids, which can be extremely uncomfortable, is rarely if ever life-threatening. In cases of dependence and withdrawal, the body has become so dependent on high concentrations of the particular chemical that it has stopped producing its own natural versions (endogenous ligands) and instead produces opposing chemicals. When the addictive substance is withdrawn, the effects of the opposing chemicals can become overwhelming. For example, chronic use of sedatives (alcohol, barbiturates, or benzodiazepines) results in higher chronic levels of stimulating neurotransmitters such as glutamate. Very high levels of glutamate kill nerve cells, a phenomenon called excitatory neurotoxicity.