

Guest Editorial



Dr. Doraisamy Parthasarathy
MBBS, MRCGP

What to know about drug tolerance

Some people use the terms “drug tolerance,” “addiction” and “dependence” interchangeably, but they all mean different things.

Drug tolerance

Happens when a person's body or brain does not respond to a drug the way it used to.

It is not the same thing as addiction, and it can happen with both prescription and recreational drugs.

Happens when someone has been taking a certain drug for an extended period of time.

The receptors or enzymes in their brain and body are less activated by the drug,

So it is not as effective.

This means that in order to experience the same effects they initially did, they need to increase their dose

In substance misuse, someone may need to take increasingly higher doses of the drug to achieve the “high” they are seeking.

Does tolerance mean addiction?

Having a tolerance to a drug does not necessarily mean a person is addicted to it.

In some cases, a person can also have a tolerance to a drug if they are addicted to it after taking it repeatedly over time.

Is it genetic?

There is no conclusive evidence suggesting drug tolerance is genetic.

A variety of factors can impact a person's drug tolerance. People with certain liver or kidney disorders, the organs that break down or metabolize drugs, may require different drug dosages.

Additionally, someone's age, sex, weight, underlying mental conditions, and drugs or substances they take at the same time as the medication may also impact their tolerance levels.



The Medical **Bulletin**

Tolerance vs. resistance vs. dependence vs. addiction

Many people use the terms “tolerance,” “resistance,” “dependence,” and “addiction” interchangeably

However, they are unique terms describing different conditions.

Tolerance

Drug tolerance happens when over time, the same dose of a drug has less effect on a person's body than it initially did.

Resistance

Drug resistance occurs in simple terms, medications once used to treat infections or diseases caused by microorganisms are no longer effective.

Antibiotic resistance is an increasingly urgent problem that annually impacts about 2.8 million people living in the United States.

Approximately 35,000 of them die from their antibiotic-resistant infection.

Dependence

Drug dependency happens when a person's body is no longer able to function as expected without taking a certain dose of a drug.

It typically occurs when someone has been taking the same drug for an extended period of time.

People with a dependency are not necessarily addicted to the drug but they can be.

If someone with a drug dependency suddenly stops taking the drug or reduces their dose, they will experience withdrawal.

This can cause a series of mental and physical symptoms. In some cases, withdrawal can even cause life threatening symptoms, especially if someone is dependent on alcohol or benzodiazepines.

People with a drug dependency need to gradually reduce the amount of the drug they take each day to help lessen, limit, or even avoid withdrawal symptoms.

Addiction

*Similar to drug tolerance and dependence, a person can become addicted to a drug if they take it repeatedly.

However, unlike drug tolerance and dependence, drug addiction is a neurological condition.

Addiction is defined as a loss of control over the use of a certain drug despite the negative



The Medical **Bulletin**

consequences associated with taking it.

People who are addicted to a drug will find themselves craving it and compulsively taking it.

It is associated with functional changes in neural pathways involved in stress, learning, and reward that can persist for a long time.

While there is no certain gene associated with drug addiction, someone can be predisposed to addiction by genetic factors.

By some estimates, as much as 50% of the risk of developing an addiction is dependent on genetic makeup.

Addiction is a complex condition that can be managed and treated.

However, there is currently no recognized cure for addiction.

Yes, some medications can increase or decrease blood concentrations of other medications, which may interfere with how effective they are or how they work.

Are there risks associated with developing drug tolerance?

One major risk associated with drug tolerance is that because a medication is not working as well, the condition it is treating may worsen.

People who develop drug tolerance may also be at an increased risk of misusing their medication.

Can external factors influence drug tolerance?

Yes, some external factors, including stress and illness, can influence a person's drug tolerance.

People who experience unexpected changes in their ability to access medications or changes in the quality of drugs, such as the purity, strength, and composition, may also experience changes in their tolerance.

How does someone treat drug tolerance?

There is no specific way to treat drug tolerance. A doctor may suggest taking higher or more frequent doses of the drug.

Alternatively, they may suggest that someone wean off their medication by gradually taking less and less of it.

Then they can start taking a new medication.

Someone may require additional supportive care, such as psychotherapy, to help them taper off medications.



*The Medical **Bulletin***

Summary

Drug tolerance occurs when a drug becomes less effective over time.

Many people that need to take prescription medications on a regular basis eventually experience drug tolerance. They should talk with a doctor if a medication seems to become less effective, or if they find themselves using higher doses or taking a drug more frequently to get the same effect.

Last medically reviewed on March 28, 2022

Dr. Doraisamy Parthasarathy

MBBS, MRCP

***General Medical Practitioner & Hospital Practitioner (Psychiatry),
(Retired Stanley Medical Group ,Stanley), Durham UK***