Science Has Revolutionized the Understanding of Drug Addiction:

For much of the past century, scientists studying drug abuse labored in the shadows of powerful myths and misconceptions about the nature of addiction. When scientists began to study addictive behavior in the 1930s, people addicted to drugs were thought to be morally flawed and lacking in willpower. Those views shaped society's responses to drug abuse, treating it as a moral failing rather than a health problem, which led to an emphasis on punishment rather than prevention and treatment. Today, thanks to science, our views and our responses to addiction and other substance use disorders have changed dramatically. Groundbreaking discoveries about the brain have revolutionized our understanding of compulsive drug use, enabling us to respond effectively to the problem.

As a result of scientific research, we know that **addiction is a disease that affects both the brain and behavior**. We have identified many of the biological and environmental factors and are beginning to search for the genetic variations that contribute to the development and progression of the disease. Scientists use this knowledge to develop effective prevention and treatment approaches that reduce the toll drug abuse takes on individuals, families, and communities.

Despite these advances, many people today do not understand why people become addicted to drugs or how drugs change the brain to foster compulsive drug use. This booklet aims to fill that knowledge gap by providing scientific information about the disease of drug addiction, including the many harmful consequences of drug abuse and the basic approaches that have been developed to prevent and treat substance use disorders. At the National Institute on Drug Abuse (NIDA), we believe that increased understanding of the basics of addiction will empower people to make informed choices in their own lives, adopt science-based policies and programs that reduce drug abuse and addiction in their communities, and support scientific research that improves the Nation's well-being.

People of all ages suffer the harmful consequences of drug abuse and addiction.

BABIES:

exposed to drugs in the womb may be born premature and underweight. This exposure can slow the child's intellectual development and affect behavior later in life.

ADOLESCENTS:

who abuse drugs often act out, do poorly academically, and drop out of school. They are at risk for unplanned pregnancies, violence, and infectious diseases.

ADULTS:

who abuse drugs often have problems thinking clearly, remembering, and paying attention. They often develop poor social
behaviors as a result of their drug abuse, and their work performance and personal relationships suffer.

Parents' drug abuse often means chaotic, stress-filled homes, as well as child abuse and neglect. Such conditions harm the wellbeing and development of children in the home and may set the stage for drug abuse in the next generation.

Drug addiction:

Addiction is defined as a chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences.It is considered brain disease because drugs change the brain—they change its structure and how it works. These brain changes can be long-lasting, and can lead to the harmful behaviors seen in people who abuse drugs.

People take drugs

In general, people begin taking drugs for a variety of reasons:

To feel good : Most abused drugs produce intense feelings of pleasure. This initial sensation of euphoria is followed by other effects, which differ with the type of drug used. For example, with stimulants such as cocaine, the "high" is followed by feelings of power, self-confidence, and increased energy. In contrast, the euphoria caused by opiates such as heroin is followed by feelings of relaxation and satisfaction.

To feel better: Some people who suffer from social anxiety, stress-related disorders, and depression begin abusing drugs in an attempt to lessen feelings of distress. Stress can play a major role in beginning drug use, continuing drug abuse, or relapse in patients recovering from addiction.

To do better: Some people feel pressure to chemically enhance or improve their cognitive or athletic performance, which can play a role in initial experimentation and continued abuse of drugs such as prescription stimulants or anabolic/androgenic steroids.

Curiosity and "because others are doing it."

In this respect adolescents are particularly vulnerable because of the strong influence of peer pressure.Teens are more likely than adults to engage in risky or daring behaviors to impress their friends and express their independence from parental and social

Environmental factors increase the risk of addiction

Home and Family:

The influence of the home environment, especially during childhood, is a very important factor. Parents or older family members who abuse alcohol or drugs, or who engage in criminal behavior, can increase children's risks of developing their own drug problems.

Peer and School:

Friends and acquaintances can have an increasingly strong influence during adolescence. Drug-using peers can sway even those without risk factors to try drugs for the first time. Academic failure or poor social skills can put a child at further risk for using or becoming addicted to drugs.

Biological factors increase the risk of addiction:

Scientists estimate that genetic factors account for between 40 and 60 percent of a person's vulnerability to addiction; this includes the effects of environmental factors on the function and expression of a person's genes. A person's stage of development and other medical conditions they may have are also factors. Adolescents and people with mental disorders are at greater risk of drug abuse and addiction than the general population.

Other factors increase the risk of Addiction:

Early Use:

Although taking drugs at any age can lead to addiction, research shows that the earlier a person begins to use drugs, the more likely he or she is to develop serious problems.[8] This may reflect the harmful effect that drugs can have on the developing brain; it also may result from a mix of early social and biological vulnerability factors, including unstable family relationships, exposure to physical or sexual abuse, genetic susceptibility, or mental illness. Still, the fact remains that early use is a strong indicator of problems ahead, including addiction.

Method of Administration.

Smoking a drug or injecting it into a vein increases its addictive potential.[9,10] Both smoked and injected drugs enter the brain within seconds, producing a powerful rush of pleasure. However, this intense "high" can fade within a few minutes, taking the abuser down to lower, more normal levels. Scientists believe this starkly felt contrast drives some people to repeated drug taking in an attempt to recapture the fleeting pleasurable state.

Adolescence is a critical time for preventing drug addiction.

(i) Early use of drugs increases a person's chances of developing addiction.
(ii). Remember, drugs change brains—and this can lead to addiction and other serious problems
(iii) So, preventing early use of drugs or alcohol may go a long way in reducing these risks
.(iv) If we can prevent young people from experimenting with drugs, we can prevent drug addiction.
(v) Risk of drug abuse increases greatly during times of transition. For an adult, a divorce or loss of a job may lead to drug abuse; for a teenager, risky times include moving or changing schools.
(vi) In early adolescence, when children advance from elementary through middle school,they face new and challenging social and academic situations.
(vii) Often during this period, children are exposed to abusable substances such as cigarettes and alcohol for the first time. When they enter high school, teens may encounter greater availability of drugs, drug use by older teens, and social activities where drugs are used.
(viii) At the same time, many behaviors that are a normal aspect of their development, such as the desire to try new things or take greater risks,may increase teen tendencies to experiment with drugs. Some teens may give in to the urging of drug-using friends to share the experiencewith them.
(ix) Others may think that taking drugs (such as steroids) will improve their appearance or their athletic performance or that abusing substances such as alcohol or MDMA (ecstasy or "Molly") will ease their anxiety in social situations.
(x) A growing number of teens are abusing prescription ADHD stimulants such as Adderall® to help them study or lose weight. Teens' still-developing judgment and decision-making skills may limit their ability to accurately assess the risks of all of these forms of drug use.
(xi)Using abusable substances at this age can disrupt brain function in areas critical to motivation, memory, learning, judgment, and behavior control.[7]
(xii)So, it is not surprising that teens who use alcohol and other drugs often have family and social problems, poor academic performance, health-related problems (including mental health), and involvement with the juvenile justice system.

The medical consequences of drug addiction

People who suffer from addiction often have one or more accompanying medical issues, which may include
(i) lung or cardiovascular disease,(ii) stroke,(iii) cancer, (v) mental disorders.
Imaging scans, chest X-rays, and blood tests show the damaging effects of long-term drug abuse throughout the body.
For example:
Research has shown that tobacco smoke causes cancer of the mouth, throat, larynx, blood, lungs, stomach, pancreas, kidney, bladder, and cervix. In addition, some drugs of abuse, such as inhalants, are toxic to nerve cells and may damage or destroy them either in the brain or the peripheral nervous system.

Addiction can harm other people

for the person with the addiction, drug abuse can cause serious health problems for others. Three of the more devastating and troubling consequences of addiction are Beyond the harmful consequences:

Negative effects of prenatal drug exposure on infants and children

A mother's abuse of heroin or prescription opioids during pregnancy
can cause a withdrawal syndrome (called neonatal abstinence syndrome, or NAS) in her infant. It is also likely that some drugexposed children will need educational support in the classroom to help them overcome what may be subtle deficits in developmental areas such as behavior, attention, and thinking. Ongoing research is investigating whether the effects of prenatal drug exposure on the brain and behavior extend into adolescence to cause developmental problems during that time period.

Negative effects of secondhand smoke

Secondhand tobacco smoke, also called environmental tobacco smoke (ETS), is a significant source of exposure to a large number of substances known to be hazardous to human health, particularly to children. According to the Surgeon General's 2006 Report,
The Health Consequences of Involuntary Exposure to Tobacco Smoke, involuntary exposure to secondhand smoke increases the risks of heart disease and lung cancer in people who have never smoked by 25–30 percent and 20–30 percent, respectively.

Increased spread of infectious diseases

Injection of drugs such as heroin, cocaine, and methamphetamine currently accounts for about 12 percent of new AIDS cases. Injection drug use is also a major factor in the spread of hepatitis C, a serious, potentially fatal liver disease. Injection drug use is not the only way that drug abuse contributes to the spread of infectious diseases. All drugs of abuse cause some form of intoxication, which interferes with judgment and increases the likelihood of risky sexual behaviors. This, in turn, contributes to the spread of HIV/AIDS, hepatitis B and C, and other sexually transmitted diseases.

Some effects of specific abused substances

Nicotine is an addictive stimulant found in cigarettes and other forms of tobacco. Tobacco smoke increases a user's risk of cancer, emphysema, bronchial disorders, and cardiovascular disease. The mortality rate associated with tobacco addiction is staggering. Tobacco use killed approximately 100 million people during the 20th century, and, if current smoking trends continue, the cumulative death toll for this century has been projected to reach 1 billion.

Alcohol consumption can damage the brain and most body organs. Areas of the brain that are especially vulnerable to alcohol-related damage are the cerebral cortex (largely
responsible for our higher brain functions, including problem solving and decision making), the hippocampus (important for memory and learning), and the cerebellum (important for movement coordination).

Marijuana is the most commonly abused illegal substance. This drug impairs short-term memory and learning, the ability to focus attention, and coordination. It also increases heart rate, can harm the lungs, and can increase the risk of psychosis in those with an underlying vulnerability.

Prescription medications, including opioid pain relievers (such as OxyContin and Vicodin, anti-anxiety sedatives (such as Valium and Xanax), and ADHD stimulants (such as Adderall and Ritalin), are commonly misused to self-treat for medical problems or abused for purposes of getting high or (especially with stimulants) improving performance. However, misuse or abuse of these drugs (that is, taking
them other than exactly as instructed by a doctor and for the purposes prescribed) can lead to addiction and even, in some cases, death. Opioid pain relievers, for instance, are frequently abused by being crushed and injected or snorted, greatly raising the risk of addiction and overdose.

Risk & Protective factors for drugs absue & addiction:

Risk Factors	Protective Factors
Aggressive behavior in childhood	Good self-control
Lack of parental supervision	Parental monitoring and support
Poor social skills	Positive relationships
Drug experimentation	Academic competence
Availability of drugs at school	School anti-drug policies
Community poverty	Neighborhood pride

Medications can help treat drug addiction:

Different types of medications may be useful at different stages of treatment to help a patient stop abusing drugs, stay in treatment, and avoid relapse.

Treating Withdrawal. When patients first stop using drugs, they can experience a variety of physical and emotional symptoms, including depression, anxiety, and other mood disorders, as well as restlessness or sleeplessness. Certain treatment medications are designed to reduce these symptoms, which makes it easier to stop the drug use.

Staying in Treatment. Some treatment medications are used to help the brain adapt gradually to the absence of the abused drug. These medications act slowly to stave off drug cravings and have a calming effect on body systems. They can help patients focus on counseling and other psychotherapies related to their drug treatment.

Preventing Relapse. Science has taught us that stress, cues linked to the drug experience (such as people, places, things, and moods), and exposure to drugs are the most common triggers for relapse. Medications are being developed to interfere with these triggers to help patients sustain recovery.

Behavioral therapies treat drug addiction:

Behavioral treatments help engage people in substance use disorder treatment, modifying their attitudes and behaviors related to drug use and increasing their life skills to handle stressful circumstances and environmental cues that may trigger intense craving for drugs and prompt another cycle of compulsive use. Behavioral therapies can also enhance the effectiveness of medications and help people remain in treatment longer.

Cognitive Behavioral Therapy seeks to help patients recognize, avoid, and cope with the situations in which they are most likely to abuse drugs.

Contingency Management uses positive reinforcement such as providing rewards or privileges for remaining drug free, for attending and participating in counseling sessions, or for taking treatment medications as prescribed.

Motivational Enhancement Therapy uses strategies to evoke rapid and internally motivated behavior change to stop drug use and facilitate treatment entry.

Family Therapy (especially for youth) approaches a person's drug problems in the context of family interactions and dynamics that may contribute to drug use and other risky behaviors.