

## Fact Sheet

## Drug Abuse and Addiction

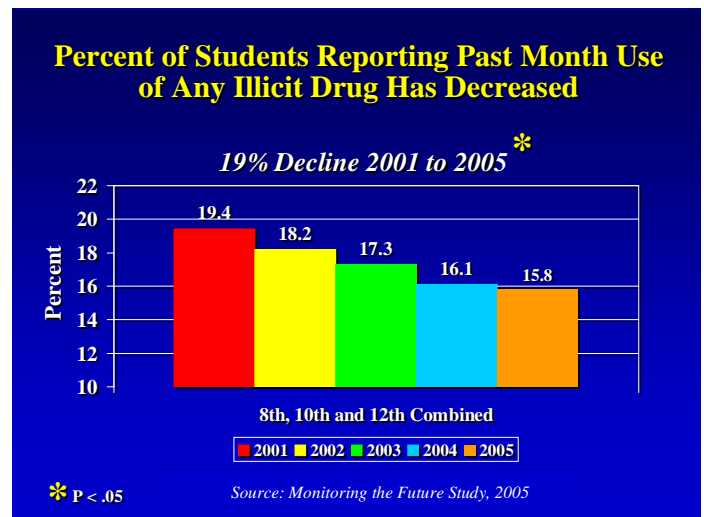
### Thirty Years Ago

- Addiction was considered a moral failing, a lack of will over one's actions.
- The mid 70s were the "heyday" of many drugs of abuse including nicotine, marijuana, and amphetamines. Had these trends continued, rather than shift downward for the last decade, we would today see exponentially higher health care and education costs, unemployment, and crime.
- We did not know how drugs of abuse worked in the brain, and the technologies that would reveal how and which brain areas were affected did not exist. The wide-ranging health effects of drug abuse (e.g., heart and lung diseases, hepatitis and HIV/AIDS) were not known.
- Methadone was the only medication available for treating drug addiction. Behavioral treatments existed but were not yet in use.
- NIH researchers identified the specific sites of action in the brain where *every* major drug of abuse, including opiates, methamphetamine, cocaine, nicotine, and THC (the active ingredient in marijuana), have their initial effects. The influence of these breakthroughs extends beyond drug abuse and addiction research to enhance our understanding of how the brain works.

### Today

**Recent scientific advances have revolutionized our understanding of addiction as a chronic, relapsing disease and not a moral failure.**

- Knowledge from scientific research prompted notable shifts in attitudes and behaviors toward drug abuse. Today, approximately 700,000 fewer young people use illicit drugs than just four years ago—an impressive 19 percent reduction. Use of certain drugs (e.g., nicotine and LSD) is now lower than at any time since the Monitoring the Future survey of students began in 1975.
- Effective medications, behavioral treatments, and a decade of educational initiatives greatly reduced the spread of HIV/AIDS through injection drug use, from its peak of more than 25,000 new cases in 1993 to fewer than 10,000 cases in 2003.
- We now recognize addiction as a developmental disease that usually begins in adolescence when exposure to drugs of abuse may adversely affect brain development and increase addiction vulnerability, highlighting the need for and development of targeted prevention and intervention strategies for this population.
- Brain imaging technology has allowed us to literally see into the brains of people addicted to drugs and discover how the brain responds to and recovers from drug addiction. Similarly, advances in molecular biology and genetics have revealed the cellular changes that drive the adaptations that occur with chronic drug use and the role of genes in these responses.



- Research demonstrated that drug abuse treatment works and is cost effective, saving approximately \$7 for every \$1 invested.

## Tomorrow

*New tools are opening up new horizons for addiction prevention and treatment.*

- We now know that genes account for about 50 percent of a person’s propensity to become addicted—or not—and that environmental factors modulate the effect of these genes. The growing knowledge about the role of genetics in addiction will allow us to identify those most vulnerable or resistant to addiction and to develop better prevention and treatment strategies.
- We now have the tools to study how social factors (e.g., peer pressure in adolescence) interact with brain chemistry to change behavior. This emerging “social neuroscience” perspective will help us understand adolescent decision-making with regard to drug use and opens the potential for developing treatments that target this process.

*Personalized approaches will “hit their mark” to reduce drug abuse and addiction.*

- Medication development is poised to take advantage of new research findings to optimize individualized treatments, restore normal brain reward pathways, and prevent relapse. Information gleaned from the completed human genome project will be used to create targeted interventions.
- Innovative uses of imaging technologies may soon help us to “tell the future” in terms of addiction treatment. Pioneering studies have already begun to identify specific brain activation patterns as accurate predictors of relapse.

**These advances in science and knowledge will reduce the stigma of addiction as they fortify and extend prevention and treatment services to all those who need them.**