Cocaine, Methamphetamine, and HIV: What Clinicians Need to Know

Trainer Guide
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Cocaine, Methamphetamine, and HIV: What Clinicians Need to Know

Background Information

The purpose of this introductory training is to provide HIV clinicians (including, but not limited to physicians, dentists, nurses, and other allied medical staff, therapists and social workers, and counselors, specialists, and case managers) with an overview of cocaine, methamphetamine, and HIV. The duration of the training is approximately 120-150 minutes (2-2 ½ hours), depending on whether the trainer chooses to present all of the slides, or a selection of slides.

Pre- and post-test questions have been inserted at the beginning and end of the presentation to assess a change in the audience’s level of knowledge after the information has been presented. An answer key is provided in the Trainer’s notes for slides 4-8 and slides 118-122.

Audience Response System can be utilized, if available, when facilitating the pre- and post-test question sessions, as well as the questions contained on slides 22, 23, 74, and 104.

In addition, a brief group video and two case studies has been inserted throughout the presentation to encourage dialogue among the training participants, and to illustrate how the information contained within the presented can be used clinically.

What Does the Training Package Contain?

- PowerPoint Training Slides (with notes)
- Trainer’s Guide with detailed instructions for how to convey the information and conduct the interactive exercises
What Does This Trainer’s Guide Contain?

- Slide-by-slide notes designed to help the trainer effectively convey the content of the slides themselves
- Supplemental information for select content to enhance the quality of instruction
- Suggestions for facilitating the “Test Your Knowledge” questions and group discussions/case studies

How is This Trainer’s Guide Organized?

For this guide, text that is shown in bold italics is a “Note to the Trainer.” Text that is shown in normal font relates to the “Trainer’s Script” for the slide.

It is important to note that several slides throughout the PowerPoint presentation contain animation, some of which is complicated to navigate. Animations are used to call attention to particular aspects of the information or to present the information in a stepwise fashion to facilitate both the presentation of information and participant understanding. Becoming acquainted with the slides, and practicing delivering the content of the presentation are essential steps for ensuring a successful, live training experience.

General Information about Conducting the Training

The training is designed to be conducted in medium-sized groups (30-50 people). It is possible to use these materials with larger groups, but the trainer may have to adapt the small group exercises/case studies and discussions to ensure that there is adequate time to cover all of the content.
Materials Needed to Conduct the Training

- Computer with PowerPoint software installed (2007 or higher version) and LCD projector to show the PowerPoint training slides.

- When making photocopies of the PowerPoint presentation to provide as a handout to training participants, it is recommended that you print the slides three slides per page with lines for notes. Select “pure black and white” as the color option. This will ensure that all text, graphs, tables, and images print clearly.

- Flip chart paper and easel/white board, and markers/pens to write down relevant information, including key case study discussion points.

Overall Trainer Notes

It is critical that, prior to conducting the actual training, the trainer practice using this guide while showing the slide presentation in Slideshow Mode in order to be prepared to use the slides in the most effective manner.

Icon Key

<table>
<thead>
<tr>
<th>![Speaker]</th>
<th>Note to Trainer</th>
<th>![People]</th>
<th>Activity</th>
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| ![Book] | References | ![Audience Response System (ARS)-Compatible Slide] |

| ![Camera] | Image Credit | ![Video Source] |
Cocaine, Methamphetamine, and HIV: What Clinicians Need to Know

Slide-By-Slide Trainer Notes

The notes below contain information that can be presented with each slide. This information is designed as a guidepost and can be adapted to meet the needs of the local training situation. Information can be added or deleted at the discretion of the trainer(s).
Before you begin, welcome participants and take care of housekeeping announcements, such as location of restrooms, turning off cell phones, participating actively, etc.

The purpose of this introductory training is to provide HIV clinicians (including, but not limited to physicians, dentists, nurses, and other allied medical staff, therapists and social workers, and counselors, specialists, and case managers) with an overview of cocaine, methamphetamine, and HIV. The duration of the training is approximately 120-150 minutes (2-2 ½ hours), depending on whether the trainer chooses to present all of the slides, or a selection of slides.

Pre- and post-test questions have been inserted at the beginning and end of the presentation to assess a change in the audience’s level knowledge after the information has been presented. An answer key is provided in the Trainer’s notes for slides 4-8 and slides 118-122.
Audience Response System can be utilized, if available, when facilitating the pre- and post-test question sessions, as well as the questions contained on slides 22, 23, 74, and 104.

In addition, a brief group discussion and two case studies have been inserted throughout the presentation to encourage dialogue among the training participants, and to illustrate how the information presented can be used clinically.

IMAGE CREDITS (Left to Right):
Drug Enforcement Administration, various publications.
This PowerPoint presentation, Trainer Guide, and companion fact sheet were developed by Beth Rutkowski, MPH (Associate Director of Training of UCLA ISAP) and Thomas E. Freese, PhD (Director of Training of UCLA ISAP and Director of the Pacific Southwest ATTC) through supplemental funding provided by the Pacific AIDS Education and Training Center, based at Charles R. Drew University of Medicine and Science. We wish to acknowledge Phil Meyer, LCSW, Kevin-Paul Johnson, Maya Gil Cantu, MPH, and Thomas Donohoe, MBA, from the LA Region PAETC.

We would also like to recognize the contributions of Dr. Jane Maxwell from the University of Texas at Austin, Addiction Research Institute.
Slide 3: Test Your Knowledge

The purpose of the following five (5) questions is to test the pre-training level of cocaine, methamphetamine, and HIV knowledge amongst the training participants. The questions are formatted as either multiple choice or true/false questions. Read each question and the possible responses aloud, and give training participants time to jot down their response before moving on to the next question. Do not reveal the answers to the questions until the end of the training session (when you re-administer the questions that appear on slides 118-122).

Slide 4: Pre-Test Question #1

Read the question and answer choices, and review audience responses out loud.

**Audience Response System (ARS)-compatible slide**
Slide 5: Pre-Test Question #2

Read the question and answer choices, and review audience responses out loud.

**Audience Response System (ARS)-compatible slide

Slide 6: Pre-Test Question #3

Read the question and answer choices, and review audience responses out loud.

**Audience Response System (ARS)-compatible slide

Slide 7: Pre-Test Question #4

Read the question and answer choices, and review audience responses out loud.

**Audience Response System (ARS)-compatible slide
Pre-Test Question

5. FDA-approved medications are available to treat cocaine and methamphetamine use disorders.
   A. True
   B. False

Read the question and answer choices, and review audience responses out loud.

**Audience Response System (ARS)-compatible slide**
In an effort to break the ice and encourage group interaction, take a few minutes to ask training participants to briefly share the answers to these four questions. You can ask for several volunteers to share their responses, if the size of your audience prevents all participants from sharing.

If the group is too large for formal introductions, the trainer can quickly ask participants the following two questions to gauge their work setting and professional training:

1. How many [case managers, LMFTs or LCSWs, counselors, administrators, physicians, PAs, nurse practitioners, nurses, medical assistants, dentists, etc.] are in the room? Did I miss anyone? {elicit responses}

Educational Objectives

At the end of this training session, participants will be able to:

1. Review the epidemiology, neurobiology, and medical consequences of cocaine and methamphetamine use

2. Discuss at least two (2) ways that cocaine or methamphetamine use can lead to increased HIV risk

Educational Objectives, continued

At the end of this training session, participants will be able to:

3. Explain the key concepts of at least three (3) effective behavioral interventions for cocaine and methamphetamine use disorders

4. Describe at least three (3) specific risk reduction strategies HIV clinicians can use to improve health outcomes for stimulant users

Slide 10: Educational Objectives

Briefly review each of the educational objectives with the audience.

Slide 11: Educational Objectives, continued

Continue by briefly review each of the educational objectives with the audience.
Slide 12: [Transition Slide] Patterns and Trends in the Use of Methamphetamine and Cocaine

*The next portion of the presentation will provide training participants with a detailed overview of patterns and trends in stimulant use in the United States. No single drug abuse indicator can tell the full story of the extent or impact of crack/cocaine use. Therefore, data from several available indicators are presented in an attempt to paint a comprehensive picture of who uses crack cocaine, powder cocaine, and methamphetamine, and the populations in which it is most prevalent.*
Data from a variety of sources, including methamphetamine seizures, survey data, price and purity data, and law enforcement reporting indicate methamphetamine continues to be readily available throughout the United States. This map shows the regional patterns in the greatest drug threat, as reported by state and local agencies between 2013 and 2015. Methamphetamine was the greatest drug threat in the Pacific, Southwest, West Central, and Florida/Caribbean regions.

CPD = Controlled Prescription Drugs

Slide courtesy of Jane C. Maxwell, PhD

**ANIMATION INSTRUCTIONS**

This slide contains animations. Trainers should practice presenting this information so they can see the timing of the animations and how new content appears on the slide. This slide includes two graphs – one showing 2004 lab incidents, and a second showing 2014 incidents. The 2004 map appears automatically. To show the 2014 map, click once, and the 2004 map will disappear and the 2014 map will appear in its place.

This map shows the number of methamphetamine lab incidents reported to the Drug Enforcement Administration, including laboratories, dumpsites, or chemical, glass, and equipment seizures. As a matter of comparison, there were nearly 15,000 more incidents in 2004 as compared to 2014. The overall number of lab incidents west of the Mississippi River decreased dramatically, as did seizures in the southern United States. The number of lab incidents in the Great Lake region of the country increased, as did incidents in many New England states.

Missouri has led the country in methamphetamine lab incidents for nearly the entire 11-year period, followed by states such as Indiana, Mississippi, Kentucky, and Oklahoma.

The Combat Methamphetamine Epidemic Act was passed in 2005, and since then, there has been a trend away from domestic “superlab” large scale methamphetamine production to the “shake and bake” method, a crude cooking method that requires pseudoephedrine and a handful of common household ingredients, such as ether, ammonia nitrate, and lithium. Drug cartels continue to meet much of the demand by manufacturing large quantities of methamphetamine in Mexico and smuggling it over the US/Mexico border.

REFERENCE:
For each pound of meth produced, there are five to six pounds of toxic waste. Those toxic wastes are often dumped down household drains, in fields and yards, or on rural roads, which has the potential of contaminating the drinking water supplies, soils, and air. Toxic by-products contaminate sites where meth is produced, posing serious health and environmental hazards to those nearby. Think of the innocent children who live in homes where meth is being produced. There has not been enough research done on those children to know the long-term health effects they may suffer. In addition, the cost to clean up one meth lab often exceeds $4,000. Federal, state, and local taxpayers pay this cost.

**IMAGE CREDIT:**
Fotolia, purchased image, 2017.
This graph depicts the percentage of items identified in the Drug Enforcement Administration’s National Forensic Laboratory Information System (NFLIS). The NFLIS system is responsible for systematically collecting results from drug chemistry analyses conducted by state, local, and federal forensic laboratories located across the U.S. As a result, NFLIS provides timely and detailed information about drugs seized by law enforcement.

The percentage of items identified as methamphetamine has been on the rise since 2010. In contrast, the percentage of items identified as cocaine has been on the decline since 2006.

Slide courtesy of Jane C. Maxwell, PhD
According to the U.S. Sentencing Commission, nearly 50% of all inmates in federal prisons throughout the U.S. are serving a sentence for a drug-related offense. Methamphetamine was the specific drug offense in 27 of 50 states, including the majority of western, Midwest, and southern states. Powder cocaine produced the most or tied for the most in seven states, including Washington, D.C. And despite the fact that marijuana is the most widely illicit substance in the U.S., but was only responsible for the highest number of drug offenses in four states.

REFERENCE:
According to the 2015 results of the National Survey on Drug Use and Health, an estimated 27.1 million people aged 12 or older were current illicit drug users in 2015, representing 10.1% of the population aged 12 or older. In other words, 1 in 10 individuals aged 12 or older in the United States used illicit drugs in the past month.

In 2015, approximately 1.9 million people aged 12 or older reported past month use of cocaine, including about 394,000 who were current users of crack. These numbers correspond to about 0.7% of the population aged 12 or older who were current users of cocaine and 0.1% who were current users of crack. The 2015 estimate for current cocaine use was similar to the estimates in most years between 2007 and 2013, but it was higher than the estimate in 2014. The 2015 estimate of crack use was similar to the estimates in most years from 2008 to 2014. The 2015 estimates of both cocaine and crack use were lower than most of the estimates between 2002 and 2006.
### Slide 18: Numbers of Past Month Illicit Drug Users among People Aged 12 or Older: 2015

Note: Estimated numbers of people refer to people aged 12 or older in the civilian, noninstitutionalized population in the United States. The numbers do not sum to the total population of the United States because the population for NSDUH does not include people aged 11 years old or younger, people with no fixed household address (e.g., homeless or transient people not in shelters), active-duty military personnel, and residents of institutional group quarters, such as correctional facilities, nursing homes, mental institutions, and long-term care hospitals.

Note: The estimated numbers of current users of different illicit drugs are not mutually exclusive because people could have used more than one type of illicit drug in the past month.

In 2015, approximately 897,000 people aged 12 or older were current users of methamphetamine, which rounds to the estimate of 0.9 million people. This number represents 0.3% of the population aged 12 or older.
Slide 18: Numbers of Past Month Illicit Drug Users among People Aged 12 or Older: 2015

Note: Prior to 2015, questions about methamphetamine use were asked in the context of questions about the misuse of prescription stimulants because methamphetamine is legally available by prescription (Desoxyn®). However, most methamphetamine that is now used in the United States is produced and distributed illicitly rather than through the pharmaceutical industry. Therefore, for 2015, a new set of questions specific to methamphetamine was created and administered separately from the questions about the misuse of prescription stimulants. Because of these changes, estimates of methamphetamine use in 2015 are not compared with estimates from prior years.

REFERENCE:
A similar number of people in the U.S. reported a substance use disorder related to cocaine and methamphetamine. In 2015, approximately 20.8 million people aged 12 or older had an SUD in the past year, including 15.7 million people who had an alcohol use disorder and 7.7 million people who had an illicit drug use disorder. About 896,000 people aged 12 or older in 2015 had a cocaine use disorder in the past year, rounding to 0.9 million people. This number represents 0.3% of the population aged 12 or older. The percentage of the population aged 12 or older with a cocaine use disorder remained stable between 2010 and 2015. However, the percentage in 2015 was lower than the percentages in 2002 to 2009. An estimated 872,000 people aged 12 or older had a methamphetamine use disorder in 2015, representing about 0.3% of people aged 12 or older.
REFERENCE:
According to SAMHSA’s Treatment Episode Data Set, the proportion of cocaine admissions has been on the decline, from 14% of admissions aged 12 and older in 2004 to 5% in 2014. Smoked cocaine (crack) represented 72% of all primary cocaine admissions in 2004; it was 66% in 2014. The proportion of stimulant admissions aged 12 and older (98 to 99% of these admissions were for methamphetamine or amphetamine abuse) ranged from 6% to 9% of admissions aged 12 and older between 2004 and 2014.

Additional Information for the Trainer(s):

Fifty-nine percent (59%) of primary smoked cocaine admissions and 69% of primary non-smoked cocaine admissions were male. The average age at admission among primary smoked cocaine admissions was 44 years; among primary non-smoked cocaine admissions, the average age was 38 years. Among primary smoked cocaine admissions, 56% were non-Hispanic Black, 32% were non-Hispanic White, and 8% were of Hispanic origin. Among primary non-smoked cocaine admissions, 43% were non-Hispanic White, 34% were non-Hispanic Black, and 19% were of Hispanic origin.
Seventy-nine percent (79%) of primary non-smoked cocaine admissions reported inhalation as their route of administration, and 11% reported injection.

Fifty-four percent (54%) of primary methamphetamine/amphetamine admissions were male. For primary methamphetamine/amphetamine admissions, the average age at admission was 33 years. About two-thirds (67%) of primary methamphetamine/amphetamine admissions were non-Hispanic White, 18% were of Hispanic origin, and 4% were non-Hispanic Blacks. Sixty-one percent (61%) of primary methamphetamine/amphetamine admissions reported smoking as the usual route of administration, 26% reported injection, and 8% reported inhalation.

REFERENCE:
Poly substance use is the norm, rather than the exception, among treatment admissions reported to TEDS, with 63% of admissions reported using more than one substance. Marijuana/hashish, alcohol, and powder cocaine were the most commonly reported secondary and tertiary substances. Methamphetamine/amphetamines were reported more often as a primary substance than as a secondary or tertiary substance. Fifteen percent (15%) of all admissions reported methamphetamine/amphetamine abuse, with 9% reporting primary abuse and 6% reporting secondary or tertiary abuse. Cocaine was reported more often as secondary or tertiary substances than as a primary substance. Cocaine was a primary substance for 5% of admissions, but was a secondary or tertiary substance for an additional 12%. Thus 18% of all treatment admissions involved cocaine abuse.
Slide 21: A Pattern of Poly Substance Use is the Norm, Rather than the Exception among Stimulant Treatment Admissions: 2014

REFERENCE:

Slide 22: What Do You Think?

What Do You Think?
Nationally, the racial/ethnic group with the highest treatment admissions for crack cocaine is:
A. Hispanic/Latino
B. White/Caucasian
C. Black/African American
D. Other

Read the question and answer choices, and review audience responses out loud.

Correct Response is C (Black/African American)

**Audience Response System (ARS)-compatible slide**
Slide 23: What Do You Think?

What Do You Think?

Nationally, the racial/ethnic group with the highest treatment admissions for methamphetamine is:
A. Hispanic/Latino
B. White/Caucasian
C. Black/African American
D. Other

Correct Response is B (White/Caucasian)

Read the question and answer choices, and review audience responses out loud.

**Audience Response System (ARS)-compatible slide**
According to TEDS, primary smoked cocaine admissions were more likely than all admissions combined to be aged 35 or older (79% vs. 46%). The average age at admission for primary smoked cocaine was 44%. Admissions among non-Hispanic Black males peaked at 49 years; admissions among non-Hispanic White males peaked at 44 years of age. Non-Hispanic Blacks accounted for 56% of primary smoked cocaine admissions (34% were males and 21% were females), and non-Hispanic Whites accounted for 32% (17% were males and 15% were females).

The average age at admission for primary non-smoked cocaine admissions was 38 years. The peak age among non-Hispanic White male admissions was 18 years younger than the peak age among non-Hispanic Black male admissions (32 vs. 50 years of age). Admissions among both non-Hispanic White females and non-Hispanic Black females peaked in their early 30s. Non-Hispanic Whites accounted for 43% of primary non-smoked cocaine admissions (27% were males and 15% were females), and non-Hispanic Black males accounted for 34% (24% were males and 10% were females).
Primary methamphetamine/amphetamine admissions were on average 33 years old at admission. Admissions for both genders in all race/ethnicities peaked in the late 20s and early 30s. Non-Hispanic Whites accounted for 67% of primary methamphetamine/amphetamine admissions (35% were males and 32% were females). Eleven percent (11%) of primary methamphetamine/amphetamine admissions were of Mexican origin (7% were males and 5% were females).

REFERENCE:
This slide contains animations. Trainers should practice presenting this information so they can see the timing of the animations and how new content appears on the slide. A separate set of maps appears for cocaine rates by state/jurisdiction and methamphetamine/amphetamine rates by state/jurisdiction. The cocaine maps appear automatically; click once to reveal the methamphetamine/amphetamine maps.

This series of maps show long-term trends in population-adjusted (per 100,000 population) treatment admission rates among people age 12 and older for cocaine (crack/powder) and methamphetamine and other amphetamines. The first set of maps correspond to trends in primary cocaine admission rates from 2004 to 2014 (the latest year for which data is available from the TEDS system). As you can see, rates of primary cocaine admissions decreased from 2004 to 2014 (the colors of the map lightened over time).
The treatment admission rate for primary cocaine was 68% higher in 2004, at 100 per 100,000 population aged 12 and older, than in 2014 (32 per 100,000). Treatment admission rates were between 36% and 78% higher in 2004 than in 2014 in the nine Census divisions. Cocaine admission rates were higher in 2004 than in 2014 in 47 of the 48 states and jurisdictions reporting in both years and higher in 1 jurisdiction (Puerto Rico). From 2004 to 2014, cocaine treatment admission rates were consistently highest in the Middle Atlantic division.

The second set of maps correspond to trends in primary methamphetamine/other amphetamine admission rates from 2004-2014. Unlike what we see with cocaine, there has been changing pattern in the rate of meth/other amphetamine admissions, with decreases in the late 2000s, followed by increases in 2012 and 2014. The treatment admission rate for methamphetamine/other amphetamines was 86% higher in 2004, at 57 per 100,000 population aged 12 and older, than in 2014 (53 per 100,000). Treatment admission rates peaked in 2005 at 69 per 100,000, then declined in every year through 2011 and increased from 2012 through 2014.

REFERENCE:
The 2016 Monitoring the Future survey, which annually surveys teen attitudes and drug use, reported a significant decline in 30-day prevalence of powder cocaine, crack cocaine, methamphetamine, and other amphetamine use (prescription stimulants) among 8th, 10th, and 12th graders from peak use in the late 1990s/early 2000s. Of the four types of stimulants, students in all three grade levels were most likely to report current use of other amphetamines.

**REFERENCE:**

The national overdose death data presented in this slide are from the Centers for Disease Control and Prevention (CDC) Wonder system, maintained by the National Center for Health Statistics. The peak year for cocaine-related overdose deaths was 2006. Since then, there have been fluctuations in the number of cocaine-related deaths, with the past four years (2012-15) showing an upward trend. Further, from the lowest number in 2010 to 2015, there has been a 1.6-fold increase in the total number of deaths.

In rare instances, sudden death can occur on the first use of cocaine or unexpectedly thereafter. Cocaine-related deaths are often a result of cardiac arrest or seizures.

**Additional Information for the Trainer(s):**

CDC Wonder also tracks the number of deaths from cocaine, with and without opioid involvement (data not shown). Since 2010, the number of deaths involving both cocaine and opioids have more than doubled, while cocaine deaths not involving opioids only increased by 9%. 
Slide 27: National Overdose Deaths – Number of Deaths from Cocaine

REFERENCE:

Slide 28: Stimulant Use and HIV Testing Status among LA County Treatment Discharges: FY 2015-16

This table depicts the prevalence of select substances of abuse and HIV testing status among discharge records located in the Los Angeles County Participant Reporting System, maintained by the County of Los Angeles Department of Public Health, Substance Abuse Prevention and Control (SAPC). Approximately 20% of discharged patients reported methamphetamine as a primary or secondary drug of abuse. For cocaine, roughly 10% reported cocaine as a primary or secondary drug use abuse. With regards to HIV testing status at discharge, approximately 41% of all patients were tested for HIV, and of those, 36% returned for their results.
Slide 29: [Transition Slide] Stimulants: What are We Talking About?

The next section of the presentation describes, in detail, cocaine and methamphetamine. Topics include formulations, manufacturing processes, the impact on the user’s brain and body, acute and chronic physical and mental/cognitive effects, use during pregnancy, and cocaine vs. methamphetamine comparisons.

IMAGE CREDIT:
Fotolia, purchased image, 2017.
Slide 30: The Broader Classification: Stimulants

The main types of stimulants are methamphetamine, amphetamines (not pictured), crack cocaine, and powder cocaine. Stimulants increase alertness and arousal by stimulating the central nervous system.

IMAGE CREDITS:
Drug Enforcement Administration, various publications.
Slide 31: Forms of Cocaine

The powdered hydrochloride salt form of cocaine can be snorted or dissolved in water and injected. Powder cocaine is most often snorted. Crack is the form of cocaine that has not been neutralized by an acid to make the hydrochloride salt. This form of cocaine comes in a rock crystal that can be heated and its vapors smoked. Crack may be smoked in a pipe bowl containing 50-100 mg or in a cigarette with as much as 300 mg. The term "crack" refers to the crackling sound heard when the mixture is smoked (heated). The cocaine high is most intense if you smoke or inject cocaine. Smoking crack bypasses the vasoconstriction that results when cocaine is snorted; therefore, the effects are similar to taking cocaine intravenously.

Common street names can differ by region. Ask the audience to offer additional street names. Many other street names exist for crack, and the popularity of these names varies by geographic region of the U.S. Additional street names include: 24-7; Badrock; Beat; Candy; Chemical; Cloud; Cookies; Crumbs; Crunch & munch; Devil drug; Dice; Electric kool-aid; Fat bags; French fries; Glo; Gravel; Grit; Hail; Hard ball; Hard rock; Hotcakes; Ice cube; Jelly beans; Nuggets; Paste; Piece; Prime time; Product; Raw; Rock(s); Scrabble; Sleet; Snow coke; Tornado; and Troop.
Slide 31: Forms of Cocaine

Additional Information for the Trainer:

The half-life of cocaine depends on the route of administration. The following table summarizes the duration of effects and half-life, by route of administration.

**Smoking:**

Onset: 7 seconds
Peak Effect (min): 1-5 minutes
Duration (min): 20 minutes
Half-Life (min): 40-60 minutes

**Injection:**

Onset: 15 seconds
Peak Effect (min): 3-5 minutes
Duration (min): 20-30 minutes
Half-Life (min): 40-60 minutes

**Nasal/Inhalation:**

Onset: 3 minutes
Peak Effect (min): 15 minutes
Duration (min): 45-90 minutes
Half-Life (min): 60-90 minutes

**Oral:**

Onset: 10 minutes
Peak Effect (min): 60 minutes
Duration (min): 60 minutes
Half-Life (min): 60-90 minutes
Slide 31: Forms of Cocaine

(Notes for Slide 31, continued)

IMAGE CREDITS:
Drug Enforcement Administration, various publications.
Crack in More Detail

Crack can be administered in many ways, but is most often smoked. Crack is widely available in various geographic regions. The crack high is quick, intense, and short term, and requires the use of more crack almost immediately to maintain the high.

Additional Information for the Trainer:
The intensity and duration of cocaine’s effects—which include increased energy, reduced fatigue, and mental alertness—depend on the route of drug administration. The faster cocaine is absorbed into the bloodstream and delivered to the brain, the more intense the high.

TAKING COCAINE BY MOUTH
This is the safest way to do coke, but by far the least efficient. Users can absorb cocaine through the mucous membrane of the inner cheeks and gums. It can also be swallowed but the drug loses much of its effectiveness in the stomach. While the rate of absorption is slow, the effects last longer.

SNORTING COCAINE
Snorting, or sniffing through the nose, is the next safest method. The effects peak sooner and don’t last as long this way. It can lead to a burning sensation in the nostrils after cocaine’s anesthetic effects wear off.
SNORTING COCAINE, continued

Cocaine highly constricts blood vessels and prolonged use can lead to nasal tissue being destroyed. Cocaine powder must be divided into very fine particles. Snorters should be careful to use a clean instrument to snort with, such as a straw or hollowed out pen. Don’t share this with others as blood-borne viruses and infections can result as the nasal linings are quite fragile. Don’t use paper money, it will have all sorts of bacteria on it (and possibly viruses) and can lead to infections.

SMOKING COCAINE

Freebase or crack cocaine is most often accomplished using a glass pipe or a small length of a radio antenna or similar metal tube. Like injecting, smoking leads to intense short-lived effects but it does bypass some of the risks posed by injecting, like infections from bacteria or viruses. The danger of overdose is lowered to some extent, but still risky.

INJECTING COCAINE

Injecting cocaine provides the highest blood levels of drug in the shortest amount of time. Upon injection, cocaine reaches the brain in a matter of seconds, and the exhilarating rush that follows can be so intense that it induces some users to vomit uncontrollably.
(Notes for Slide 32, continued)

Slide 32: Crack in More Detail

INJECTING COCAINE, continued

The euphoria passes quickly. Make sure you use a 0.2 wheel filter to get rid of bacteria and fillers.

One effect of cocaine is a restricting of your veins. They get harder to find, so rotate your sites and take care if you are on a binge. An injected mixture of cocaine and heroin is a dangerous combination, as the converse effects of the drugs actually complement each other, but may also mask the symptoms of an overdose.

IMAGE CREDIT:
Drug Enforcement Administration, NIDA website, 2016.

Slide 33: Methamphetamine

Methamphetamine is commonly found in a few forms – methamphetamine powder, base/paste methamphetamine, and crystal methamphetamine. The information on this slide is provided to describe the differences between each form of methamphetamine.

IMAGE CREDIT:
Drug Enforcement Administration, 2017.
Slide 34: A Quick History of Methamphetamine

This slide depicts a brief history of the methods used to produce methamphetamine, both domestically and internationally.


Slide courtesy of Jane C. Maxwell, PhD

IMAGE CREDIT:
PBS website, 2017.

Slide 35: Methamphetamine Manufacturing Processes – Three Methods

This slide explains the different processes used to manufacture methamphetamine. The new synthetic profile from Mexico is beginning to pop up along the US/Mexico border and in states along the Mississippi River.

Slide courtesy of Jane C. Maxwell, PhD

IMAGE CREDIT:
Slide 36: Purity vs. Potency

This slide provides the definition of purity and potency. With regards to the two isomers of methamphetamine, the key message is this: **If drug is 100% potent, it’s all d-form. If 0% potent, is all l-form.**

Slide courtesy of Jane C. Maxwell, PhD

REFERENCES:


Slide 37: Differences in PSE and P2P Methods of Methamphetamine Manufacture

This slide details the differences in the ephedrine/pseudoephedrine-based method and P2P/phenylacetone method of manufacturing methamphetamine.

Slide courtesy of Jane C. Maxwell, PhD
Slide 38: Let’s Take a Look at Normal Dopamine Functioning

[This slide contains a movie clip that will play when the trainer clicks on the black box. In order for this to work, the connection between the PowerPoint presentation and the video file must be maintained. When moving the PowerPoint file to another location on your computer or to another computer, make sure to always move the video file along with it.

If the link becomes broken, the video will need to be reinserted. Delete the black box. From the insert menu in PowerPoint, select “movie.” Select the video file that was included for this training. When asked, indicate that the movie should play automatically. It will appear as a black box on the screen. The video should play when the slide show is being viewed when the trainer clicks on the black box]
Slide 38: Let’s Take a Look at Normal Dopamine Functioning

In order to understand the impact of crack/cocaine on the brain, you first need to understand the way that the brain works normally (in the absence of these substances). It is then possible to see how stimulants like crack change this functioning. A movie will play here depicting the normal dopamine transmission process.

VIDEO SOURCE:
Meth Inside Out,
One of the neurotransmitters affected by cocaine and methamphetamine, and by most drugs of abuse, is dopamine. The release of dopamine within the reward or pleasure circuits in the brain produces immediate feelings of pleasure and elation. Anything that causes you to feel pleasure will cause a spike in your dopamine levels. Even things like food and sex cause dopamine spikes.

The figure on the left illustrates what happens when a food-deprived rat is given food. When the food is introduced to the rat in the feeding box, the rat’s dopamine level increases from a baseline of about 100 to a high of about 150.

The figure on the right illustrates what happens when a sex-deprived male rat is introduced to a female rat. When the rats are brought together to do what sex-deprived rats will do, their dopamine level increases from that same baseline level of about 100 to a high of 200 (which indicates that sex has a bigger effect on dopamine levels than food).
Slide 39: Natural Rewards Elevate Dopamine Levels

REFERENCES:

How Does Cocaine Work in the Brain?

The most extensively studied effect of cocaine on the central nervous system is the blockage of the dopamine transporter protein. In the normal communication process, dopamine is released by a neuron into the synapse, where it can bind to dopamine receptors on neighboring neurons.

Normally, dopamine is then recycled back into the transmitting neuron by a specialized protein called the dopamine transporter. Cocaine acts by preventing the dopamine from being recycled, causing excessive amounts of the neurotransmitter to build up, amplifying the message to and response of the receiving neuron, and ultimately disrupting normal communication. It is this excess of dopamine that is responsible for cocaine’s euphoric effects.

With repeated use, cocaine can cause long-term changes in the brain’s reward system and in other brain systems as well, which may eventually lead to addiction. With repeated use, tolerance to the cocaine high also often develops. Many cocaine abusers report that they seek but fail to achieve as much pleasure as they did from their first exposure.
Slide 40: How Does Cocaine Work in the Brain?

Some users will increase their dose in an attempt to intensify and prolong the euphoria, but this can also increase the risk of adverse psychological or physiological effects.

Dopamine-rich brain regions such as the ventral tegmental area, nucleus accumbens, and prefrontal cortex are frequent targets of cocaine addiction research.
As was previously stated, normally, dopamine is then recycled back into the transmitting neuron by a specialized protein called the dopamine transporter.
Slide 41: How Does Tobacco Deliver its Effects?

Cocaine acts by preventing the dopamine from being recycled, causing excessive amounts of the neurotransmitter to build up, amplifying the message to and response of the receiving neuron, and ultimately disrupting normal communication. It is this excess of dopamine that is responsible for cocaine’s euphoric effects. With repeated use, cocaine can cause long-term changes in the brain’s reward system and in other brain systems as well, which may eventually lead to addiction. With repeated use, tolerance to the cocaine high also often develops. Many cocaine abusers report that they seek but fail to achieve as much pleasure as they did from their first exposure. Some users will increase their dose in an attempt to intensify and prolong the euphoria, but this can also increase the risk of adverse psychological or physiological effects.

VIDEO SOURCE:
National Institute on Drug Abuse, The Reward Circuit: How the Brain Responds to Cocaine, available at: https://www.youtube.com/watch?v=yeAN26kJuTQ.
Acute intoxication with stimulants resembles hypermania or a manic state. In low doses, a user’s libido is stimulated and sexual performance is enhanced. In high doses, spontaneous ejaculation and orgasm can occur. With increasing doses comes poor judgment, indiscretions, sexual acting-out, and other bizarre behaviors or mental alterations. Acute stimulant intoxication can result in seizures, confusion, respiratory depression, chest pain, or cardiac arrhythmias (Gold and Miller, 1997). The acute physical effects of cocaine intoxication include constricted blood vessels, dilated pupils, and increased temperature, heart rate, and blood pressure. The duration of cocaine’s immediate euphoric effects, which include hyperstimulation, reduced fatigue, and mental alertness, depends on the route of administration. The faster the absorption, the more intense the high. On the other hand, the faster the absorption, the shorter the duration of action. The high from snorting may last 15 to 30 minutes, while that from smoking may last 5 to 10 minutes. Increased use can reduce the period of time a user feels high and increases the risk of addiction. Taken in small amounts, cocaine usually makes the user feel euphoric, energetic, talkative, and mentally alert, especially to the sensations of sight, sound, and touch.
Cocaine can also temporarily decrease the need for food and sleep. Some users find that the drug helps them perform simple physical and intellectual tasks more quickly, while others experience the opposite effect. Acute effects of cocaine are similar to other stimulants, such as methamphetamine. Cocaine users are hypervigilant. Cocaine users will initially feel as if their thinking is ‘clear and focused.’

Slide courtesy of Gloria Miele, PhD
Slide 43: Dopamine (D2) Receptor Availability

This slide features brain images showing decreased dopamine (D2) receptors in the brain of a person addicted to cocaine versus D2 receptors in the brain of a non-drug user. The dopamine system is important for conditioning and motivation, and alterations such as this are likely responsible, in part, for the diminished sensitivity to natural rewards that develops with addiction.

The scan on the left side of the screen depicts the brain of a non-drug using control. Notice the bright colors (red and orange) in the reward center (the egg-shaped areas towards the top of the scan). Bright colors indicate that there is a lot of activity occurring in the scanned individual’s reward center. The scan on the right side of the screen depicts the brain of a cocaine abuser who has been matched to the control in terms of age, race, etc. Notice that there are no bright red and orange colors in the reward center. Essentially, you see virtually no dopamine activity in the reward centers of the cocaine abuser’s brain, suggesting very severe disruption of the dopamine neurons. If you were to apply emotions to the cocaine abuser, how would he/she be feeling? He/she would feel depressed, sad, distraught, etc.
(Notes for Slide 43, continued)

Slide 43: Dopamine (D2) Receptor Availability

Additional Video Resources for the Trainer(s):

*Why do people lose control over their cocaine use?* (Video):
https://www.youtube.com/watch?v=UsBx7Ji5t4M

*The reward circuit: how the brain responds to cocaine* (Video):
https://www.youtube.com/watch?v=yeAN26kJuTQ
This set of PET scan images shows how the brain is affected by long term use of a stimulant drug such as cocaine. In the set of scans, the level of brain function is indicated in yellow. The **top row** shows a normal-functioning brain without drugs. You can see a lot of brain activity. In other words, there is a lot of yellow color. The **middle row** shows a cocaine addict’s brain after 10 days without any cocaine use. Less yellow means less normal activity occurring in the brain - even after the cocaine abuser has abstained from the drug for 10 days. The **bottom row** shows the same person’s brain after 100 days without any cocaine. You can see a little more yellow, so there is some improvement, or more brain activity, as this state of early recovery. But the person’s brain is still not back to a normal level of functioning more than 3 months later. Scientists are concerned that there may be areas in the brain that may never fully recover from drug abuse and addiction.
(Notes for Slide 44, continued)

Slide 44: Long-Term Impact of Cocaine Use

REFERENCES:


Chronic cocaine use impacts more than the dopamine reward system. According to a study by Dr. Nora Volkow and colleagues, they found that research subjects (in this case animals) who were addicted to cocaine had decreased glucose metabolism in the orbitofrontal cortex (OFC), an indicator of reduced activity. In this brain image, the brain of a control subject is on the left side, and the brain of an animal addicted to cocaine is on the right. Poor decision-making, an inability to adapt to negative consequences of drug use, and a lack of self-insight all appear to be related to diminished functioning in the OFC.

REFERENCE:
Long-Term Effects of Crack/Cocaine

As a result of long-term use of cocaine, an appreciable tolerance to cocaine’s high may develop, with many individuals reporting that they seek but fail to achieve as much pleasure as they did from their first experience. Some cocaine users will frequently increase their doses to intensify and prolong the euphoric effects. While tolerance to the high can occur, users can also become more sensitive (sensitization) to cocaine’s anesthetic and convulsing effects, without increasing the dose taken. This increased sensitivity may explain some deaths occurring after apparently low doses of cocaine. Long-term effects can lead to long-term mental health problems, legal problems, and problems with SUD and HIV treatment adherence.

Medical Consequences of Crack/Cocaine

Cocaine is a powerful stimulant that causes the heart to work harder and strains the vascular system. Chronic use can cause heart attacks and strokes. Cocaine increases blood pressure, and has other medical impacts as described on this slide.
Stimulant withdrawal is not medically life threatening and, unlike alcohol or barbiturate withdrawal, does not require pharmacological intervention. A characteristic withdrawal-type syndrome usually develops within hours to days after cessation of prolonged and heavy stimulant use. Stimulant withdrawal symptoms seem to be most severe in the initial days following cessation of use (Cornish and O'Brien, 1996; Gold and Miller, 1997). Cocaine intoxication is characterized by the presence of two or more symptoms listed in the left column. Cocaine withdrawal often has no visible physical symptoms, like the vomiting and shaking that accompanies withdrawal from heroin or alcohol. Dysphoric mood must **ALWAYS** be present when assessing for cocaine withdrawal, plus at least 2 of the other withdrawal symptoms listed in the right column. The level of craving, irritability, delayed depression, and other symptoms produced by cocaine withdrawal rivals or exceeds that felt with other withdrawal syndromes. A common symptom of cocaine withdrawal is the “cocaine crash,” which is the craving for another dose of cocaine. Other common withdrawal symptoms include fatigue, depression, restless behavior, and a feeling of anxiety or paranoia.
Slide 48: Stimulant Intoxication and Withdrawal Syndromes (DSM-5)

During withdrawal, individuals may also experience a period of malaise when they just do not feel like doing anything at all. Many individuals who have experienced cocaine withdrawal report very unpleasant and vivid dreams.

DSM-5 criteria for stimulant intoxication are (1) recent use of an amphetamine-type substance, cocaine, or other stimulant; (2) clinically significant problematic behavioral or psychological changes that develop during, or shortly after, use of a stimulant; and (3) two or more signs or symptoms (left hand side of table) developing during, or shortly after, stimulant use.

DSM-5 criteria for stimulant withdrawal are (1) cessation or (or reduction in) prolonged amphetamine-type substance, cocaine, or other stimulant use; (2) dysphoric mood and two (or more) physiologic changes developing within a few hours to several days (right hand side of table).
(Notes for Slide 48, continued)

Slide 48: Stimulant Intoxication and Withdrawal Syndromes (DSM-5)

REFERENCE:
Different methods of taking cocaine can produce different adverse effects. Regular intranasal use (snorting) of cocaine, for example, can lead to loss of the sense of smell; nosebleeds; problems with swallowing; hoarseness; and a chronically runny nose. Ingesting cocaine can cause severe bowel gangrene as a result of reduced blood flow. Injecting cocaine can bring about severe allergic reactions and increased risk for contracting HIV/AIDS and other blood-borne diseases. Binge-patterned cocaine use may lead to irritability, restlessness, and anxiety. Cocaine abusers can also experience severe paranoia—a temporary state of full-blown paranoid psychosis—in which they lose touch with reality and experience auditory hallucinations. (NIDA InfoFacts). Snorting can cause short term and long term adverse affects on nose/lungs. Ingesting can cause severe stomach problems. Injection increases the risk of HIV and other infectious diseases.

REFERENCE:
Slide 50: Effects of Cocaine Use During Pregnancy

This slide details the effect that cocaine use may have during pregnancy. Possible effects found in the few human studies that exist include increased rates of premature delivery, placental abruption (early separation of a normal placenta from the wall of the uterus), retarded fetal growth, and cardiac and brain abnormalities. Cain and colleagues estimate that there are approximately 750,000 cocaine-exposed pregnancies each year.

REFERENCES:


Slide 50: Effects of Cocaine Use During Pregnancy

IMAGE CREDIT:
NIDA website, 2017.

Slide 51: A Long-Term Research Study Debunks the “Crack Baby” Myth

Betancourt and colleagues studied children who were exposed to cocaine in utero to determine if prenatal cocaine exposure has latent effects on neurocognitive outcomes that do not usually manifest themselves until adolescence or young adulthood. The research team examined neurocognitive function using five tasks designed to tap into inhibitory control, working memory, receptive language, and incidental memory. They found that there was no evidence on latent effects of gestational cocaine exposure on inhibitory control, working memory, or receptive language.
Slide 51: A Long-Term Research Study Debunks the “Crack Baby” Myth

While the cocaine-exposed children and control group performed about the same on the tests, both groups lagged on developmental and intellectual measures compared to the norm. The research team began to think the factor affecting long-term outcomes as poverty. As time went on, the research team conducted several evaluations in an attempt to determine if environmental factors could be responsible for affecting their development. What they found is that children who were in a nurturing home, with caregiver warmth, affection, and language stimulation, did better than those in a less nurturing home. With regards to crime and exposure to violence, those children who were exposed to high levels of violence were more likely to show signs of depression and anxiety and had lower self-esteem.

REFERENCE:

-72-
At the outset, methamphetamine is a seductive drug because its effects during the early stages of use are very pleasurable and reduce appetite and fatigue. People take the drug to help them work longer hours, lose weight, study longer, become more athletic, and have more and better sex. When a person uses methamphetamine, heart rate and blood pressure increase, as do pupil size, sensory acuity, and energy. Concomitantly, it decreases appetite, sleep, and reaction time. People find these effects useful.
Slide 53: How the Brain Responds to Meth

[This slide contains a movie clip that will play when the trainer clicks on the mouse one time. In order for this to work, the connection between the PowerPoint presentation and the video file must be maintained. When moving the PowerPoint file to another location on your computer or to another computer, make sure to always move the video file along with it.

If the link becomes broken, the video will need to be reinserted. Delete the still video image that appears on the screen. From the insert menu in PowerPoint, select “movie.” Select the video file that was included for this training. When asked, indicate that the movie should play automatically. It will appear as a black box on the screen.

As you will see from this video clip, the effects of methamphetamine on the brain are different than what we see from other stimulants such as cocaine.]
(Notes for Slide 53, continued)

Slide 53: How the Brain Responds to Meth

While the methamphetamine molecule is structurally similar to amphetamine and to the neurotransmitter dopamine, it is quite different from cocaine. Although these stimulants have similar behavioral and physiological effects, there are some major differences in the basic mechanisms of how they work. According to NIDA, “in contrast to cocaine, which is quickly removed from and almost completely metabolized in the body, methamphetamine has a much longer duration of action, and a larger percentage of the drug remains unchanged in the body. Methamphetamine therefore remains in the brain longer, which ultimately leads to prolonged stimulant effects. Although both methamphetamine and cocaine increase levels of dopamine, administration of methamphetamine in animal studies leads to much higher levels of dopamine, because nerve cells respond differently to the two drugs. Cocaine prolongs dopamine actions in the brain by blocking the re-absorption (re-uptake) of the neurotransmitter by signaling nerve cells.
Slide 53: How the Brain Responds to Meth

At low doses, methamphetamine also blocks the re-uptake of dopamine, but it also increases the release of dopamine, leading to much higher concentrations in the synapse (the gap between neurons), which can be toxic to nerve terminals.”

VIDEO SOURCE:
Meth Inside Out,
The same phenomenon of dopamine release can be seen with drugs of abuse, but to an even larger extent than is seen with food and sex. Cocaine causes a spike in dopamine to about 350. Alcohol increases dopamine levels to 125, and nicotine increases dopamine levels to 225. But with methamphetamine, you see an unparalleled spike in dopamine to a level of about 1,100. Nothing that exists in nature can have as large an impact on dopamine levels than methamphetamine.

REFERENCES:

Like the initial medical effects of methamphetamine, the initial psychological effects are also generally pleasant: methamphetamine increases confidence, alertness, positive mood, sex drive, energy, and talkativeness. It also decreases boredom, loneliness, and timidity.
Slide 56: Methamphetamine: Chronic Physical Effects

Over time, the effects of methamphetamine change. As methamphetamine is repeatedly applied to the brain, it changes brain chemistry, structure, and function. Some structures of the brain develop tolerance to the drug’s effects and require an increased dosage to produce the desired effects. However, other areas of the brain become sensitized to the effects of methamphetamine, causing even small doses to produce very powerful reactions. Simply put, over time, part of the brain reacts to the drug by needing more of it, while other parts of the brain respond in exactly the opposite manner.

Methamphetamine is a powerful stimulant that causes the heart to work harder and strains the vascular system. Chronic use can cause heart attacks and strokes. It increases blood pressure and thickens heart valves. Methamphetamine constricts blood vessels on the skin surface, causing the skin to feel tingly. Users will frequently vigorously scratch their skin in response to this sensation (meth bugs, speed bumps). Some of the effects to the left are due to the method the user uses to get the drug into his/her body. And what started as a weight loss of a few pounds ends up being an uncontrollable level of weight loss.
Infective Endocarditis (i.e., staphylococcus aureus) is frequent among injection drug users (IDUs). About 8-16% of hospital admissions for IDUs are accounted for by infective endocarditis. Essentially, an organism colonizes the heart (mostly the right side). Most common symptoms of endocarditis are chest pain, cough, fever, chills, and arthralgia. The condition can be treated with antibiotics or surgery.
The phenomenon of “Meth Mouth” has received substantial attention by the media because the dental problems associated with methamphetamine use are severe, and photographs of the dental disease experienced by methamphetamine users are quite dramatic and unsightly. The constriction of blood vessels caused by methamphetamine reduces the blood flow to the gums and teeth. Over time, this restriction of blood flow can result in inadequate nourishment reaching the gums and teeth, causing tooth death.

Methamphetamine also causes a decrease in saliva output. Lack of saliva, along with the almost universal poor dental hygiene of methamphetamine users, can promote the formation of cavities. Further, methamphetamine use causes bruxism (teeth grinding) in many users. This phenomenon can also substantially damage the enamel on the teeth and cause serious dental wear. For those who smoke meth, some research suggests that the direct effects of the meth vapor that is drawn into the mouth via smoking may also have direct damaging effects on the teeth.
(Notes for Slide 57, continued)

Slide 57: Meth Use Leads to Severe Tooth Decay

IMAGE CREDIT:
American Dental Association website, 2017.

Slide 58: Methamphetamine: Chronic Psychological Effects

As dramatic as the chronic physical effects of methamphetamine are, the chronic psychological effects are even more profound. During initial stages of use, methamphetamine produces feelings of optimism, enthusiasm, and sociability. Over time, however, these positive effects are replaced with much more troublesome and pathological symptoms. In fact, the major presenting problems for methamphetamine users are psychological symptoms such as confusion, depression, anxiety, delusions, paranoid reactions, hallucinations, and suicidal ideation.
Slide 59: Effects of Maternal Methamphetamine Use

According to the American College of Obstetricians and Gynecologists (ACOG), Committee on Health Care for Underserved Women, as is the case with cocaine, the use of methamphetamine during pregnancy can endanger the health of the mother, and increase the risk of low birth weight and small for gestational age babies, and may also increase the risk for neurodevelopmental problems in children.

REFERENCE:
The IDEAL study was a longitudinal, multi-site research study that looked at the neonatal growth effects of babies prenatally exposed to methamphetamine. This slide outlines the key findings related to small-for-gestational age infants. The four study sites were Los Angeles, California, Des Moines, Iowa, Tulsa, Oklahoma, and Honolulu, Hawaii.

REFERENCE:

IMAGE CREDIT:
Fotolia purchased image, 2017.
In the IDEAL follow-up study, the research team followed methamphetamine-exposed children to seven and one-half years of age and found that while prenatal exposure may lead to targeted behavioral problems, a more supportive home environment could make a difference in the children’s behavioral and emotional control, decreasing the severity and risk of such issues. The slide details other factors that may contribute to behavioral and emotional problems among the methamphetamine-exposed children.

REFERENCE:
It would be unethical to give a human being who has never been exposed to methamphetamine a dose of the drug to see what happens to his/her brain. So when brain imaging researchers wish to study the effects of methamphetamine on the human brain, they match non-using controls to methamphetamine abusers (by gender, age, socioeconomic status, etc.). In this study, researchers examined the PET scans of chronic methamphetamine users who had achieved two years of abstinence from methamphetamine. The scans showed a return to virtually normal dopamine levels. While this is good news, and suggests that the brain has an amazing ability to repair itself, the subjects in the study did not regain all of the lost cognitive function associated with the damage, which could suggest an incomplete recovery. While the fact that the brain recovers is good news, the not-so-good news is that the recovery takes months, not days. Treatment and recovery are long-term processes.
Slide 62: Partial Recovery of Brain Dopamine Transporters in Methamphetamine Abuser After Protracted Abstinence

REFERENCE:
Slide 63: Cocaine vs. Methamphetamine

Methamphetamine is structurally similar to amphetamine, but it is quite different from cocaine. Although these stimulants have similar behavioral and physiological effects, there are some major differences in their basic mechanisms of action. In contrast to cocaine, which is quickly removed and almost completely metabolized in the body, methamphetamine has a much longer duration of action and a larger percentage of the drug remains unchanged in the body. This results in methamphetamine being present in the brain longer, which ultimately leads to prolonged stimulant effects. The half-life of methamphetamine is about 10 hours, vs. a half-life of cocaine of approximately 2 hours. Although both methamphetamine and cocaine increase levels of the brain chemical dopamine, animal studies reveal much higher levels of dopamine following administration of methamphetamine due to the different mechanisms of action within nerve cells in response to these drugs. Cocaine prolongs dopamine’s action in the brain by blocking dopamine re-uptake. While at low doses, methamphetamine blocks dopamine re-uptake, methamphetamine also increases the release of dopamine, leading to much higher concentrations in the synapse, which can be toxic to nerve terminals.
Slide 63: Cocaine vs. Methamphetamine

Methamphetamine is neurotoxic, but cocaine does not appear to be neurotoxic. Methamphetamine-induced paranoia can last as long as 7 to 14 days (or longer), whereas cocaine paranoia usually subsides within about 4-8 hours following drug cessation.

REFERENCE:
Dr. Sara Simon and colleagues conducted a study of 120 methamphetamine abusers and 63 cocaine abusers to determine patterns of stimulant use. According to Dr. Simon, “the typical methamphetamine abuser reported using the drug when he or she first got up in the morning, then using approximately every 2 to 4 hours during their waking day. Most of the descriptions of use more closely resembled taking a medication than using a drug for pleasure. “..."Cocaine abusers reported patterns that fit a picture of recreational use: They began in the evening and continued until all the cocaine on hand had been used.”

These differing patterns of use may be a result in the differential impacts the individual drugs have on the user’s brain and body. Understanding the differing patterns of use may help treatment providers and patients identify the circumstances (triggers, different times of the day or places) that may lead to relapse.
Slide 64: Differences in Patterns of Use: Methamphetamine vs. Cocaine

REFERENCE:
In a separate study from the one described on slide 64, Dr. Simon and colleagues evaluated the effects of stimulants on learning and memory. The study involved 40 methamphetamine abusers and 40 cocaine abusers not currently engaged in treatment and 80 individuals who had never used either stimulant (comparison group). A variety of tests were administered to evaluate memory, perceptual speed, verbal fluency, and executive function.

Methamphetamine abusers performed more poorly than the comparison group in tests of word recall, perceptual speed, ability to manipulate information, and abstract thinking. Cocaine abusers scored more poorly than the comparison group in tests measuring the ability to recall words and pictures and working memory.

While both drugs were associated with similar cognitive deficits, the most striking difference was that those individuals who abuse methamphetamine had more trouble than those individuals who abuse cocaine at tasks requiring attention and the ability to organize information. From a treatment implication perspective, methamphetamine abusers would benefit from using pictures to relay their feelings than words.
Slide 65: Differences between Stimulant and Comparison Groups on test requiring perceptual speed

Additional Information for the Trainer(s):

The Digit Symbol test is similar to the old Batman decoder ring, where you had to match letters to numbers to open the ring. In the study conducted by Dr. Simon, it took the comparison group less time than the stimulant users to complete the task.

Trail Making A and B are complicated “connect the dots” tasks. In both tasks, it once again took the comparison group less time that the stimulant users to complete the tasks.

REFERENCE:
In a separate study from the one described on slide 64, Dr. Simon and colleagues evaluated the effects of stimulants on learning and memory. The study involved 40 methamphetamine abusers and 40 cocaine abusers not currently engaged in treatment and 80 individuals who had never used either stimulant (comparison group). A variety of tests were administered to evaluate memory, perceptual speed, verbal fluency, and executive function.

Methamphetamine abusers performed more poorly than the comparison group in tests of word recall, perceptual speed, ability to manipulate information, and abstract thinking. Cocaine abusers scored more poorly than the comparison group in tests measuring the ability to recall words and pictures and working memory.

While both drugs were associated with similar cognitive deficits, the most striking difference was that those individuals who abuse methamphetamine had more trouble than those individuals who abuse cocaine at tasks requiring attention and the ability to organize information.
Slide 66: Memory Differences between Stimulant and Comparison Groups

These cognitive findings reveal a major treatment implication. Stimulant abusers, more specifically methamphetamine abusers, are unable to remember words. So when designing treatment programs, it is better to avoid focusing entirely on talking or verbal information exchange, and instead incorporate pictures or written information transfer into the treatment process. It is not the case that the methamphetamine abusers are in denial when they say that they forgot an appointment or a group session. They truly cannot remember.

Additional Information for the Trainer(s):

The Word Recall test involves telling participants a series of 30 unrelated words (dog, house, grass, tree, car, etc.), and asking them to tell the research team how many of the words they can recall. The Picture Recall task is similar to the word recall task, but slightly easier overall.

REFERENCE:
The street price of drugs can vary significantly from city to city, depending on many factors such as source and purity. These prices are averages, and may or may not match the street price in some cities.

According to the DEA’s domestic STRIDE data (Jan 2007-Dec 2013), the price of methamphetamine (price per gram, PPG), decreased 74.5% from $276/gram to $70/gram, while the purity increased 143.1% from 38% pure to 94% pure.
The next portion of the presentation corresponds to the relationship between substance use disorders in general and HIV/AIDS. Injection of drugs such as heroin, cocaine, and methamphetamine accounts for more than a third 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.

IMAGE CREDIT:
Fotolia, purchased image, 2017.
According to HIV surveillance data maintained by the Centers for Disease Control and Prevention, the percentage of adults and adolescents with diagnosed HIV infection attributed to male-to-male sexual contact increased from 60% in 2010 to 66% in 2014. The percentages of diagnosed HIV infections attributed to injection drug use, male-to-male sexual contact and injection drug use, and heterosexual contact decreased from 2010 through 2014. The “Other” transmission category is not displayed as it comprises less than 1% of cases. The category includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Data have been statistically adjusted to account for missing transmission category. Heterosexual contact is with a person known to have, or to be at high risk for, HIV infection.
Slide 69: The Scope of Impact of HIV in the United States

REFERENCE:
Centers for Disease Control and Prevention. (2015). Epidemiology of HIV Infection through 2015 Slide Set. Available at:
At the end of calendar year 2014, there were nearly one million adults and adolescents living with diagnosed HIV infection in the US and six dependent areas (970,319). Among the 734,506 **males** living with diagnosed HIV infection, 36% were black/African American, 35% were white, and 23% were Hispanic/Latino. Approximately 4% were males of multiple races and approximately 1% were Asian. Less than 1% each were American Indian/Alaska Native and Native Hawaiian/other Pacific Islander. Among the 235,813 **females** living with diagnosed HIV infection, 59% were black/African American, 19% were Hispanic/Latino, and 17% were white. Approximately 4% were females of multiple races and approximately 1% were Asian. Less than 1% each were American Indian/Alaska Native and Native Hawaiian/other Pacific Islander.

The data presented on this slide include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. The Asian category includes Asian/Pacific Islander legacy cases (cases that were diagnosed and reported under the pre-1997 Office of Management and Budget race/ethnicity classification system). Hispanics/Latinos can be of any race.
Persons living with diagnosed HIV infection are classified as adult or adolescent based on age at year-end 2014.

REFERENCE:
Centers for Disease Control and Prevention. (2015). Epidemiology of HIV Infection through 2015 Slide Set. Available at:

Why is it important that we know about the HIV & STD risk behavior of our patients?

If time permits, engage the audience in a brief group discussion. Ask this question to the group, “Why is it important that we know about the HIV & STD risk behavior of our patients?” Touch on any reasons they may have missed.

Possible discussion points include:

- **HIV stats – how it affects us**
- **Comorbidities/complications (add to current problems)**
- **Infecting others (MSM – heterosexual contact; link with drug use, minority infection rate)**
- **Help them connect with resources**
- **Many of our patients are infected and it’s our job to help them**

IMAGE CREDIT:
Fotolia, purchased image, 2017.
A variety of research studies have shown that methamphetamine use is intricately connected to both sexual identity and sexual expression in many gay-identified men who have sex with men (MSM). Changes in sexual behaviors and changes in decision-making processes present extreme HIV risks, especially when methamphetamine is involved.

The use of alcohol and other drugs can impair a person’s decision making ability and compromise judgement. When this happens, the person puts him/herself at risk for risky sexual behaviors, which may include trading sex for drugs, sharing needles, and having unprotected sexual intercourse.

REFERENCE:
Slide 74: What Do You Think?

**Audience Response System (ARS)-compatible slide**

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What do you think?

All of the following is true about cocaine and HIV except:

A. Cocaine users are more likely to develop new AIDS-defining illnesses than non-users
B. Cocaine interacts negatively with HIV antiretrovirals
C. HIV-positive cocaine users are less likely to have received HIV care
D. Cocaine users have greater CD4 cell loss and higher HIV-1 RNA levels

Correct Response is B (cocaine interacts negatively with HIV antiretrovirals)
Many HIV+ crack/cocaine users live in disadvantaged and impoverished communities, which can present a multitude of health care barriers, including limitations to regular primary and HIV-related medical care.

**REFERENCES:**


**IMAGE CREDIT:**
Fotolia, purchased image, 2017.
Numerous research studies have been conducted to better understand the impact that cocaine use has on HIV infection and disease progression. This slide lists several of the key findings. NeuroAIDS, as is mentioned in the final bullet is a term that encompasses neurological conditions that are associated with HIV infection. Symptoms include memory loss, movement problems, and vision impairment.

Individuals who use cocaine and are living with HIV disease often have advanced progression of the disease, including increased viral load and accelerated decreases in CD4+ cell counts. In addition, being infected with HIV can increase a person’s risk for co-infection with hepatitis C. This co-infection can lead to a variety of serious illnesses, including immune system, neurological, and liver complications.

REFERENCE:
Slide 77: Cocaine Use and Immune System Disruption

According to a recent animal study conducted at the University of California, Los Angeles by Kim and colleagues, further evidence was compiled that cocaine use disrupts the immune system, making people who use the drug more likely to become infected with HIV, because cocaine blunts the potency of the body’s defense against the virus. The next stage of Kim’s research will be to determine how cocaine abuse might affect HIV transmission in mucosal membranes; how pre- and post-exposure prophylaxis (PrEP and PEP) can be affected by cocaine exposure; how cocaine might affect viral latency; and how cocaine may alter the body’s immune defenses from other viral infections.

REFERENCE:
Slide 78: Cocaine Use is a Significant Risk Factor for Teens

This study is one of the first to look at the link between crack and powder cocaine use and HIV risk behaviors in adolescents. Teens with a history of crack or powder cocaine use are significantly more likely to engage in unprotected sex than youth who have never used these drugs, putting themselves at increased risk for HIV.

REFERENCE:

IMAGE CREDIT:
Fotolia, purchased image, 2017.
The NY/NJ AIDS Education and Training Center (AETC) developed a pocket guide entitled, “Recreational Drugs and HIV Antiretrovirals: A Guide to Interactions for Clinicians, 2014.” The guide outlines known drug interactions for a variety of street drugs, including: alcohol, amphetamines, cocaine, ecstasy, etc. At this time, according to research conducted through November 2009, there are no known drug interactions between cocaine and the HIV antiretrovirals.

Slide 80: Methamphetamine and HIV in MSM: A Time-to-Response Association?

This series of statistics demonstrate the point that the farther along that an MSM is in the treatment system, the more likely he is to be diagnosed with HIV. By starting at the left side of the graph, HIV prevalence is lower in samples of MSM seeking prevention or non-intervention projects. As you move to the right, the prevalence increases, with very high prevalence observed in the treatment samples.

REFERENCE:
According to Shoptaw and Reback, this “time-to-response” association has implications for guiding interventions, with lower-intensity prevention likely sufficient to help recreational and chronic users reach drug and sexual risk-behavior goals and high-intensity treatments likely necessary for MSM with dependence to reach drug and sexual risk-behavior goals.

REFERENCE:
The connection between crystal meth use and HIV transmission has been well established by researchers. Individuals who use methamphetamine are more likely to become infected with HIV and transmit the virus to others. Studies have also documented more substantial brain damage and cognitive impairment people who use meth and are infected with HIV, as compared to people living with HIV who do not use meth.

REFERENCE:
Slide 83: Methamphetamine Use May Accelerate HIV Reproduction

According to a paper published by Toussi and colleagues in 2009, methamphetamine speeds up HIV replication in both test tube and animal studies. This slide details the key findings from the test tube studies and mouse model studies.

REFERENCE:
The Effect of Methamphetamine on the Brain of a Person Infected with HIV

Cherner published an article in the APA Psychology and AIDS Exchange Newsletter in 2013 about the effects of methamphetamine on the brain of a person infected with HIV. This slide details the key findings.

REFERENCE:
Blackstone and colleagues from the University of San Diego, Translational Methamphetamine AIDS Research Center conducted a study to assess daily functioning among nearly 800 individuals who are HIV positive and use methamphetamine. They assessed daily functioning in four key areas – everyday cognitive symptoms, instrumental (skilled) activities of daily living, basic activities of daily living, and employment. The next slide contains the key findings from the study.

REFERENCE:
Participants who use methamphetamine or are infected with HIV showed similar increases in functional dependence (need for assistance), as compared to participants who were not infected with HIV and did not use methamphetamine. Study participants who were infected with HIV and used methamphetamine showed the highest levels of functional impairment in most domains of daily life. The greatest disparities were seen in everyday cognitive abilities and skilled activities of daily life (2nd and 3rd set of bars from the left).

One clinical implication of this research study is the need for clinicians to carefully monitor medication compliance among patients who use methamphetamine, are infected with HIV, or both.

REFERENCE:
Case Study #1: Determining Service Needs

Ricardo, a 37-year-old Latina, used methamphetamine for a little over a year on weekends to party and attend sex parties with guys she met online. He recently switched to cocaine because he was having more and more trouble "going back to life" after a weekend meth binge. He is HIV negative. You are a hospital case manager who is sent to meet with Ricardo. He doesn’t know the details of why he is there, except that a stranger called an ambulance and he woke up at the hospital.

- What are the issues that need to be addressed?
- What providers should be involved in his care?
- What strategies would you employ to coordinate care among the various providers?

Read the case study aloud. Ask participants to break into pairs or small groups (depending on the size of the audience), and spend 5-10 minutes discussing the three questions. De-brief as a full group for 5-10 minutes. Ask for volunteers to briefly share responses to the three questions.

IMAGE CREDIT:
YMSM+LGBT Center of Excellence LGBT Curriculum (purchased image).
Behavioral treatments help engage people in drug abuse treatment, modifying their attitudes and behaviors related to drug abuse 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 abuse. Moreover, behavioral therapies can help people remain in treatment longer. Length of time in treatment is the #1 predictor of a successful treatment experience. The longer you can keep a person engaged in treatment, the more likely he/she is to be successful. Behavioral interventions—particularly, cognitive-behavioral therapy—have been shown to be effective for decreasing cocaine use and preventing relapse. Treatment must be tailored to the individual patient’s needs in order to optimize outcomes—this often involves a combination of treatment, social supports, and other services. Early engagement techniques should be utilized to ensure that the client comes back for his/her group and individual sessions.
The following section pertains to effective behavioral treatment interventions for stimulant users.

Additional Information for the Trainer:
Several manuals have been developed for use with cocaine abusers.

- Cognitive-Behavioral Approach: Treating Cocaine Addiction (Manual 1)
- Community Reinforcement Approach: Treating Cocaine Addiction (Manual 2)
- Individual Drug Counseling Approach to Treat Cocaine Addiction: The Collaborative Cocaine Treatment Study Model (Manual 3)
- Drug Counseling for Cocaine Addiction: The Collaborative Cocaine Treatment Study Model (Manual 4)
- Brief Strategic Family Therapy for Adolescent Drug Abuse (Manual 5)
Slide 88: [Transition Slide] Effective Treatment Interventions for Stimulant Use Disorders

The manuals are available for download at no cost on the NIDA website. Visit http://www.nida.nih.gov/DrugPages/Cocaine.html for more information.

IMAGE CREDIT:
Fotolia, purchased image, 2017.
Slide 89: What Treatments are Effective for Stimulant Users?

Currently, the only effective treatments for cocaine and methamphetamine addiction are behavioral in nature. While several medications have shown promise in clinical trials, no medications have been approved for use with individuals who are addicted to cocaine or methamphetamine. If a medication is found to be effective in treating cocaine and/or methamphetamine, it will be important to combine use of the medication with a comprehensive behavioral therapy program. Research shows that this combination of pharmacological and behavioral interventions is the most effective method to reduce drug use in the long term.

Successful Outpatient Treatment Predictors:

1. Durations over 90 days (with continuing care for another 9 months)
2. Techniques and clinic practices that improve treatment retention are critical.
3. Treatment should include 3-5 clinic visits per week for at least 90 days.
4. Employ evidence-based practices (i.e., CBT, CM, CRA, MI, Matrix Model)
(Notes for Slide 89, continued)

Slide 89: What Treatments are Effective for Stimulant Users?

Successful Outpatient Treatment Predictors, included:

5. Family involvement and 12-step programs appear to improve outcome.

6. Urine testing (at least weekly is recommended).

REFERENCE:
Slide 90: What about Pharmacological Interventions?

Currently, there are NO medications approved for use in treating cocaine or methamphetamine use disorders. Topiramate and modafanil have shown promising signals as potential cocaine treatment agents. Baclofen, a GABA-B agonist, showed promise in a subgroup of cocaine addicts with heavy use patterns. Because of mood changes experienced during the early stages of cocaine abstinence, antidepressant drugs have been shown to be of some benefit. Researchers are seeking to develop medications that help alleviate the severe craving associated with cocaine addiction, as well as medications that counteract cocaine-related relapse triggers, such as stress. Several compounds are currently being investigated for their safety and efficacy, including a vaccine that would sequester cocaine in the bloodstream and prevent it from reaching the brain.
Slide 91: Behavioral Treatments

This slide includes a list of behavioral interventions that have been shown to be effective with individuals with cocaine and/or methamphetamine use disorders. The slides that follow will include more detailed information about each intervention, with the exception of Community Reinforcement Approach (CRA), Red Road to Wellbriety and Traditional Healing.

Community Reinforcement Approach (CRA) includes behavioral skills training, social and recreational counseling, marital therapy, job counseling, and relapse prevention.

The Red Road to Wellbriety: In the Native American Way is a guide to alcohol and drug recovery and sobriety especially for American Indians, Alaska Natives, and First Nations people. It has also found enthusiastic acceptance among Indigenous people from other parts of the world, as well as by Non-Native people.
Cognitive Behavioral Therapy (CBT) seeks to help patients recognize, avoid, and cope with the situations in which they are most likely to abuse drugs. Thoughts cause feelings and behaviors, not external things, like people, situations, and events. You can change the way we think to feel / act better even if the situation does not change.

CBT is a short-term, evidenced-based, focused approach which has been used to help individuals with substance abuse disorders. CBT is a flexible, individualized approach that can be adapted to a wide range of clients and treatment settings. CBT emphasizes learning of skills to be used to achieve abstinence, and addresses other problems, including initiation and mastery of skills through practice, role playing, and extra-sessions tasks. NIDA published a CBT manual, which can be downloaded from:

What CBT Skills can Clinicians Use when Working with People who Use Stimulants?

- Functional analysis and patterns of use
- Coping with craving
- Addressing ambivalence and coping with thoughts
- Refusal skills
- Seemingly irrelevant decisions
- Planning for emergencies
- Problem solving skills
- HIV risk reduction

Slide 93: What CBT Skills can Clinicians Use when Working with People who Use Stimulants?

This slide lists the CBT skills that clinicians can use with patients who use stimulants.
The Matrix Model is an intensive, outpatient treatment approach for individuals with substance use disorders, which was developed through 30 years of experience in real-world treatment settings. The intervention integrates aspects of several treatment approaches, including cognitive-behavioral therapy, contingency management, motivational interviewing, 12-step facilitation, family involvement, and supportive/person-centered therapy.

Core components consist of early recovery groups, relapse-prevention groups, family education, social-support groups, and individual counseling delivered over a 16-week period. Clients learn about issues critical to addiction and relapse, such as cue-induced craving and related behaviors. Clients also receive direction and support from a trained therapist, become familiar with self-help programs, and are monitored for drug use by urine and breath testing. Family members receive education to help understand and support the recovery process.

The therapist functions simultaneously as teacher and coach, fostering a positive, encouraging relationship with the client and using that relationship to reinforce positive behavior change.
Slide 94: Behavioral Approach #2: Matrix Model

The interaction between the therapist and the client is realistic and direct, but not confrontational or paternalistic. Therapists are trained to conduct treatment sessions in a way that promotes self-esteem, dignity, and self-worth.

REFERENCE:

Slide 95: Behavioral Approach #3: Motivational Interviewing (MI)

Compared with non-directive counseling, motivational interviewing is more focused and goal-directed. The examination and resolution of ambivalence is its central purpose, and the counselor is intentionally directive in pursuing this goal.

Additional Information for the Trainer regarding the “MI Spirit”:

The spirit of MI can be characterized in a few key points. The following information was excerpted directly from www.motivationalinterview.org:

Motivation to change is elicited from the client, and not imposed from without.

Other motivational approaches have emphasized coercion, persuasion, constructive confrontation, and the use of external contingencies (e.g., the threatened loss of job or family). Such strategies may have their place in evoking change, but they are quite different in spirit from motivational interviewing which relies upon identifying and mobilizing the client's intrinsic values and goals to stimulate behavior change.
Slide 95: Behavioral Approach #3: Motivational Interviewing (MI)

*It is the client's task, not the counselor's, to articulate and resolve his or her ambivalence.* Ambivalence takes the form of a conflict between two courses of action (e.g., indulgence versus restraint), each of which has perceived benefits and costs associated with it. Many clients have never had the opportunity of expressing the often confusing, contradictory and uniquely personal elements of this conflict, for example, "If I stop smoking I will feel better about myself, but I may also put on weight, which will make me feel unhappy and unattractive." The counselor's task is to facilitate expression of both sides of the ambivalence impasse, and guide the client toward an acceptable resolution that triggers change.

*Direct persuasion is not an effective method for resolving ambivalence.* It is tempting to try to be "helpful" by persuading the client of the urgency of the problem about the benefits of change. It is fairly clear, however, that these tactics generally increase client resistance and diminish the probability of change (Miller, Benefield and Tonigan, 1993, Miller and Rollnick, 1991).
Motivational Interviewing (MI)

The counseling style is generally a quiet and eliciting one. Direct persuasion, aggressive confrontation, and argumentation are the conceptual opposite of motivational interviewing and are explicitly proscribed in this approach. To a counselor accustomed to confronting and giving advice, motivational interviewing can appear to be a hopelessly slow and passive process. The proof is in the outcome. More aggressive strategies, sometimes guided by a desire to "confront client denial," easily slip into pushing clients to make changes for which they are not ready.

The counselor is directive in helping the client to examine and resolve ambivalence. Motivational interviewing involves no training of clients in behavioral coping skills, although the two approaches are not incompatible. The operational assumption in motivational interviewing is that ambivalence or lack of resolve is the principal obstacle to be overcome in triggering change. Once that has been accomplished, there may or may not be a need for further intervention such as skill training. The specific strategies of motivational interviewing are designed to elicit, clarify, and resolve ambivalence in a client-centered and respectful counseling atmosphere.
Slide 95: Behavioral Approach #3: Motivational Interviewing (MI)

Readiness to change is not a client trait, but a fluctuating product of interpersonal interaction. The therapist is therefore highly attentive and responsive to the client's motivational signs. Resistance and "denial" are seen not as client traits, but as feedback regarding therapist behavior. Client resistance is often a signal that the counselor is assuming greater readiness to change than is the case, and it is a cue that the therapist needs to modify motivational strategies.

The therapeutic relationship is more like a partnership or companionship than expert/recipient roles. The therapist respects the client's autonomy and freedom of choice (and consequences) regarding his or her own behavior.

REFERENCE:
The strategic goals of MI are to: (a) resolve ambivalence; (b) avoid eliciting or strengthening resistance; (c) elicit “Change Talk” from the client; (d) enhance motivation and commitment for change; and (e) help the client move through the Stages of Change. A series of MI micro-skills (which will be described on the next slide) can be used to move a patient/client through the Stages of Change to elicit and reinforce self-motivational statements (a.k.a., Change Talk).

**Empathy** may be the most crucial principle. It creates an environment conducive to change, instills a sense of safety and a sense of being understood and accepted, and reduces defensiveness. Empathy sets the tone within which the entire communication occurs. Without it, other components may sound like mechanical techniques. By **developing discrepancy**, the clinician can help the client to become more aware of the discrepancy between their addictive behaviors and their more deeply-held values and goals.
Part of this is helping client to recognize and articulate negative consequences of use. It is more effective if the client does this, not the clinician. With regards to rolling with resistance, in general, it is not helpful to argue with clients. Confrontation elicits defensiveness, which predicts a lack of change. It is particularly counter-therapeutic for a clinician to argue that there is a problem while the client argues that there isn’t one. The client does not need to accept a diagnostic label (e.g. “addict” or “alcoholic”) for change to occur. Supporting self-efficacy can be conceptualized as a specific form of optimism, that is, a “can-do” belief in one’s ability to accomplish a particular task or change. This principle is crucial to help the client see and experience his/her own ability to make positive changes. Part of this is the clinician believing in the client’s ability to change.

Open-ended questions: (a) solicits information in a neutral way; (b) helps the person elaborate his/her own view of the problem and brainstorm possible solutions; (c) helps the therapist avoid prejudgments; (d) keeps communication moving forward; (e) allows the client to do most of the talking.
Affirmations should be focused on achievements of the individual, and are intended to: (a) support the individual’s persistence; (b) encourage continued efforts; (c) assist the individual in seeing the positive in the situation; and (d) support the individual’s proven strengths. With reflective listening, one should: (a) listen to both what the person says and to what the person means; (b) check out assumptions; (c) create an environment of empathy (nonjudgmental); and (d) be aware of intonation (statement, not question). The clinician does not have to agree with the client. Summaries capture both sides of the ambivalence (You say that __________ but you also mentioned that ______________.). They demonstrate the clinician has been listening carefully. Summaries also prompt clarification and further elaboration from the person. Lastly, summaries prepare clients to move forward.
Slide 97: Behavioral Approach #4: Contingency Management (CM)

Contingency management (CM) is a tool to enhance treatment and facilitate recovery, and is used as an adjunct to other therapeutic clinical methods. CM targets specific behaviors that are part of a patient treatment plan. CM helps to celebrate the success of behavioral changes chosen by therapist and patient. CM can be used to help motivate patients through stages of change to achieve an identified goal.

REFERENCE:
Acceptance includes the realization that drug addiction is a chronic, progressive disease over which one has no control, that life has become unmanageable because of drugs, that willpower alone is insufficient to overcome the problem, and that abstinence is the only alternative. Surrender involves giving oneself over to a higher power, accepting the fellowship and support structure of other recovering addicted individuals, and following the recovery activities laid out by the 12-step program. While the efficacy of 12-step programs (and 12-step facilitation) in treating alcohol dependence has been established, the research on other abused drugs is more preliminary but promising for helping drug abusers sustain recovery. 12-Step meeting dates, times, and locations can be found by visiting: http://www.aa.org (Alcoholics Anonymous); www.ca.org (Cocaine Anonymous); www.na.org (Narcotics Anonymous).
Slide 98: Behavioral Approach #5: 12-Step Facilitation Therapy

REFERENCES:


Slide 99: Techniques for Talking to Your Patients about Quitting Smoking

Peer influence is used to help individuals learn and assimilate social norms and develop more effective social skills. Treatment staff and those in recovery are key agents of change. The second fundamental TC principle is "self-help," which implies that the individuals in treatment are the main contributors to the change process.

REFERENCE:
Slide 100: Getting Off: A Behavioral Treatment Intervention for Gay and Bisexual Male Methamphetamine Users

Gay-Specific Cognitive Behavioral Therapy (GCBT): CBT that is culturally tailored to address gay-specific issues, and emphasizes HIV risk reduction. At Friends Getting Off, formerly Friends La Brea, is a community-based outpatient treatment program located at Friends Community Center, a division of Friends Research Institute, Inc. The program offers CM+GCBT to help gay and bisexual men to stop using methamphetamine and to change risk behavior related to HIV and other substance use. Since 2007, the Getting Off Intervention has been adopted by multiple other community-based treatment programs.

The Getting Off manual can be downloaded from:

REFERENCE:
The Gay-Specific Cognitive Behavioral Therapy (GCBT) intervention is based upon the theoretical concepts of CBT and relapse prevention therapy, and includes eight core elements: (1) Matrix Intensive Outpatient Treatment for Stimulant Use Disorders; (2) HIV prevention; (3) use of small-group sessions; (4) identification of methamphetamine use and sexual risk situations; (5) retaining participants who test positive for methamphetamine use; (6) referral of participants to higher levels of substance use disorder treatment as indicated; (7) delivery of the intervention by a counselor trained in CBT principles; and (8) supervision of counselors by a clinically trained project director.

REFERENCE:
Slide 102: A Gay-Specific Cognitive Behavioral Therapy Intervention

This slide details the key differences between standard CBT and GCBT.

“Aunt Tina” is a fictional character who represents someone to whom men might turn to for emotional and social support while stopping their methamphetamine use.

REFERENCE:

Slide 103: NREPP – Other Evidence-Based Interventions for Stimulant Users

NREPP stands for SAMHSA’s National Registry of Evidence-Based Programs and Practices. It is a searchable online registry of more than 350 substance use and mental health interventions. It was originally developed to help the public learn more about evidence-based interventions that are available for intervention. The URL is [http://nrepp.samhsa.gov/landing.aspx](http://nrepp.samhsa.gov/landing.aspx).
Slide 104: Strategies to Prevent Smoking among Youth

The purpose of this question is to have a mini-discussion with the training participants about the behavioral approach they feel makes the most sense to them as providers, or the one they believe would work the best with their patients. This is an opinion question, as such, there are no wrong answers.

**Audience Response System (ARS)-compatible slide**

Slide 105: [Transition Slide] Some Final Clinical Considerations for Working with Stimulant Users

The next few slides provide a set of clinical considerations and tips for providers (clinical and non-clinical) who work with stimulant users, regardless of their HIV status.

IMAGE CREDIT:
NIDA website, 2017.
Slide 106: Tip #1: Become Comfortable with the Topics You will Discuss on a Regular Basis

It is critical that providers become comfortable with the information they’ll be discussing with their patients.

Slide 107: Tip #2: Identify Multiple Ways of Describing Sexual Behaviors

Some patients may not know the technical terms for the sexual risk behaviors you ask them to describe.

Slide 108: Tip #3: Practice Asking Questions Out Loud

Practice asking the questions you’ll be asking patients out loud to get used to how the words sound. This will help to raise your level of comfort with asking questions that are not generally polite to talk about with people who do not know well.
Tip #4: Keep it Professional and Be Prepared

With regards to keeping things professional, the provider should practice re-directing personal questions by (1) asking the person what the answer would mean to them; (2) focusing on the needs of the client; and (3) clarifying professional roles and boundaries.

With regards to maintaining boundaries, the provider can (1) keep focused on them and the information that you are gathering. Tangents may be opportunities for inappropriate comments or behavior; (2) remember that your safety comes first and maintaining boundaries helps to keep the client safe, as well; and (3) take a break if needed.
Tip #5: Discuss Issues of Sex, Sexuality, HIV Disclosure, and Stigma

Methamphetamine use is closely connected to sexual expression and sexuality. Use of the drug is associated with transmission of HIV and other STIs, particularly among men who have sex with men. Reductions in methamphetamine use are associated with a marked lowering of sexual risk behaviors, which has huge individual and public health benefits. Individuals who use methamphetamine are less likely than non-users to disclose their HIV status to sex partners.

REFERENCES:

REFERENCES:


Slide 111: Case Study #2: Referring for Services

Case Study #2: Referring for Services

Sonya is a 34 year old African American woman. She was recently treated in the ER for severe chest pains. In the ER, she disclosed that she use crack cocaine "occasionally" but didn't think it was a problem. Medical records that she brought with her to her session indicate her cocaine use is significantly related to her cardiac symptoms. Sonya is willing to talk to you about medical care, but does not think her crack use is a problem.
• What strategies can you use to connect Sonya with appropriate care?
• What interventions would be helpful in helping her to address her cocaine use?

Read the case study aloud. Ask participants to break into pairs or small groups (depending on the size of the audience), and spend 5-10 minutes discussing the three questions. De-brief as a full group for 5-10 minutes. Ask for volunteers to briefly share responses to the three questions.

IMAGE CREDIT:
Fotolia, purchased image, 2016.
A mouthpiece can prevent burns from the pipe, and can be made from a rubber spark plug cover/boot (available at local auto supply store), or rubber bands. Place either item on the mouth end of the pipe to act as a barrier between your lips and the hot metal or glass. Also, glass pipes are usually cooler than metal. If a mouthpiece is not available, the pipe should be let to cool down before the next hit, and petroleum jelly can be used to protect the lips.

Using a longer pipe will cause less burns, as the temperature will be lower. Cracked pipes should be avoided, as cuts are a way for bacteria and viruses to enter the body. Mouthpieces and pipes should not be shared with anyone else. If it is necessary to share, clean equipment with bleach or alcohol first.

A pipe screen (available at head shops) is the safest type of screen for a crack pipe. A small piece of household copper scrubbing pad can also be used. Burn the pad a bit first to mold it into the pipe. The copper scrubbing pad screen should be changed often to prevent it from hurting your mouth.
A new syringe should be used each time, as well as new cookers, cotton filters and water. If new syringes are not available from either a local syringe/needle exchange or pharmacy, syringes should be cleaned well with room-temperature water or bleach, flushing them at least three times.

Preparation should occur on a clean surface, such as an unread section of newspaper or magazine. The stimulant should be cooked at least 15 seconds to prevent infection. To protect veins, pure ascorbic acid should be used to dissolve crack for injection, rather than vinegar or lemon juice. Using lemon juice can cause serious eye problems. Crack can also be crushed between two spoons to turn it into a powder. Methamphetamine should be mixed with distilled or bottled water (tap water can be used, if that is all that is available).

For more information, download the safer injection guide complete with pictures from The Chicago Recovery Alliance at http://www.anypositivechange.org/bvcsi.html.
Slide 114: Infectious Disease Risk-Reduction Strategies: Having Sex While Using Stimulants

Use condoms. If you cannot use condoms, use plenty of water-based lube to reduce your risk. Apply a drop of lube inside the tip of the condom for better sensation. Use condoms and dental dams / plastic wrap for oral sex:

- If you have burns on your lips, cuts on your lips, or the roof of your mouth is irritated from smoking crack, avoid giving oral sex without a condom – flavored condoms are a nice option.
- If you do give oral sex without a condom, it is best for your partner not to come in your mouth. This will help you avoid HIV and other STIs.
Pre-exposure prophylaxis (or PrEP) is when people at very high risk for HIV take HIV medicines daily to lower their chances of getting infected. A combination of two HIV medicines (tenofovir and emtricitabine), sold under the name Truvada® (pronounced tru vá duh), is approved for daily use as PrEP to help prevent an HIV-negative person from getting HIV from a sexual or injection-drug-using partner who’s positive. Studies have shown that PrEP is highly effective for preventing HIV if it is used as prescribed. PrEP is much less effective when it is not taken consistently.

If PrEP is taken daily, the presence of the medicine in the person’s bloodstream can often stop HIV from taking hold and spreading in the body. If PrEP is not taken every day, there may not be enough medicine in the person’s bloodstream to block the virus.

PrEP can be prescribed only by a health care provider, so it is important for interested individuals to talk to their provider to see if PrEP is the right HIV prevention strategy. PrEP must be taken daily for it to work. Also, the person must take an HIV test before beginning PrEP to be sure they don’t already have HIV, and repeat testing should be done every 3 months.
Slide 115: PrEP/PEP

The cost of PrEP is covered by many health insurance plans, and a commercial medication insurance program provides free PrEP to people with limited income and no insurance to cover PrEP care.

PEP (post-exposure prophylaxis) means taking antiretroviral medicines (ART) after being potentially exposed to HIV to prevent becoming infected. PEP should be used only in emergency situations and must be started within 72 hours after a recent possible exposure to HIV. If a person thinks he/she has recently been exposed to HIV during sex or through sharing needles and works to prepare drugs or if he/she has been sexually assaulted, he/she should talk to a health care provider or an emergency room doctor about PEP right away.

More information is available at www.cdc.gov/hiv.
Concluding Thoughts

- While drug use trends are changing, cocaine and methamphetamine remain major drugs of abuse.
- Stimulant use remains high among some populations and in many geographic locations.
- Both cocaine and methamphetamine are shown to increase risk of HIV and other infectious disease transmission.

Fortunately, strategies exist to lessen the risk of becoming infected infectious diseases.

What Did You Learn?

The purpose of the following five post-test questions is to test the change in stimulant and HIV knowledge among training participants. The five questions are identical to the pre-test questions. Read each question and possible responses aloud, and give training participants adequate time to jot down each response before moving onto the next question. Reveal the answer before moving on to the next question.
Slide 118: Post-Test Question #1

Read the question and answer choices, and review audience responses out loud.

Correct Response is A (Methamphetamine)

**Audience Response System (ARS)-compatible slide**

Slide 119: Post-Test Question #2

Read the question and answer choices, and review audience responses out loud.

Correct Response is C (Blocking dopamine transporters)

**Audience Response System (ARS)-compatible slide**
Slide 120: Post-Test Question #3

Read the question and answer choices, and review audience responses out loud.

Correct Response is B (False)

Slide 121: Post-Test Question #4

Read the question and answer choices, and review audience responses out loud.

Correct Response is E (All except A)
Post-Test Question

5. FDA-approved medications are available to treat cocaine and methamphetamine use disorders.
   A. True
   B. False

Correct Response is B (False)

Audience Response System (ARS)-compatible slide

Take Home Points for Clinicians

• Know your local resources (substance use disorders treatment facilities, 12-step meetings, mental health resources, etc.).

• Remember stimulant use disorders are treatable and every clinic visit is an opportunity for intervention and prevention messages.

• Encourage patients and staff to discuss the challenges of stimulant use and remind them of the importance of continued HIV care.

Slide 123: Take Home Points for Clinicians

It is important to be familiar with local resources, including substance use disorders treatment facilities, 12-step meetings, and mental health resources. Stimulant use impacts the user’s brain and body, but can be treated. Continue to dialogue with patients about their stimulant use and the importance of using HIV risk reduction strategies.
Slide 124: Key Resources

This slide contains a variety of free resources available for viewing and downloading. The images include hyperlinks to the source material. The URLs are as follows:

- Cocaine Research Report Series - [https://d14rmgtrzwf5a.cloudfront.net/sites/default/files/1141-cocaine.pdf](https://d14rmgtrzwf5a.cloudfront.net/sites/default/files/1141-cocaine.pdf)
- Methamphetamine Research Report Series - [https://d14rmgtrzwf5a.cloudfront.net/sites/default/files/methrrs.pdf](https://d14rmgtrzwf5a.cloudfront.net/sites/default/files/methrrs.pdf)
This concludes the presentation. Thank the participants for their time and address any last-minute questions about the content. Encourage participants to reach out to the Pacific Southwest ATTC or the LA Region PAETC, should they have questions or concerns following the training session.

IMAGE CREDITS (Left to Right):
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