Substance Use Disorder Series

MODULE 1

Introduction to Substance Use Disorders

MARSHALL

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Disclosures

- Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation

Learning Objectives

1. Review the history of substance use disorder (SUD) and treatment

2. Discuss SUD as a disease

3. Compare and contrast tolerance, dependence, and addiction

4. Demonstrate ability to maintain a stigma-free environment when providing care to patients with substance use disorder

5. Discuss primary prevention of various SUDs

Review the history of substance use disorder (SUD) and treatment

Defining Substance Use Disorder

Substance use disorder (SUD) is defined by the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) as:

- "A **cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems**."
    - In order to reduce stigma and better explain the disease, SUD has replaced the term drug addiction for medical professionals

History of Substance Use

- Substances have been used to escape reality for as long as humans have recorded history:
    - Alcohol was fermented at least 10,000 years ago in the Fertile Crescent (the "cradle of civilization")
    - Central Asia has evidence of mushroom use (*Amanita muscaria)* for at least 4,000 years
    - Ritual opium use on Cyprus around 3,000 years ago
    - "The Eleusinian Mysteries" of the ancient Greeks utilized psychoactive substances (before 300 B.C.)
    - Native American, Central American, and many other cultures have used substances in religious practices and other purposes

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3202501/ Accessed 8-13-2019

Recreational Substance Use

- In America, nicotine, alcohol, and caffeine are all culturally accepted drugs used for their psychotropic alterations
    - Around 1900, coca tea was a top import
    - Coca-Cola originally contained cocaine
- Hashish (cannabis) has long been consumed in sections of the Islamic culture as well as others
- Some Vikings were known as "berserkers" because they were in a trance like state, likely from substance use
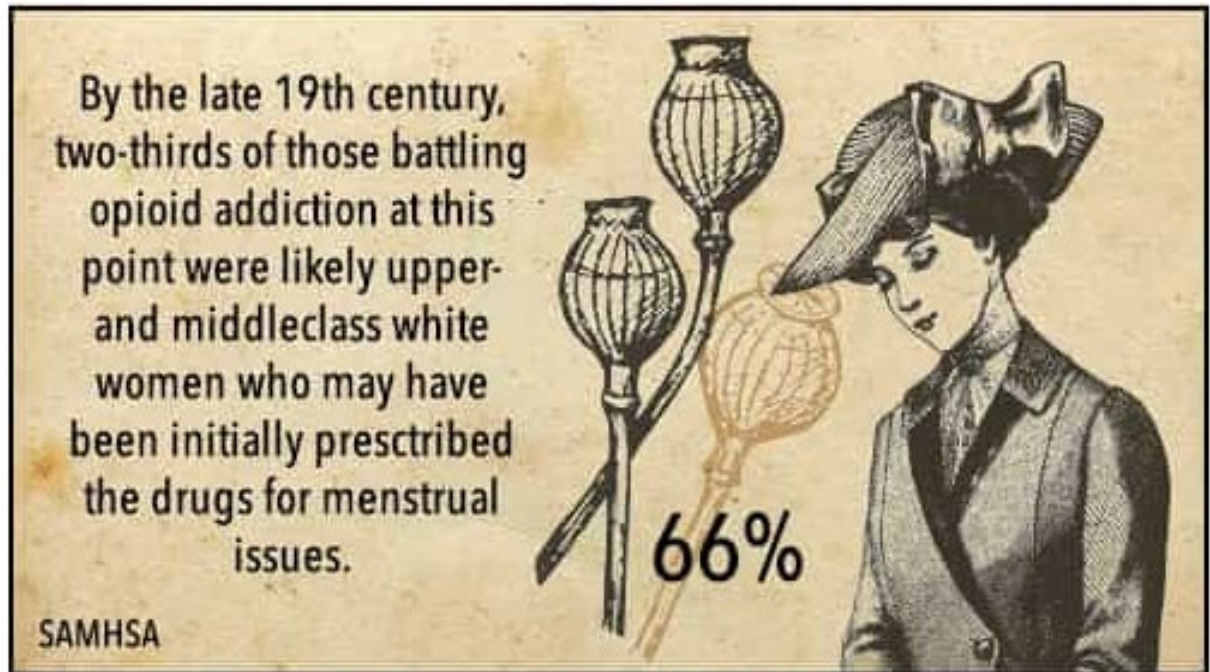
Opium

- Around 3,400 B.C., Sumerians cultivated the opium poppy and called it Hul Gil, the "joy plant"

- In the 1800s (1839-1842 and 1856-1860), Britain and China fought two separate wars over opium
  - Addiction to opium in China was so widespread, the Chinese government destroyed more than 20,000 chests of opium in transit to China to decrease the availability
    - This began the first opium war with Britain (who was supplying the opium)
  - In China, it is believed that the wars show a western conspiracy to destroy the country with drugs

https://www.britannica.com/topic/Opium-Wars and https://www.historytoday.com/archive/opium-wars Accessed 8-13-2019

The American Civil War

- By the 1860s, morphine, the primary pain reliever derived from opium, had been discovered and mass produced
    - It was a "miracle" to soldiers on the battlefield
    - Soldiers who returned home spoke highly of morphine's value in treatment
    - Many soldiers who were treated with morphine continued using after the war
- Morphine was available to the public
    - It was marketed as a cure for many thingswith no marketing restrictions
        - This helped fuel the first opioid epidemic in America

Morphine Use in the Public

- It was also being used for many other medical purposes including cough, pain, menses, and headaches

By the late 19th century, two-thirds of those battling opioid addiction at this point were likely upper- and middleclass white women who may have been initially presctribed the drugs for menstrual issues.

66%

SAMHSA

Views on SUD Evolve

- In 1641, Dr. Nicolaes Tulp, a Dutch physician, used theological models to illustrate the inability to control various behaviors

- He gave medical explanations to behavior that had previously been considered sinful

  - He attempted to remove subjectivity and stigma from the behaviors

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5486499/ and https://www.researchgate.net/figure/Tenebrism-The-Anatomy-Lesson-of-Dr-Nicolaes-Tulp-1632-Rembrandt-van-Rijn-Oil-on_fig5_28318931
Accessed on 8-13-2019

Views on SUD Evolve continued

- By the 1700s, Dr. Benjamin Rush wrote that loss of self-control described compulsive drinking and that the disease was mostly attributable to the drink itself, not the drinker

- In 1876, *The Journal of Inebriety* appeared in the United States

- In 1884, the *British Journal of Addiction* was first published

- By 1890, Dr. Emil Kraepelin showed that chronic alcoholism led to cognitive decline caused by cortical brain lesions

Accepted SUD Treatments – 1800s

- 1800s – Replacement therapy
  - Replaced opium or alcohol with cocaine, morphine, or other substances

- 1800s – Hydrotherapy
  - Used cold or hot water to "shock" victims
  - Used for "mental health," and/or alcohol treatment

- 1879 – The Keeley Cure
  - Injected gold, strychnine, and alcohol
    - Over 200 US clinics used this method by 1900
  - Popularized the ideas of group therapy and community support

https://deserthopetreatment.com/addiction-guide/substance-abuse/treatment-history/ Accessed 8-15-2019

Views on SUD Evolves ~1900

- Around 1897, Sigmund Freud began grouping all addictions and substance use disorders as different expressions of the same behaviors

- In the 1900s, these substances were classified, and the pathway of reward was mapped
  - All addictive medications act on the brain's reward system (dopamine) and cause the brain to interpret substance use as rewarding survival in the same way as sex and food do

Accepted SUD Treatments – Early 1900s

- Around 1900
  - Equisine - Horses build antibodies to alcohol, so horse blood was collected and attempted as a "vaccine" for alcoholism (not used long)
  - Light boxes and heat lamps were used as treatment, thought similar-to seasonal affective disorder.
- 1906 – Bromide-sleep therapy
  - Induce a coma, wake up "cured" (if wake up)
- 1907 – Marriage forbidden
  - Several states forbid marriage
  - Some sanitariums forced or offered sterilization
- 1909 – Hallucinations from nightshade plant (*Atropa belladonna*)

Accepted SUD Treatments – 1920s and 1930s

- 1927 – Insulin comas
  - Insulin was not marketed until in 1921

- 1930-1950 – Colorado State Penitentiary
  - Abdominal infections were drained and injected into their blood for treatment

- 1935 – Aversion therapy
  - Unpleasant aroma presented with alcohol

- 1935 – Replacement therapy in withdrawal
  - Morphine or codeine injections were given

Accepted SUD Treatments – 1940s and Onward

- 1940-1950 – Adrenal injections
    - Injected with an extract from the adrenal gland
- 1948-1952 – Frontal lobotomies
    - SUD behaviors were linked to the prefrontal cortex and it was believed that if it was removed, then behaviors would improve
- Mid 1950s – Electroshock therapy
- 1950-1960 – Hallucinations induced
    - LSD first used to treat alcoholism
- Mid 1960s – Methadone utilized for SUD
- 2002 – Buprenorphine approved for SUD

https://deserthopetreatment.com/addiction-guide/substance-abuse/treatment-history/ Accessed 8-15-2019
https://www.centerwatch.com/drug-information/fda-approved-drugs/drug/804/subutex-suboxone-buprenorphine-naloxone Addessed 8-15-2019

SUD Treatment Today

- The goal today is to treat all patients with compassion, kindness, and dignity
  - Patients with SUD have been stigmatized for a long time, and many are surprised by this treatment
  - Medication assisted treatment (MAT), cognitive behavioral therapy (CBT), other counseling, and withdrawal management are examples of accepted methods

- Significant focus on patients seeing themselves as part of the community in which they live and reconnecting to other individuals and society

Discuss SUD as a disease

Learning from History

With all this history and knowledge, how did another opioid crisis occur?

- Opioids were used sparingly for pain by providers who had seen the results of previous crises, but by the 1980s, few were left who remembered

- Advertising in the 1980s implied that opioids may be less addictive than believed

- By the 1990s, marketing shifted focus to treating patient pain
  - Pain became the 5th vital sign (JACHO 2001)

Opium in the 20ᵗʰ Century Definitions of Terms

- Over the years, opium has changed names
- Opiates are natural products derived from the opium poppy:
    - Codeine, morphine, and thebaine
- Every other product derived from opium on the market today is an opioid
    - Opioids are synthetic (man-made) drugs that work on the opioid receptor the same way opiates do to remove pain, produce euphoria, and predispose to SUD

Common Opium-Derived Medications

Brand	Generic
MS Contin®, Kadian®, Avinza®	Morphine
Tylenol II, III, and IV®	Codeine
Ultram®	Tramadol
Nucynta®	Tapentadol
Suboxone®, Subutex®, Sublocade®, Butrans®, Buprenex®	Buprenorphine
Norco®	Hydrocodone
Percocet®, Oxycontin®, Roxicodone®, Percodan®	Oxycodone
Dilaudid®	Hydromorphone
Opana®	Oxymorphone
Duragesic®, Actiq®	Fentanyl
Demerol®	Meperidine
Methadose®	Methadone

A Disease Without Question

- Disease: a disorder of structure or function in a human, animal, or plant, especially one that produces specific signs or symptoms or that affects a specific location and is not simply a direct result of physical injury

- Over the next few modules, we will explore the disorder of both function and structure that defines substance use disorder (SUD)

https://www.oxfordlearnersdictionaries.com/us/definition/american_english/disease accessed 8-15-2019

SUD (Addiction) as a Disease

- Patients who use substances for a length of time develop tolerance due to brain structure changes
- After this happens for long enough, patients can no longer become euphoric or get "high"
  - Patients use to feel "normal" and prevent withdrawal symptoms
    - Many patients use to prevent sickness
- The patient's thoughts and behavior (function) become severely altered compared to life before they began using the substance

SUD is a Disease

- Quote adapted from Jo Dee Gottlieb, MSW, LCSW
  - Department of Social Work at Marshall University

- "SUD is a brain disease, which like many other preventable diseases that start with unhealthy early life choices (some heart disease, high cholesterol, high blood pressure, and many more), has a strong genetic component and is both gradual and progressive. By the time it is SUD, it is NOT a choice."
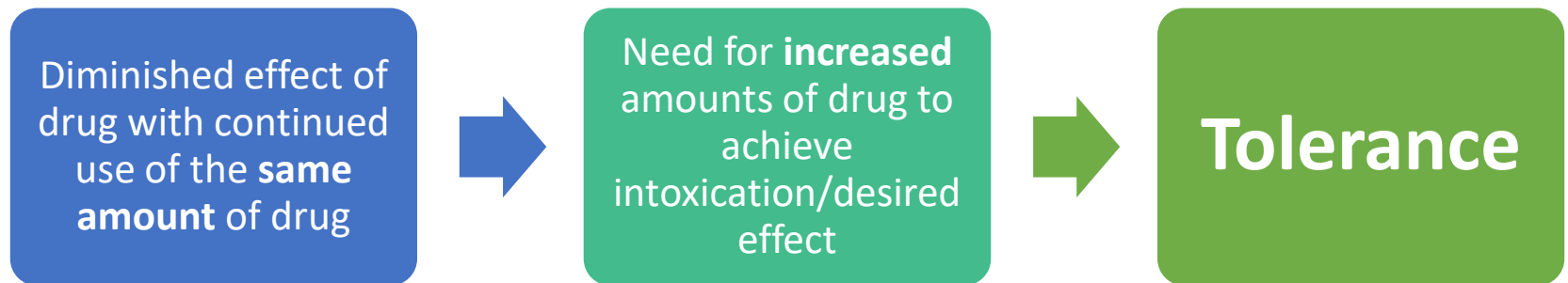
Compare and contrast tolerance, dependence, and addiction

Definitions

- **Tolerance**: requiring more drug or substance to achieve a certain effect

- **Dependence**: the body adapts to the drug's presence yielding drug-specific physical or mental symptoms with abrupt discontinuation of the drug

- **Addiction**: compulsive use of drugs despite harmful consequences

Tolerance Development Process

| Diminished effect of drug with continued use of the **same amount** of drug | → | Need for **increased** amounts of drug to achieve intoxication/desired effect | → | **Tolerance** |

How does tolerance develop?

Speed of drug metabolism increases

- Hepatic enzymes become more active

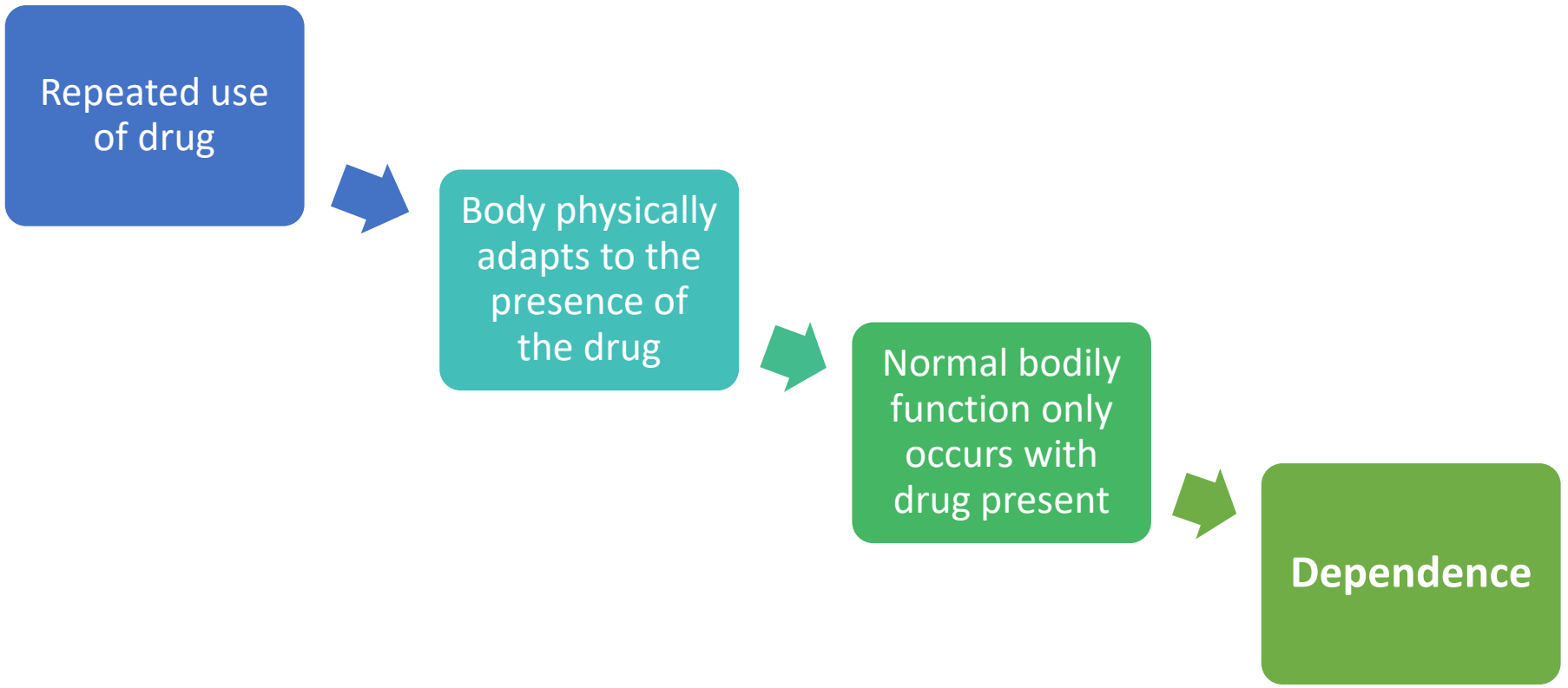**Changes in interaction between drug and cell receptors**

- Number of receptors decreases → less sites for drug binding
- Affinity between the receptor and drug decreases → less efficient binding

https://www.merckmanuals.com/home/drugs/factors-affecting-response-to-drugs/tolerance-and-resistance-to-drugs Accessed on 8-1-19

Tolerance versus Resistance

- Terms sometimes used interchangeably but meanings differ

- **Tolerance** denotes what happens in the body to yield a need for more drug

- **Resistance** denotes what happens to specific cells (e.g. cancer cells, bacteria, and viruses) to allow them to withstand the effects of drugs that are usually effective against those specific cells
  - Resistance is not typically used in medical discussions of substance use disorder

https://www.merckmanuals.com/home/drugs/factors-affecting-response-to-drugs/tolerance-and-resistance-to-drugs Accessed on 8-1-19

Dependence Development Process

Repeated use of drug

Body physically adapts to the presence of the drug

Normal bodily function only occurs with drug present

Dependence

https://www.drugabuse.gov/publications/teaching-packets/neurobiology-drug-addiction/section-iii-action-heroin-morphine/8-definition-dependence Accessed on 8-1-19

Tolerance, Dependence, and Management of Withdrawal

- Tolerance can affect the clinical indications for withdrawal treatment

- Higher doses of drugs utilized prior to withdrawal/detoxification may yield additional or more severe symptoms of withdrawal
  - Example: increased alcohol **tolerance** yields increased alcohol consumed (for effect)
    - → increased **dependence**
      - → increased withdrawal symptoms and medical risk during withdrawal (e.g. seizures)

Tolerance and Dependence in the Clinical Setting

- Tolerance can lead to dose escalation both in prescribed and non-prescribed drug consumption

- Dependence and tolerance can be difficult to distinguish because they may occur concomitantly

Example of Tolerance and Dependence

- Common, real-life example:
  - Caffeine consumption
- Routine, caffeinated coffee consumption leads to needing more coffee to net the same physical effects (tolerance)
- Abruptly stopping or missing routine coffee can yield a headache (symptom of withdrawal due to **dependence** of the blood vessels on the substance)
  - The body's adjustment to a substance = dependence

Expanding on Addiction

- Definition: compulsive use of drugs despite harmful consequences…
  - Caused by biochemical changes in the brain…
    - Leading to a marked change in behavior…
      - Leading to drug acquisition and use becoming first priority…
        - Regardless of poor effects for self and other people

Biochemical Changes in Addiction → Reward Circuit

- Humans are motivated by natural rewards
  - Food, water, sex, and nurturing
    - All necessary components for survival (biologically)

- In response to a reward, **dopamine** is released by neurons in the ventral tegmental area (VTA) of the brain
  - Dopamine is a neurotransmitter that will then activate the nucleus accumbens (NAc) and the prefrontal cortex

- In addiction, drugs overstimulate the reward circuit (overriding negative feedback)

Behavioral Changes in Addiction/Substance Use Disorder

- Secondary to changes in the brain chemistry and overstimulation of the reward circuit, the behavior of drug use becomes reinforced
  - Dopamine = reward → teaches the brain to seek drugs to get positive feedback (reward circuit activation)
- Behavior of drug use becomes compulsive
- Physical changes have been shown in areas of the brain used for judgement, behavioral control, and decision-making
  - Leading to altered behavior

Relationship of Terms

- Dependence is sometimes separated into "physical dependence" and "psychological dependence"
  - "Psychological dependence" is frequently used synonymously to "addiction"

- Tolerance ≠ addiction

- Tolerance and dependence do not necessarily yield addiction
  - Occurs with medications that are not drugs of abuse
  - Addiction only occurs when substance use continues **despite harmful consequences**

Status of the Term "Addiction"

- The use of the term "addiction" is decreasing in the medical community

- "Substance use disorder" is now most often used in scientific literature

- Substance use disorder replaced individual diagnoses of substance abuse and substance dependence in the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5)

- Use of "substance use disorder" instead of "addiction" may decrease **stigma**

Demonstrate ability to maintain a stigma-free environment when providing care to patients with substance use disorder

What is stigma?

- Dictionary definition:

 "a mark of shame or discredit"

- Negative attitudes and stereotypes towards people with substance use disorders

https://www.merriam-webster.com/dictionary/stigma Accessed on 8-1-19
https://www.ncbi.nlm.nih.gov/books/NBK384923/ Accessed on 8-1-19

Stigma and Substance Use Disorder

- Addiction has been recognized as a disease in the medical community since 1987
  - American Medical Association officially recognized

- Despite being recognized as an established diagnosis with criteria, substance use disorder is commonly stigmatized in both medical practice and society at large

https://www.ncsbn.org/Understanding_the_Disease_of_Addiction.pdf Accessed on 8-1-19

Morality and Substance Use Disorder

- Language describing substance use disorder commonly has implied morality
  - "Clean" versus "dirty" urine
  - "Lapsed/relapse"
    - Commonly heard outside of substance use terminology as "lapse in grace" or "lapse in judgement" → may imply moral failing
  - "Abuse/Misuse"
- Acknowledging that substance use disorder is a diagnosable and treatable illness can be accomplished without use of terms linked to morality

Impact of Stigma

- Substance use disorder has been noted to be subject to more social disapproval and discrimination than any other physical or psychiatric condition

- Stigma can affect integration into society, access to healthcare, housing, and employment

Terminology Can Perpetuate Stigma in the Healthcare Setting

- Use of stigmatizing language can create barriers to patients seeking treatment or feeling valued

- A 2010 study compared clinician attitudes toward "person having a substance use disorder" and "substance abusers"
  - Based on terminology for describing the patient alone, clinicians had statistically significant differences in perception of a patient scenario
  - Clinicians were more likely to see the "substance abuser" as personally responsible for their condition and deserving of punitive action

Stigmatizing Babies and Moms

- Even infants are stigmatized:
  - "Babies born addicted"
  - "Drug addicted babies"

- Choose words that do not stigmatize
  - "Born dependent"
  - Neonatal abstinence syndrome (NAS)

Do you feel differently when you read these?

Would you treat mom differently?

How does stigma affect a patient?

- External experiences
  - Rejection, discrimination, or stereotyping
  - "My doctor started dismissing my concerns after I disclosed my history of drug use."

- Internal experiences
  - Feelings of blame, inferiority, and shame
  - "Why I am not strong enough to quit using? I'm a failure. I'm so ashamed, and I don't deserve better."

- Anticipated experiences
  - Concerns about future stigmatization
  - "If she finds out that I use (or used) drugs, she won't listen to what I have to say or trust me."

Dehumanization

- By definition is a form of moral disengagement
  - Leads to accepting behaviors or beliefs which would otherwise immediately be recognized as unfair or unethical

- Redefines targets of prejudice by making them seem less human

- Reduces a person to a single identifier
  - "Junkie" or "addict"

- Solutions for dehumanization: empathy and respect

https://www.psychologytoday.com/us/blog/the-web-violence/201806/what-is-dehumanization-anyway Accessed on 8-1-19

https://www.drugpolicy.org/sites/default/files/DPA_Fact_Sheet_Stigma_and_People_Who_Use_Drugs.pdf Accessed on 8-1-19

Avoiding Stigmatization

- Use people-first language
  - "Person with substance use disorder" puts the patient/person first before the disease state
    - This is the language expected with other diseases, such as "person with asthma" (person-first) versus "asthmatic" (labels person as disease state) other examples include "person with diabetes" or "person with cancer"
    - The disease is only a small part of who the person is
  - Stylistic requirement for publication by the American Medical Association

https://www.amamanualofstyle.com/view/10.1093/jama/9780195176339.001.0001/med-9780195176339-div2-353?rskey=kO1Zqa&result=1 Accessed on 8-1-19

Societal Consequences of Stigmatization of Substance Use Disorder

- Under-diagnosed
  - Uncomfortable conversations between provider and patient are avoided
  - Patients fear judgement, so they don't disclose drug use
- Under-treated
  - Patients are concerned about seeking treatment
  - Treatment opportunities can be limited in some areas
- Under-funded
  - Historically, compared to other chronic health conditions
  - Lack of understanding of substance use disorders can decrease funding opportunities in public policy arenas

From the AMA Opioid Task Force Chair

"The key to recovery is support and compassion. Patients in pain and patients with a substance-use disorder need comprehensive treatment, not judgment."

-Patrice A. Harris, M.D.

https://www.ama-assn.org/delivering-care/opioids/4-factors-add-stigma-surrounding-opioid-use-disorder Accessed on 8-1-19

Dispelling Stigma in Treatment Strategies

- Medication-assisted treatment (MAT) therapy is commonly stigmatized

- Common stigmatizing statements:
  - Patient isn't truly "clean"
  - Patient is still "addicted"
  - Abstinence-only treatment philosophies

- However:
  - Substances used for treatment are "medications"
    - Distinction between prescribed therapy that may result in dependence versus non-prescribed, non-therapeutic drug use in substance use disorder
  - Evidence strongly indicates that MAT is a best practice

http://www.massmed.org/Continuing-Education-and-Events/Conference-Proceeding-Archive/Opioid-Use-Disorder-and-MAT-Treatment---John-Kelly/ Accessed on 8-1-19

Strategies to Reduce Stigma

- Provide education for patient, family, and public
  - Decrease misinformation and dispel negative myths
  - Can be part of cognitive behavioral therapy (reframing view of self)

- Improving mental health literacy
  - Understanding the nature of substance use disorder as a chronic disease

- Increased contact
  - Lack of contact between those with and without substance use disorder can lead to fear and discomfort
  - Opportunities for people with lived experience to share stories of challenges and success

Discuss primary prevention of substance use disorders

Levels of Prevention

Primary
- Intervening before health effects occur
  - Stratify risks (ACEs, trauma history, etc.)

Secondary
- Screening to identify diseases in the earliest stages

Tertiary
- Managing disease post-diagnosis to slow or stop progression

CDC. Prevention. https://www.cdc.gov/pictureofamerica/pdfs/picture_of_america_prevention.pdf Accessed on 8-1-19

Key Components of Prevention

Awareness and Education	**Research**	**Surveillance**
Hazard Evaluation	**Improvement of public health systems**	**Proactive behavior by individuals**

Of note, professional guidelines cross into all these areas...

CDC. Prevention. https://www.cdc.gov/pictureofamerica/pdfs/picture_of_america_prevention.pdf Accessed on 8-1-19

Prevention Program Approaches- Health Communication

Use of research-based strategies to shape materials

Understanding conventional wisdom, language, and priorities

Consideration of health literacy

Development of materials

Rural Health Promotion and Disease Prevention Toolkit. Updated 4/30/18.
https://www.ruralhealthinfo.org/toolkits/health-promotion/about-this-toolkit

Health Communication Strategies Can:

Increase risk perception

Reinforce positive behaviors

Influence social norms

Increase availability of support and needed services

Empower individuals

SUD Communication Examples

- Public Service Announcements

- Social Media Presence

- Brochures

Prevention Program Approaches-Health Education

Participation of the target population

Completion of community needs assessment

Planned learning activities

Programs with integrated, well planned curricula

Ensuring proficiency of staff

Rural Health Promotion and Disease Prevention Toolkit. Updated 4/30/18. https://www.ruralhealthinfo.org/toolkits/health-promotion/about-this-toolkit Accessed on 8-1-19

SUD Prevention Education Examples:

- Generation Rx (https://generationrx.org/)
- Discharge counseling using a planned curriculum on opioid agents

Prevention Program Approaches-Policy Systems and Environmental Change

Policy	Systems	Environmental
• Legislative advocacy • Regulatory oversight	• Change in the way problems are solved	• Changing the economic, social, or physical surroundings

SUD Policy/Environmental Examples:

- Controlled Substance Monitoring (https://www.csappwv.com/)

- Prescribing Guidelines (https://www.cdc.gov/drugoverdose/pdf/guidelines_at-a-glance-a.pdf)

Conclusion

- The history of SUD and treatment is riddled with mistakes

- SUD is a disease with physical changes, and it can be treated

- Tolerance, dependence, and addiction are sometimes used interchangeably but have significant differences

- A stigma-free environment is essential when working with patients with SUD

- Being aware of primary prevention strategies to prevent SUD can help connect patients and the public with resources

QUESTIONS?

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