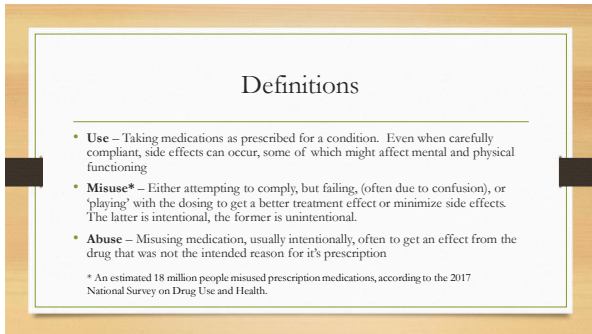
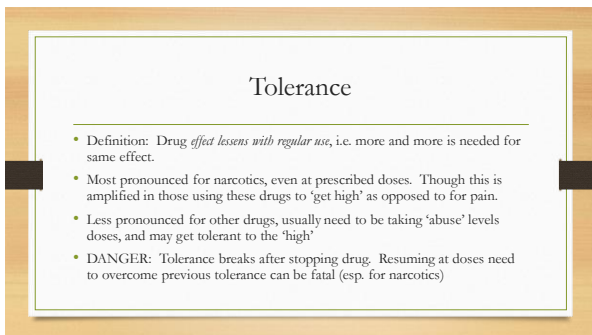


1



2



3

Addiction vs Physical Dependence

- Physical dependence: Brain changes occur over time (this is related to tolerance) to the point that normal function requires the drug
 - Abstinence syndrome occurs if drug stopped (less severe with gradual tapering)
 - This can occur with 'normal use' of narcotics and sedatives
- Addiction: This usually refers to physical dependence that occurs in the context of abuse.
- Psychological dependence refers to 'perceived need' for the drug that can occur without true physical dependence. However, both can occur together.

4

Abstinence Syndromes

- When the body/mind has become physically dependent on a substance, *changes have occurred in the physiology* with the drug 'substituting' for (and perhaps enhancing) some endogenous system
- When the substance is removed, there is now a physiological deficit in the system
- The result will be an abstinence syndrome that typically consists of symptoms that are *opposite* of the drug's effects

5

Abstinence Symptoms

- Narcotics cause sedation, constipation, constricted pupils, pain relief
 - So abstinence results in insomnia, diarrhea, nausea, dilated pupils, increased pain
- Sedatives cause sedation, reduced anxiety, reduced seizure risk, reduced pulse and BP
 - So abstinence can result in insomnia, increased anxiety, seizures increased BP and pulse
- Some abstinence syndromes are just uncomfortable, some are medically dangerous but *all lead to craving for the last drug effect*
- One complicating factor, is that it may be hard to separate an abstinence symptom from a return of the original symptom for which the drug was prescribed (e.g. anxiety)

6

DEA SCHEDULING

- SCHEDULE I : Illegal drugs, no defined medicinal use
 - Examples include heroin, cocaine, marijuana, hallucinogens
- SCHEDULE II : High abuse potential, no refills or telephone orders
 - Examples: amphetamines, methylphenidate, most narcotics/opioids, barbiturates
- SCHEDULE III : Moderate abuse potential, limited refills allowed
 - Examples: lower-dose narcotics such as Tylenol #3, some anabolic steroids, Suboxone, lorcetamine
- SCHEDULE IV : Limited abuse potential, refills allowed
 - Examples: benzodiazepines (Valium, Xanax, Ativan, etc.)
- SCHEDULE V : Minimal abuse potential,
 - Examples: preparations with minimal amounts of narcotics (e.g. some antidiarrheal & cough syrups)

7

Which medications are problematic?

- Any prescribed medication could have physical and/or mental side effects even when taken as prescribed, but the focus today will primarily be on *psychotropic* drugs which by definition affect the mind in some way.
- However, many non-psychiatric drugs can have cognitive effects (i.e. effects on the brain). This is related to its mechanism of action as well as to how easily the drug can cross the "blood-brain barrier".
 - E.g. some drugs that treat incontinence can cause significant impairments in cognition and memory, especially in older individuals. Medications for Parkinson's disease can lead to psychosis.

8

Types of Medication-Induced Impairments

- **Excess sedation** – sedative, narcotic and/or antihistamine effects.
- **Impaired focus and concentration** – sedation, anticholinergic effects. (Some drugs improve this -> stimulants for example).
- **Impaired memory** – anticholinergic drugs, benzodiazepines (Versed e.g.).
- **Impaired judgment** -> If any of the above are occurring, then judgment might be impaired. Alcohol, while not a prescribed drug, is a big offender.
- **Psychosis and/or paranoia** -> Overuse of stimulants (including caffeine) can do this.
- **Delirium** -> Severe brain dysfunction, usually a toxic effect of combined medications in susceptible individuals. This is a medical emergency. Sudden withdrawal from some meds can cause this as well.

9

Non-compliance can be a problem too...

- While the focus is on the use and misuse of medications, note that non-compliance with medications *designed to treat various mental disorders* can have serious consequences for the practicing professional and could be considered a type of "misuse"
- *Untreated depression* can lead to poor job performance, absenteeism, poor judgments, low energy and concentration, insomnia and even suicide
- *Untreated panic/anxiety* can lead to poor job performance, avoidance, poor concentration and focus
- *Untreated mania or psychosis* can lead to embarrassing, disinhibited behavior, inappropriate interactions with others (including judges), very poor judgement

10

Medication Classes

- Antidepressants (Prozac, Zoloft, Cymbalta, etc)
 - Anti-anxiety/ sedatives (Xanax, Valium, Ambien, etc)
 - Antipsychotics (Zyprexa, Haldol, Seroquel, Thorazine, etc)
 - Mood stabilizers (lithium, Depakote, Lamictal)
 - Stimulants (Ritalin, Concerta, Adderall)
 - Anticholinergics* (Cogentin, Artane)
 - Narcotics – (Percocet, Vicodin, OxyContin, etc)
- *many meds in most of these classes may have anticholinergic properties as can many non-psychotropic drugs

11

Antidepressants

- Examples – Prozac, Paxil, Lexapro, Zoloft, Cymbalta, Effexor, Tricyclics, Remeron
- **USE:** For depression, anxiety disorders, panic, PTSD, OCD. These drugs work slowly to 'nudge' the brain back to normal functioning
- Side effects vary by drug but functionally impairing ones include memory impairment, arrhythmias, sedation, orthostatic hypotension, nausea, sexual dysfunction. Can precipitate mania in susceptible individuals.
- *Misuse and abuse are not common.* The most frequent type of misuse is failing to understand that these drugs work by being continuously present and are of no help with PRN use.

OCD = Obsessive-Compulsive disorder; PTSD = Post-traumatic Stress Disorder

12

Anti-anxiety/Sedative Medications (examples include Xanax, Klonopin, Valium, Ativan)

- USE: Short-term control of anxiety, panic, PTSD. Can be used situationally in high stress/crisis situations or phobias (flying). Also some have anti-manic properties. Can be used to detox patients from alcohol.
- Side effects: Sedation, impaired memory, disinhibition, balance problems
- Misuse – People taking it upon themselves to decide the dosage they need. Also taking other sedating drugs at the same time such as alcohol or narcotics can be dangerous.
- Abuse – Common. Higher doses are similar to getting drunk on alcohol (another sedative) which is a feeling craved by some. People can become physically addicted and *sudden withdrawal can lead to seizures and death.*

13

Mood Stabilizers

(examples include lithium, Depakote, Tegretol, Lamictal)

- USE: For mood stabilization in bipolar disorder. These drugs can have anti-manic effects and can be used to augment antidepressants in depression.
- Lithium – Gold standard agent. Blood levels are followed. Interactions with certain meds can raise levels. Kidney function can be affected. High blood levels lead to *toxicity* which looks like being drunk and can lead to death. However the drug has anti-suicide properties as well.
- Depakote and Tegretol are anti-seizure drugs which are monitored by blood levels as well. Side effects may include sedation, tremor, hair loss, nausea, ataxia.
- Misuse is fairly common but abuse is uncommon.

14

Antipsychotics

(examples: Haldol, Zyprexa, Seroquel, Abilify, Thorazine, Risperdal)

- USE: These drugs are primarily used for psychotic disorders (schizophrenia, psychotic depression, delirium) or mania. Some are used as antidepressant augmenters (Abilify e.g.). They are also anti-agitation agents.
- Side effects: Many are anticholinergic -> dry mouth, constipation, memory impairment. Sedation is common with some. Weight gain with push toward diabetes, lipid dyscontrol with long-term use. Orthostasis. EPS -> tremor, restlessness, etc.
- Misuse and non-compliance -> common. Abuse: uncommon (though Seroquel – quetiapine- has some street value).

15

Narcotics

(Morphine, Oxycontin, Percocet, Vicodin, Fentanyl, etc.)

- USE: Pain control but *tolerance* is problematic (i.e. need more and more for effect). Highly addictive (note physical dependence vs addiction)
- Side Effects: Sedation, constipation, nausea. Illicit IV use: Hepatitis B & C, HIV
- Misuse/ Abuse common – these drugs are frequently abused to get "high". However in many chronic users the need for the drug is not so much to get high but to avoid withdrawal symptoms. Withdrawal symptoms are usually the opposite of treatment effects.
- *Overdose danger is exacerbated greatly by tolerance* -> when resuming the medication after a break, the dose must be reduced dramatically.
- FDA is clamping down on prescription amounts to address 'epidemic'. This may lead to more illicit use of drugs such as heroin. There are some very dangerous, very potent forms of fentanyl available illicitly.

16

The Opiate Epidemic

- JCAHO: In 2001, the Joint Commission rolled out its Pain Management Standards, which included pain as a "fifth vital sign." It required healthcare providers to ask every patient about their pain, given the perception at the time was that pain was undertreated.
- CMS: Patient satisfaction with pain management used (in part) to affect reimbursement rates for hospitals
- Pharmaceutical companies downplayed the risks of addiction
- DEA: Continued to approve more powerful narcotics during these years

17

The current epidemic by the numbers...

- 130 people die every day in the U.S. of opiate overdoses
- 17000 people died of this in 2017 (a 30% increase from 2016)
- About a quarter of patients prescribed opioids for chronic pain misuse them

18

Secondary consequences

- Rise in neonatal abstinence syndromes (due to mother's addiction)
- Increased incidence of Hep B & C and HIV infections
- \$78.5 billion economic burden (lost productivity, increased health care needs, treatment costs, criminal justice system)

19

Unintended consequences (of responses to the epidemic)

- Doctors fear litigation due to governmental regulations, DEA warnings or loss of privileges due to overzealous enforcement of new 'standards'
- Patients with legitimate needs may have a harder time getting narcotics
- Patients (who have been stable for years) are taken off these drugs -> some turn to illicit sources (such as heroin)
- Illicit sources are of unpredictable potency, also if tolerance is broken, previous doses may be fatal

20

Stimulants

(Examples: Ritalin, Adderall, Concerta)

- USE: ADD/ADHD, antidepressant augmentation, apathy treatment in dementia
- Side effects: Anxiety, insomnia, loss of appetite, increased pulse and pressure. Psychosis/mania with heavy abuse.
- Misuse/abuse: Common. These drugs (along with illicit drugs like cocaine) are often abused. FDA Schedule II due to high abuse potential. Heavy use may lead to manic-like behavior/psychosis. Sudden cessation after long use may lead to severe depression.

21

What constitutes misuse of stimulants?

- In ADD/ADHD-> These drugs stimulate 'attention-centers' -> performance in school is enhanced, impulse behavior can improve
- But that happens to everybody that takes these medications...
- Where is the line between 'normality' and 'illness'?
- Students -> Increase performance potentially – is this a bad thing?
- This is controversial...
- However -> Everyone agrees that just "getting high" on these drugs would be abuse

22

Anticholinergics

(many antipsychotics, antidepressants, incontinence meds* and some anti-Parkinson's meds)

- Use: Primarily to control incontinence or treat Parkinson's symptoms (especially those caused by antipsychotics). Some used for IBS and motion-sickness**.
- Side effect vs treatment effect: dry mouth, constipation, rapid heart beat, urinary retention, **memory impairment**. Toxicity can lead to **Delirium**.
- Misuse – intentional misuse uncommon. Abuse- rare.
- These drugs **work exactly the opposite** (to block the neurotransmitter acetylcholine) of **anti-dementia drugs**, like Aricept, which increase acetylcholine in the brain).

*Ditropan and Detrol for example **scopolamine patch

23

Drug Interactions (polypharmacy)

- Prescription Drugs can interact with each other to enhance or diminish treatment effects, enhance side effects or both. Can see additive and potentiating effects.
 - For example antihistamines can potentiate some sedatives, sedating meds can add together. Anticholinergics can block the treatment effect of some Alzheimer's drugs.
- Over-the-counter meds/supplements can interact with prescription drugs
 - OTC antihistamines such as diphenhydramine(Bendryl) can add to antihistaminic effects of drugs like mirtazapine(Remeron) and Thorazine. Decongestants can enhance stimulant actions.
- Psychoactive substances (legal and otherwise) can interact with prescribed meds
 - For example Alcohol is a sedative and enhances sedating effects of narcotics, antidepressants and other sedatives such as benzodiazepines

24

Summary

- Not using prescribed drugs for a psychiatric condition can lead to significant functional impairment as can the side effects of some of these drugs, so it is a balancing act. **Most of the time, the use of a medication as prescribed will not lead to significant functional impairments except in more vulnerable populations.** Untreated conditions are more likely to lead to impairment.
- Non-compliance and misuse of prescription drugs is **common in all populations**, even educated ones
- Abuse is usually related to sought after effects different than what originally prescribed for.
- Tolerance to some addictive meds can lead to unintentional overdoses.
- Polypharmacy is common (especially in older individuals) and can lead to unpredictable treatment effects and side effects.
