I. Introduction

Extent of the problem:

    Drugs are used (recreationally and abused) by many people in the USA

    And this pattern is an old one…common to all societies, cultures

    2002 survey (of Ss 12 years and older): 8.3% were current users of 1 or
        more illicit drug (55% MJ only, 20% MJ + 1 or more other drugs,
        and 25% 1 or more others drugs, but not MJ)

        30% used tobacco

        51% used ethanol (ETOH), 7% "heavy users" of ETOH ("5+ drinks at
            a time, 5+ days per month)

    peak of illicit drug use is in Ss 16-25 years of age (20-23% of Ss), with
        slow declines after that (8% from 30-50yrs, <5% after 50 years)

Historical Context of Drug Use:

    All human societies have used drugs recreationally, humans seem to like
        alter their perceptions, moods, consciousness in this way….

    Primitive humans could have easily observed intoxicated animals and
        the plants they were eating to become intoxicated…and followed their
        example

    A fairly consistent pattern:

        Plant/drug first used in religious ceremonies

        Then used for healing/medicinal purposes

        Then used recreationally

        Once recreational use becomes widespread & social order/roles/
            productivity are threatened, "government" attempts to control use
            of the drug, often through controlling access to substance (make
            them illegal to possess for the general public)

        When this control attempt fails, then through taxation & punishments

    Note: these attempts at control probably worked fairly well in small,
        isolated societies that had small numbers of intoxicating substances to
        deal with…
        These methods do not work well with a global "village" and relatively
        easy access to many, many substances

I. **Introduction** (cont.)

Important dates:

1858 development of the hypodermic syringe (Scottish physician)

1906 Pure Food & Drug Act (regulated labeling of patent medicines & established the FDA)

1914 Harrison Act passed (regulated dispensing & use of opiod drugs and cocaine)

1920 18th Constitutional Amendment (Prohibition) (banned alcohol except for medicinal use) (repealed in 1933)

1937 Marijuana Tax Act (banned nonmedical use of MJ) (overturned by US Supreme Court in 1969)

1970 Controlled Substances Act (established a schedule of controlled substances & created the DEA)

II. **Features of Drug Abuse & Dependence**

1. Drug addiction is a chronic, relapsing behavioral disorder

   Earlier views of drug abuse/addiction put emphasis on physical dependence on the drug & importance of aversive withdrawal Sxs in preventing the addict from stopping drug use

   More recent views put emphasis on drug "cravings" and the compulsive nature of repeated drug use

   And that drug addiction is a chronic behavioral disorder in which relapses are the norm, not the exception (chronic periods of remission & relapses)

   See DSM-IV definitions of Substance Abuse & Substance Dependence

2. Two patterns of progression in drug use

   Early "experimentation" with drugs, usually starting with the "legal" drugs (tobacco and alcohol and caffeine), & later on, MJ

   Small #s also try cocaine, heroine, Rx drugs (e.g. Valium, Ritalin)

   Often seen in preteens and teens

   May stay at this occasional use level or stop use completely (Fig.8.4)

   Or may progress on to increased use, to the point of harm to self

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    2. <u>Two Patterns</u> (cont.)
      Why does one pattern occur vs. the other? Why does dependence
        occur in some and not others?
        Why do some teen/20s drug users <u>"mature out"</u> of drug abuse and
        others go on to a life long pattern of relapsing dependence?

      Lack of one, clear pattern of drug use into abuse (see Figure 8.5 and
        Box 8.1)
      Many answers…involving many factors…

    3. <u>How "addictive" is the Drug Used?</u>
      Refer to Table 8.4
        (1) heroin, (2) cocaine or alcohol, (3) alcohol or cocaine, (4) nicotine,
        (5) caffeine, & (6) marijuana

      Refer to Table 8.3 (Schedule of Controlled Substances)
        Why are alcohol and tobacco not listed?.......

      Role of <u>route of administration</u>

III. **Models of Drug Abuse & Dependence**
    1. <u>Physical dependence</u> model (emphasis on <u>withdrawal Sxs</u>)
      (see Fig. 8.6)
      "abstinence syndrome"
      Role of classical conditioning (see Fig. 8.7)
      PET scan data of CNS
      Critiques of this model

    2. <u>Positive reinforcement</u> model (emphasis on <u>reward/reinforcing drug effect</u>)
      (see Fig. 8.10)
      Animal data, progressive ratio (start CR, switch to FR, increase FR till
      animal stops responding = "breaking point")
      Higher doses of drug extend FR before animal stops responding
      The "hijacking" of the CNS's natural reinforcement centers
      Critiques of this model

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3. Incentive-Sensitization & Opponent-Process Models
    I-S model: makes a distinction between drug liking (the "high) and
        drug wanting/needing (the craving)
        Changes in "liking" vs. "wanting/needing" with repeated drug use
        Different brain areas control the two processes:
            Mesolimbic DA system – controls wanting/needing, is sensitized
                Involves "incentive salience"
            (Other limbic or even cortical areas may interpret drug "liking")

    O-P model: a model of mood/emotions in general (now applied to drug
        abuse)
        Hypothesizes that all stimuli that evoke either a strong positive or
            negative affect will automatically also evoke the opposing affect
            later on
        The initial affect (e.g. joy) is tied to the stimulus and occurs only when
            the stimulus is present; the opponent affect (e.g. sorrow) occurs
            later on, after the stimulus is gone, and is less intense
        Repeated exposure to the stimulus will not change the initial affect, but
            will change the opponent affect (will make it occur faster, last
            longer and be more intense)
        So…applying this to taking drugs…

    Critique of the models

4. Disease model (treats addiction as a medical disorder)
    Most widely accepted model
    Two different aspects: Susceptibility model (leading to loss of control)
        (see Fig. 8.15) and Exposure model (drug exposure ✍ brain changes ✍
        loss of control
        Emphasis on role of genetics (perhaps by altering CNS) and acquired
        brain changes 2nd to use of drug (addiction is a brain disease)

    Note: these 2 submodels have different implications on whether or not the S
        must abstain completely from any drug use
    Critique of the model

5. Toward a Comprehensive Model of Drug Abuse & Dependence
    (Table 8.5) a biopsychosocial model
    Most ("all") addicts starting using drug(s) early (pre-teen, teen years)
        The factors that supported this behavior may be different from the factors
           that support drug use later on in life (e.g. peer influence, lack of
           awareness of consequences, even inability to evaluate consequences)
    Later repeated drug use does alter the CNS of user
    The social environment of user is bound to change as gets older and as uses
        drug repeatedly (which means that other factors not present at initial drug
        experimentation are now impacting the drug use) (see Fig. 8.17)

    What are the "reinforcing" effects of the drug use?
    What are the "discriminative subjective effects" of drug use?
    What are the consequences of being exposed to drug-conditioned stimuli?
        "primers" to drug seeking/use
   Note: importance of self-administered vs. other-administered drugs
   What are the "risk factors" for drug use?
        Incl. comorbidities, personality-related factors, familial & sociocultural
        factors
   What are "protective factors"? (absence of X, presence of Y)