Neuroscience

CNS: Brain + Spinal Cord
- SC
  a. Conduit b/ PNS & brain
    i. Ascending tract – info up to brain
    ii. Descending tract – info down to muscles
  b. Org some behav w/o brain
    i. Reflexes
    
- Brain
  a. Hindbrain
    i. Medulla – breathing, BP, circulation
    ii. Pons – sleep and arousal
      1. Connects brainstem and cerebellum
    iii. Cerebellum – voluntary mov’t, balance
  b. Forebrain
    i. Thalamus – relay sensory info; maintain consciousness
    ii. Limbic system
      1. Hippocampus
        ❖ Acquire explicit memory
        ❖ Related to trauma and PTSD
      2. Amygdala
        ❖ Emotion
        ❖ Stimulate – aggressive
        ❖ Lesion – fearless, less aggressive, can’t read emotions well
        ❖ Related to fear
    3. Hypothalamus
        ❖ Reg hormone
        ❖ Reg motivated behav/basic needs
        ❖ Maintain homeostasis
        ❖ Controls appetite and aggression
  c. Cerebrum
    i. Grey matter = cell bodies
    ii. White matter = axons
      1. Distrib action potential
      2. Communication b/w brain regions
    iii. Corpus callosum – connects hemispheres
    iv. Cerebral cortex – 4 lobes
      1. Frontal – thinking
        a. Related to depression and schizo
      2. Parietal – tactile
      3. Occipital – visual
      4. Temporal – sound & memory

PNS
- Somatic Nervous System – reg action of skeletal muscles
  a. Afferent nerve fibers – AWAY from periphery → CNS
  b. Efferent NF - CNS → periphery
- Autonomic NS– self reg, ctr glands & muscles of organs
  a. Sympathetic – Fight or flight
    i. Mobilizes body
    ii. Related to panic
  b. Parasympathetic – resting and digesting
    i. Generally conserves body resources
Professions

Clinical Psychologist
- Ph.D./Psy.D.
- Internship in psychiatric hospital/mental health center

Counseling Psychologist
- Ph.D. in psych
- Internship in marital/student counseling setting

School Psychologist
- Doctoral training in child clinical psych

Psychiatrist
- M.D.; residency in psychiatric hospital/mental health center

Psychoanalyst
- M.D. / Ph.D.
- Intensive training in psychoanalysis

Psychiatric Social Worker
- M.S.W. / Ph.D.
- Specialized training in mental health settings

Psychiatric Nurse
- R.N. certificate
- Training in care and treatment of psychiatric clients

Occupational Therapist
- B.S. in occupational therapy
- Internship w/ physically/psychologically handicapped

Pastoral Counselor
- Ministerial bg
- Trainin in psychology

Community Mental health Worker
- Work under professional direction
- Usually involved in crisis intervention

Alcohol or Drug-Abuse Counselor
- Trained in eval and management of alc/drug-abuse problems
a. Surgery → LAPBAND → Pharmacotherapy → Lifestyle modifications
b. Moderately effective
c. Commercial weight loss helpful-ish
d. Personally directed behavior modification programs most successful
e. Behavioral treatment
   i. Lifestyle mods

f. Dangerously obese
   i. Bariatric surgery
   ii. Balloon devices
   iii. Drug treatment
g. More successful in young

### Sleep Wake Disorders

Dyssomnias – disorders where people have trouble falling asleep, getting enough sleep, quality of sleep
Polysomnographic (PSG) evaluation
- Measures respiration, leg mop’t, brain activity, muscle mop’t, eye mop’ts, daytime activities considered

General Treatments
- Good sleep habits
- Log of sleep behaviors to track good and troubled sleep

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Description</th>
<th>Criteria</th>
<th>Etiology</th>
<th>Epidemiology</th>
<th>Treatment</th>
</tr>
</thead>
</table>
| **Insomnia**              | Total insomnia = fatal Trouble with 
   a. Falling asleep 
   b. Staying asleep 
   c. Feeling refreshed after sleep | Complaint of sleep quality/quantity Sleep disturbance causes distress 3 nights a wk for 3 mths | Pain/discomfort Physical inactivity Respiratory prob Can’t lower body temp Sleep disorders Stress | 33% experience Associated w/ depression, anxiety Wm report 2x as much | Drugs |
|                           |                               |                                                      |                            |                           | a. Short acting b. Meant for short term c. Often abused |
| **Hypersomnolence disorder** | Excessive sleepiness despite after sleeping well night | Recurrent sleepiness 9+ hours tht aren’t refreshing 3x per week for 3 mths |                            |                           | Drugs |
|                           |                               |                                                      |                            |                           | a. Stimulants b. Treat cataplexy w/ SSRI (SSRI reduce REM Sleep) |
Mood Disorders & Suicide

- Mood: long, stable affective state, series of characteristic emotions
- Mood disorder: extremely high/low moods
- 14-42% of nursing home residents = depressed
- Unipolar disorders
  a. Diagnoses w/ depressive episodes
  b. MDD
  c. Persistent Depressive Disorder
  d. Premenstrual dysphoric disorder
  e. Disruptive mood dysregulation disorder
  f. Mania can happen but rare
- Bipolar disorders
  a. Depressive & manic episodes
  b. Bipolar I
  c. Bipolar II
  d. Cyclothymia

Premenstrual Dysphoric Disorder
- 2-5% Wm from severe emotional reactions
- Prozac → Sarafem

Disruptive Mood Dysregulation Disorder
- No elevated mood
- Diagnoses to capture children with
  a. Chronic/severe irritability
  b. Difficulty regulating emotions
  c. Frequent tantrums
  d. Risk for anxiety/depressive dx
- Criteria
  a. Temper outbursts 3x or more per week for 1 year
  b. Mood b/w outburst = irritable

Major Depressive Disorder (MDD)
- 5 of DSM criteria for 2+ weeks
  a. Depressed mood
  b. Anhedonia
  c. Diff in weight
  d. Insomnia/hypersomnia
  e. Fatigue
- Presence of 1 + Major depressive episode, lack manic episode prior

Epidemiology
- 16.6% lifetime prev
- Onset – 30
- Avg episods – 4-9
- Median duration- 4-5 mnnths
- Onset before 21 – more chronic, worse prognosis
- Potentially fatal from suicide
- Gender diff
  a. Wm during childhood
  - Comorbid w/ dimentia

Persistent Depressive Disorder (PDD)
- Depressed mood for 2 + years
- 2 + depressive symptoms
- More severe than MDD b/c
  a. More chronic
  b. More comorbid
  c. Less responsive to treatment
  d. Slower to respond to treatment

Double Depression