SLEEP

1. Normal Sleep Stages

   Wake: alert          beta EEG            18 – 30 cps, low ampl., desynch.
   drowsy                alpha EEG           8 – 12 cps, med.ampl., synchron.
   Sleep – Stage 1 NREM theta EEG            6 – 8 cps, med.ampl., synchron.
   Sleep – Stage 2 NREM theta + sleep spindles & K-complexes
   Sleep – Stage 3 NREM delta EEG            0.5 – 2 cps, high ampl., synchron.
   Sleep – Stage 4 NREM delta EEG            50% + of record is delta
   Sleep – Stage REM   beta EEG + “sawtooth” waves

2. Age Related Changes in sleep stages & total sleep time
   infant vs. young adult vs. elderly person

3. Brain Mechanisms involved in regulating sleep
   wake/arousal – reticular activating system
     areas of basal forebrain & anterior hypothalamus
     may be using ACh predominantly, also orexin/hypocretin
   sleep – locus coeruleus (uses NE) & other areas in pontine brainstem
   NREM          raphe nucleus (uses 5HT)

   sleep (REM) – also pontine brainstem area, including locus coeruleus, but
     using ACh predominantly, and maybe GABA

   note: anti-depressant medications are usually NE/5HT agonists and ACH
     antagonists; these drugs often increase NREM sleep and decrease REM

   note: other drugs that affect sleep
     caffeine – is an adenosine antagonist (adenosine makes one sleepy)
     Benadryl – is a histamine antagonist (histamine makes one alert)
     alcohol – is a GABA agonist (which is associated with sedation, but ETOH
       may help one get to sleep but then produces disrupted sleep later in night)
     nicotine – is a stimulant, can disrupt sleep esp. if S is very dependent