Fatigue and Duty Hours
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Behavioral Effects of Fatigue

- Alertness becomes unstable and lapses of attention occur
- Cognitive slowing occurs and time pressure increases errors
- Working memory declines
- Tasks begin well but deteriorate with complexity and stress
- Preservation of ineffective solutions
Behavioral Effects of Fatigue, cont.

- Neglect of activities considered nonessential
- Involuntary micro-sleep attacks occur
- Increased efforts to remain behaviorally effective
- Risk of critical errors, accidents or crashes increases
- Cognitive deficiencies can be masked by stimulation
Sleep Needed vs Sleep Obtained

- **Myth:** “I’m one of those people who only need 5 hours of sleep, so none of this applies to me.”

- **Fact:** Individuals may vary somewhat in their tolerance to the effect of sleep loss, but are not able to accurately judge themselves.

- **Fact:** Human beings need 8 hours of sleep to perform at an optimal level.

- **Fact:** Getting less than 8 hours of sleep starts to create a “sleep debt” which must be paid off.
Adaptation to Sleep Loss

- **Myth:** “I’ve learned not to need as much sleep during my residency.
- **Fact:** Sleep needs are genetically determined and cannot be changed.
- **Fact:** Human beings do not “adapt” to getting less sleep than they need.
- **Fact:** Although performance of tasks may improve somewhat with effort, optimal performance and consistency of performance do not!
Risk to Health Care Providers

Studies suggest fatigue causes clinical impairment:

- **Surgery:**
  - Degraded hand-eye coordination in surgeons performing laparoscopy; degraded visual memory in interns
  - 20% more errors and 14% more time required to perform simulated laparoscopy post-call

- **Clinical Pathology:**
  - Most studies preformed in lab settings suffered from methodological flaws

Taffinder, et al. 1998; Grantcharov et al., 2001; Gaba 2002; Rollinson 2003; Asken 1983; Samkoff 1991; Leung 1992; Owens 2001; Weinger 2002,
More studies suggesting fatigue causes clinical impairment:

- **Internal Medicine:**
  - Efficiency and accuracy of ECG interpretation impaired in sleep-deprived interns. Lingenfelser et al., 1994

- **Pediatrics:**
  - Time required to place an inter-arterial line increased significantly in sleep-deprived. Storer et al., 1989

- **Anesthesia:**
  - The baseline daytime sleepiness level of participating anesthesiology residents approached the levels seen in patients with narcolepsy or sleep apnea, with post-call levels exceeding this level. Howard S, et al., 2002
Risks to Residents

- Residents are at a >50% risk of sustaining a blood borne pathogen exposure during night work compared with day work.
- Fatigue has been associated with increased risk for post shift automobile accidents in residents.
- Female residents have increase incidence of pregnancy induced hypertension, pre-term labor, and small-for-gestational-age infants.

Bottom Line

- You need to be alert to take the best possible care of your patients and yourself
Recognize the Warning Signs of Sleepiness

- Falling asleep in conferences or on rounds
- Feeling restless and irritable with staff, colleagues, family, and friends
- Having to check your work repeatedly
- Having difficulty focusing on the care of your patients
- Feeling like you really just don’t care
If you are fatigued – what can you do immediately

- First, take a nap for at least one hour or as long as possible
- Take a shower after the nap
- Get some caffeine on board
- Call a colleague to:
  - Help you
  - Check you while operating or doing procedures
  - Expedite results and help with judgment
Background of ACGME Efforts for Duty Hours

- Increased concern for patient safety
- Increasing intensity of the clinical environment
- Impact of resident hours on patient care quality, learning and resident well being
- Increasing public concern and pressure
- Increasing legislative and political regulatory activity
Duty Hour Standards

Some variations in specialized requirements – may not exceed these standards:

- An 80 hr weekly limit averaged over 4 weeks
- A rest period of 10 hrs between duty periods
- A 24 hr limit on continuous duty with up to 6 added hrs for continuity of care or education
- One day in 7 free of duty or educational obligation
- In-house call no more than every 3 nights averaged over 4 weeks
The Following Count Toward 80 hr Maximum

- Direct patient care
- Attendance at required didactic lecture or conference, teaching rounds or evaluation session
- Time in hospital called in from home call
- Time spent in In Service or Clinical exams
- Charting or chart dictating
- Moonlighting in a S&W facility or program
The Following Do Not Count Toward 80 hr Maximum

- Time traveling to and from work
- Time studying for exams
- Home call
- Attendance at non-required conferences
- Independent study/research time
- Teaching Board review to residents or students
- Meals or annual Hospital compliance training
Home Call

- At home call is not subject to every 3rd night limitation
- It is required that at least 1 day in 7 be free of all educational and clinical activities
- When called in, one hour spent in the hospital counts toward the 80 hour limit.
- Demands of home call must be monitored by the program director.
Greatest Compliance Challenges

- Getting all residents to actively record work hours in a timely fashion
- Acceptance of the rules by faculty and program directors
- Changing resident culture to accept going home instead of staying for another case
- Coordinating time for continuity clinic into duty hour limitations
- Helping program directors complete innovative duty schedules for coverage
Residency Duty Hour Survey

- Averaged over 4 wks have your hours exceeded 80 hrs/week?
- Averaged over 4 wks have you been denied one full 24 hr out of 7 days free of clinic or educational duties?
- Averaged over 4 wks have you been assigned call in House more often than every third night?
- Averaged over 4 wks have you been scheduled to work with less than 10 hrs between duty periods?
- During the last month, have you been scheduled to work more than 24 hours continuous (with 6 hrs for education or continuity of care?)
- Have you moonlighted over the last 4 weeks?
The End

to take the post test proceed to the next slide
Behavior effects of fatigue include all of the following except:

1. Alertness becomes unstable and lapses of attention occur
2. Cognitive slowing occurs and time pressure increases errors
3. Working memory remains unchanged
4. Tasks deteriorate with complexity and stress
Post test question two

Which of the following is incorrect:

1. Sleep needs are genetically determined.
2. Human beings need 8 hours of sleep to perform at an optimal level.
3. Individuals are able to accurately judge their tolerance to the effect of sleep loss.
4. Getting less than 8 hours of sleep creates a “sleep debt”
Post test question three

Which of the following reflect ACGME standards:

1. An 80 hr weekly limit averaged over 5 weeks
2. A rest period of 12 hrs between duty periods
3. A 24 hr limit on continuous duty with up to 8 added hrs for continuity of care or education
4. One day in 7 free of duty or educational obligation
Return Post Test

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