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Fatigue and Shiftwork: Consecutive Midnight Shifts

Why is it so hard to work midnight shifts ("Mids")?

In a 24/7 operation, mids are unavoidable. It is what it is. The challenge is that you have to be alert when your circadian clock (internal body clock) is programmed to sleep. To prepare for a mid, you need to sleep in the daytime when your body clock is on alarm (resisting sleep). Working mids disrupts your sleep pattern which may lead to an increase in sleep debt (accumulation of getting less sleep than you need). Performance and alertness levels decrease with each passing day of shortened sleep. But what about consecutive mids?

Are consecutive mids more fatiguing than working a single mid?

Yes, because the more mids in a row, the larger the sleep debt, and the tougher the recovery. With one mid, sleep debt is acute and recovery (making up sleep by sleeping more on days off) is possible. With consecutive mids, sleep debt becomes chronic and recovery may require multiple full nights of recuperative sleep.

Does working consecutive mid shifts affect performance and alertness?

Yes. If you work a schedule associated with reduced opportunities for night time recovery sleep, that loss increases the likelihood of decrements in both work performance and alertness. These decrements are exponential during early morning hours when your body clock is at its lowest (around 0300-0500) and you naturally have the urge to sleep. It is scientifically proven that:

- Incident/accident risk increases significantly on the 3rd and 4th consecutive mid shift compared to the 1st
- Driving home after a mid increases the risk of fatigue-related traffic accidents
- Total sleep time obtained per 24-hour period is significantly reduced when working mid shifts as compared to early morning, morning and day shifts
- Consecutive mids increase the likelihood of:
  - Slowed reaction times, reduced cognitive speed, decrements in short-term and long-term memory
  - Having a recovery error: lapse (failing to take action) or slip (taking the wrong action)
  - Impaired decision-making capacity and difficulties communicating
  - Unpredictable performance and inability to focus

So…what actions help maximize alertness when working consecutive mids?

Before a mid:

- Get as much sleep as you can in the days prior to your first mid shift to minimize acute sleep loss
- Take advantage of the afternoon window of circadian low (1500-1800) to take a nap prior to a mid; this reduces your hours of continuous wakefulness

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During a mid:

- If you tolerate caffeine, use it as is a short-term countermeasure to fight fatigue, which may particularly intensify during the hours when your body clock is at its lowest (0300-0500)
- Take recuperative breaks to refresh and restore

Directly after a mid:

- Try to sleep: The timing is closer to the body clock's normal rhythm than sleeping in the evening before a mid
- Set the stage for your sleep: Eat only a light, nutritional meal if you are hungry, avoid caffeine, and sleep as long as you can, if possible, in a sleeping environment that is quiet, cool and dark

Myth: You eventually adapt to consecutive mids with no impact on alertness and performance.

Fact: You may think you adapt, but the truth is that your body never fully adapts to working consecutive mids. Why? Because exposure to the light/dark cycles and social cues of a traditional daytime social and living schedule is unavoidable. The challenge to adjust is even greater if you work straight mids, but switch to standard nighttime sleep hours on your days off. Increased sleep debt combined with challenges of daytime sleeping to prepare for mids, adversely impacts fatigue levels.