Use of the Psychomotor Vigilance Test (PVT) to Assess Alertness/Impairment

Steve Lerman, MD, MPH, FACOEM
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Psychomotor Impairment: Multiple Causes, Same Results

The 4 Ds

Drugged

Drunk

Drowsy

Diseased
Fitness for Work: Importance of Making the Right Call

- Allowing an unfit employee to continue safety sensitive work may put the employee and others at risk

- Preventing a fit employee from continuing safety sensitive work may:
  - Needlessly impact careers
  - Impact management’s ability to staff critical roles

- The Psychomotor Vigilance Test can help get it right
What is Psychomotor Vigilance Testing (PVT)

- A validated process to assess alertness
- Measures reaction time
- Sensitive to all factors that degrade alertness
- Does not determine cause of impairment
False start
Fitness for Work Threshold

- Deficits in the range of 8-12 lapses result from:
  - BAC = 0.04
  - 17 hrs of continuous wakefulness
  - 5 days of 4 hrs of sleep/night

- Stratify results into 3 tiers based on # errors:
  - 0 – 7 errors
    - Encourage efforts to remain alert
  - 8 – 11 errors:
    - Consider need for limitations
    - Counsel about techniques to maximize alertness
    - Consider need for further evaluation to identify and remediate issues impacting alertness
  - 12 or more errors:
    - Strongly consider issuing work limitations
    - Counsel employee about techniques to maximize alertness
    - Recommend further evaluation to identify and remediate issues impacting alertness

ABOVE FIGURE:
Lapses in attention across 14 days of chronic sleep restriction 8h, 6h, 4h, and 3h sleep per day. The mean ± s.e. of PVT lapses for 1 and 2 days of total sleep deprivation are shown as light and dark gray bands, respectively—see Van Dongen, et al. 2003 for more details.

Population:
- 95 Employees in Safety Sensitive Positions during Mandatory Medical Examinations

Results:
- Clinic staff reported some usability issues, most resolved during the pilot
  - Some require modification of the App
  - Some can be addressed by enhanced training of clinic staff
- Acceptance among all stakeholders (employees, clinicians, management) high
- 3 employees deemed unfit for period ranging from 1 day to ~60 days
  - 1 underlying illness, 2 employees situational issues
Conclusions and Proposed Next Steps*

Conclusions
- The use of the PVT is feasible in an Occupational Health clinic setting
  - Modifications to the app and additional training would enhance usability and decrease time needed
- The results of the testing enhanced clinical decision-making
  - Identified fitness for work concerns
  - Led to identification of root causes resulting in
    ✓ Return to full duty
    ✓ Enhanced health & wellbeing

Next Steps
- Working with vendor to modify app to address usability concerns
- Enhance training for Clinic staff regarding administration and interpretation of the test
- Implement a phased deployment of this technology