Did raising the drinking age reduce veterans’ later alcohol treatment episodes?

The U.S. military as a natural experiment

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Early alcohol exposure may lead to:

- Neuroanatomical changes
  - Decreased hippocampal volume
- Neurocognitive impairment
- Risky sexual behaviors, injury (e.g. by MVA) or premature death (accident, suicide)
- Increased vulnerability to later AUDs
Based on what data?

Observational studies in human adolescents
- Possible confounders for adolescents who drink early include
  - genetic predisposition toward AUDs
  - adverse environmental factors

Randomized controlled trials
- Consistent with observational studies
- One problem  (RATS!)
Adolescent rats

- Rats may not behave exactly like humans
GAPS

- What are the relative contributions of genetics and environment versus exposure per se?
- If early exposure per se is a risk factor, when is drinking safe?
- Is a 13 year old like an 18 year old?
U.S. Military—natural experiment?

Pre-1982

- US soldiers could drink on base regardless of age
- Discounted alcohol was sold on base
- Alcohol was provided to troops in the field after stressful events
1982 and beyond…

1982-88
○ Bases conformed to state drinking age laws

Post-1988
○ Drinking age for soldiers on US bases was 21
○ Zero tolerance policies established for underage and problem drinking
○ Early detection and prevention programs created
○ Alcohol was “deglamorized”
Was reducing alcohol exposure during late adolescence for soldiers associated with changes in later problem drinking?

Using treatment episodes as a proxy for later AUDs:

- Compare vets from age groups with different exposures across years spanning changes in drinking age

- Compare vets to same-age civilians
Methods:

- **Treatment Episode Data Set (TEDS)**
  Data were collected on all clients entering any addiction treatment at publicly funded programs. 67% of the total known admissions. Doesn’t include VA.

- **Years 1992-2003**

- **Four age groups:**
  25-29, 30-34, 35-39, 40-44

*United States Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. Office of Applied Studies*
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Methods-cont’d

- All treatment episodes with alcohol “flag”
- Males and females analyzed separately
- Obtained veteran status from TEDS
- Denominators for rates
  - US Census age group and years
  - VetPop age group and years
- Veteran exposure proportion by state base population
Assumptions:

- Military recruitment at age 18 lasting through at least age 20 (three years potential exposure)
- Ages equally distributed within age group for treatment episodes and age group denominators
- Exposure to lower drinking age on non-US bases non-contributory
- US base populations by state used to model military population exposure
Results: (ages 25-44, years 1992-2003)

Males:
- 446,763 alcohol treatment episodes for 65 million male veterans
- 3.3 million alcohol treatment episodes for 434 million male civilians

Females:
- 28,083 alcohol treatment episodes for 756,000 female veterans
- 1.5 million alcohol treatment episodes for 444 million female civilians
Males: Treatment episode rate per 1000 by year and age group

Wallace et al Military Medicine July 2008
Odds ratios of alcohol treatment episodes and exposure to legal under 21 year drinking for male veterans vs. civilians by age group.

Wallace et al. Military Medicine July 2008
Females:

- Lower drinking rates than males
  - Abuse: 26/1000 vs. 69/1000 for men
  - Dependence: 23/1000 vs. 54/1000 for men
- Genetic factors ~ 50%
- Environmental factors ~ 50%
  - Male-dominated work environments
  - Negative life events

Female soldiers/veterans higher AUD risk
Odds ratios of alcohol treatment episodes and exposure to the legal <21 year drinking for female veterans vs. civilians by age group

Wallace et al Journal of Women’s Health (inpress)
Conclusions:

- Changes in drinking age and military environment were associated with reduction in later alcohol treatment episodes for vets.
- The greater the exposure to 21-year drinking age/enforcement, the greater the difference between:
  - Veterans compared to same-aged civilians
  - Veterans within age groups pre- and post- military drinking changes
- 1992 vet rates > civilian rates
- By 1998, all vet rates < civilian rates (exposure to under 21 drinking age ~50%)
Limitations

○ VA treatment?
Cutbacks in late 1990s likely mean steeper curves

![Graph showing treatment episodes per 1000 enrolled vets for 35-39 year olds from 1992 to 2002. The graph indicates a decrease in treatment episodes over time, with a notable dip in 1997. The y-axis represents treatment episodes per 1000 enrolled vets, ranging from 0 to 12, and the x-axis represents years from 1992 to 2002.]
Limitations continued

- Reliance on observational data—advantages over prior studies—
  - “Random” comparison groups (pre-post environment changes)
  - Large sample
- Assumptions may be erroneous
- Other environmental or military cohort factors may be responsible
Implications

- Legal drinking age should not be lowered
- Other supervised settings (college campuses) should consider following the military’s example
- Find the happy medium....
“Young man, go to your room and stay there until your cerebral cortex matures.”
Acknowledgements

VAMC Outcomes Group REAP

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