PEth Improves Detection of Alcohol and Associated Mortality Among HIV+/HCV+

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Background / Rationale

- Alcohol abstinence is recommended for those with HIV and hepatitis C (HIV+/HCV+) making self-report subject to social desirability bias
- Phosphatidylethanol (PEth), an abnormal phospholipid formed only in the presence of ethanol, can detect exposure for up to 21 days
  - Any detectable amount suggests exposure
  - The most commonly used cut offs range from 8-19 ng/mL

Specific Aims

- **Aim 1**: Evaluate agreement between PEth and self-report Alcohol Use Disorder Identification Test – Consumption (AUDIT-C) among HIV+/HCV+
  - Hypothesis: PEth will identify more individuals with hazardous use than self-report AUDIT-C
- **Aim 2:** Evaluate whether PEth demonstrates stronger association with mortality than AUDIT-C
  - Hypothesis: PEth will demonstrate a stronger association with mortality than self-report AUDIT-C

Methods

- **Design**: Cohort study using Veterans Aging Cohort Study (VACS)
- **Data Source**:
  - AUDIT-C self-completed June 2002 to August 2007
  - Biomarker Study collected August 2005 to August 2007
- **Study Patients:** HIV+/HCV+
  - Restricted to current drinkers to avoid confounding from those who stopped drinking due to illness
  - Had a detectable PEth (>0ng/mL) OR
  - Reported having a drink in the past 12 months
- **Variables**
  - Peth >0 as detectable, 8+ as hazardous exposure
  - AUDIT-C of 4+ for men 3+ for women (4+/3+) as hazardous use
  - Follow-up to date of death or July 2015

Methods

- **Statistical Analysis**:
  - Kappa statistics used to compare agreement between unhealthy AUDIT-C and PEth 8+
  - Separate Cox Models to estimate mortality hazard ratios by:
    - PEth (0,1-7, 8-49, 50-99, 100+ ng/mL)
    - AUDIT-C (0, 1-3, 4-5, 6-7, 8+)
    - Adjusted for age, race, and disagreement between measures (AUDIT-C = 0 but Peth 8+, Peth = 0 but AUDIT-C 4+/3+

Results

- **Out of 806 with HIV and HCV**
  - 56% reported drinking in past year; 24% with AUDIT-C 4+/3+
  - 76% had PEth>0; 39% with PEth 8+
  - 670 (83%) reported having a drink in the past year or had PEth >0

Table 1. Characteristics of those who reported drinking in past year or had PEth>0 (n=670)

Mean age (SD)	53 (6.8)
Race/Ethnicity	
White	12%
African-American	76%
Hispanic/Other	12%
Male	98%
Self-reported drinking in past year	68%
PEth >0 ng/mL	91%
AUDIT-C nondrinker (0)	32%
AUDIT-C non-hazardous drinker (<4/<3)	39%
AUDIT-C hazardous drinker (4+/3+)	29%
PEth 8+ ng/mL	45%
Median # days between AUDIT-C and PEth (IQR)	55 (1-203)
Median follow-up time in years from PEth (IQR)	8.9 (7.9-9.4)
Median follow-up time in years from AUDIT-C (IQR)	9.2 (7.1-9.6)

Results

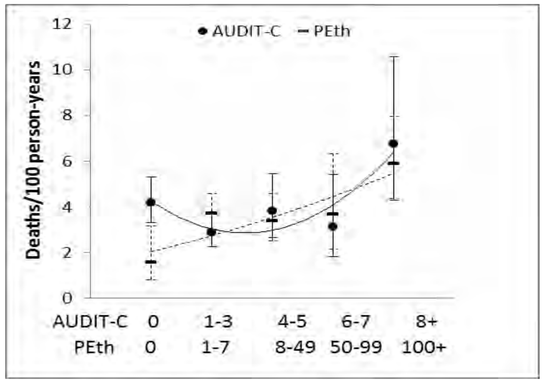
Table 2. Agreement Between AUDIT-C and PEth (n=670)*

	Self-Report AUDIT-C			
PEth	**Nondrinker**	**Non-hazardous Drinker**	**Hazardous Drinker**	**Total**
0	0	47	13	60
1-7	157	112	27	296
8+	59	100	155	314
Total	216	259	195	670

*Hazardous AUDIT-C and PEth 8+ have 70% agreement and kappa statistic = 0.39 indicating fair agreement

PEth identifies more individuals with alcohol exposure and potentially unhealthy use than AUDIT–C

Figure 1. Mortality Rates by AUDIT-C and PEth (n=670)

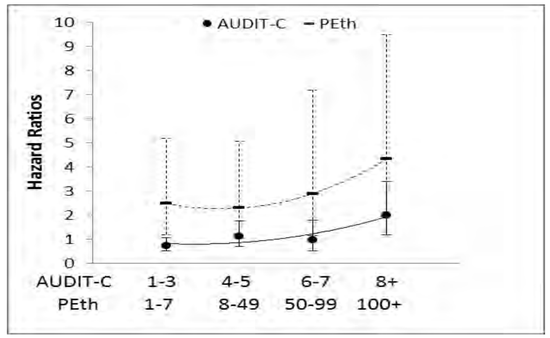


Those who reported no drinking in past year (i.e. had zero AUDIT-C score) had higher mortality rates than those with AUDIT-C Scores from 1-7

In contrast, those who had a zero PEth had lower mortality than any other PEth group

Results

Figure 2. Hazard Ratios for Mortality by AUDIT-C and PEth*



*Mortality HR for PEth and AUDIT-C modeled in separate Cox Models
*Reference groups are PEth 0 and AUDIT-C 0
*Adjusted for age, race, and discrepancy in alcohol information

Both PEth and AUDIT-C were associated with mortality, but PEth demonstrates stronger associations and steeper gradient

Self-report did not enhance the association between alcohol and mortality beyond that identified by PEth (data not shown)

Conclusions

- Among HIV+/HCV+, PEth is more sensitive than AUDIT–C for detecting alcohol exposure associated with mortality
- Thresholds for exposure may need to be reduced among HIV+/HCV+
- PEth offers a practical, direct measure of alcohol exposure

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