

◦ Workplace EtG Testing – The American Experience

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Development of EtG Testing

- 1950s - EtG identified and described.
- Early 2000s - Clinical use of EtG test in urine began in Europe.
- Studies confirmed that testing could reliably detect presence of EtG using LC/MS/MS, indicating exposure to alcohol.
- EtG found to be a more reliable indicator of drinking and abstinence than ETOH.

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- 2003-04 urine EtG testing began in U.S.
 - Low cut-offs used to extend window of detection - 100, 250, or 500 ng/mL.
 - Used primarily for professional monitoring programs – health professionals who agree to abstain from alcohol as a condition of employment and licensure.

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- Perceived advantages of EtG testing over ETOH (2003-2004)
 - Longer detection time (at lower cut-offs)
 - Excellent biomarker to determine abstinence
 - Not subject to in-vitro formation

Intense Marketing Effort


- “Any value greater than 250 ng/mL indicated Ethanol consumption within 24 hours of specimen collection.”
- “...negligent not to test for EtG when monitoring recovering alcoholics.”
- Within one year most professional healthcare monitoring programs began testing for EtG.

2004-2005 – Increasing Concerns

- Stability
- Incidental exposure
 - Hand sanitizer
 - Cough syrup
 - Mouthwash
 - Communion wine
 - Non-alcoholic beer

Increasing Dilemma Of Interpretation

- 2005-06: significant number of donors with low level positives claimed the test was faulty.
- 2006: study raised questions of whether use/inhalation of hand sanitizer was creating low level positives.
- August 2006: Wall Street Journal article on problems with EtG testing.
- September 2006: SAMHSA issued warning on use of EtG results.

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- Late 2006 and 2007, numerous lawsuits filed challenging the use of the test and suing for negligent use and marketing.
 - While test was accurate (i.e., correctly identified and quantified EtG), donors claimed it was incorrectly marketed and used and was causing them to lose their licenses and jobs.

More Uncertainty

- *In vitro* disappearance and formation of EtG.
- 2005 study found that e-coli infected specimens supplemented with EtG showed decrease in EtG when stored at 22° C. Helander, A., Dahl, H., (2005). *Urinary tract infection: A risk factor for false negative urinary ethyl glucuronide but not ethyl sulfate in detection of recent alcohol consumption.* Clinical Chemistry, 51(9).1728-1730.
- 2007 study found that e-coli infected specimens exposed to ethanol sometimes resulted in synthesis of EtG. Helander, A., Olsson, I., & Dahl, H., (2007). *Postcollection Synthesis of Ethyl Glucuronide by Bacteria in Urine May Cause False Identification of Alcohol Consumption.* Clinical Chemistry, 53(10). 1-3.

Responses To Uncertainties

- Use of EtS as additional biomarker.
- Disclaimers/warnings for clients.
- Use of higher cut-offs.
- Reporting differentials based on increasing or decreasing EtG.
- Criteria for both EtG & EtS to report as positive.

Recent Developments

- Immunoassay screening for EtG.
- Revised SAMHSA advisory on alcohol biomarkers, including EtG/EtS.

Recommended Practices

- Use of both EtG and EtS as biomarkers of alcohol.
- Use of higher cut-offs to lessen the amount of positives due to incidental exposure.
- Effective education of clients as to interpretation limits of the test.
- Employer use of a consent form to have donors avoid contact with alcohol-containing products.

QUESTIONS



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