Prevalence survey of alcohol consumption at antenatal booking in pregnancy: Comparing blood biomarker analysis to self-report

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Background

Providing antenatal and postnatal care for women who drink alcohol in pregnancy is only possible if those at risk can be identified.

Aims:

- To detect the prevalence of actual and self-reported alcohol consumption in pregnant women in the first trimester of pregnancy.
- To compare the utility of self-report to blood biomarker analysis.
A feasibility study by Tappin et al (2012) using the same methods, discovered that levels of CDT among a study sample of 150 pregnant women demonstrated that approximately 5% had recently engaged in hazardous alcohol use.
600 random blood samples were analysed by Helena Biosciences from 2014 (50 were taken from each month to identify any seasonal variation)

We tested an aliquot (0.5 mL serum/plasma) of anonymised blood for Carbohydrate Deficient Transferrin (CDT), a validated marker of chronic alcohol consumption (normalising 2-4 weeks from the start of abstinence). To see a detectable increase in CDT levels, women need to drink 50-80g of alcohol a day (i.e. 6-10 units)
Frequency of alcohol consumption during pregnancy is currently based on self-report. We collected data from medical records on women’s reported alcohol consumption at booking.

We analysed and compared the self-reported alcohol consumption data with the blood biomarkers.
Results: Blood Biomarker

Of the 600 samples tested:

- **1.8% (n=11)** appeared to have a transferrin genetic variant, which precluded further analysis. This can artificially increase/decrease the CDT concentration and therefore the results have not been included.
- **0.2% (n=1)** appeared to have some level of interference, it is unclear as to whether this is a transferrin genetic variant or another anomaly.
- **0.8% (n=5)** have elevated CDT above the cut off of 1.6% and may be chronic alcohol users.
- **0.5% (n=3)** have very high CDT above 1.87 and are very likely to be chronic alcohol users.
Monthly variation

Data 1

- Jan
- Feb
- Mar
- Apr
- May
- Jun
- Jul
- Aug
- Sep
- Oct
- Nov
- Dec
Results: Self-Report

- **4821 Bookings**
  - 2993 Recorded Reports
  - 1828 Not Recorded

- **2993 Documented**
  - 17 (0.57%) Reported Drinking in Pregnancy
  - 2219 (74.1%) Reported drinking 2 months before pregnancy
  - 757 Reported not drinking

- **17 Drinkers in Pregnancy**
  - 10 (58.8%) 1-3 Units per week
  - 4 (23.5%) 4-6 units per week
  - 3 (17.7%) Greater than 9 units per week
The CDT and self-report findings are closely aligned to current literature estimating a 1% prevalence rate of FASD births.

CDT is possibly not sensitive enough to pick up lower level drinking

Additional data from other Trusts could be useful
Conclusions

- CDT picked up slightly more women who may be drinking in pregnancy than self-report, although both methods are likely to result in under-estimates.
- CDT may not detect the low level drinkers and therefore, further studies using additional blood biomarkers may be beneficial in detecting a more detailed drinking history.
- Self-report may under-estimate drinking levels due to factors such as social stigma.
- The extent of the under-estimate remains unclear in both cases.
Future work

- Training for healthcare workers on recording alcohol consumption
- Prospective collection of self-reported data, after training
- Use of additional blood bio-markers
- Consented collection of blood samples for alcohol analysis
- Data collection at other trusts
Thank you

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