PREGNANT WOMEN NEVER DRINK ALONE

ALCOHOL AND PREGNANCY

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➤ Epidemiology

➤ The Impact

➤ Fetal Alcohol Spectrum Disorders: Fetal Alcohol Syndrome

➤ The Evaluation and Management
TRUE OR FALSE?

➤ There is a safe concentration of alcohol use in pregnancy.

➤ Alcohol can be safely consumed during particular times in pregnancy.

➤ Certain types of alcohol can be safely consumed in pregnancy.

➤ The WHO Region of the Americas has one of the lowest levels of Fetal Alcohol Syndrome resulting from drinking in pregnancy.
ALCOHOL USE AND PREGNANCY

➤ Impact prenatally
➤ Unprotected sex
➤ Unintended pregnancy
➤ Delayed recognition
➤ Increased risk of fetal exposure to alcohol—> Teratogenic

(Scott-Sheldon et al., 2016; Rehm et al., 2012)
(Connery, Albright & Rodolico, 2014; Oulman et al., 2015; Lundsberg et al., 2018).
Epidemiology?
A systematic review & meta-analysis estimated these figures (Popova et al., 2017).

At the country level, binge drinking during pregnancy ranged from 0.2% to 13.9% (Lange et al., 2017).
Prevalence of heavy episodic drinking during pregnancy in General Population of Latin America and the Caribbean in 2012

*Estimate of excessive alcohol use during pregnancy based on a meta-analysis of the current literature
IMPACT?
➤ Adverse pregnancy outcomes:

- Stillbirth
- Spontaneous abortion
- Premature birth
- Intrauterine growth retardation
- Low birth weight
- Fetal alcohol spectrum disorders (FASD)  

(Henriksen et al., 2004; Kesmodel & Kesmodel, 2002; Patra et al., 2010)
The fetus is attached to the placenta by its umbilical cord.

The placenta allows for the exchange of nutrients, oxygen, wastes- **Alcohol**!

Alcohol is polar and small in size- easily diffused.

Alcohol in Fetal Circulation

- Increased production of Oxygen
  - Free Radicals + Acetaldehyde
  - Destruction of DNA, Proteins, Lipids
  - Ultimate Cell Death

- Fetal liver lacks important antioxidants and enzymes that help break down harmful end products of alcohol metabolism
- Oxygen species overwhelm cellular repair
Alcohol-induced oxidative damage to fetal neurons
When a pregnant woman drinks

The alcohol passes freely through the placenta and within an hour or two, the fetus has a blood alcohol concentration (BAC) nearly equal to that of the mother.

The fetus has minimal ability to metabolise alcohol and relies on maternal metabolism.

The amniotic fluid retains alcohol, which prolongs the fetal exposure time to the alcohol.

Source: “Prenatal Alcohol Exposure”- Burd L, Blair J, Dropps K.
The risk of consequences is related to:

- Frequency of consumption
- Amount of alcohol consumed
- Genetics, maternal health and environmental factors

Timing of exposure: (the fetus is vulnerable to the teratogenic effects of alcohol for the whole gestational period)

Periods of Fetal Development:

- Central Nervous System: Weeks 3½ to Full Term
- Ears: Weeks 4½ to 20
- Heart: Weeks 3½ to 9
- Upper Limbs: Weeks 4½ to 9
- Eyes: Weeks 4½ to Full Term
- Teeth: Weeks 6½ to Full Term
- Palate: Weeks 6½ to 16
- Lower Limbs: Weeks 4½ to 9
- External Genitalia: Weeks 7 to Full Term

There is no safe amount, no safe time and no safe type of alcohol to drink during pregnancy.

Source: National Health and Medical Research Council: Australia.
Effects of Alcohol Exposure During Stages of Brain Development

1st TRIMESTER
- Neurons develop
- Neurons multiply
- Neurons migrate

2nd TRIMESTER
- Neurons branch, form synapses
- Pruning (apoptosis)
- Synapses reorganize
- Myelination

3rd TRIMESTER

1st TRIMESTER
- Norepinephrine
- Dopamine
- Serotonin
- GABA
- Glutamate

2nd TRIMESTER

3rd TRIMESTER

- Facial dysmorphologies
- Musculoskeletal abnormalities
- CNS dysfunction
- Low IQ
- Disrupted learning and memory
- Disrupted cognition
- Disrupted executive functioning
- Emotional dysfunction
- Difficulties with timing tasks
- Lack of coordination
- Disrupted cognition, memory
- Emotional dysfunction

Understanding Fetal Alcohol Spectrum Disorders (FASD) Duke University
Adverse pregnancy outcomes:

- Stillbirth
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(Henriksen et al., 2004; Kesmodel & Kesmodel, 2002; Patra et al., 2010)
FASD

- Fetal Alcohol Syndrome (FAS)
- Alcohol-Related Birth Defects (ARBD)
- Alcohol-Related Neurodevelopmental Disorder (ARND)
- Partial Fetal Alcohol Syndrome (pFAS)

CNS DAMAGE
CLINICAL FEATURES OF FASD

- Eye openings that are shorter than normal
- Thin upper lip
- Smooth ridge between upper lip and nose

- Small head
- Epicanthal folds
- Flat midface
- Smooth philtrum
- Underdeveloped jaw
- Low nasal bridge
- Small eye openings
- Short nose
- Thin upper lip
EPIDEMIOLOGY?
Figure 1.1 Prevalence of fetal alcohol syndrome and fetal alcohol spectrum disorders in the general population, by WHO region

Data obtained from Popova et al., 2017.
FAS = fetal alcohol syndrome; FASD = fetal alcohol spectrum disorders.
AFR = African Region; AMR = Region of the Americas; EMR = Eastern Mediterranean Region; EUR = European Region; SEAR = South-East Asia Region; WPR = Western Pacific Region.
PREVALENCE OF FETAL ALCOHOL SYNDROME (FAS)

Resulting from drinking during pregnancy

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage per 10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLOBALLY</td>
<td>14.6</td>
</tr>
<tr>
<td>AMERICAS</td>
<td>16.6</td>
</tr>
</tbody>
</table>

Prevalence of fetal alcohol syndrome (FAS) and fetal alcohol spectrum disorders (FASD) in AMERICAS*:

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Percentage per 10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>FASD</td>
<td>87.9</td>
</tr>
<tr>
<td>FAS</td>
<td>16.6</td>
</tr>
<tr>
<td>FASD-FAS</td>
<td>71.3</td>
</tr>
</tbody>
</table>
Estimated Prevalence of FAS and FASD in the general population in Latin America and The Caribbean 2012
RISK FACTORS FOR FASD

• Higher maternal age
• Higher gravidity and parity
• History of miscarriages and stillbirths
• Inadequate prenatal care
• Poor maternal nutrition during pregnancy
WHAT ABOUT BREASTFEEDING?
EVALUATION AND MANAGEMENT
<table>
<thead>
<tr>
<th>Screening Tool</th>
<th>Questions</th>
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| NIDA Quick Screen-ASSIST Quick Screen † | 1. In the past year, how often have you used the following?  
   a. Five or more alcohol drinks in a day for men or 4 or more alcohol drinks in a day for women  
   b. Tobacco products  
   c. Prescription drugs for nonmedical reasons  
   d. Illegal drugs |
| ASSIST ‡ | 1. In your lifetime, which of the following substances have you used? (response options of yes or no)  
2. In the past 3 mo, how often have you used the substances you mentioned? (response options of never, once or twice, monthly, weekly, and daily or almost daily for items 2–5)  
3. In the past 3 mo, how often have you had a strong desire or urge to use (each substance)?  
4. (During the past 3 mo, how often has your use of (each substance) led to health, social, legal or financial problems?  
5. During the past 3 mo, how often have you failed to do what was normally expected of you because of your use of (each substance)?  
6. Has a friend or relative or anyone else ever expressed concern about your use of (each substance)?  
7. Have you ever tried to control, cut down or stop using (each substance)?  
8. Have you ever used any drug by injection? |
| SURP-P § | 1. Have you ever used marijuana?  
2. How many alcoholic drinks have you consumed in the month before knowing you were pregnant?  
3. Do you feel the need to cut down on your alcohol or drug use? |

* 4P’s Plus questionnaire not included because it is covered by copyright; the researchers purchased a license to administer to participants.  
† Response options for each substance are: never, once or twice, monthly, weekly, and daily or almost daily. For purposes of validation, both the Quick Screen and ASSIST were given to all participants to complete.  
‡ Substances assessed are: tobacco products; alcohol; cannabis; cocaine; amphetamine-type stimulants (ATS); sedatives and sleeping pills (benzodiazepines); hallucinogens; inhalants; opioids; and “other” drugs.  
§ Scoring involves classifying the number of alcoholic drinks consumed in the month before pregnancy as none vs any, and then counting the number of affirmative items. Negative responses for all items yields a low-risk individual, one affirmative response yields a moderate risk individual, and two or three affirmative responses yield a high-risk individual.
Albania’s “drinking can harm your unborn baby”
Kenya’s “alcohol consumption when pregnant harms your baby”.
GOVERNMENT WARNING:

ACCORDING TO THE SURGEON GENERAL, WOMEN SHOULD NOT DRINK ALCOHOLIC BEVERAGES DURING PREGNANCY BECAUSE OF THE RISK OF BIRTH DEFECTS.

know your limits

UK Chief Medical Officers recommend
Adults do not regularly exceed:
MEN 3-4 units daily
WOMEN 2-3 units daily
Avoid alcohol if pregnant or trying to conceive
www.drinkaware.co.uk
“It’s easy to stigmatize women who drink during pregnancy, with words and with policy. The goal, though, is healthier mothers and infants. To achieve that, policymakers may need to stop stigmatizing and start over.”
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-National Organization on Fetal Alcohol Syndrome
Thank you