

# 2020 Dietary Guidelines Advisory Committee: Beverages and Added Sugars Subcommittee

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[DietaryGuidelines.gov](https://www.dietaryguidelines.gov)

# Status of Questions

## Developing the plan:

- Added sugars and:
  - risk of cardiovascular disease\*
  - risk of type 2 diabetes\*
  - growth, size, body composition, and risk of overweight and obesity\*
- Added sugars **during pregnancy** and gestational weight gain\*
- Added sugars **during lactation** and postpartum weight loss\*

## Implementing the plan:

- Beverage consumption and growth, size, body composition, and risk of overweight and obesity?
- Beverage consumption **during pregnancy** and
  - birth weight standardized for gestational age and sex?
  - gestational weight gain?
- Beverage consumption **during lactation** and
  - postpartum weight loss?
  - human milk composition and quantity?\*

\*Protocols presented today

**All protocols discussed in this presentation are available at [DietaryGuidelines.gov](http://DietaryGuidelines.gov)**

# Status of Questions (Continued)

## Still to come:

- Alcohol and:
  - all-cause mortality
  - certain types of cancer
  - risk of cardiovascular disease
  - neurocognitive health
  - growth, size, body composition, and risk of overweight and obesity (including alcohol during lactation and postpartum weight loss)
- Alcohol **during lactation** and:
  - infant developmental outcomes, including neurocognitive development
  - human milk composition and quantity

**All protocols discussed in this presentation are available at [DietaryGuidelines.gov](https://www.dietaryguidelines.gov)**

# Question: Non-alcoholic beverage consumption

What is the relationship between **beverage consumption during lactation** and human milk composition and quantity?

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Approach to Answer Question: (e.g., NESR Systematic Review)

# All non-alcoholic beverages will be included

Milk			Nonalcoholic beverages					Water	
Milk	Flavored milk	Dairy drinks & substitutes	100% Juice	Diet Beverages	Calorically Sweetened Beverages	Nutritional beverages	Coffee and Tea	Plain water	Flavored or enhanced water
Milk, whole	Flavored milk, whole	Milk shakes & other dairy drinks	Fruit juice	Diet soft drinks	Soft drinks	Meal replacement beverages	Coffee -plain -sweetened	Including: Tap water Bottled water	Flavored or carbonated water
Milk, reduced fat	Flavored milk, reduced fat	Milk substitutes	Vegetable juice	Diet sport and energy drinks	Fruit drinks	Smoothies & grain drinks	Tea -plain -sweetened		Enhanced or fortified water
Milk, <u>lowfat</u>	Flavored milk, <u>lowfat</u>			Other diet drinks	Sport and energy drinks	Protein shakes (except supplements)			
Milk, nonfat	Flavored milk, nonfat				Drinks such as: smoothies, mixed coffee drinks, may also fit here				

# Key Definitions & Population: Beverages during lactation and human milk composition and quantity

- **Beverage pattern:** the quantities, proportions, variety or combinations of different beverages in diets. Studies that examine a specific beverage or beverage group will also be considered
- **Population of interest:** Lactating women who are exclusively or predominantly breastfeeding

# Key Definitions & Population: Beverages during lactation and human milk composition and quantity

- **Exclusive breastfeeding** - Infant receives no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse). Infants may receive oral rehydration solution, drops and syrups (vitamins, minerals and medicines). (WHO, 2001)
- **Predominant breastfeeding** – Breast milk (including milk expressed or from a wet nurse) is infant's predominant source of nourishment. Infants may also receive liquids (water and water-based drinks, fruit juices) ritual fluids and oral rehydration solution, drops or syrups (vitamins, minerals and medicines). (WHO, 2001)

# Inclusion and Exclusion Criteria: Beverages during lactation and human milk composition and quality

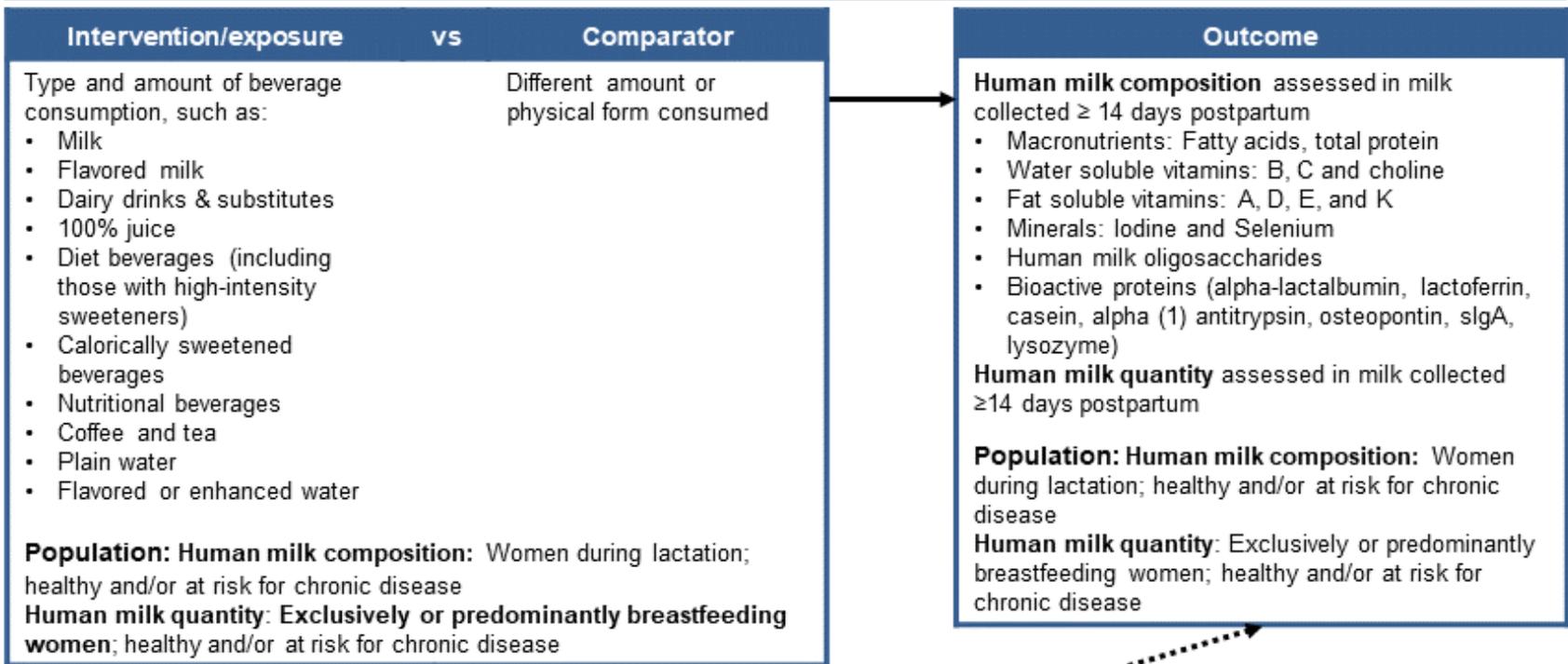
- Propose standard criteria be used for:
  - Publication Status
  - Language of Publication
  - Country
  - Health Status of Participants
- Tailor standard criteria for this question
  - **Study design:** include case-control and cross-sectional studies

# Inclusion and Exclusion Criteria: Study Participants

Category	Inclusion Criteria	Exclusion Criteria
<b>Study participants</b>	<ul style="list-style-type: none"> <li>Human milk composition: Women during lactation</li> <li>Human milk quantity: Exclusively or predominantly breastfeeding women</li> </ul>	<ul style="list-style-type: none"> <li>Animal and in vitro models</li> <li>Human milk quantity outcome only: Studies that exclusively enroll multiple gestation pregnancies or exclusively present combined analyses of singleton and multiple gestations</li> <li>Human milk from third parties (e.g., banked/donor milk)</li> </ul>
<b>Health status of study participants</b>	<ul style="list-style-type: none"> <li>Studies that enroll mothers who are healthy and/or at risk for chronic disease</li> <li>Studies that enroll some mothers diagnosed with a disease</li> <li>Studies that enroll some mothers who were severely undernourished prior to pregnancy</li> <li>Studies that enroll some or all mothers classified as underweight, or obese prior to pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Studies that <b>exclusively</b> enroll mothers who gave birth to preterm (gestational age &lt;37 weeks and 0/7 days)</li> <li>Studies that <b>exclusively</b> enroll mothers diagnosed with a disease, including severe undernutrition, or hospitalized with an illness or injury</li> </ul>

# Analytic Framework: Beverages during lactation and human milk composition and quality

**Systematic review question:** What is the relationship between beverage consumption during lactation and human milk composition and quantity?



**Key Confounders:** Maternal age, race/ethnicity, socioeconomic status, anthropometry (pre-pregnancy BMI and gestational weight gain), smoking, gestational age, supplement intake during lactation; **Other factors to be considered:** Parity, total energy intake, physical activity, hydration status, diet quality (e.g., HEI), diabetes (gestational, type 1, type 2), alcohol, medications

**Beverages during lactation and human milk**  
**2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Added sugars consumption: Questions

What is the relationship between **added sugars consumption** and:

- Risk of cardiovascular disease
- Risk of type 2 diabetes
- Growth, size, body composition, and risk of overweight and obesity

What is the relationship between **added sugars consumption during pregnancy** and gestational weight gain?

What is the relationship between **added sugars consumption during lactation** and postpartum weight loss?

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Approach to Answer Questions: (e.g., NESR Systematic Review)

# What are added sugars?

**FDA, 2016:** Sugars that are either added during the processing of foods, or are packaged as such (e.g., a bag of sugar). Added sugars include sugars (free, mono- and disaccharides), sugars from syrups and honey, and sugars from concentrated fruit or vegetable juices that are in excess of what would be expected from the same volume of 100 percent fruit or vegetable juice of the same type. (Studies that use a different definition of added sugars will also be considered.)

## For example:

- Anhydrous dextrose
- Brown sugar
- Confectioner's powdered sugar
- Corn syrup
- Corn syrup solids
- Dextrose
- Fructose
- High-fructose corn syrup (HFCS)
- Honey
- Invert sugar
- Lactose
- Malt syrup
- Maltose
- Maple syrup
- Molasses
- Nectars (e.g., peach nectar, pear nectar)
- Pancake syrup
- Raw sugar
- Sucrose
- Sugar
- White granulated sugar

# Key Definitions: Added sugars consumption questions

- **Prediabetes:** Prediabetes is diagnosed by an A1C of 5.7% – 6.4%, fasting blood sugar of 100 – 125 mg/dl, or Oral Glucose Tolerance Test 2 hour blood sugar of 140 mg/dl – 199 mg/dl (ADA)
- **Type 2 Diabetes:** Type 2 diabetes is diagnosed by an A1C  $\geq 6.5\%$ , fasting blood sugar  $\geq 126$  mg/dl, or Oral Glucose Tolerance Test 2 hour blood sugar  $\geq 200$  mg/dl (ADA)

# Inclusion and Exclusion Criteria: Added sugars consumption questions

- What is the relationship between **added sugars consumption** and:
  - **Risk of cardiovascular disease**
  - **Risk of type 2 diabetes**
  - **Growth, size, body composition, and risk of overweight and obesity**
- Propose standard criteria be used for:
  - Study Design
  - Publication Status
  - Language of Publication
  - Country
  - Health Status of Participants

**Added sugars consumption questions**  
**2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Inclusion and Exclusion Criteria: Study duration

What is the relationship between added sugars consumption and **growth, size, body composition, and risk of overweight and obesity?**

Category	Inclusion Criteria	Exclusion Criteria
<b>Study duration</b>	Minimum duration for experimental studies: 8 weeks [No duration cutoff for observational studies]	Experimental studies shorter than 8 weeks

# Inclusion and Exclusion Criteria: Study participants (Continued)

Category	Inclusion Criteria	Exclusion Criteria
<b>CVD</b>	Age at intervention/exposure/ outcome*: <ul style="list-style-type: none"><li>• Child (2-5 years)</li><li>• Child (6-12 years)</li></ul>	
<b>T2DM</b>	<ul style="list-style-type: none"><li>• Adolescents (13-18 years)</li><li>• Adults (19 and older)</li><li>• Older adults (65+ years)</li></ul>	
<b>Growth, size, body comp, overweight, obesity</b>	<p>*Note: Coverage of infants and toddlers &lt;2y is still in discussion between the Beverages and Added Sugars SC and Birth to 24 Months SC.</p>	

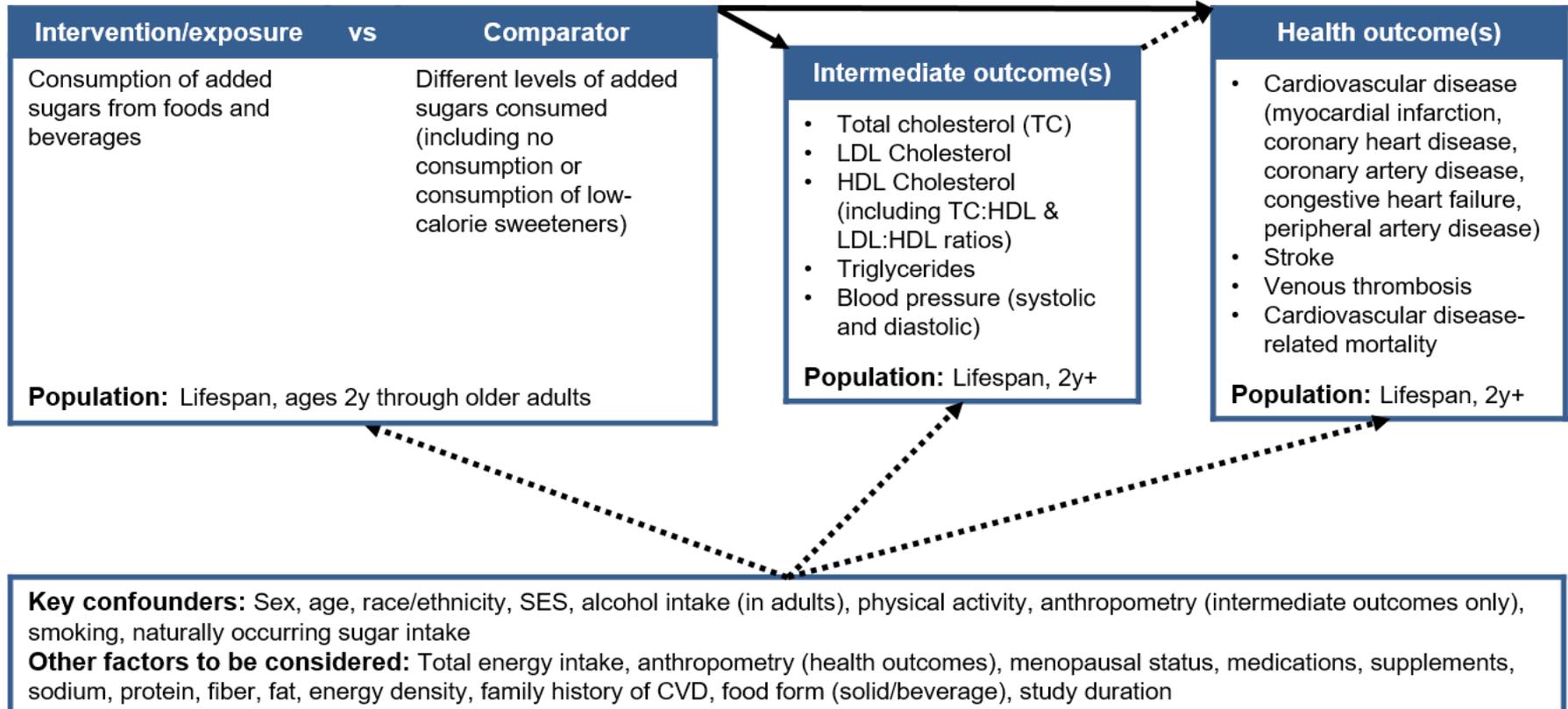
**Added sugars consumption questions**  
**2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Inclusion and Exclusion Criteria: Health status of study participants

Category	Inclusion Criteria	Exclusion Criteria
<b>Cardiovascular disease</b>  <b>Type 2 diabetes</b>	<ul style="list-style-type: none"> <li>• <u>CVD &amp; T2DM</u>: Studies that enroll participants who are healthy and/or at risk for chronic disease, including those with obesity</li> <li>• <u>CVD &amp; T2DM</u>: Studies that enroll some participants diagnosed with a disease</li> <li>• <u>CVD &amp; T2DM</u>: Studies that enroll some participants with endpoint outcomes</li> <li>• <u>CVD only</u>: Studies that exclusively enroll participants with high blood pressure or high cholesterol and are evaluating cardiovascular disease endpoint outcomes (i.e., studies that aim to prevent cardiovascular disease in participants who are at high risk)</li> </ul>	<ul style="list-style-type: none"> <li>• <u>CVD &amp; T2DM</u>: Studies that exclusively enroll participants diagnosed with a disease, or hospitalized with an illness or injury. (For this criterion, studies that exclusively enroll participants with obesity will not be excluded).</li> <li>• <u>CVD &amp; T2DM</u>: Studies that exclusively enroll participants with endpoint outcomes (i.e., studies that aim to treat participants who have already been diagnosed with the endpoint outcomes of interest)</li> <li>• <u>CVD only</u>: Studies that exclusively enroll participants with high blood pressure or high cholesterol and are evaluating blood pressure or cholesterol outcomes (i.e., studies that aim to treat participants who already have high blood pressure or high cholesterol)</li> </ul>
<b>Growth, size, body composition, overweight, obesity</b>	<ul style="list-style-type: none"> <li>• Studies that enroll participants who are healthy and/or at risk for chronic disease</li> <li>• Studies that enroll <i>some</i> participants diagnosed with a disease</li> <li>• Studies that enroll <i>some</i> participants who are classified as underweight, stunted, wasted, or obese</li> </ul>	<ul style="list-style-type: none"> <li>• Studies that <i>exclusively</i> enroll participants diagnosed with a disease, or hospitalized with an illness or injury</li> <li>• Studies that <i>exclusively</i> enroll participants classified as obese (i.e., studies that aim to treat participants who have already been classified as obese)</li> </ul>

# Analytic Framework: Cardiovascular disease

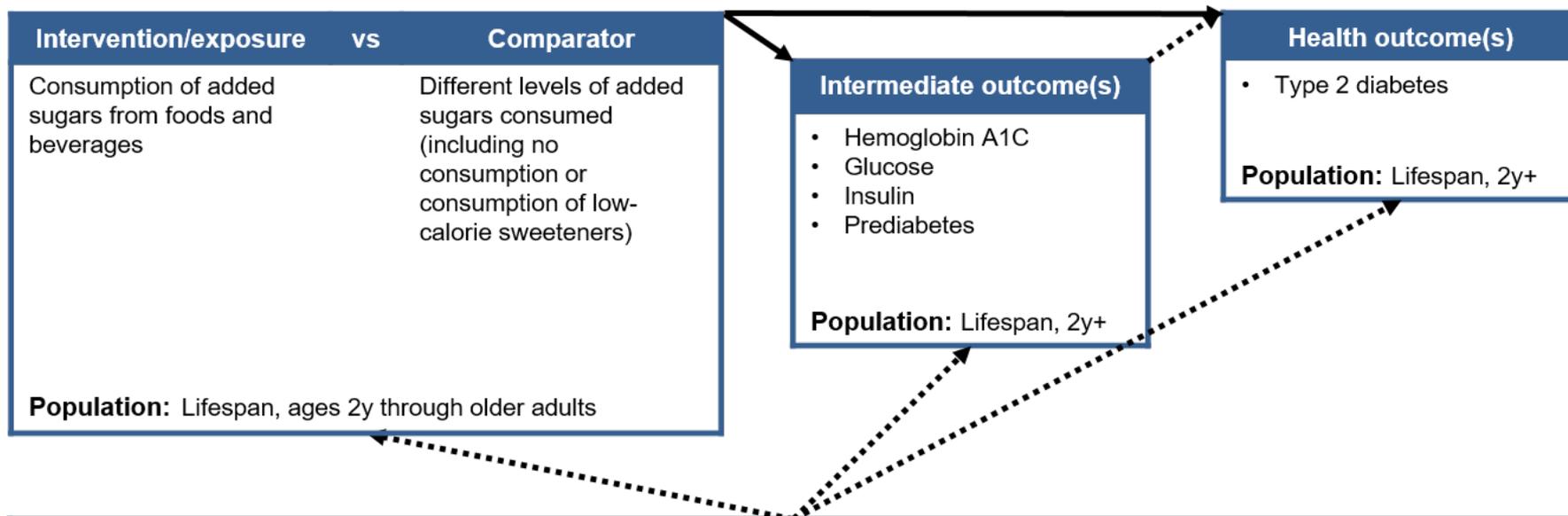
**Systematic review question:** What is the relationship between added sugars consumption and risk of cardiovascular disease?



**Added sugars consumption and risk of cardiovascular disease  
2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Analytic Framework: Type 2 diabetes

**Systematic review question:** What is the relationship between added sugars consumption and risk of type 2 diabetes?



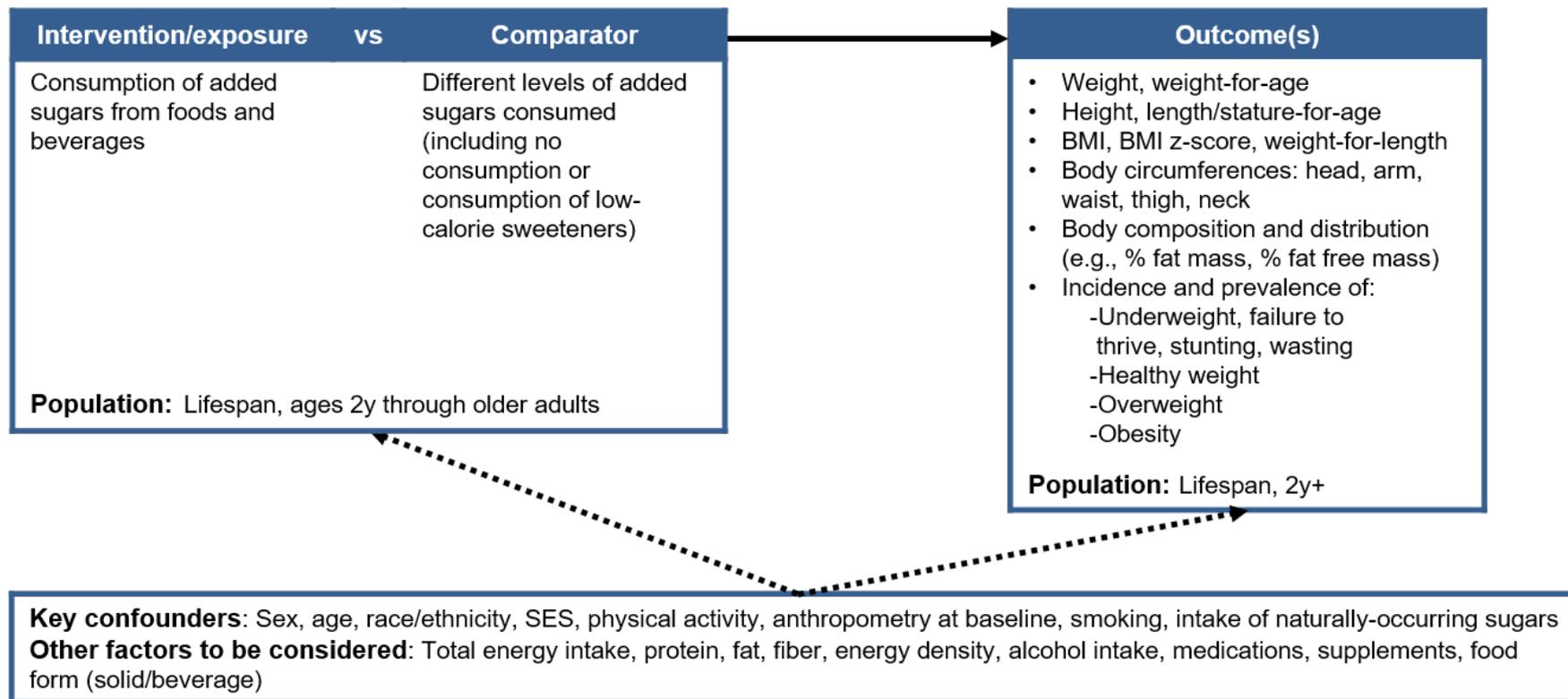
**Key confounders:** Sex, age, race/ethnicity, SES, physical activity, smoking, naturally-occurring sugar intake

**Other factors to be considered:** Total energy intake, adiposity (e.g., BMI, waist circumference, % body fat), menopausal status, medications, supplements, alcohol intake, protein, fiber, fat, energy density, family history of T2DM, acanthosis nigricans, food form (solid/beverage), study duration

**Added sugars consumption and risk of type 2 diabetes  
2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Analytic Framework: Growth, size, body composition, and risk of overweight and obesity

**Systematic review question:** What is the relationship between added sugars consumption and growth, size, body composition, and risk of overweight and obesity?



**Added sugars consumption and growth, size, body comp, overweight, and obesity**  
**2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Inclusion and Exclusion Criteria: Added sugars consumption questions

- What is the relationship between **added sugars consumption during pregnancy and gestational weight gain?**
- What is the relationship between **added sugars consumption during lactation and postpartum weight loss?**
- Propose standard criteria be used for:
  - Study Design
  - Publication Status
  - Language of Publication
  - Country
  - Health Status of Participants

# Inclusion and Exclusion Criteria: Study duration (Continued)

What is the relationship between added sugars consumption during pregnancy and **gestational weight gain**?

What is the relationship between added sugars consumption during lactation and **postpartum weight loss**?

<b>Category</b>	<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
<b>Study duration</b>	Minimum duration for experimental studies: 8 weeks [No duration cutoff for observational studies]	Experimental studies shorter than 8 weeks

# Inclusion and Exclusion Criteria: Study participants (Continued)

Category	Inclusion Criteria	Exclusion Criteria
<b>Gestational weight gain</b>	<ul style="list-style-type: none"> <li>• Human subjects</li> <li>• Females who are pregnant</li> <li>• Females capable of becoming pregnant</li> </ul>	<ul style="list-style-type: none"> <li>• Animal and in vitro models</li> <li>• Hospitalized patients, when hospitalization is not related to pregnancy, birth and immediate postpartum</li> <li>• Studies that exclusively enroll based on pregnancies conceived using Assisted Reproductive Technologies</li> <li>• Studies that exclusively enroll multiple gestation pregnancies</li> <li>• Studies that enroll both singleton and multiple pregnancies and do not account for singleton and multiple gestation in the design or analyses and only present aggregate findings</li> </ul>
<b>Postpartum weight loss</b>	<ul style="list-style-type: none"> <li>• Human subjects</li> <li>• Postpartum women who are lactating</li> </ul>	<ul style="list-style-type: none"> <li>• Animal and in vitro models</li> <li>• Hospitalized patients, when hospitalization is not related to pregnancy, birth and immediate postpartum</li> <li>• Studies that enroll lactating and non-lactating mothers and ONLY present combined data for lactating and non-lactating mothers</li> </ul>

**Added sugars consumption and GWG/PPWL  
2020 Dietary Guidelines Advisory Committee: Meeting 3**

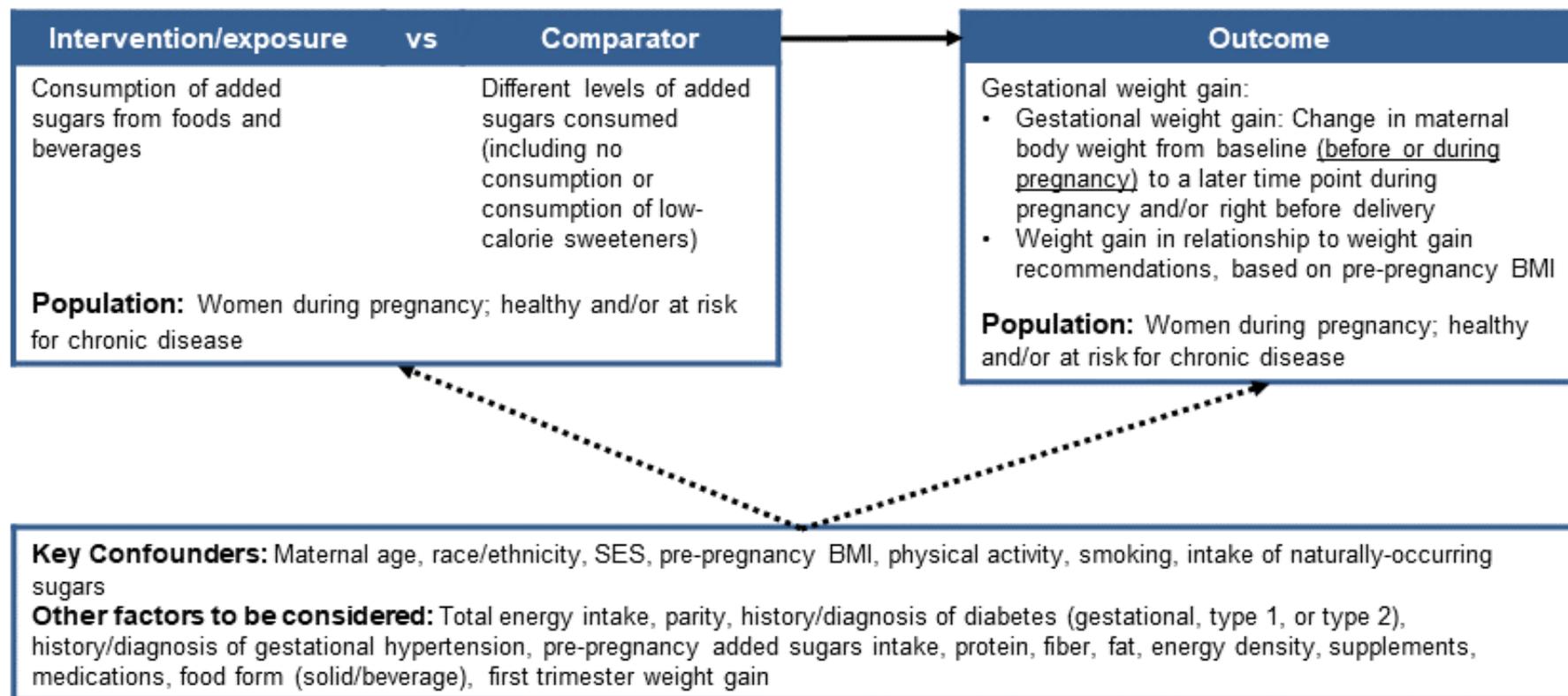
# Inclusion and Exclusion Criteria: Health status of study participants

Category	Inclusion Criteria	Exclusion Criteria
<b>Gestational weight gain;</b>	<ul style="list-style-type: none"><li>• Studies that enroll mothers who are healthy and/or at risk for chronic disease</li></ul>	<ul style="list-style-type: none"><li>• Studies that exclusively enroll mothers who gave birth to preterm (&lt;37 weeks and 0/7 days)</li></ul>
<b>Postpartum weight loss</b>	<ul style="list-style-type: none"><li>• Studies that enroll some mothers diagnosed with a disease</li><li>• Studies that enroll some mothers who were severely undernourished prior to pregnancy</li><li>• Studies that enroll some or all mothers classified as underweight or obese prior to pregnancy</li></ul>	<ul style="list-style-type: none"><li>• Studies that exclusively enroll participants diagnosed with a disease, including severe undernutrition, or hospitalized with an illness or injury</li></ul>

**Added sugars consumption and GWG/PPWL  
2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Analytic Framework: Gestational weight gain

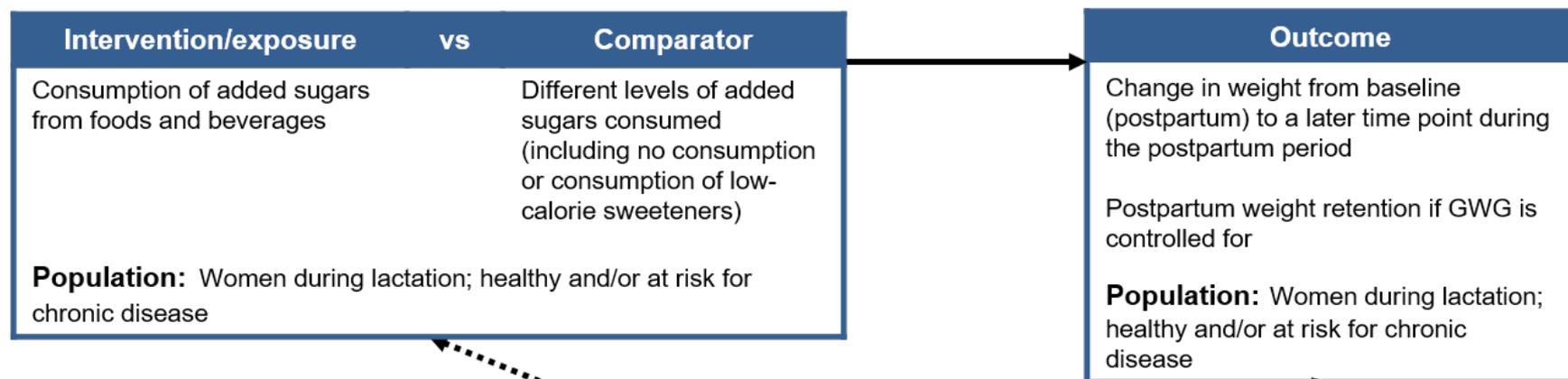
**Systematic review question:** What is the relationship between added sugars consumption during pregnancy and gestational weight gain?



**Added sugars consumption and GWG**  
**2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Analytic Framework: Postpartum weight loss

**Systematic review question:** What is the relationship between added sugars consumption during lactation and post-partum weight loss?

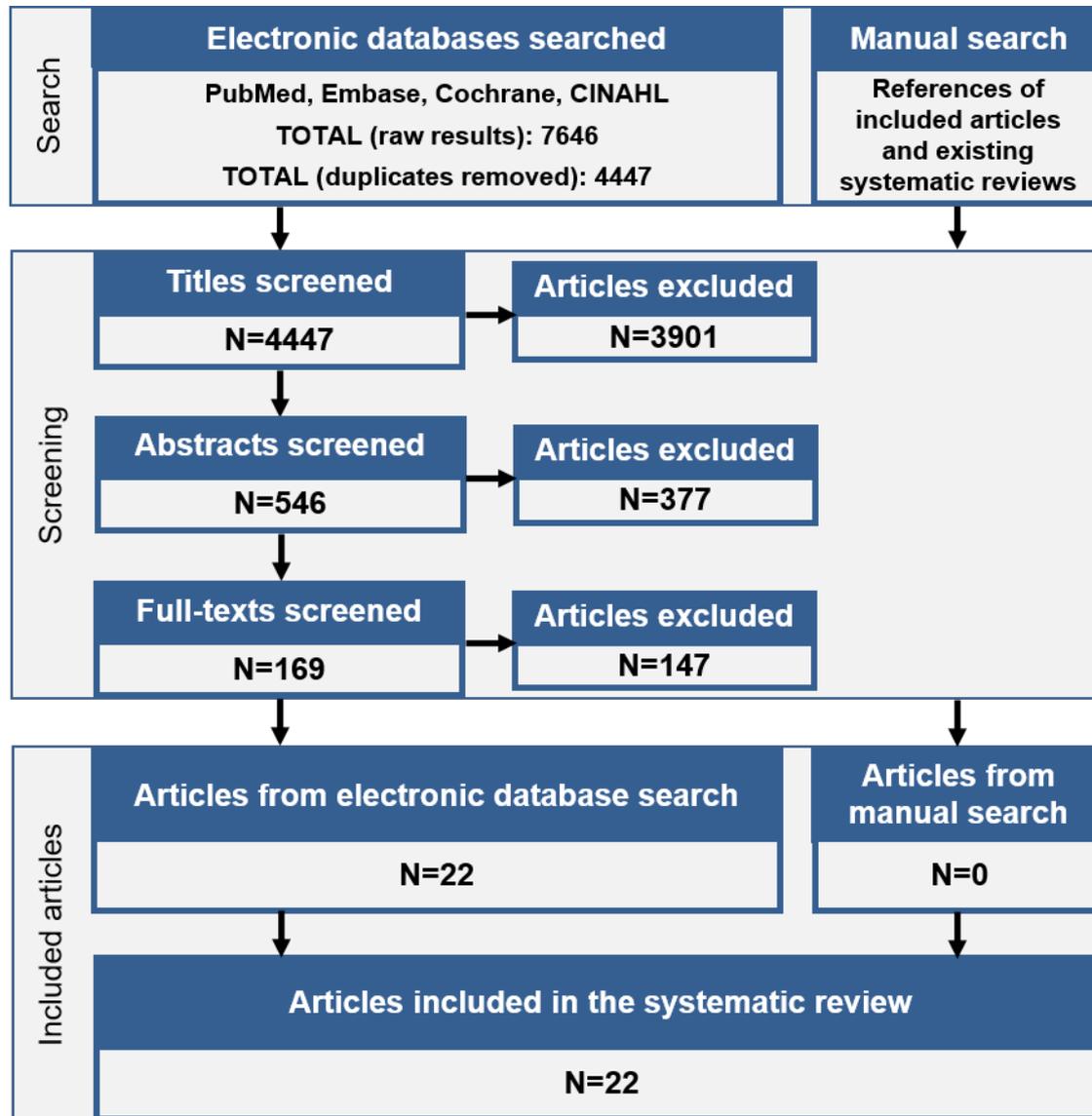


**Key Confounders:** Maternal age, race/ethnicity, SES, anthropometry (pre-pregnancy BMI, gestational weight gain), smoking, breastfeeding status

**Other factors to be considered:** Total energy intake, parity, pre-pregnancy added sugars intake, protein, fiber, fat, energy density, alcohol intake, medications, supplements, food form (solid/beverage), duration of period under study

**Added sugars consumption and PPWL**  
**2020 Dietary Guidelines Advisory Committee: Meeting 3**

# Work underway: Beverages during pregnancy and birth weight



# Work underway: Protocol development for alcohol questions

Draft content below. Complete protocols will be presented at the next public meeting.

## **Exposure:**

- Defined as:
  - Level of consumption of alcoholic beverages
  - Per occasion consumption of alcoholic beverages (i.e., number of drinks per day or drinks per drinking occasion)  
[Information on type of beverage (e.g., beer, wine, liquor) will be collected if available]
- Comparator: different level of alcohol consumption
- Population: adults 21y and older

## **Considerations:**

- Careful thought being given to key confounders and other factors to be considered that are unique to this exposure

# Next Steps

- Finalize alcohol protocols, discuss at next public meeting
- Finish screening questions with complete search results: Results are currently being screened independently by two NESR analysts for:
  - 4 beverage questions
  - 5 added sugars questions
- Synthesize findings from beverage and added sugars questions to be presented at next public meeting
- Continue cross-cutting discussions with DA/FPM working group and B24 subcommittee

# 2020 Dietary Guidelines Advisory Committee: Beverages and Added Sugars Subcommittee



## **Members:**

Elizabeth Mayer-Davis

Heather Leidy

Richard Mattes

Timothy Naimi

Rachel Novotny

Barbara Schneeman

## **Support staff:**

Meghan Adler

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Julia Quam

Jenna Seymour

Maureen Spill

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# 2020 Dietary Guidelines Advisory Committee

## Committee Discussion

[DietaryGuidelines.gov](https://www.dietaryguidelines.gov)



ADJOURN



We will reconvene  
tomorrow at 9:00 a.m.

#DietaryGuidelines

