OVERVIEW FOR PRESENTER

This 30-minute lesson plan is the first part in a two-part series about the Open Truth campaign (www.opentruthnow.org). Part 1 exposes the truth that sugary drinks are making us sick. The activities are designed to teach the following key messages in an interactive and engaging way. It is divided into the following sections:

1. What is a sugary drink?
2. Sugary drinks vs. sugary food
3. How much is too much?
4. Sugary drinks are making us sick
5. Wrap Up

SUPPLIES	
☐ Variety of sugary drinks and answer key	Handouts
☐ Bag of sugar packets	☐ Calculating Teaspoons of Sugar in a container
☐ 5 pounds of sugar	
☐ 17 teaspoons of sugar	☐ Sugary Drinks are Making Us Sick

WHAT IS A SUGARY DRINK? (5 min)

[Before the presentation, place a variety of sugary drinks around the room and cover the total grams of sugar on the nutrition label with a sticker or masking tape.]

Today we are going to talk about sugary drinks and how they affect your health. Before we get started, let's get on the same page about sugary drinks. Sugary drinks are any drink that contains caloric sweeteners. Let's do an activity to help us understand just how much sugar are in some popular drinks.

Some of you have a sugary drink in front of you. I've covered the sugar on the nutrition label. I'd like you to come to the front of the room, introduce yourself and share with the group the name of your sugary drink. Then place your drink along this "Sugar Spectrum" with lowest amount of sugar on one end to the highest amount of sugar on the other.

[Allow participants to come to the front of the room and place the drinks on a spectrum from lowest to highest amount of sugar in the container.]

Does anyone want to rearrange or fix the order of drinks?

*[Hand out and explain the formula for **Calculating Teaspoons of Sugar in a Container**. Reveal the correct order of drinks along the Sugar Spectrum and show the participants the answer key for each drink so they learn the teaspoons of sugar for each container.]*

What was most surprising? *[Discuss]*

SUGARY FOODS VS. SUGARY DRINKS (5 min)

One question we often get is "why do we focus on sugary drinks and not sugary food?" We're going to do a little demonstration to explain why. I **need 2 volunteers** (Vol A and Vol B).

> [Vol A] will represent the **sugary food**. *[Hand bag of sugar packets to Vol A]*
> [Vol B] will represent the **human body**.

[Instruct Vol A to slowly toss sugar packets, one at a time, to Vol B who will catch them.]

Sugary food *can* have nutritional value, including fiber and other nutrients that slow digestion and absorption of the added sugars. Multiple organs in the body may help metabolize the added sugars for energy. In other words, **your body can take what is thrown at it**.

Now **Vol A will represent a sugary drink**, and **Vol B will represent the liver**.

What does the liver do? The liver plays a very important role in the body. It cleans our blood, makes bile, and processes all the liquids we consume, which is why alcohol damages the liver.

[Instruct Vol A to throw a large handful of sugar packets to Vol B who is unable to catch them.]

How did Vol B react differently to the sugary drink?

Unlike glucose that can be metabolized by every cell in your body for energy, **fructose can only be processed by your liver.** When we consume large amounts of fructose and very quickly, like when we drink it, it overwhelms the liver. The liver is unable to process all the fructose and it gets stored as fat. We are now seeing increased cases of **Non-Alcoholic Fatty Liver Disease**, which can lead to liver failure, liver cancer, and liver-related death.

Vol B couldn't catch what was thrown to him/her. The **sugary drink overwhelmed the liver and over time, the liver gets sick from overuse, resulting in fatty liver disease**, like people who consume too much alcohol.

In summary:

- Sugary foods *can* have nutritional value while sugary drinks have little to NO nutritional value.
- Sugary foods contain other ingredients that may slow down the absorption of added sugars. Sugary drinks contain large amounts of high fructose corn syrup, and fructose can only be metabolized by the liver. When we consume large amounts of it and very quickly (i.e. when we drink it), it can overwhelm the liver.
- Unlike sugary foods, sugary drinks do not make you feel full[i], which may alter your body's natural hunger cues and cause you to drink more and eat more.
- Because the liver processes all the liquids we consume, high amounts of fructose can overwhelm the liver, leading to liver failure, liver cancer, and liver-related death.

HOW MUCH IS TOO MUCH? (2 min)

Sugary drinks are THE NUMBER ONE source of added sugars in our diets[ii]. The average American consumes **17 teaspoons of added sugars a day**. That's what this is:

[Show audience 17 teaspoons of sugar]

That means the average person is consuming **5 pounds of sugar a month**!

[Show them 5 pounds of sugar]

This is what the average person is consuming, but what is the *maximum* that we should be consuming?

- The American Heart Association recommends no more than 9 teaspoons of added sugars a day for men, 6 for women, and 3 for children.
- The World Health Organization recommends a maximum of 6 teaspoons of added sugars.[iii]

SUGARY DRINKS ARE MAKING US SICK (10 min)

Sugary drinks are making us sick from head to toe and we now have the first generation of children in over two centuries who may live a shorter lifespan than their parents! [iv] **1 in 3 kids born after 2000 will have type 2 diabetes**[v], and **for African American and Latino children, it's 1 in 2**.

A growing body of science has linked sugary drinks to numerous health conditions including tooth decay[vi], heart disease[vii], osteoporosis, type 2 diabetes, cancer, infertility/erectile dysfunction, metabolic syndrome[viii] and gout[ix], and ultimately, premature death.

[Give each group a hand out and 5 minutes to identify which diseases are linked to sugary drinks and fill in the blank. Review the answers as a group.]

Ask the audience: What was most surprising? Which of these diseases are most compelling to your age group/community?

[The following information is for the presenter's reference. You may choose to read this information to participants, or use this information if participants have questions.]

CANCER - Rates of liver cancer are rising and are linked to Non-Alcoholic Fatty Liver Disease (NAFLD), which is fueled by drinking sugary drinks.[x] Drinking sugary drinks may be a risk factor for type I endometrial cancer regardless of other lifestyle factors.[xi]

INFERTILITY/ERECTILE DYSFUNCTION - Erectile dysfunction, or impotence, is the inability to get and maintain an erection during sexual activity on an ongoing basis. Impotence can lead to

stress, anxiety, relationship problems and low self-esteem. Common causes of erectile dysfunction include diabetes, high blood pressure and metabolic syndrome.[xii] Consuming sugary drinks increase your risk of developing type 2 diabetes, which is a risk factor for erectile dysfunction.[xiii] In a recent study, young healthy men who drank more than one sugary drink a day had significantly lower sperm quality, impacting their fertility, than those who drank less than one sugary drink a day.[xiv]

GOUT - Gout happens when crystals form in the joints, causing pain and swelling. It usually occurs in the big toe, other toe joints, the ankle, and the knee. These crystals are made from a substance called uric acid, which comes from certain foods.[xv] Sugary drinks can affect gout because they may lead to the body making more uric acid. When there's too much uric acid, it can form those crystals in the joints, causing pain.

LIVER - The liver is a vital organ that cleans our blood, makes bile, and processes all the liquids we consume, which is why alcohol is so damaging to the liver. Fructose can only be processed in the liver, so consuming drinks high in fructose or high fructose corn syrup has a large impact of the buildup of fat in the liver. We are now seeing increased cases of **Non Alcoholic Fatty Liver Disease**, which can lead to liver failure, liver cancer, and liver-related death.

METABOLIC SYNDROME is a name for a group of health issues that can happen together and might make it more likely for someone to get heart disease, stroke, and type 2 diabetes. In metabolic syndrome, a person might have high blood sugar, higher blood pressure, and not enough of the good kind of cholesterol.[xvi]

OSTEOPOROSIS is a disease characterized by weakening of bones and bone density. For children and adolescents, this is a double whammy: 1) These are their critical bone-building years; and 2) Sugary drinks are displacing healthy drinks like milk and water.[xvii, xviii]

TOOTH DECAY – Tooth decay is the most common chronic disease of children and adolescents[xix]. Drinking sugar is worse for your teeth than eating sugar due to the length of time that sugar is on the surface of the tooth. Even diet soda is highly acidic, causing teeth to be highly susceptible to cavities. You don't have to be a heavy soda drinker to experience dental decay. Drinking one 12 oz. can of soda a day can cause dental erosion due to the cumulative effects of some of the chemicals we consume.[xx, xxi] Even children less than 1 year old can have cavities. Early Childhood Caries, also known as **Baby Bottle Tooth Decay**[xxii], happens when children are allowed to sleep with sweet liquids in their mouth.

TYPE 2 DIABETES – Type 2 diabetes is a health condition that affects how your body handles sugar. Imagine sugar as fuel for your body, like the gas for a car. Normally, your body uses a hormone called insulin to help the sugar get into your cells, where it's used for energy. People with type 2 diabetes don't produce enough insulin, or the insulin it makes doesn't work properly. When this happens, the sugar can't get into your cells like it should. Instead, it stays in your bloodstream, causing high blood sugar levels. Too much sugar in your blood can lead to

various problems over time like heart disease, kidney damage, nerve damage, blindness, foot problems, etc.[xxiii]

PREMATURE DEATH - Roughly 180,000 deaths worldwide are linked to sugary drink consumption.[xxiv] A new study found that drinking a 20-ounce sugary drink a day can age you as much as smoking cigarettes.[xxv] Without careful management, diabetes can lead to complications such as: blindness, amputations, kidney failure, liver disease, heart attacks, strokes, cancer, and death.[xxvi,xxvii]

WRAP UP

There are three key messages that I hope you'll remember:

1. **Sugary drinks are the number one source of added sugar in the American diet.**
2. **Sugary drinks increase the risk of chronic diseases** like tooth decay, type 2 diabetes, and heart disease.
3. Studies show that **cutting back on sugary drinks helps reduce risk of these diseases.**

Choose healthy drinks like tap, bottled, unsweetened sparkling water, unsweetened low-fat milk or tea. Flavor plain or sparkling water by adding herbs, fruit, etc. Carry a water bottle with you and refill it throughout the day.

FACTS ABOUT SF TAP WATER www.sfwater.org

- SF tap water is the **healthiest** and most **affordable** drink around!
- Here in San Francisco, our delicious tap water comes from pristine snowmelt from **Hetch Hetchy Reservoir** in **Yosemite National Park**.
- Unlike bottled water, our delicious Hetch Hetchy tap water **costs less than half a penny** per gallon AND is **quality tested over 100,000 times** a year!

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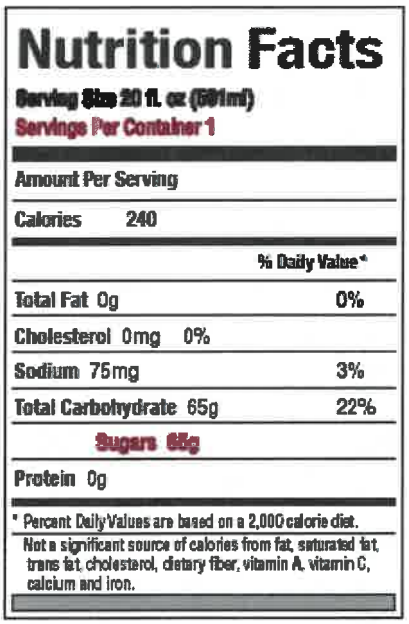
Calculating How Much Sugar is in a Container



Nutrition Facts

Serving Size 20 fl. oz (591ml)
Servings Per Container 1

Amount Per Serving	
Calories 240	
	% Daily Value*
Total Fat 0g	0%
Cholesterol 0mg 0%	
Sodium 75mg	3%
Total Carbohydrate 65g	22%
Sugars 65g	
Protein 0g	

* Percent Daily Values are based on a 2,000 calorie diet.
Not a significant source of calories from fat, saturated fat, trans fat, cholesterol, dietary fiber, vitamin A, vitamin C, calcium and iron.

GRAMS OF SUGAR ÷ 4 = TEASPOONS OF SUGAR

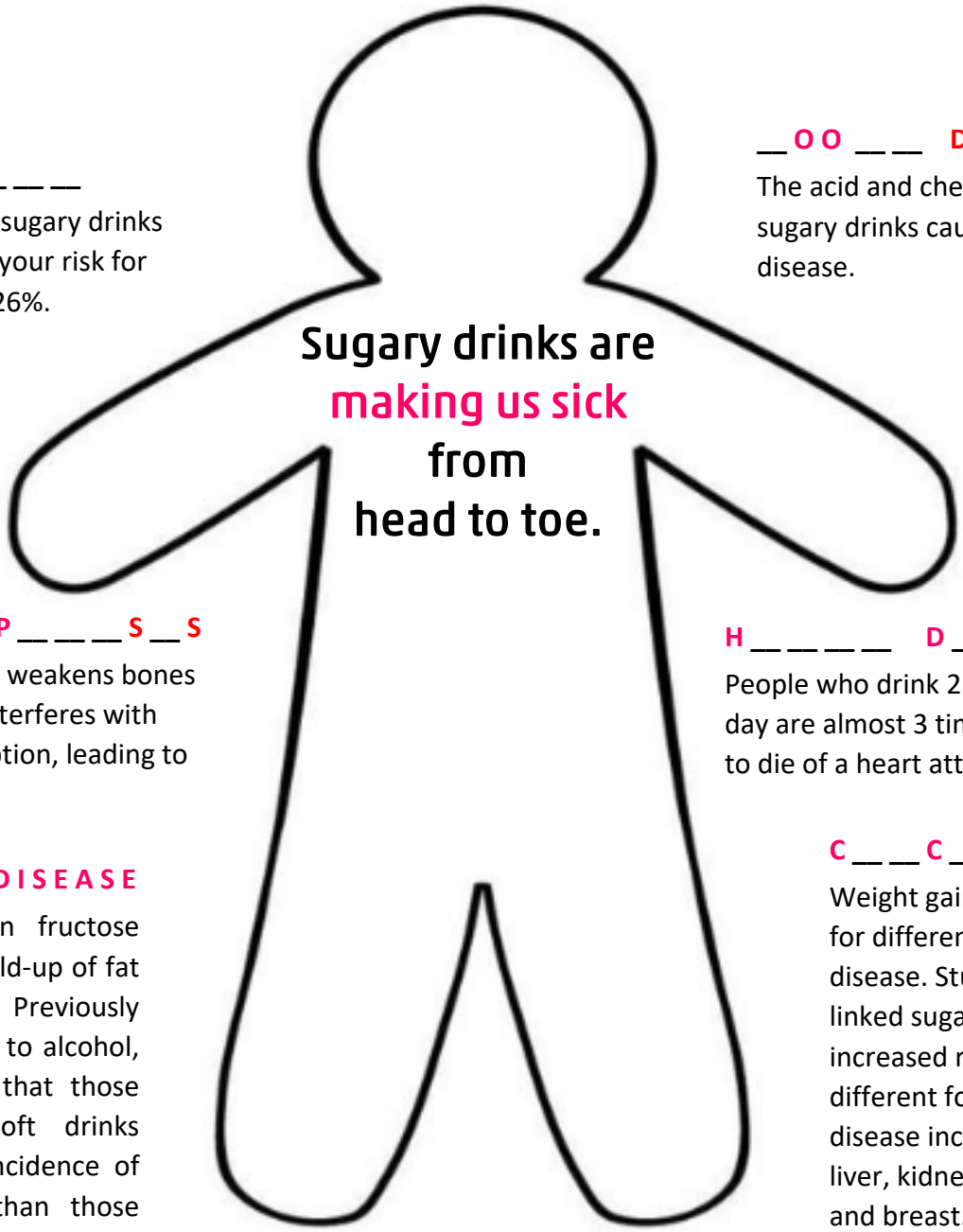
65g ÷ 4 ≈ 17 teaspoons

Remember: Multiply the teaspoons of sugar by the number of servings to get the total number of teaspoons of sugar in the container.

Example: 10 tsp x 2 servings = 20 teaspoons total in the container

Sugary Drinks Are Making Us Sick

Fill in the blanks to identify the diseases linked to drinking too many sugary drinks.



T __ __ __ 2
__ I A __ __ __ __ __

Just one to two sugary drinks a day increases your risk for this disease by 26%.

__ O O __ __ D __ __ __ Y

The acid and chemicals in sugary drinks cause this disease.

O __ __ __ __ P __ __ __ S __ S

Phosphoric acid weakens bones and caffeine interferes with calcium absorption, leading to this disease.

H __ __ __ __ D __ S __ __ __ E

People who drink 2 to 3 sodas per day are almost 3 times more likely to die of a heart attack.

L __ V __ __ DISEASE

Drinks high in fructose lead to the build-up of fat in this organ. Previously related mainly to alcohol, studies show that those who drink soft drinks have higher incidence of this disease than those who do not.

C __ __ C __ R

Weight gain is a risk factor for different forms of this disease. Studies have linked sugary drinks to increased risk of 13 different forms of this disease including of the liver, kidney, pancreas, and breast.

I __ F __ __ __ __ __ __ __ Y

In a recent study, young healthy men who drank more than one sugary drink a day had significantly lower sperm quality than those who drank less than one sugary drink a day.

G O __ __

This form of arthritis causes severe pain, redness, and tenderness in joints.

Source: Open Truth Website www.opentruthnow.org