Essential Question: How can my lifestyle affect the quality of my life?

Activity 3 – What does eating Fast Food have to do with Diabetes?

Purpose: I can explain how eating choices affect my health.

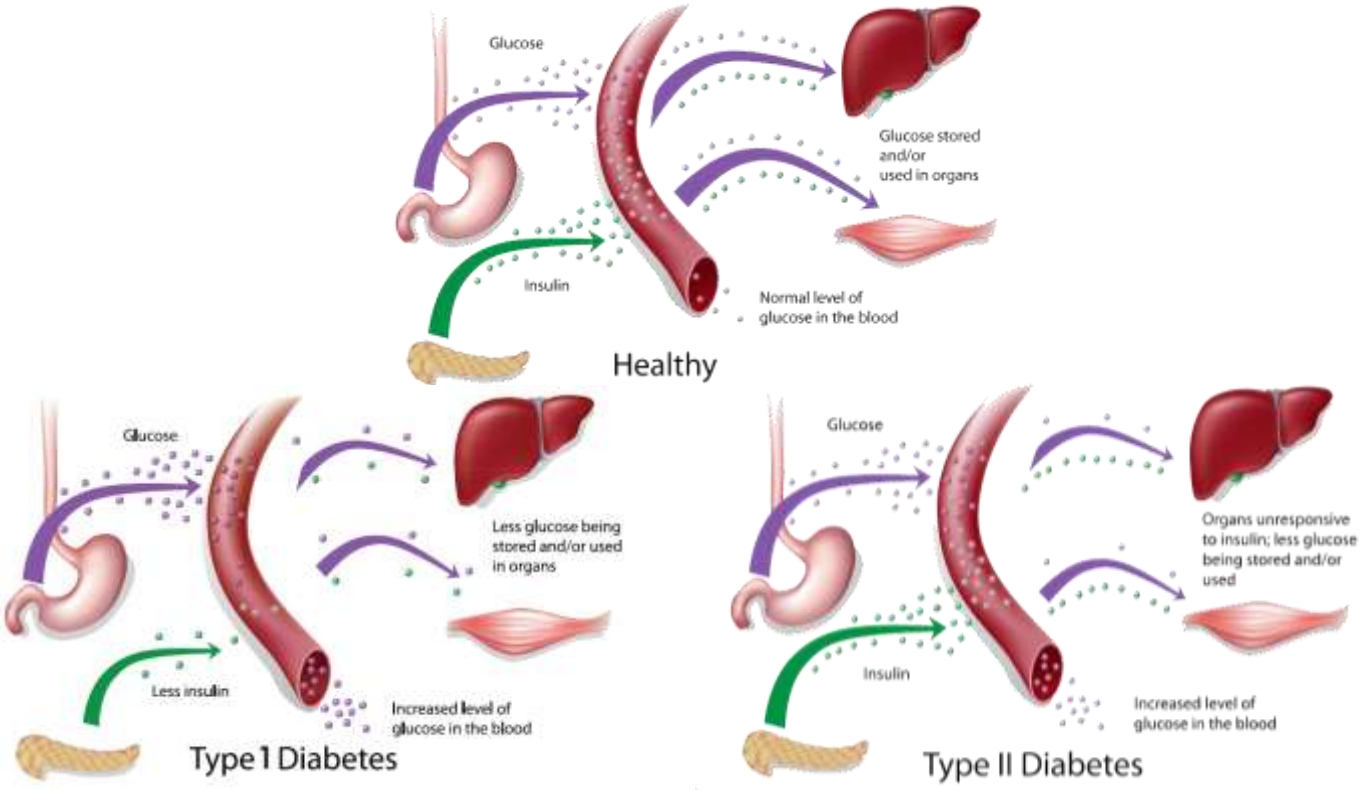
Background: In the 1990's scientists were astounded by the rapid rise in diabetes in America. However reasons for this rise were not shown until 2004, when Dr. Mark Pereira and his team made a landmark discovery linking eating fast food and diabetes. In 2012 Dr. Pereira and colleagues followed up by showing the effect of a fast food diet on society's that didn't previously eat fast food. You will read and answer questions about both studies.

Basics: Diabetes is a disease in which your body cells cannot bring glucose into the cell to make energy. Glucose comes from two sources in your body

- Directly into the Circulatory system from nutrients broken down in the Digestive system.
- From the liver. The liver makes glucose from its stores when the bloodstream's glucose level goes down,.

Insulin is important because this molecule "**activates**" the cells to bring glucose inside so energy can be made. Insulin comes from an organ in your body called the **pancreas.**

- There are two **types of diabetes**, Type one and type two. **Type I diabetes** occurs in infants. However
- **Type 2** occurs in people in their late teens and older when their body cells become resistant to insulin.



After reading the background, view the Insulin, Glucose and You vclip. Then answer the following questions CQC.

1. **Article 1.** Tell why insulin is important**.**

Total deaths from diabetes are projected to rise by more than 50% in the next 10 years.
Most notably, they are projected to increase by over 80% in upper-middle income countries.

Student Review: 1-Below Standard, 2-Approaching Standard, 3-Standard, 4-Above Standard Use the scale to evaluate completeness & correctness of the job. Put score, Initial & date in boxes.	Score	Initial/Date

2. Explain what it means for someone to have have a major risk factor for type two diabetes.

3. Tell how many pounds people gained in fat when eating fast food ***more than twice a week*** **AND** their risk for Diabetes compared to people who comsumed fast food ***less then once a week***.

4. Tell how many young adults were followed in this study **AND** how long the researchers collected data from these study subjects. Are the results **reliable**?

5. Describe what Dr Pereira concluded from his fast food study **AND** tell what he says will happen if young adults continue to increase their fast food consumption.

6. Explain what the fast food industry has done in the past 15 to 20 years to make the obesity and diabetes problem worse.

7. Article 2 Explain the risk of dying from coronary heart disease for people in Singapore who eat fast food:

a. Once a week

b. Two – three times a week

c. Four or more times a week

8. How does eating fast food ***2+ a week*** affect the risk of developing Type 2 diabetes?

9. Describe what the researchers found interesting about the study participants.

10. Explain what Dr. Pereira said was the big picture he concluded from their findings.

RESEARCH ARTICLE # 1 - This is the research that showed first real Evidence "Fast Foods" were an issue!

Researchers link fast food to diabetes in young adults

Dec 31, 2004 – Tom Majeski – The Seattle times

Minneapolis – Young adults who frequently eat fast food are far more likely to gain weight and develop type 2 diabetes than those who don't, researchers have found. While this sounds like a no-brainer, there really isn't much science at all linking fast food diets to an increasing risk of developing type 2 diabetes, said Mark Pereira, assistant professor of epidemiology in the University of Minnesota's school of Public Health. ""It could be argued that this is a first of a kind study."

Obesity is a major risk factor for diabetes. Having diabetes is a major risk factor for cardiovascular disease (clogging of the heart's blood vessels). Together, they annually cause hundreds of thousands of premature deaths and cost billions of dollars to treat. Pereira and his colleagues found that young adults who consumed fast food more than twice a week gained 10 additional pounds and had twice the risk of diabetes than those who ate fast food less than once a week.

The researchers followed 3,031 young adults for 15 years, beginning in 1985. During that period, they were asked repeatedly about dietary habits, weighted, measured and had blood – sugar levels tested. Participants ranged in age from 18 to 30 and lived in four study areas: Minneapolis; Birmingham, Ala.; Chicago; and Oakland, Calf. The groups were about evenly divided between white and black, men and women, Pereira said.

"The more fast food they ate," Pereira said, "the more likely they were going to gain weight and increase their risk of developing type 2 diabetes. The more frequently they went to these restaurants, the worse their diets were." Fast-food restaurants first appeared in the 1950s. The nation's 247,115 fast-food outlets have grown into a dominant dietary pattern, researchers said. As a result, fast-food consumption by children has increased from 2 percent of total energy in the late 1970s to 10 percent in the 1990s.

Increased consumption of sugar, salt, and fat leads to excess body weight and boosts insulin resistance, a precursor to diabetes, Pereira said. "The predictions for diabetes worldwide for the next 20 to 30 years are really daunting," he said. "It will lead to some bankruptcies in the health-care industry." Obesity, on the other hand, annually causes an estimated 300,000 deaths and triggers at least $100 billion in medical expenditures.

Pereira placed part of the problem on the fact that meal and soft-drink size have increased consistently in the past 15 to 20 years. "Portion sizes are enormous, with lots of calories but not a lot of nutrients. There's lots of sugars and starches and the wrong kinds of fats and poor-quality protein." Super-sized meals are "a bargain for the wallet but not for the waistline or the emergency room," he said. While the fast-food industry is starting to make some improvements in the types of food it offers, "they are only baby steps," Pereira said.

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RESEARCH ARTICLE # 2 - Evidence

Fast Food Intake Increases Risk of Diabetes and Heart Disease in Singapore

MINNEAPOLIS/ST. PAUL (JULY 2, 2012) –

The dangers of fast food are well documented; portions are often larger and the food is generally high in calories and low in nutrients. Now, University of Minnesota School of Public Health researchers have examined the eating habits of residents in Singapore and found new evidence that a diet heavy in fast food increases the risk of developing Type 2 diabetes and coronary heart disease.

The latest research, published online today by the American Heart Association's journal *Circulation*, found that:

- People who consume fast food even once a week increase their risk of dying from coronary heart disease (clogging the heart arteries) by 20 percent in comparison to people who avoid fast food.
- For people eating fast food two-three times each week, the risk increases by 50 percent,
- The risk climbs to nearly 80 percent for people who consume fast food items four or more times each week.

Eating fast food two or more times a week was also found to increase the risk of developing Type 2 diabetes by 27 percent.

According to University of Minnesota researchers, the few existing studies on the association of fast food and metabolic risk have looked almost exclusively at Western-Caucasian (white) populations from the United States.
"We wanted to examine the association of Western-style fast food with cardio-metabolic risk in a Chinese population in Southeast Asia that has become a hotbed for diabetes and heart disease," said University of Minnesota post-doctoral researcher Andrew Odegaard, Ph.D., M.P.H.
"What we found was a dramatic public health impact by fast food, a product that is primarily a Western import into a completely new market."

The researchers worked alongside researchers from the National University of Singapore. Together, they examined the results of a study conducted over a period of 16 years beginning in 1993, which looked at the eating habits of 52,000 Chinese residents of Singapore who have experienced a recent and sudden transition from traditional foods to Western-style fast food.

"What's interesting about the results is that study participants who reported eating fast food most frequently were younger, better educated, smoked less and were more likely to be physically active," said Odegaard. "This profile is normally associated with lower cardio-metabolic risk."

According to the study's senior researcher, Mark Pereira, Ph.D., M.P.H., of the School of Public Health's Division of Epidemiology and Community Health, the new research provides an important perspective on global health and the nutrition transfer when cultures developing in different parts of the world start moving away from their traditional diet and mode of exercise.

"The big picture is that the fast food aspect of U.S. and Western culture might not be the best thing to spread to cultures around the world," he said. "Global public health efforts should focus on maintaining the positive aspects of traditional cultures, while preventing the spread of outside influences thought to be harmful based on the scientific evidence."

Total deaths from diabetes are projected to rise by more than 50% in the next 10 years. Most notably, they are projected to increase by over 80% in upper-middle income countries.