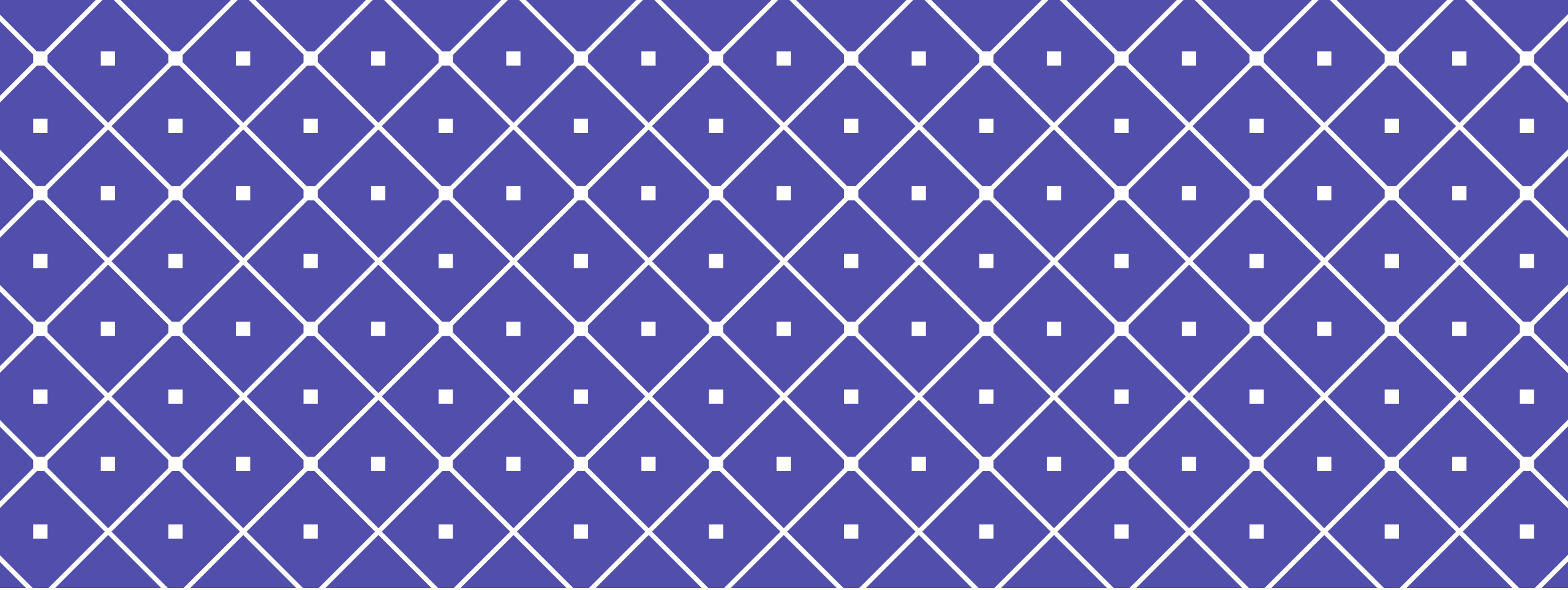


DEPOSITS

Dentalelle Tutoring

PH SCALE

Concentration of Hydrogen ions compared to distilled water				Examples of solutions and their respective pH
	1/10,000,000	14	Liquid drain cleaner, Caustic soda	
	1/1,000,000	13	bleaches, oven cleaner	
	1/100,000	12	Soapy water	
	1/10,000	11	Household Ammonia (11.9)	
	1/1,000	10	Milk of magnesium (10.5)	
	1/100	9	Toothpaste (9.9)	
	1/10	8	Baking soda (8.4), Seawater, Eggs	
	0	7	"Pure" water (7)	
	10	6	Urine (6) Milk (6.6)	
	100	5	Acid rain (5.6) Black coffee (5)	
	1,000	4	Tomato juice (4.1)	
	10,000	3	Grapefruit & Orange juice, Soft drink	
	100,000	2	Lemon juice (2.3) Vinegar (2.9)	
	1,000,000	1	Hydrochloric acid secreted from the stomach lining (1)	
	10,000,000	0	Battery Acid	

DENTAL CARIES

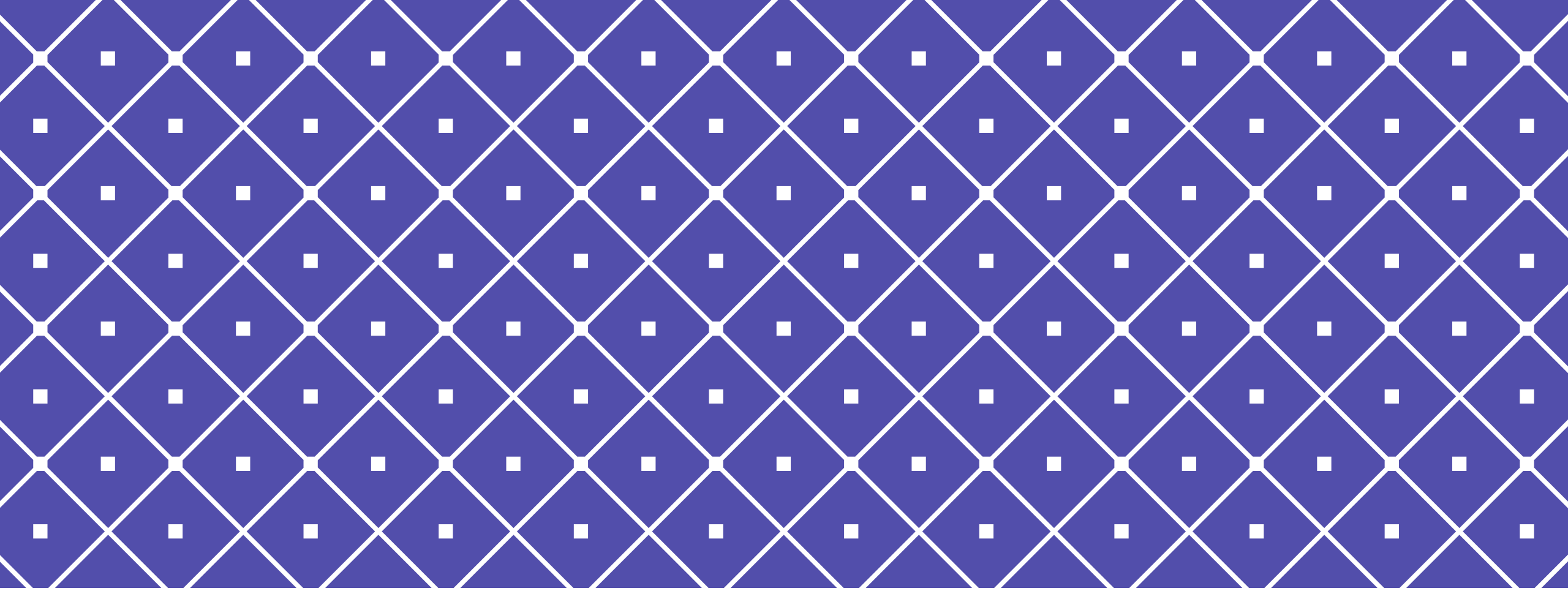
Dental caries is a dynamic process that involves a susceptible tooth, cariogenic bacteria in dental plaque (***streptococcus mutans* and *lactobacillus***), and a fermentable carbohydrate. Other considering factors also include absence of fluoride, salivary gland hypofunction, and poor oral hygiene. Fermentable carbohydrates are commonly considered to be primarily sucrose (table sugar).

However, all simple sugars are potentially cariogenic. The universal sweetener in use today, high fructose corn syrup is made from the simple sugar, fructose.

CONTINUED

The **frequency of sugar** eaten is the primary factor involved in the caries process. Sugary foods or liquids consumed 20 minutes apart allows for separate opportunities for bacteria to feed and produce acid. **When the pH of the dental plaque falls below 5.5, the caries process begins.** Form and composition of a fermentable carbohydrate plays a secondary role depending on how long it takes for a food or drink to clear the oral cavity.

Liquids clear faster than soft, sticky foods. The total amount of sugar consumed is the least important factor to consider while counseling patients. A food that is 80% sucrose may not be any more harmful than one that is 40% sucrose.



STAGES OF CALCULUS FORMATION

PELLICLE FORMATION

Within minutes after brushing or cleaning teeth, a thin membrane or pellicle, forms on tooth surfaces. This pellicle arises not from the action of bacteria but from proteins within saliva that naturally deposits on teeth as a protective coating. Bacteria exploit this membrane, growing in it as readily as they grow on Petri dishes in a laboratory.

As the pellicle gains a freight of bacterial colonies, it loses its solubility; the stabilized film allows more bacterial colonies to grow on teeth, particularly in fissures and crevices.

PLAQUE FORMATION

Bacteria produce their own biofilm (a slippery matrix in which the microbes grow undisturbed) that adheres to teeth. These biofilm layers are the earliest stages of plaque formation. Plaque -- a mixture of bacteria and bacterial waste products -- becomes visible within hours after tooth-brushing as a whitish paste on surfaces within the mouth.

As these bacterial colonies grow, they produce acidic by-products that destroy tooth enamel, leading to tooth decay. **Brushing and flossing dislodge immature plaque less than 24 hours old but as plaque matures it becomes more difficult to remove.**

CALCULUS FORMATION

Within 24 hours, plaque begins to mineralize into calculus. Acids and bases interact to form salts; this process forms part of the composition of calculus as calcium and phosphates in alkaline saliva interact with acidic bacterial wastes. In its earliest phase of development, brittle calculus deposits fall away under a toothbrush or strand of dental floss.

If left undisturbed, the mineralization process continues and builds around defunct bacteria, fossilizing them. Within approximately twelve days to two weeks, calculus matures.

MATURATION

Dentists can readily see mature calculus formations as whitish or pale yellow structures affixed to teeth. The largest calculus deposits typically occur on the lingual (nearest the tongue) surfaces of the lower front teeth but tartar can occur anywhere in the mouth.

Sub-gingival calculus grows below the gums, while supra-gingival calculus grows on visible tooth surfaces above the gums. Although it feels solid, porous calculus plays host to multiple colonies of bacteria that thrive on the increased surface area that the mineralized plaque provides.