

CareQuest Cariology Curriculum Instructor Guide

Session 1: Foundations of Dental Caries: Disease Process and Epidemiology

SESSION DETAILS

Pedagogy:

Lecture: Interactive Presentation

In-Class Activities:

1. What Is Dental Caries?
2. Caries Data Research
3. Optional Role Play Activity

Length: 60 mins

*Extended Learning Module: Updating Your Knowledge of Dental Caries:
Epidemiology*

Short Self-Paced Course (approximately 30 minutes)

<https://learning.carequest.org/#/online-courses/240328c5-9761-4e10-a446-f13c69dc84af>

Description:

This session introduces dental caries as a chronic, dynamic, biofilm-mediated disease rather than a static lesion. Learners will examine how microbial metabolism, repeated pH fluctuations, and host factors such as saliva, diet, fluoride exposure, and oral hygiene behaviors influence cycles of demineralization and remineralization over time. The session will also provide a high-level overview of caries epidemiology to contextualize its impact across populations.

Learning Objectives:

- Explain dental caries as a chronic, dynamic, biofilm-mediated disease process driven by repeated pH changes and influenced by host and environmental factors.
- Describe how microbial activity within dental biofilms leads to cycles of demineralization and remineralization over time.
- Describe how caries progression varies by individual risk and contextual factors.
- Interpret high-level population data on dental caries to explain why early detection and prevention are central to oral health practice.

PRE-SESSION PREP CHECKLIST

Reading:

- [Essentials of Dental Caries](#), Kidd *et al.*, chapter 1

Asynchronous:

- CareQuest Self-Paced Education, [“Updating Your Knowledge of Dental Caries: Causes, Concerns, and Considerations”](#)

ADDITIONAL STUDENT RESOURCES**“HIDDEN PAIN: America’s Oral Health Crisis” (11:30)**

<https://youtu.be/2jZ1IOhJURg?si=quQxg97ZLF-PV5wA>

“WHO’s Science in 5: Oral health – 21 November 2022” (5:07)

https://youtu.be/-b6NGkv5RmM?si=Yqez1_oQsFZsc-lr

“Oral and Dental Health,” CDC/National Center for Health Statistics,

<https://www.cdc.gov/nchs/fastats/dental.htm>

Global Oral Health Status Report: Towards Universal Health Coverage for Oral Health by 2030

<https://www.who.int/publications/i/item/9789240061484>

SYNCHRONOUS CLASS TIMING LESSON PLAN

- Opening and Framing [10 minutes]
- What Is Dental Caries? [5 minutes]
- Key Terminology [15 minutes]
- Global Caries Impact [5 minutes]
- National and Local Trends over Time [15 minutes]
- Progression Overview [5 minutes]
- Wrap Up [5 minutes]

LESSON OUTLINE	INSTRUCTIONAL PROMPTS
Opening and Framing [Lecture and Activity, 10 minutes]	Slide 1: Welcome and why this topic matters. Slide 2: Learning objectives (brief). Slide 3: Think – Pair – Share (90 seconds). Prompt: “What is dental caries?” Take 2 to 3 responses.
What Is Dental Caries? [Discussion, 5 minutes]	Slide 4: Frame dental caries as a disease process that occurs over time. Emphasize: <ul style="list-style-type: none"> • Caries is a biofilm-mediated disease. • It involves cycles of demineralization and remineralization. • It can produce non-cavitated or cavitated lesions. Keep this focused on disease understanding, not treatment.

<p>Key Terminology [Discussion + small-group activity, 15 minutes]</p>	<p>Slides 5–9: Review terminology and how definitions have evolved over time. Slide 10: Small-group activity (4 minutes). Students review the figure and answer:</p> <ul style="list-style-type: none"> • Which factors are modifiable? • Which are not modifiable? • Are any missing or mislabeled? <p>Take 2 brief share-outs.</p>
<p>Global Caries Impact [Lecture, 5 minutes]</p>	<p>Slides 11–12: Address slide notes. Keep it to two key takeaways:</p> <ul style="list-style-type: none"> • Caries burden is high globally. • Impact is not evenly distributed across populations.
<p>National and Local Trends over Time [Discussion, 15 minutes]</p>	<p>Slides 13–14: Review national prevalence and untreated caries data. Slide 15: “Different populations” slide with local data mini-activity (8 minutes total): Divide into small groups. Assign each group one population category (age, race/ethnicity, income, geography). Students identify one credible statistic and report back:</p> <ul style="list-style-type: none"> • What is the number? • Which population is most affected? • One sentence on why prevention and early detection matter. <p>Slides 16–17: Review trends over time and possible reasons for decline. Brief discussion: What system-level factors may explain these trends?</p>
<p>Progression of Dental Caries [Lecture, 5 minutes]</p>	<p>Slides 18–19: Provide a high-level overview only. Emphasize:</p> <ul style="list-style-type: none"> • Caries progression is a process over time. • Early stages often do not cause pain. • Disease activity can be slowed or stopped depending on stage and risk.
<p>Wrap Up [Lecture, 5 minutes]</p>	<p>Final content slides 20–21: Reinforce two key takeaways:</p> <ul style="list-style-type: none"> • Caries is a disease process that develops over time. • Early recognition and prevention are central to practice.

OPTIONAL ROLE PLAY ACTIVITY

Explain tooth decay to a patient

Total Time: 6 minutes

- **Round 1:** 2 minutes (45 seconds role-play, quick feedback)
- **Round 2 (switch roles):** 2 minutes
- **Quick share:** 2 minutes (ask 2 pairs to share their best one-liner)

Learning Goal: Practice a clear, respectful, plain-language explanation of dental caries as a disease process.

Setup:

- Students work in pairs.
- One is the clinician; one is the patient.
- Switch roles halfway through.

Scenario:

Patient: "You said I have a cavity. What does that mean for me?"

Clinician: Explain it in 45 seconds. No treatment planning yet.

Clinician must include (3 parts):

- **What it is**
 - Example: *"Tooth decay is a process that weakens the tooth over time."*
- **How it happens**
 - Example: *"Plaque germs use sugar or starch to make acid. That acid can weaken the tooth when it happens often."*
- **Why it matters**
 - Example: *"If we catch it early, we can often slow it down or stop it."*

Patient prompt lines (choose one):

- "I brush, so why is this happening?"
- "Does this mean I did something wrong?"
- "Is this going to hurt?"

Instructor notes:

Require plain language

If students say "caries," they must also say "tooth decay."

Keep sentences short (one idea per sentence)

Avoid blame language

If a student makes it sound inevitable, prompt them to add the early-action message.

Optional example script (45 seconds):

"Tooth decay is a process that can weaken a tooth over time. It happens when plaque germs use sugar or starch from food and drinks to make acid. If that acid exposure happens often, the tooth can start to lose minerals and weaken. The good news is that when we catch it early, we can often slow it down or stop it."

