

Caries Management and Prevention: A Risk-Based Approach by CareQuest Institute

Session 11: Saliva in Disease: Asthma, Allergic Rhinitis, and Caries Risk

SESSION DETAILS

Pedagogy:

Lecture: Interactive Presentation

In-Class Activity:

1. Multiple Choice Questions

Extended Learning Module [\[add clickable link\]](#)

Length: 50 mins

Description:

In this session, learners will explore how asthma and allergic rhinitis can impact saliva and increase the risk of dental caries. This presentation will explore the medications used by patients and guide the creation of a collaborative preventive treatment plan. It will address the impact of asthma and allergic rhinitis medications on the oral microbiome.

Learning Objectives:

- Discuss how the bacteria in saliva connect to asthma and allergic rhinitis.
- Examine the relationship between caries and asthma and allergic rhinitis.
- Evaluate the saliva and clinical case of a patient with asthma.

PRE-SESSION PREP CHECKLIST

Reading:

- [Essentials of Dental Caries](#), Kidd *et al.*, chapters 2.1 and 2.4

Explore:

- [Controlling Asthma](#), Centers for Disease Control and Prevention
- [2020 Focused Updates to the Asthma Management Guidelines: At-a-Glance Guide](#), National Heart, Lung, and Blood Institute

SYNCHRONOUS CLASS TIMING LESSON PLAN

- Opening and Framing [5 minutes]
- Asthma Overview and Epidemiology [10 minutes]
- Asthma, Saliva, and Caries Risk [20 minutes]
- Allergic Rhinitis and Oral Health [10 minutes]
- Wrap Up [5 minutes]

LESSON OUTLINE	INSTRUCTIONAL PROMPTS
Opening and Framing [Lecture, 5 minutes]	Slide 1: Introduce the connection between saliva, asthma, allergic rhinitis, and caries. Slide 2: Learning objectives (brief). Slide 3: Explain that saliva composition and flow vary due to biological and systemic factors. Slide 4: Reinforce that changes in saliva influence the oral microbiome and disease risk.
Asthma Overview and Epidemiology [Lecture, Multiple Choice Question, 10 minutes]	Slides 5–6: Define asthma and describe common triggers relevant to patient care. Slides 7–8: Summarize asthma prevalence trends and emphasize impact across age groups. Slides 9–10: Read question. Have learners vote. Encourage quick participation. Confirm correct answer. Slide 11: Explain that asthma attacks remain common in the US, affecting a significant portion of patients with asthma each year, and emphasize that frequency varies based on geography, environment, and individual risk factors.
Asthma, Saliva, and Caries Risk [Lecture, 20 minutes]	Slide 12: Introduce the relationship between asthma and dental caries. Slides 13–16: Summarize evidence showing increased caries risk in patients with asthma. Slide 17: Emphasize asthma treatments can reduce salivary flow which increases caries risk. Slide 18: Explain that while the overall microbiome may appear similar, shifts in bacterial abundance may influence inflammation and contribute to both asthma development and increased caries risk.

	Slides 19–20: Address slide notes. Describe how shifts in bacterial abundance increase cariogenic potential. Slide 21–22: Highlight how reduced salivary flow and sIgA contribute to increased caries risk. Slides 23–25: Review how asthma medications contribute to oral changes and caries risk. Slides 26–27: Walk through asthma action plans and how to assess patients. Slides 28–29: Connect the different changes asthma medication can have on saliva. Slide 30: Review strategies to manage xerostomia and support salivary functions.
Allergic Rhinitis and Oral Health [Lecture, Multiple Choice Question, 10 minutes]	Slides 31–32: Define allergic rhinitis and describe patterns, symptoms, and prevalence. Slides 33–34: Explain how allergy medications can impact saliva and increase caries risk. Slides 35–36: Read question. Have learners vote. Encourage quick participation. Confirm correct answer. Slide 37: Discuss xylitol and adjunct strategies to support oral and nasal health.
Wrap Up [Lecture, 5 minutes]	Slide 38 (final content slide): Key takeaway: Patients with asthma and allergic rhinitis have an increased risk for dental caries due to changes in saliva, microbiome, and medication effects, so recognizing risk and implementing targeted preventive strategies is critical in patient care.

EVALUATION METHOD

This session can be assessed through short-answer, essay, or multiple-choice questions to effectively evaluate comprehension. Below are sample questions to help guide the creation of the questions.

Question 1

What is asthma?

- A. A seasonal allergy
- B. A chronic lung condition
- C. A bacterial infection
- D. An emotional trigger

Question 2

What environmental factor is associated with lower asthma symptoms in some regions, such as North Dakota and Colorado?

- A. Dry conditions
- B. High humidity
- C. Pollution
- D. Allergy triggers

Question 3

How did a systemic review in 2010 contribute to understanding the link between asthma and dental caries?

- A. It disproved any association.
- B. It focused on cardiovascular disease.
- C. It ignored primary dentition.
- D. It found increased odds of tooth decay in children with asthma.

Question 4

What is one way asthma or allergy medications can affect oral health?

- A. Improved salivary flow
- B. Decreased pH
- C. Reduced risk of caries
- D. Enhanced buffer capacity

Question 5

How can xylitol nasal spray contribute to oral health for patients with allergic rhinitis?

- A. Increasing mucus production
- B. Disrupting normal flora
- C. Increasing pathogenic bacteria
- D. Reducing bacterial adherence

Question 6

A patient with asthma reports frequent inhaler use and dry mouth. Which of the following best explains their increased risk for dental caries?

- A. Increased salivary flow improves remineralization.
- B. Reduced salivary flow limits buffering and acid neutralization.
- C. Increased oxygen levels in saliva.
- D. Decreased bacterial activity.

Question 7

Which of the following best describes how inhaler use can affect plaque pH?

- A. It permanently increases plaque pH.
- B. It has no effect on plaque pH.
- C. It causes a temporary decrease in plaque pH.
- D. It eliminates acid production in plaque.

Question 8

A patient with allergic rhinitis reports chronic nasal congestion and mouth breathing. What is the most likely oral health impact?

- A. Increased salivary flow
- B. Improved buffering capacity
- C. Increased risk of xerostomia and caries
- D. Decreased bacterial colonization

Question 9

Which of the following best explains the relationship between asthma and dental caries?

- A. Asthma directly causes enamel breakdown.
- B. Asthma eliminates protective oral bacteria.
- C. Medications and reduced saliva contribute to a more cariogenic environment.
- D. Asthma prevents plaque formation.

Question 10

Which preventive strategy is most appropriate for a patient using inhaled asthma medications?

- A. Avoid fluoride use.
- B. Increase frequency of sugar intake.
- C. Rinse the mouth after inhaler use.
- D. Reduce dental visits.