



Side Effect Support  
ASSISTANCE ON THE ROAD TO RECOVERY

# Cancer Treatments & Oral Health

Making the Mouth-Body  
Connection in Cancer Care

Jill Meyer-Lippert, RDH









What I thought would happen



What really happened









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## Our Promise...

Side Effect Support LLC is dedicated to improving the oral health and overall wellbeing of those fighting cancer. We are committed to assisting oncology patients and their providers.

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<https://SideEffectSupport.com/>



Take home more resource

# Keep your cell phones ready!





# Objectives

- Identify oral-systemic links with various types of cancer
- Describe oral side effects of cancer treatments and how they may affect quality of life and tx outcomes.
- Discuss preventive approaches to avoid and manage short-term and long-term oral side effects.
- Develop strategies for the medical team and dental team to work together to improve patient care.



CARE DELIVERY

June 16, 2018 01:00 AM

## Oral hygiene program reduces infections among young cancer patients at Johns Hopkins

MARIA CASTELLUCCI



- Johns Hopkins All Children's Hospital
- Implemented an oral care bundle in September 2016
- Brush teeth and lip balm twice a day, mouth rinse three times a day
- Compliance rate is 60%
- 50% reduction in mucosal barrier infections

<https://www.modernhealthcare.com/article/20180616/TRANSFORMATION03/180619957/oral-hygiene-program-reduces-infections-among-young-cancer-patients-at-johns-hopkins>



## Using oral care to prevent nonventilator hospital-acquired pneumonia

March 12, 2015

Author(s): Barbara Quinn, MSN, CNS, RN, and Dian Baker, PhD, APRN-BC, PNP



<https://www.myamericannurse.com/using-oral-care-prevent-nonventilator-hospital-acquired-pneumonia/>

October 2016 – December 2017

- Non-ventilator, hospital-acquired pneumonia cases fell 92% (avoided 60 NV-HAP cases)
- Saved more than \$2.4 million
- With the \$117,600 expenditure for our new, higher-quality oral-care supplies, the return on investment (ROI) was \$2.28 million.

<https://myamericannurse.com/wp-content/uploads/2015/03/ant3-CE-Oral-Care-225.pdf>





Image credit: HyLife Oral Health Alliance



# Oral-Systemic Links



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## Oral Microbiome Linked to Lung Cancer Risk

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August 10, 2022, by Elise Tookmanian, Ph.D.

## Oral Microflora and Its Potential Carcinogenic Effect on Oral Squamous Cell Carcinoma: A Systematic Review and Meta-Analysis



Mudiyayirakkani Muthusamy  • Pratibha Ramani • Reshma Poothakulath Krishnan • Hemashree K • Gheena Sukumaran • Abilasha Ramasubramanian

Published: January 09, 2023

DOI: 10.7759/cureus.33560 



## How do oral bacteria make colorectal cancer more aggressive?

The common oral bacterium *F. nucleatum* hastens the aggressiveness of colorectal cancer by promoting the growth of cells that are already cancerous.



## Oral Bacteria Linked With Pancreatic Cancer

April 19, 2016

"We found that *Porphyromonas gingivalis* and *Aggregatibacter actinomycetemcomitans*, two species of bacteria linked to periodontal disease, were associated with a more than 50% increased risk of pancreatic cancer," said Jiyoung Ahn, PhD, associate professor of population health and associate director of population sciences at the Laura and Isaac Perlmutter Cancer Center at NYU Langone Medical Center in New York, in a press release. "These data do not show a causal relationship, but they are the first steps in understanding a potential new risk factor for pancreatic cancer, which is vital if we are to develop new approaches for pancreatic cancer prevention and early detection in the future."



NEWSLETTER

## Mouth bacteria linked to esophageal cancer

An analysis of microbes sampled from the mouths of more than 120,000 people has found that two types of bacteria that lead to gum disease are also linked to higher risk of esophageal cancer.

They found that the presence of *Tannerella forsythia* was tied to higher risk of EAC, and that "abundance" of *Porphyromonas gingivalis* was tied to higher risk of ESCC. In contrast, they also identified two types of bacteria — *Streptococcus* and *Neisseria* — that were linked to a lower risk of esophageal cancer.

<https://www.medicalnewstoday.com/articles/320232#Some-bacteria-raise-esophageal-cancer-risk>





**Early Intervention and  
Patient Education are Key**

**Anticipate potential  
problems and start  
treating them before they  
have a chance to start!**




# Oral Health Risks



- Hyposalivation/Xerostomia
- Oral Mucositis/Stomatitis
- Caries
- Periodontal Disease
- Enamel Erosion
- Infections (fungal and bacterial)
- Dysgeusia (taste changes)
- Dysphasia (trouble swallowing)
- Osteonecrosis of the Jaw from Radiation to the Head & Neck or from certain medications
- Graft vs. Host Disease after bone marrow transplant
- Growth & development issues with children

# Gather/share important information *PRIOR* to dental visit

  
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**Oncology Intake Call**

**Caller/Patient Information:** Circle: New Patient or Patient of Record

Caller Name \_\_\_\_\_ Relationship to Patient \_\_\_\_\_

Patient Name \_\_\_\_\_ Date of Birth \_\_\_\_\_

Phone: Home Cell Work \_\_\_\_\_

If Child, Parent Name (s) \_\_\_\_\_

**Dental History:**

Are you currently having any pain? YES / NO If yes, describe: \_\_\_\_\_

Previous Dentist: \_\_\_\_\_ Approximate Date of Last Recall? \_\_\_\_\_

(Call Previous DDS for: Last Prophy Date: \_\_\_\_\_ Last BWX: \_\_\_\_\_ Last FMX/PAN: \_\_\_\_\_)

Other Comments (Perio ~~hx~~, etc): \_\_\_\_\_ (Request all recent x-rays to be sent prior)

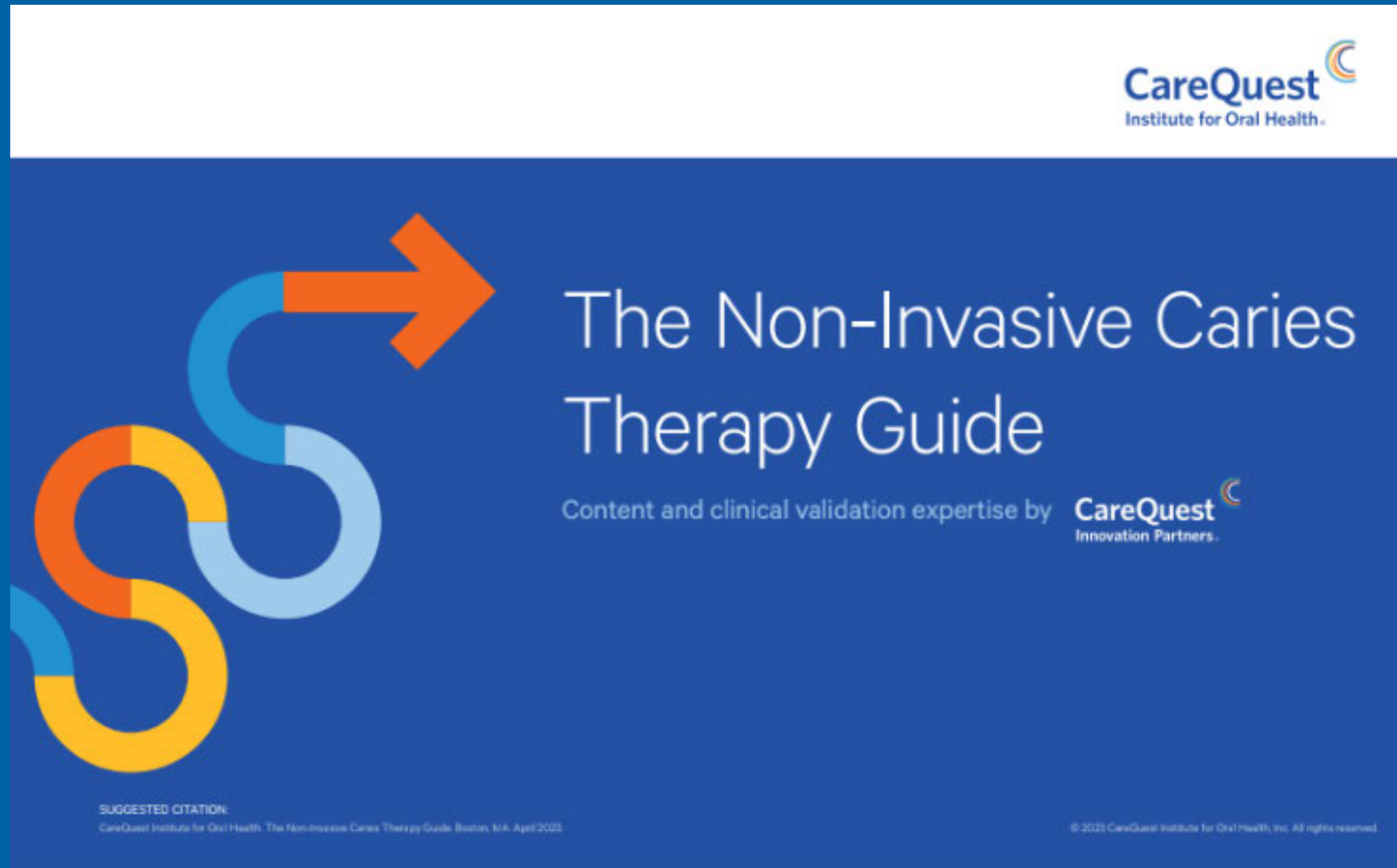




# What The Dental Team Can Do Prior To Treatments

- Accommodate patient by seeing ASAP
- Thorough records (specific to tx risks)
  - Determine immediate needs and documentation for damage that may occur
- Basic level of oral health

# What if needs are too extensive for the timeline?



In January 2023, CPT code 0792T was published for Silver Diamine Fluoride (SDF) treatment. This Category III code will allow medical offices to track and bill for SDF treatments in medical practices. This new code went into effect in July of 2023.



# What The Dental Team Can Do Prior To Treatments

- Treat side effects **BEFORE** they start
- Provide information and resources
  - **Informing without frightening**
- Keep lines of communication open between  
Oncology team and Dental team



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## Professional Resources

### Download/Print the Side Effect Support Patient Brochures

English Adult Version:





# Dry Mouth Patient Education

## More than a comfort issue

- Tissue lubrication
- Wound Healing
- Infection prevention
- Buffers oral pH
- Remineralized teeth
- First step in food digestion
- Plays a role in taste



# Dry Mouth - Simple Tips

- Stay hydrated
- Diet changes
  - Avoid caffeine & alcohol
  - Avoid dry, crusty foods
  - Use sauces & gravies
- Breathe through nose
- Use humidifier







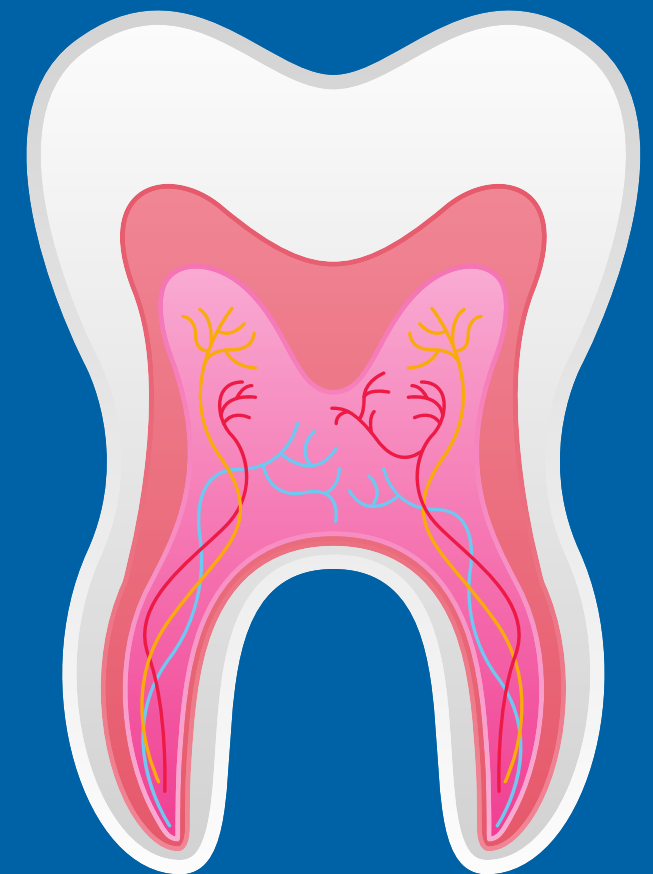
# Rx and OTC Dry Mouth products

- No “one size fits all”
- Think long-term effects vs. just masking symptoms

# Oral pH and oral diseases

“Critical pH”

Demineralization/Remineralization

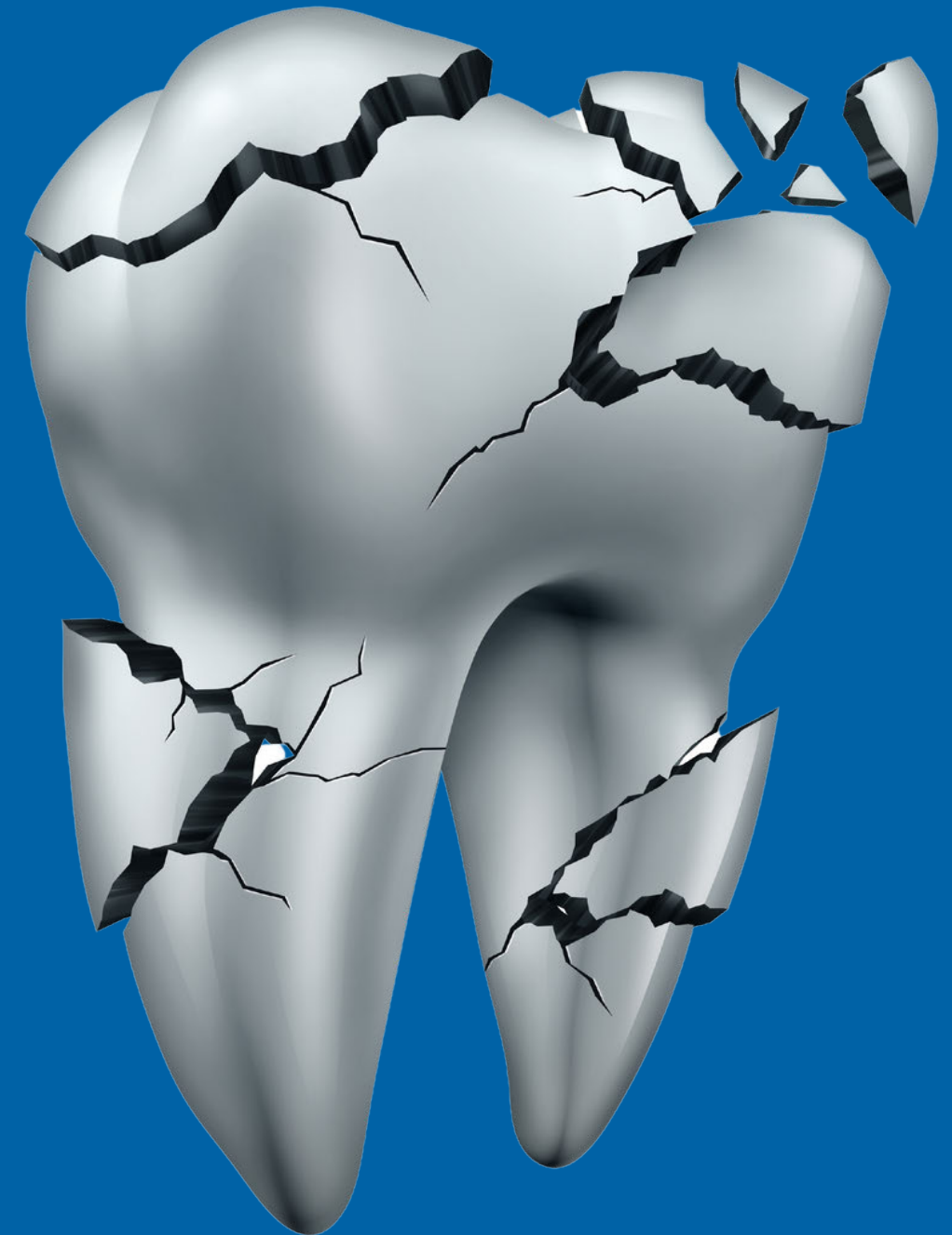




# Critical pH

What is the critical pH and why does a tooth dissolve in acid? JCDA December 2003. 69(11):722-24)

“...the critical pH below which enamel dissolves is not constant but rather is inversely proportional to the concentrations of calcium and phosphate in the saliva and plaque fluid”



# Florida study evaluates acidity levels in oral lozenges

<https://www.dentistryiq.com/dental-hygiene/article/16367852/florida-study-evaluates-acidity-levels-in-oral-lozenges>



- DenTek OraMoist, pH 2.9
- Cotton Mouth Lozenges, pH 3.1
- MedActive Oral Relief Lozenges, pH 3.2
- Hager Pharma Dry Mouth Drops, pH 4.44
- Rite Aid Dry Mouth Discs, pH 5.1
- CVS Dry Mouth Discs, pH 5.3
- ACT Dry Mouth Lozenges, pH 5.7
- TheraBreath Dry Mouth Lozenges, pH 5.82





Mouthrinse	pH
CTx4 Treatment Rinse	10.4
CTx3 Maintenance Rinse	8.33
TheraBreath Oral Rinse	8.20
ACT Anticavity Fluoride Mouthwash	7.95
Cepacol Mouthwash	7.79
PerioSciences AO ProRinse	7.75
OraCare	7.55
BreathRx Anti-Bacterial Tongue Spray	7.30
CB12 Mouthwash	7.20
Oxyfresh Mouthrinse	7.17
SmartMouth	7.11
CloSYS Rinse	7.10
Biotène Dry Mouth Oral Rinse	7.09
Colgate Optic White Mouthwash	6.95
CloSYS Alcohol-Free Oral Rinse	6.85
Oasis Moisturizing Mouthwash for Dry Mouth	6.49
Colgate Total Advanced Health Mouthwash	6.31
BreathRx Anti-Bacterial Mouth Rinse	6.21
BreathRx Anti-Bacterial Breath Spray	6.20
Colgate FluoriGard Daily Mouth Rinse	6.10
Listerine Zero Alcohol Mouthwash	6.02
ProFRESH Chlorine Dioxide Oral Rinse	5.90
ACT Restoring Anticavity Fluoride Mouthwash	5.56
Scope Classic	5.55
Peridex	5.48
Listerine Total Care Mouthwash	5.44
Crest 3D White Multi-Care Whitening Rinse	5.40
Crest Pro-Health Clinical Rinse	5.18
Chlorhexidine Alcohol-Free	5.10
Fluoridex Daily Renewal Oral Rinse	5.10
Listerine Antiseptic Mouthwash	4.88
BreathRx Anti-Bacterial Rinse	4.74
Biotène Mouthwash	4.64
BreathRx Anti-Bacterial Mouth Spray	4.53
Healthy White Bleach Agent	4.50
Crest Pro-Health Multi-Protection Mouthwash	4.27
Peroxyl Antiseptic Oral Cleanser	3.90
Tom's of Maine Wicked Fresh! Mouthwash	3.89
The Natural Dentist Healthy Gums Mouth Rinse	3.30

Image credit for  
product pH list:  
CariFree



# The Scoop On Sugars

## Xylitol & Erythritol

- Improve oral microbiome
- Buffers oral pH
- Exposure/dosage
- Introduce slowly into diet
- Safe for diabetics
- Keep away from pets





# Consider Xylitol and Erythritol for dry mouth and improving the microbiome

**SUPPORTIVE CARE** | VOLUME 26, ISSUE 9, P1704-1710, SEPTEMBER 01, 2020

PDF [1 MB] Figures Save Share Reprints Request

## Improving Oral Health and Modulating the Oral Microbiome to Reduce Bloodstream Infections from Oral Organisms in Pediatric and Young Adult Hematopoietic Stem Cell Transplantation Recipients: A Randomized Controlled Trial

Priscila Badia • Heidi Andersen • David Haslam • ... Stella M. Davies • Saral Thikkurissy • Christopher E. Dandoy • [Show all authors](#)

[Open Archive](#) • Published: June 03, 2020 • DOI: <https://doi.org/10.1016/j.bbmt.2020.05.019> • [Check for updates](#)

PlumX Metrics

### Highlights

- Bloodstream infections (BSIs) from oral organisms are a significant cause of morbidity and mortality in hematopoietic stem cell transplantation (HSCT) recipients.
- The addition of xylitol to standard oral care significantly improves gingivitis and dental plaque in HSCT recipients.
- The addition of xylitol to standard oral care may be associated with decreased BSIs from oral organisms after HSCT.

<https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:844e5d8e-223b-4221-b32a-2962f8d95ea5>

# Oral Mucositis

Treatment and prevention are primarily aimed at reducing modifiable RISK FACTORS:

- Dry Mouth
- Existing Dental Issues
- Poor Oral Hygiene





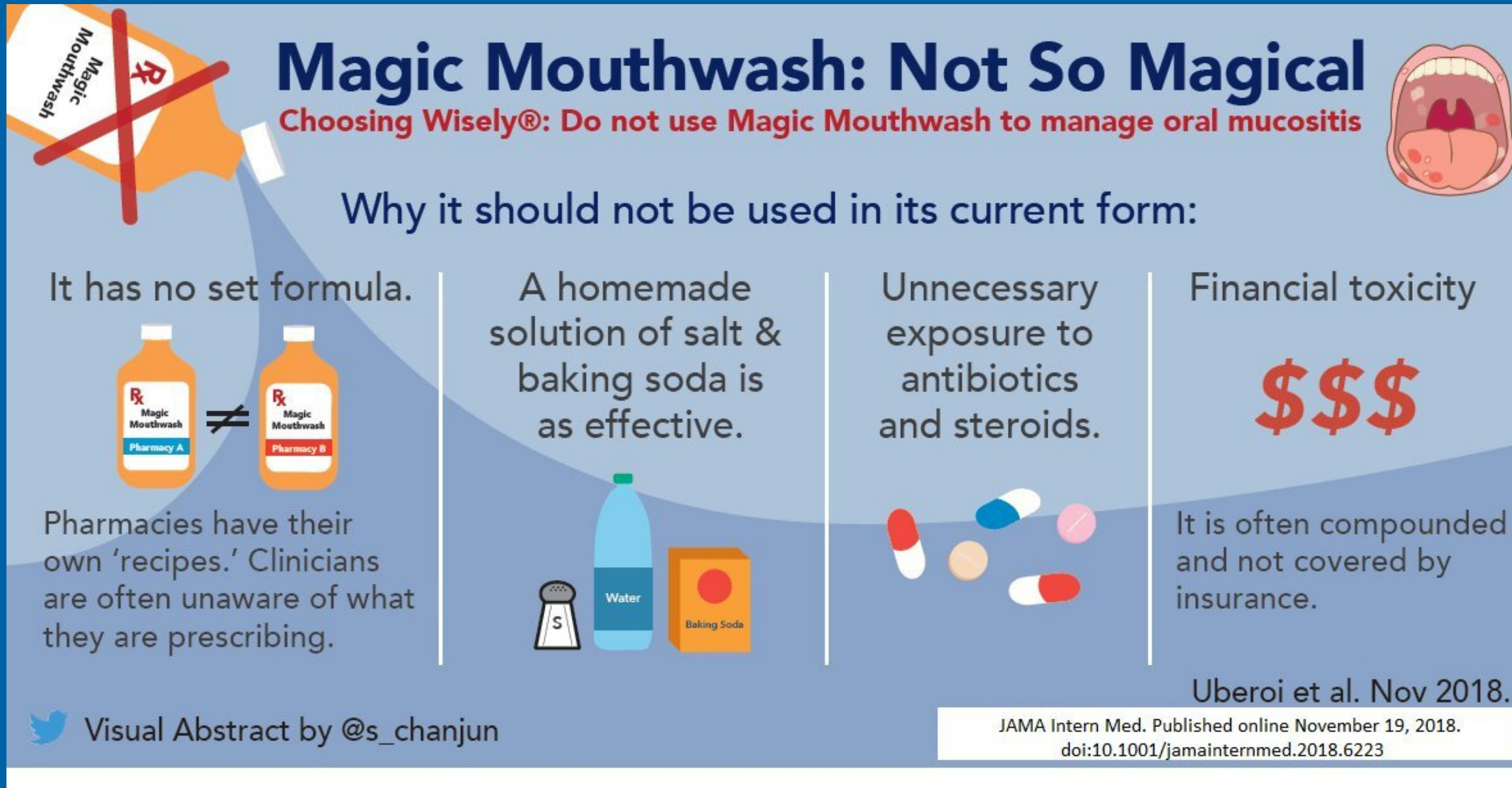
# Oral Microbiome Connected With Mouth Sore Severity In Patients With Head and Neck Cancer

October 6, 2023

Alex Biese

**“Our study suggests that the oral microbiome plays an important role in the longitudinal patterns of OM and the potential interaction between the oral microenvironment and the development of OM in patients with HNC,”**

<https://www.curetoday.com/view/oral-microbiome-connected-with-mouth-sore-severity-in-patients-with-head-and-neck-cancer>




# Magic Mouthwash: Not So Magical


Choosing Wisely®: Do not use Magic Mouthwash to manage oral mucositis


Why it should not be used in its current form:

- It has no set formula.



Pharmacies have their own 'recipes.' Clinicians are often unaware of what they are prescribing.
- A homemade solution of salt & baking soda is as effective.


- Unnecessary exposure to antibiotics and steroids.


- Financial toxicity

\$\$\$

It is often compounded and not covered by insurance.

Uberoi et al. Nov 2018.

JAMA Intern Med. Published online November 19, 2018.  
doi:10.1001/jamainternmed.2018.6223

Visual Abstract by @s\_chanjun

## American Academy of Nursing - Choosing Wisely

“ Don’t use mixed medication mouthwash, commonly termed “magic mouthwash, to prevent or manage cancer treatment-induced oral mucositis.”

<http://www.aannet.org/initiatives/choosing-wisely/choosing-wisely---magic-mouthwash>



## MOUTH RINSE BLAND RECIPE



1 level teaspoon  
(5 mL) of salt



1 level teaspoon  
(5 mL) of baking soda



4 cups (1 L)  
of water

### HOW TO MAKE YOUR MOUTH RINSE

1. Mix 1 teaspoon of baking soda and 1 teaspoon of salt with 4 cups of water.
2. Put the mouthwash in a container with a lid.
3. The mouthwash should be kept at room temperature.
4. Discard at the end of each day and make a new batch.

### HOW TO USE YOUR MOUTH RINSE

- Shake well before using.
- Rinse and gargle with one tablespoon (15 mL) and then spit out.
- Repeat 2 or 3 times at each use.
- Use mouthwash every 2 hours during the day.

# Toothbrush Basics



- Size/shape of brush
- Softness of bristles
- When to replace
- Protecting from germs
  - How is brush stored
  - Sharing is not caring



# Detergents



## Sodium Lauryl Sulfate (SLS)

- Known to penetrate skin and cause cutaneous irritation

## Cocamidopropyl betaine

- Allergy to CAPB is most commonly seen in a head and neck distribution, although other patterns have been identified." American Journal of Contact Dermatitis 2001
- American Contact Dermatitis Society Allergen of the Year 2004

# Drying & Irritating Ingredients

- Alcohol
- Phenol
- Whitening
- Tartar Control





# Consider flavors

- Mint/Cinnamon
- Strength of flavoring
- Unflavored
- Children's flavors



# Cleaning between teeth

- Proper technique is a must!
- Consider blood counts



Images courtesy of Waterpik and Sunstar Butler



# Fluoride

- Topical vs. systemic
- OTC vs Rx
- Tray fabrication
- Tolerability
- Recommended vs. reality
- Check for potentially irritating detergents



# Additional considerations

- 10% Nanohydroxyapatite
- Prebiotics
  - Arginine
- Probiotics







“my hair  
will  
grow back;  
my teeth  
won’t”

# THANK YOU

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Side Effect Support

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