

A Protocol for Matt

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I have hesitated to write out this protocol because it differs from the highest levels of evidence (which focus almost exclusively on aggressive fluoride therapy) and is instead based upon my own experience caring for family and patients with the help of creative pharmacists. However, when my friend Matt recently began chemotherapy, I felt compelled to put in writing that which I have traditionally shared only through private correspondence with colleagues, because providing oral healthcare for patients undergoing chemotherapy or radiation treatment is especially important. The patient's oral comfort (or discomfort) has direct effects on obtaining vital nutrition, quality of life, and there are indications in the literature that improved oral health can improve the prognosis and speed recovery following oncological treatment. I offer the following advice so you can "move beyond Biotene and prayer," keep your patient family comfortable, and speed their recovery following cancer treatment.

While the protocols that are available regarding this subject are focused on eliminating any teeth that have a poor prognosis and providing high levels of fluoride with toothpaste and trays, I have not found this tactic especially useful. On the contrary, I have observed that high concentrations of fluoride can actually exacerbate nausea which the patient will likely experience during chemotherapy. Unfortunately the timeliness of providing care to these extra special patients doesn't allow for behavior change techniques via small incremental changes to their routine using motivational interviewing, but my experience has taught me the patient is usually very receptive to making some significant alterations to their home care rather quickly.

My goals are simple: prevent xerostomia, mucositis, and pathogenic biofilm formation with gentle therapeutics, while also stimulating salivary flow. It is highly likely xerostomia will set in at some point, and when it does, you'll need to adapt this protocol a little (see below). I assume you will place any necessary restorations (using glass ionomer) and remove teeth that are severely compromised. I'll let you decide how to best apply the EBD guidelines concerning high dose fluoride. (Professionally applied topical fluoride, JADA vol 37, 2006)

I suggest you dedicate no less than thirty minutes to a conversation with your patient upon their diagnosis of cancer, and consider their risk for oral disease in the past and future. This is a time to carefully consider past and present caries, gingival health, major restorative services, and surfaces that are prone to future disease. Obtain a thorough current medical history, and seek to understand your patient's particular course of treatment then explain how biofilm in the mouth and oral inflammation have implications to overall health. Both chemotherapy and radiation affect the oral environment, but radiation has a direct effect and causes long term damage. [This is not the time to debate the link between oral and systemic health – IN MY OPINION THERE IS DEFINITELY A LINK!].

I advise patients to get serious about meticulous oral hygiene and dedicate at least five minutes each evening to a really good gentle and thorough brushing, using baking soda and toothpaste, then follow it up by flossing with cocofloss (I also give the patient an ultra-suave toothbrush for if/when the oral tissues become fragile). I strongly encourage the use of an AirFloss with 3% H₂O₂ to disrupt subgingival and interproximal endotoxins. After brushing, flossing, and AirFlossing with H₂O₂, the patient should rinse with 5 mL of chitosan argininamide mouth rinse (Synedent). You may also want to give the patient a bottle of Moisyn (available at www.synedent.com) to carry with them throughout the day. This regimen will help establish a biofilm dominated by commensal organisms and soothe the soft tissues. Xylitol gel and CPP-ACP with NaF (MI Paste Plus) can supplement this regimen as the patient begins to find the therapies that provide the most benefit/relief – remember xylitol inhibits cariogenic organisms and CPP-ACP with NaF keeps remineralizing ions around which help maintain the integrity of the oral mucosa. In the morning after breakfast, the patient should brush and then use whichever agent they prefer (Synedent, xylitol gel, CPP-ACP with NaF, or even a baking soda solution) that provides the most comfort. Personally, I prefer to avoid aggressive oral hygiene in the morning, which disrupts the commensal biofilm that protects the host (patient) from exogenous pathogens by stimulating a vigorous immune response.

Rx: 2 gram sorbitol/xylitol lollipop with 5 mg of pilocarpine, #3, Sig use prn for 10-20 seconds to stimulate saliva flow. Direct the patient to fill this prescription at the local compounding pharmacy (which you can find by visiting www.pccarx.com). I highly recommend you call the pharmacy and establish a relationship yourself prior to sending the patient there. The patient should use the lollipops right before any radiation treatment to keep the major and minor salivary glands functional during therapy. They can also use them any time throughout the day when they notice dry mouth. It's usually wise to keep them close by the bed while sleeping to relieve dry mouth at night too.

Some of your patients will develop severe xerostomia that makes using a lollipop painful. When this occurs, simply have them swish/shake the lollipop in a shot glass of warm water to create a dilute pilocarpine solution then use it like mouthwash. Our goal is to keep the minor salivary glands active so saliva can carry out its God-given purpose of protecting tissues and carrying tastants to taste buds, thereby maintaining whatever taste perception has not been ameliorated by their cancer treatments.

I hope you find this advice useful. If you alter this protocol in a way that makes it more effective, please don't hesitate to contact me. If I can assemble a significant cohort of case studies demonstrating the benefit, I'll pursue publishing our experiences in a peer-reviewed journal and mention your contributions. Peace be with you and your patient family.

Clinician's Summary

Matt's Protocol	Current (aka Standard) Approach
Improve oral health and maintain it Prevent xerostomia Prevent and mitigate mucositis Prevent pathogenic biofilm formation Stimulate salivary flow as long as possible	Extract non-restorable teeth Restore teeth with good prognosis Provide high concentration fluoride Biotene and water prn Pray

Step One: **Have the Oral Health Conversation after reviewing the medical history and understanding the patient's specific course of chemotherapy and/or radiation**

- Discuss past and future oral health
- Previous and current caries risk
- Gingival and periodontal health
- Major restorations and surgical procedures
- Review all the surfaces that are prone to future disease

The Pilocarpine Predicament

Pilocarpine is well known for its cholinergic effects and often clinicians are hesitant to prescribe because of potential interactions. Please realize the dose I'm using is a microdose that is absorbed topically with much fewer systemic effects.

Step Two: **Provide oral hygiene instructions and nutritional counseling with the following emphasis:**

- *In the evening before bed*
 - o 5 minutes of dedicated gentle and thorough brushing (consider an ultra-suave toothbrush)
 - o Floss with Cocofloss
 - o Airfloss (or interproximal irrigation) with 3% hydrogen peroxide
 - o Rinse with 5 mL Synedent
 - o Consider adding CPP-ACP with fluoride and/or xylitol gel to increase comfort
- *In the morning after breakfast*
 - o Gentle (non-aggressive) brushing with xylitol gel or non-sls toothpaste like MI Paste One
 - o Alternatively vigorously swish with Synedent or dilute baking soda solution
 - o Supplement with CPP-ACP with NaF, xylitol gel, or Moisyn spray for comfort prn

Step Three: **Prescribe Pilocarpine Lollipops**

Rx: 2 gram sorbitol/xylitol lollipop with 5 mg pilocarpine, #3, Sig Use prn for 20-30 seconds to stimulate saliva flow and relieve dry mouth.

Use daily as needed to improve oral comfort and immediately before radiation treatment. When the mouth becomes overly dry, swish the lollipop in a shot glass of warm water to create a dilute mouth rinse and then swish for 30 seconds.

References and More Information

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