Dry Mouth: From Symptoms to Solutions

Presented by:

Klarissa Renteria, DDS

Clinical Assistant Professor

UT Health San Antonio School of Dentistry

Tiffany Tavares, DDS, DMSc

Clinical Associate Professor

UT Health San Antonio School of Dentistry

Disclosures:

- The authors have no conflicts of interest to disclose.
- The images and contents of this lecture are for educational purposes only are not to be, copied, distributed or reproduced in any format.

Learning Objectives:

- Discuss risk factors and clinical presentation of patients with xerostomia/salivary gland hypofunction
- Determine differential diagnoses for patients presenting with a complaint of dry mouth
- Identify complications related to xerostomia and salivary hypofunction
- Discuss management strategies for the prevention and treatment of xerostomia and salivary gland hypofunction

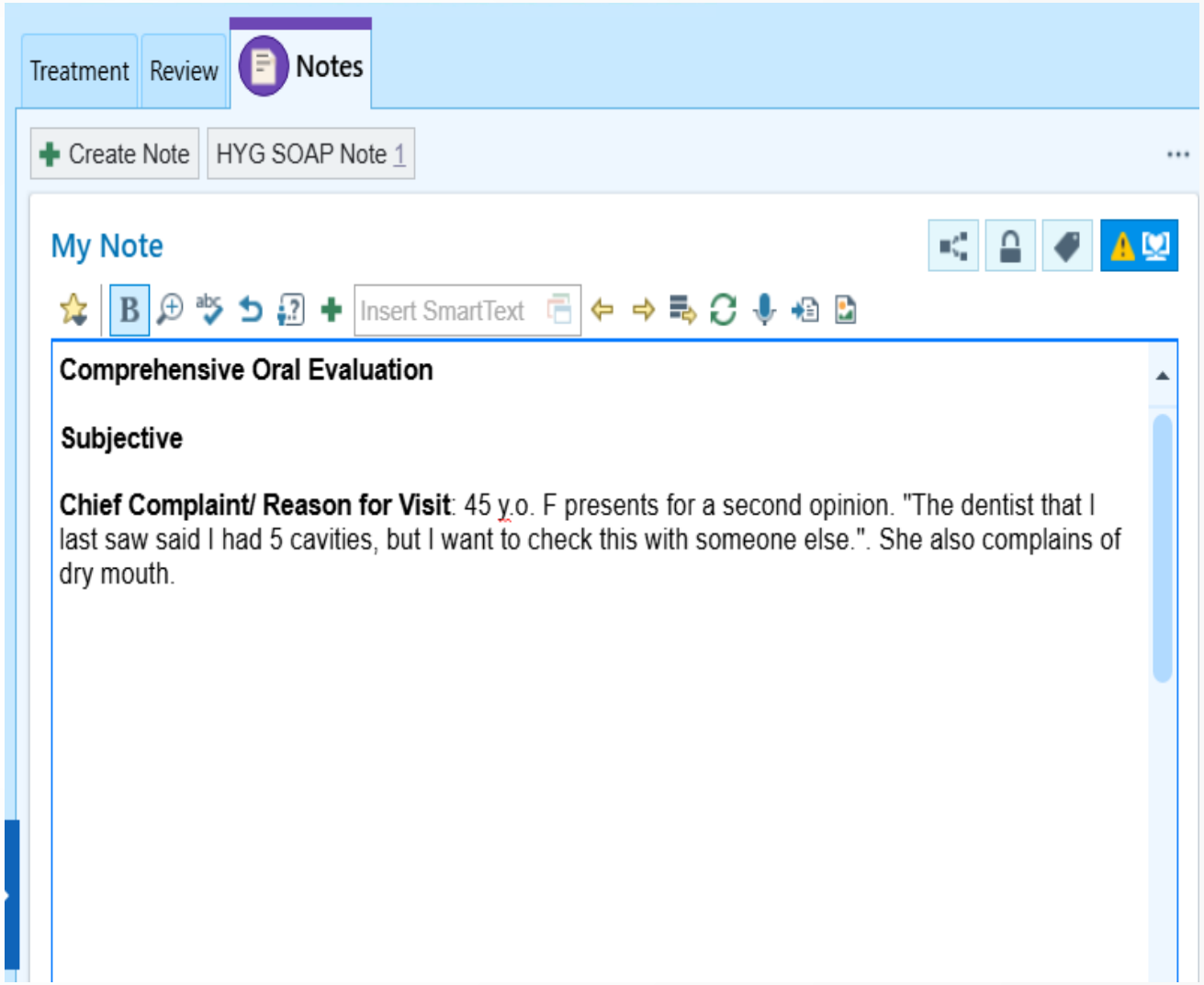
Why Dry Mouth Matters

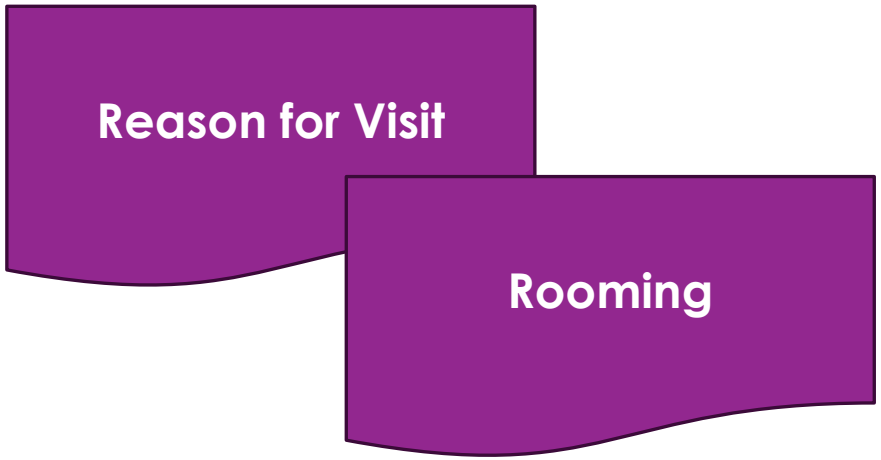
- Overall estimated prevalence of xerostomia : ~23% of the global population
- Prevalence is generally
  - Higher among older individuals (>60 years of age)
  - Females > Males
- May represent an oral manifestation of systemic disease
- Risk factor for many dental/oral complications

Agostini *et al.* (2018); Stoopler *et al.* (2024)

Reason for Visit

Chief Complaint




Reason for Visit
Rooming

DH

Dawn Hudson
Female, 45 y.o., 5/12/1981
MRN: 61690460
Visit in Pro... 00:18
Code: Not on file (no ACP docs)

Isolation: None

Care Team: No PCP
Coverage: None

Allergies: No Known Allergies

2:00 PM DENTAL TREATMENT 3
for Dry Mouth; Cavity / Caries
No procedures
Appointment Scheduled

NO PREVIOUS VISIT

CARE GAPS
- Colorectal Cancer Screening
- DTaP/Td/Tdap Vaccine (1 - T...
- CERVICAL CANCER SCREENI...
- Breast Cancer Screening (M...

Show 3 more

PROBLEM LIST (0)

Rooming

Visit Information

Reason for Visit
Dry Mouth
Cavity / Caries

Recent Visits with Cruz-Balderas, Rosario
None

Other Visits in General Dentistry
None

Vitals

New Reading | Flowsheets

	8/10/2026 2:38 PM
BP	131/78
Heart Rate	83
Resp	20

Tobacco
Smoking status: Never
Passive exposure: Never
Smokeless status: Never
Reviewed: **Never reviewed**

OB/Gyn Status
Menstrual status: Having periods
OB/Gyn status reviewed: **Never Reviewed**

Allergies/Contraindications

No Known Allergies | Last Updated by Renteria, Klarissa, DDS on 8/10/2026 2:39 PM | History

Add a new agent | Add | Full Search | View Procedure-Allergy Interactions | View Drug-Allergy Interactions

No Known Allergies
You can use the box to the upper left to add an allergy or a contraindication for this patient.

Mark as Reviewed | Unable to Assess | Never Reviewed

Verify Pharmacy Benefits

Pharmacy benefits query in progress . . .

Open Sidebar

DH

Dawn Hudson
Female, 45 y.o., 5/12/1981
MRN: 61690460
Visit in Pro... 00:19
Code: Not on file (no ACP docs)

Isolation: None

Care Team: No PCP
Coverage: None

Allergies: No Known Allergies

2:00 PM DENTAL TREATMENT 3
for Dry Mouth; Cavity / Caries
No procedures
Appointment Scheduled

NO PREVIOUS VISIT

CARE GAPS
- Colorectal Cancer Screening
- DTaP/Td/Tdap Vaccine (1 - T...
- CERVICAL CANCER SCREENI...
- Breast Cancer Screening (M...

Show 3 more

PROBLEM LIST (0)

Rooming

Visit Info | Vitals | Allergies | Verify Rx Benefits | Medication Review | Dental Health | History | Caries Risk Assessment Over 17 years | Perio Risk Assessment | Implants | OurPractice Advisories | Interpreter Services

Medication Review

Comments

Search for medications | Patient-Reported

Name	Dose, Frequency	Adh
Outpatient Medications		
ALBUTEROL SULFATE IN	2 puff, Every 6 hours PRN	Taking as Needed / Taking Differently / Not Taking / Unknown
ALPRAZolam (XANAX) 0.25 MG Oral tablet	0.25 mg, Nightly PRN	Taking as Needed / Taking Differently / Not Taking / Unknown
dilTIAZem (CARDIZEM) 120 MG Oral immediate release tablet	120 mg, DAILY	Taking / Taking Differently / Not Taking / Unknown
fexofenadine (ALLEGRA) 180 MG Oral tablet	180 mg, Daily	Taking / Taking Differently / Not Taking / Unknown
Fluticasone-Salmeterol 45-21 MCG/ACT Inhalation AERO	2 puff, 2 times daily PRN	Taking as Needed / Taking Differently / Not Taking / Unknown
ibuprofen 800 MG Oral tablet	400 mg, Every 6 hours PRN	Taking as Needed / Taking Differently / Not Taking / Unknown
metformin (GLUCOPHAGE) 1000 MG Oral tablet	1,000 mg, 2 TIMES DAILY WITH MEALS	Taking / Taking Differently / Not Taking / Unknown
rifAXIMin (XIFAXAN) 550 MG Oral TABS	550 mg, 3 times daily	Taking / Taking Differently / Not Taking / Unknown
sertraline (ZOLOFT) 100 MG Oral tablet	100 mg, Daily	Taking / Taking Differently / Not Taking / Unknown
spironolactone (ALDACTONE) 25 MG Oral tablet	25 mg, Daily	Taking / Taking Differently / Not Taking / Unknown

No pharmacy selected Select pharmacy

Mark Rest as Taking | Mark as Reviewed **Never Reviewed**

Check Interactions

Dental Health

New Reading

Flowsheets

Appointment from 8/10/2026 in Student Dental Clinic A

8/10/2026

Open Sidebar

DH
Dawn Hudson
Female, 45 y.o., 5/12/1981
MRN: 61690460
Visit in Pro... 00:22
Code: Not on file (no ACP docs)

Isolation: None

Care Team: No PCP
Coverage: None

Allergies: No Known Allergies

2:00 PM DENTAL TREATMENT 3
for Dry Mouth; Cavity / Caries
No procedures
Appointment Scheduled

NO PREVIOUS VISIT

CARE GAPS
- Colorectal Cancer Screening
- DTaP/Td/Tdap Vaccine (1 - T...
- CERVICAL CANCER SCREENI...
- Breast Cancer Screening (M...

Show 3 more

PROBLEM LIST (0)

Rooming

+ Clotting disorder
+ Congenital heart disease
+ Neurological problem
+ Vascular graft

Past Medical History

Diagnosis	Date	Comment	Src.	PL
Small intestinal bacterial overgrowth				
Irritable bowel syndrome				
Hypertension				
Dry mouth				
Diabetes mellitus type II				
Depression				
Dental disease				
Dental caries				
Asthma				
Arthritis				
Anxiety				
Allergic rhinitis				

Surgical History

Never | Mark as Reviewed

Add surgical history | Add | Pertinent Negative

Quick Entry

Surgical History

+ Dentures
+ Facial reconstruction
+ Lymph node biopsy
+ Neck surgery
+ Orthodontic treatment
+ Root canal
+ Tonsillectomy
+ Wisdom tooth extraction

Past Surgical History

Open Sidebar

DH

Dawn Hudson
Female, 45 y.o., 5/12/1981
MRN: 61690460
Visit in Pro... 121:57
Code: Not on file (no ACP docs)

Isolation: None

Care Team: No PCP
Coverage: None

Allergies: No Known Allergies

8/10 DENTAL TREATMENT 3
for Dry Mouth; Cavity / Caries
No procedures
Done Rooming

NO PREVIOUS VISIT

CARE GAPS
- Dental Oral Exam
- Dental X-Ray: Bitewings
- Dental X-Ray: Full Mouth
- Dental Prophylaxis

Show 6 more

PROBLEM LIST (0)

Rooming

Visit Info | Vitals | Allergies | Verify Rx Benefits | Medication Review | Dental Health | History | Caries Risk Assessment Over 17 years | Perio Risk Assessment | Implants | OurPractice Advisories | Interpreter Services

No pertinent negatives documented.

Family History

Relation	Status	Problems (Age of Onset) - (Comment)
Mother	Alive	Rheumatoid Arthritis
Sister	Alive	Rheumatoid Arthritis
Aunt	Alive	Diabetes Mellitus II

Surgical History

Past Surgical History

	Laterality	Date	Comments
TOTAL KNEE REPLACEMENT [ORT19]	Right	11/04/2020	

Social History

Tobacco History
Smoking Status
Never
Passive Exposure
Never
Smokeless Tobacco Use
Never

Alcohol History
Alcohol Use Status: **Yes**
Comment: **5 ounces of wine per week**

Drug Use
Drug Use Status
Never

Sexual Activity
Sexually Active
Not Asked

Other Factors
Not Asked

Mark as Reviewed **Never Reviewed** View Audit Trail Report

Open Sidebar

How to Evaluate Xerostomia and Salivary Gland Hypofunction (SGH)

Subjective

- **Medical History**
  - Head and Neck Radiation
  - Sjogren Disease
  - Graft vs Host Disease
  - Diabetes
  - Sarcoidosis
  - Amyloidosis
- **Medications/Polypharmacy**
- **Social History**
  - Tobacco
  - Alcohol
  - Substance use
- **Review of Systems**
  - Dry eyes
  - Dryness of other mucous membranes
  - Polyuria

Medication-Related Xerostomia/SGH

Drug Class	
Anti-depressant	Amitriptyline, Buproprion, Citalopram, Duloxetine, Escitalopram, Fluoxetine, Sertraline, Venlafaxine, Nortriptyline
Anti-cholinergic	Scopolamine, Oxybutynin, Atropine, Tiotropium, Propiverine, Solifenacin, Propantheline, Tolterodine
Anti-hypertensives	Verapamil, Clonidine, Metoprolol, Lisinopril, Enalapril, Atenolol, Timolol, Furosemide
Anti-psychotic	Aripiprazole, Clozapine, Olanzapine, Paliperidone, Quetiapine, Ziprasidone, Chlorpromazine, Lithium, Loxapine, Perphenazine, Risperidone
Psychostimulant	Methylphenidate
Hypnotic	Zolpidem, Zopiclone, Doxylamine
Opioid- analgesic	Buprenorphine, Butorphanol, Tramadol
Skeletal Muscle Relaxant	Baclofen, Cyclobenzaprine

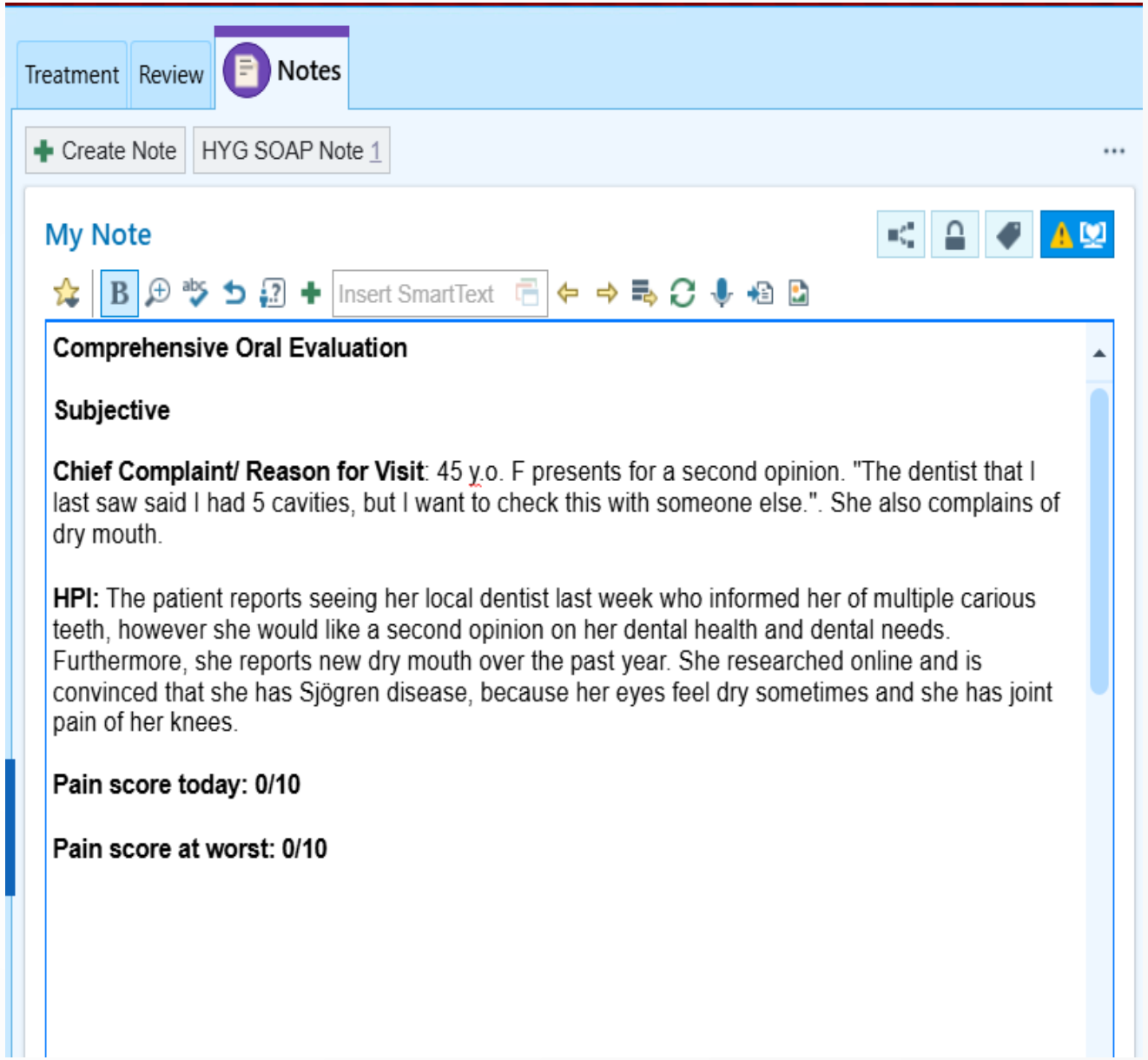
Wolff et al.(2017)

How to Evaluate Xerostomia and SGH

Subjective

- **Medical History**
  - Head and Neck Radiation
  - Sjogren Disease
  - Graft vs Host Disease
  - Diabetes
  - Sarcoidosis
  - Amyloidosis
- **Medications/Polypharmacy**
- **Social History**
  - Tobacco
  - Alcohol
  - Substance use
- **Review of Systems**
  - Dry eyes
  - Dryness of other mucous membranes
  - Polyuria
- **History of present Illness**

History of Present Illness



Questions for Dry Mouth Chief Complaint

Question	Answer
How many cups of water do you drink/day?	3
How many cups of caffeinated coffee, tea, or soda do you drink/day?	6
Have you had a daily, feeling of dry mouth for more than 3 months?	Yes
Have you had recurrently or persistently swollen salivary glands as an adult?	No
Do you frequently drink liquids to aid in swallowing dry food?	No
Have you had daily, persistent troublesome dry eyes for more than 3 months?	Not daily
Do you have a recurrent sensation of sand or gravel in the eyes?	No
Do you use tear substitutes more than three times a day?	No

Xerostomia ≠ SGH

Xerostomia

- **Xerostomia – SUBJECTIVE**
- Subjective sensation of dry mouth
- The most common **symptom** of salivary gland hypofunction (SGH)

Salivary Gland Hypofunction

- **Salivary gland hypofunction – Objective**
- Objective, measurable decrease in salivary flow (hyposalivation)
- Clinical examination and adjunctive tests

Constituents of Saliva

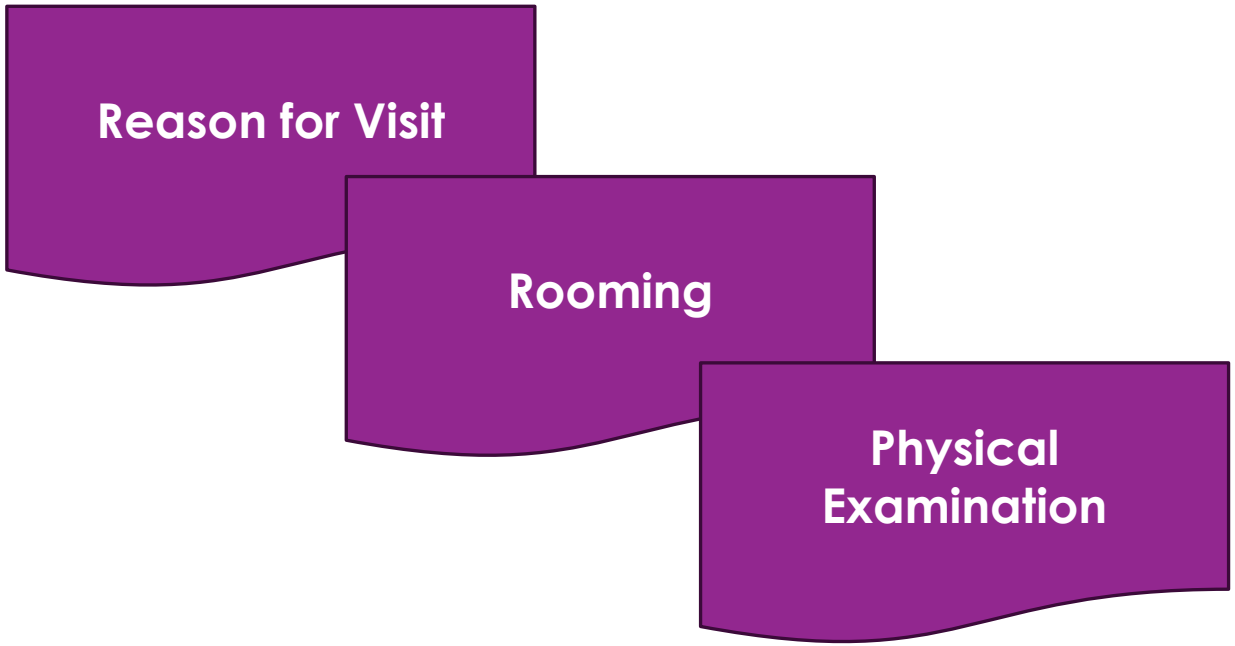
Water is the main component of saliva, constituting 99% of its volume.

The remaining 1%:

- Inorganic salts of sodium, potassium, calcium, bicarbonate, phosphates, and magnesium
- Organic compounds: cholesterol, immunoglobulins, uric acid, enzymes, and proteins

Functions of Saliva

- Cleansing of the oral cavity
- Protection from oral and physical microbial insults
- Maintenance of mucosal integrity
- Digestion by salivary amylase and maltase
- Buffering - maintaining oral pH 6.8–7.2 (hydrogen carbonate and phosphate); buffers gastric reflux at the esophageal level
- Antibacterial effect of saliva:
  - Lactoferrin and lysozyme - degradation of the peptidoglycan cell wall of Gram-positive bacteria belonging to Streptococcus spp. and Staphylococcus spp.


Reason for Visit
Rooming
Physical Examination

How to Evaluate Xerostomia/SGH

Objective

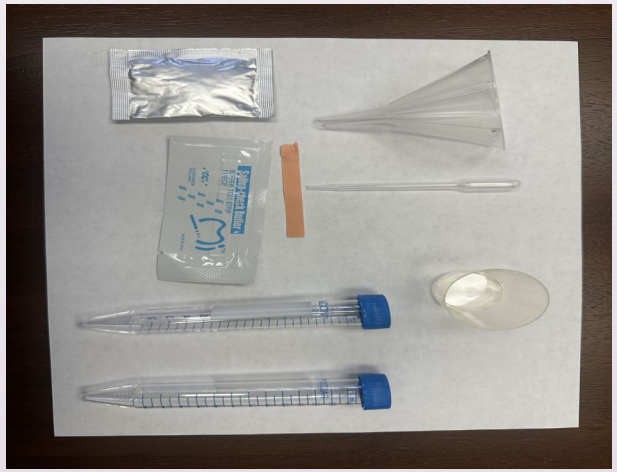
- **Extraoral Examination**
  - Salivary gland enlargement

- **Intraoral Examination**
  - Salivary Flow Rate
  - Salivary Gland Enlargement
  - Ductal obstruction
  - Clinical indicators of oral dryness
    - Challacombe Scale

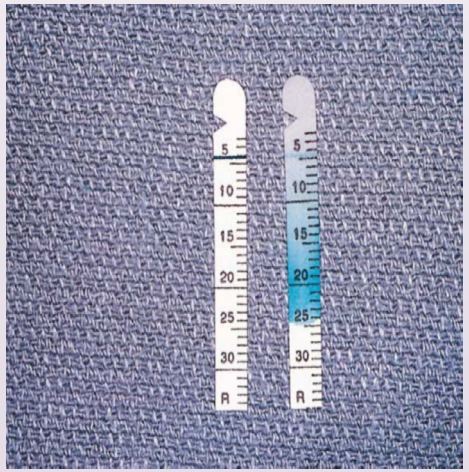
  - **Evidence of complications**
    - High caries index
    - Candidiasis

Objective Evaluation of Salivary Flow

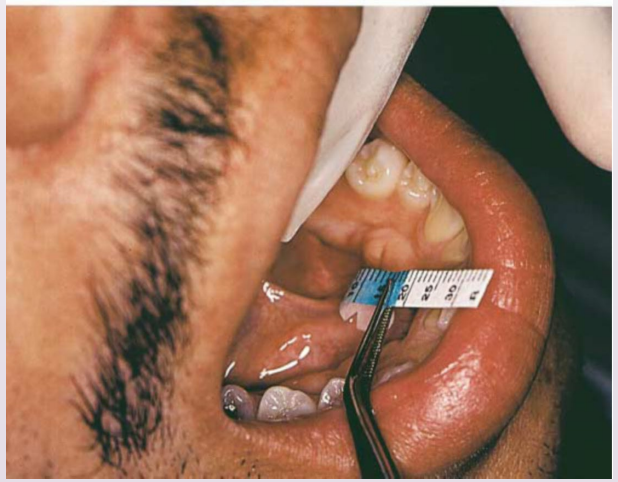
Saliva	Rate	Collection Methods	Salivary Gland Hypofunction
Normal	0.25-0.35 ml/min		
Unstimulated	0.3 – 0.4 ml/min	Draining or drooling	<0.1ml/min
Stimulated	1 – 3 ml/min	Mastication (paraffin wax) followed by expectoration	< 0.7 ml/min



Courtesy of Dr. Amaechi



Modified Schirmers



Chen et al. (2005)

Other method:
Fishburne tabs

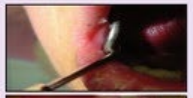
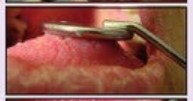
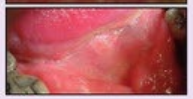
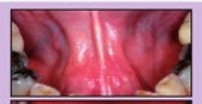
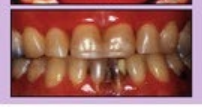
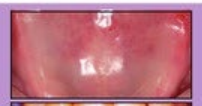
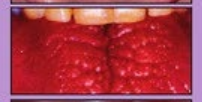
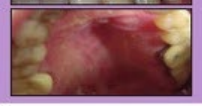
The Challacombe Scale

of Clinical Oral Dryness

KING'S College LONDON

The Challacombe Scale was developed from research conducted at King's College London Dental Institute under the supervision of Professor Stephen Challacombe*. The purpose of this scale is to be able to visually identify and quantify whether your patient has xerostomia (dry mouth) and if so, how it changes over time and the most appropriate therapy options. This scale is applicable whatever your profession.

The Challacombe Scale works as an additive score of 1 to 10 : 1 being the least and 10 being the most severe. Each feature scores 1 and symptoms will not necessarily progress in the order shown, but summated scores indicate likely patient needs. Score changes over time can be used to monitor symptom progression or regression.

1		Mirror sticks to buccal mucosa
2		Mirror sticks to tongue
3		Saliva frothy
4		No saliva pooling in floor of mouth
5		Tongue shows generalised shortened papillae (mild depapillation)
6		Altered gingival architecture (ie. smooth)
7		Glassy appearance of oral mucosa, especially palate
8		Tongue lobulated / fissured
9		Cervical caries (more than two teeth)
10		Debris on palate or sticking to teeth

An additive score of 1 - 3 indicates mild dryness. May not need treatment or management. Sugar-free chewing gum for 15 mins, twice daily and attention to hydration is needed. Many drugs will cause mild dryness. Routine checkup monitoring required.

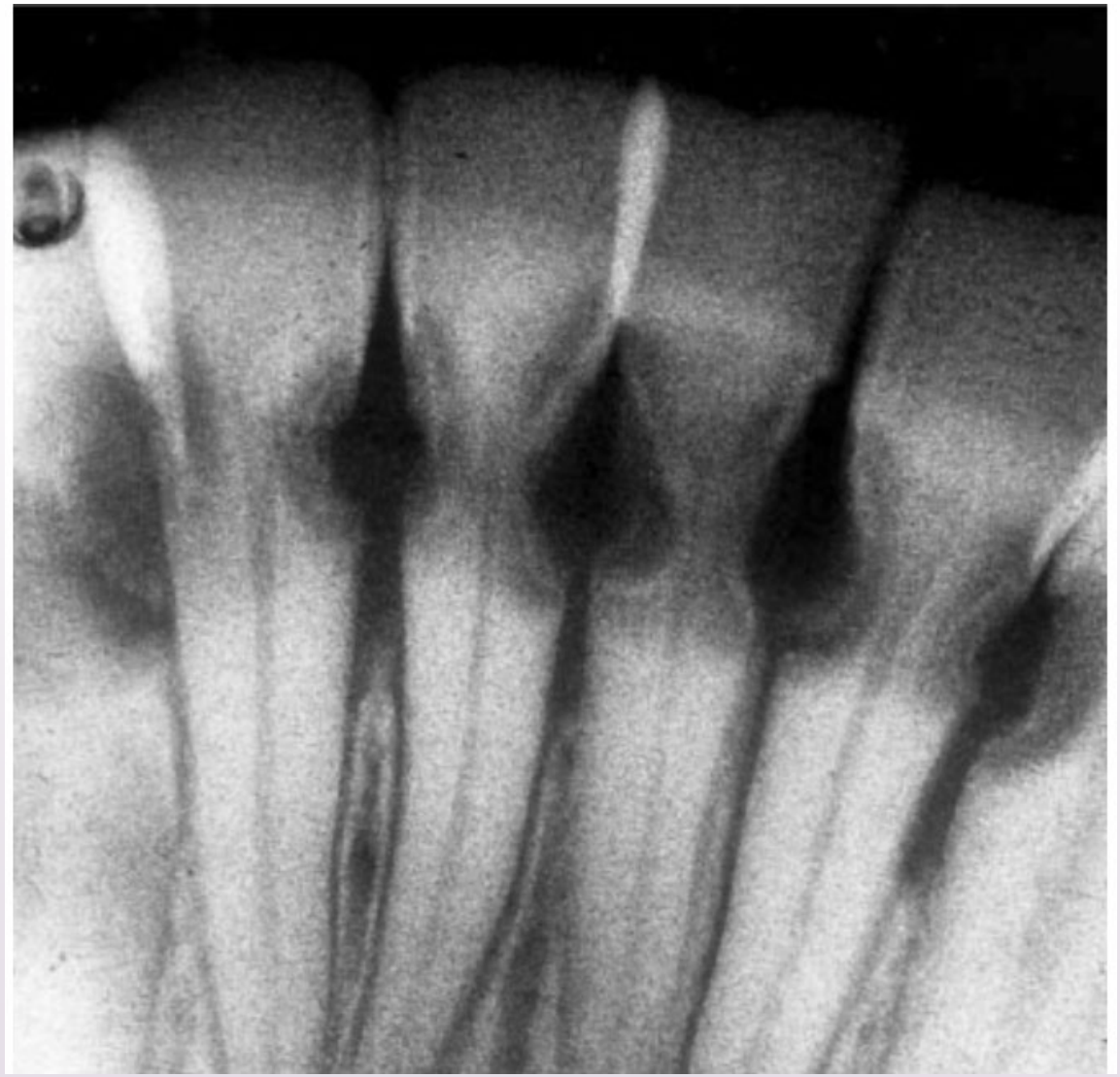
An additive score of 4 - 6 indicates moderate dryness. Sugar-free chewing gum or simple sialogogues may be required. Needs to be investigated further if reasons for dryness are not clear. Saliva substitutes and topical fluoride may be helpful. Monitor at regular intervals especially for early decay and symptom change.

An additive score of 7 - 10 indicates severe dryness. Saliva substitutes and topical fluoride usually needed. Cause of hyposalivation needs to be ascertained and Sjögrens Syndrome excluded. Refer for investigation and diagnosis. Patients then need to be monitored for changing symptoms and signs, with possible further specialist input if worsening.

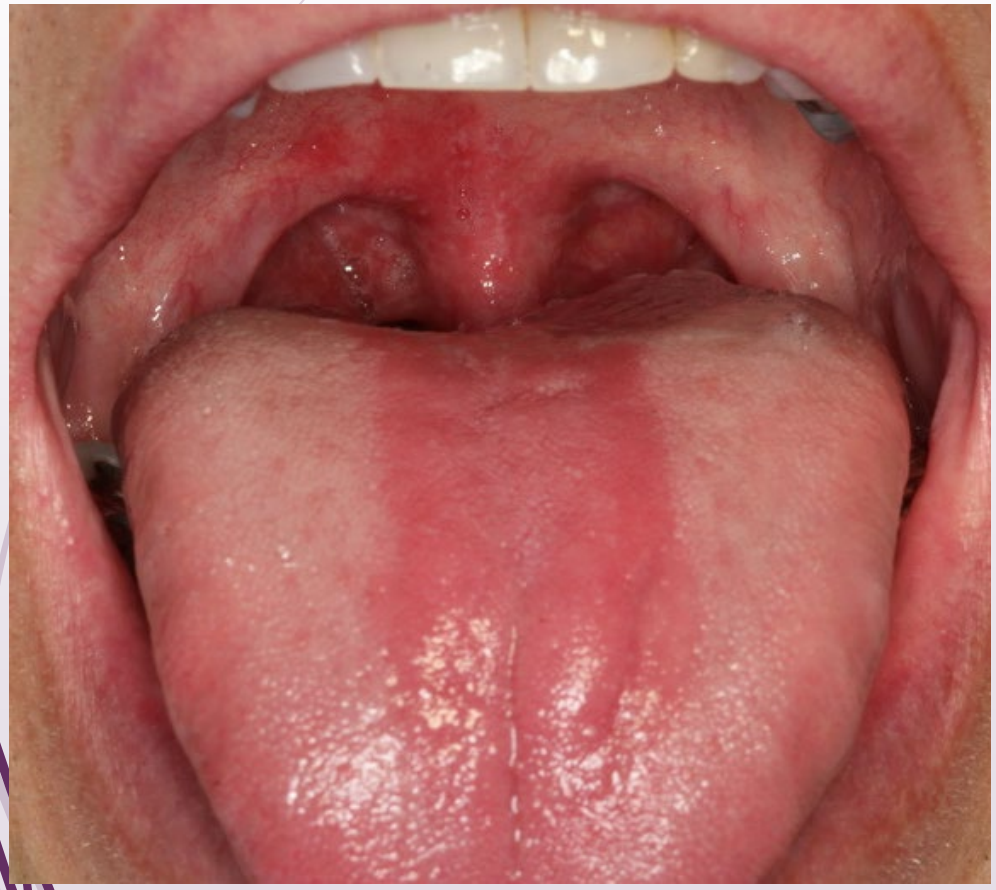
* S Osailan et al "Investigating the relationship between hyposalivation and mucosal wetness" (2011) Oral Diseases volume 17, Issue 1, Pages: 109–114

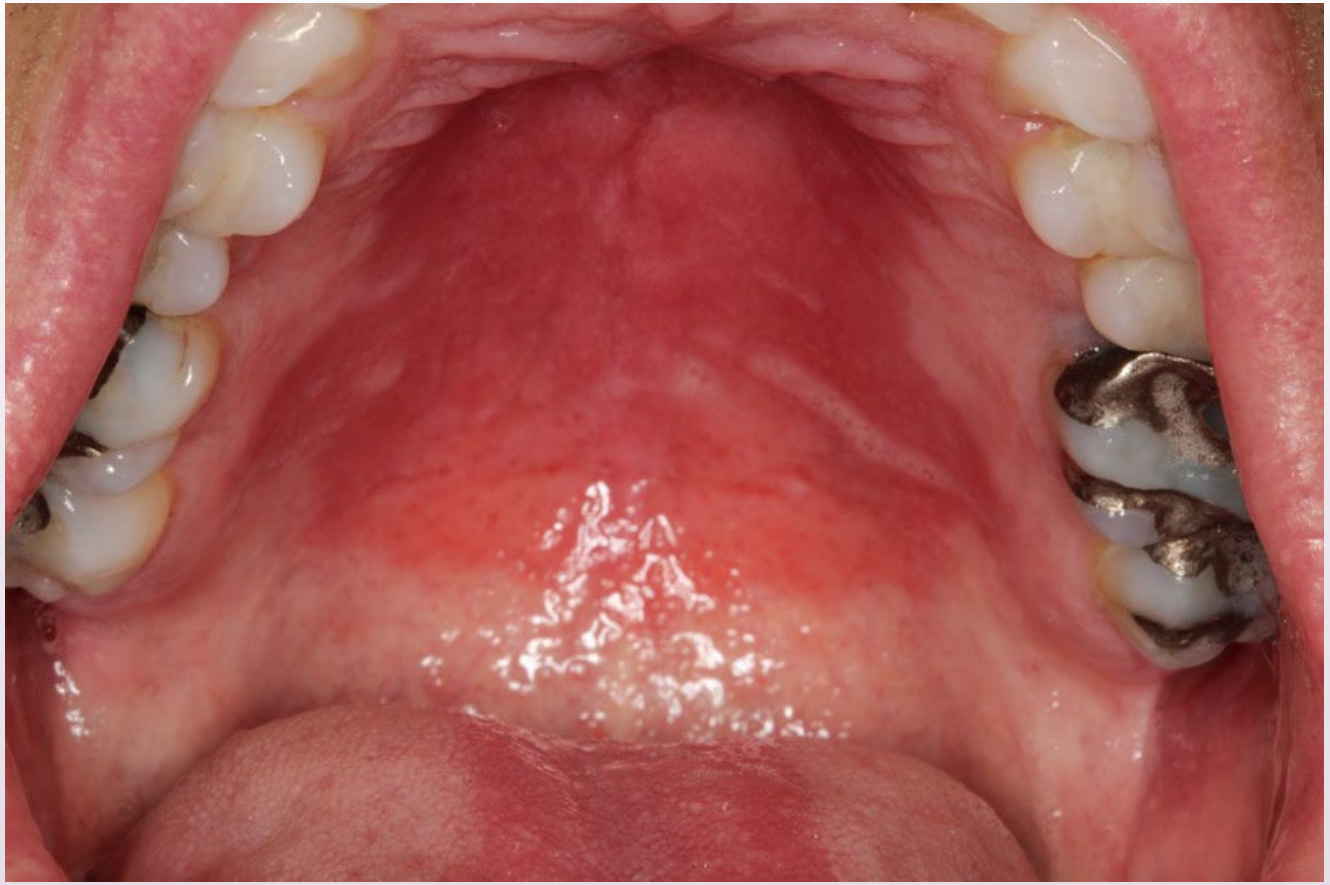
Complications of Xerostomia/SGH

- Caries
- Poor retention of complete denture
- Dysgeusia (bitter or salty taste)
- Dysphagia
- Burning of the tongue and/or lips (not burning mouth syndrome)
- Candidiasis

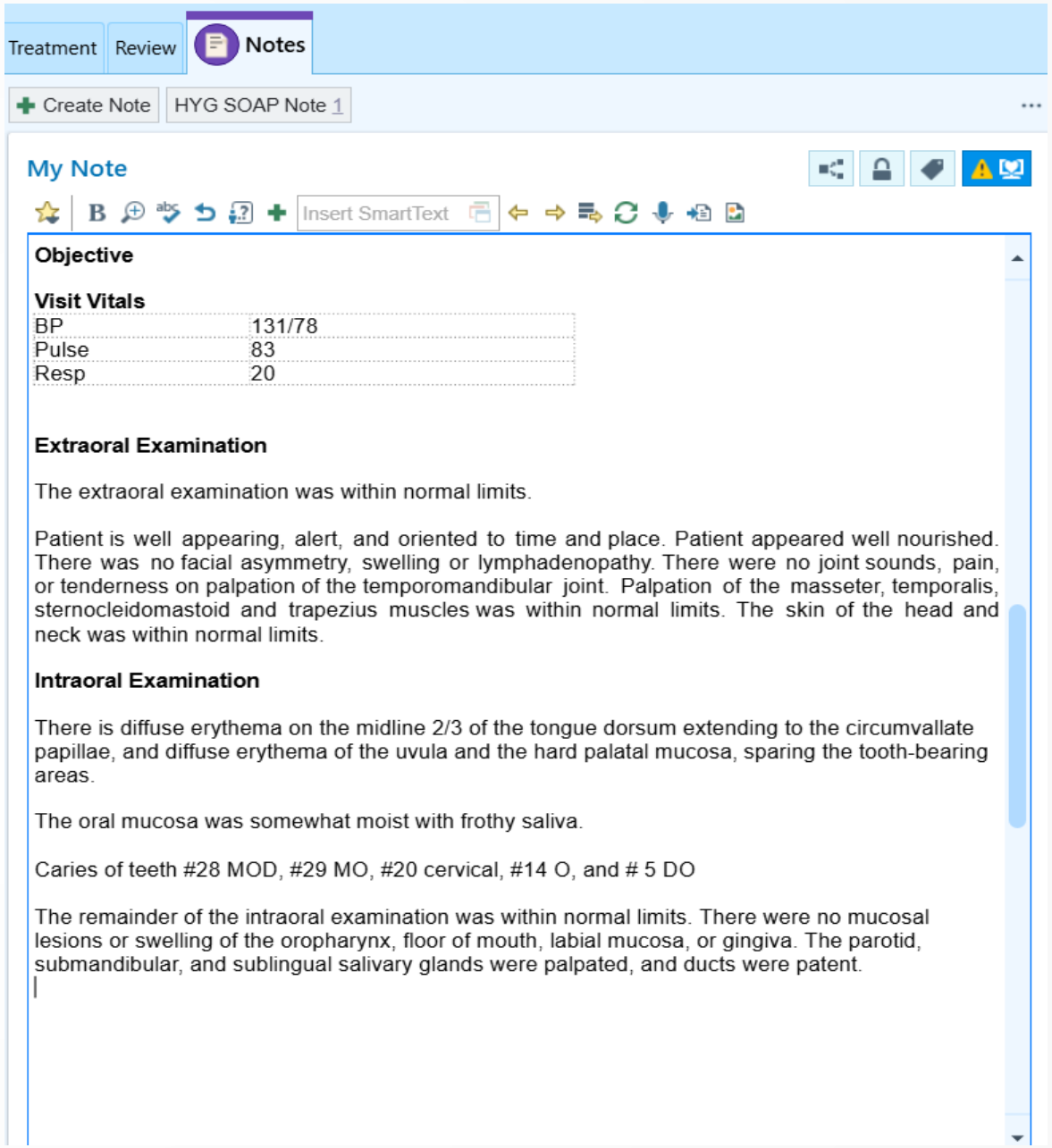


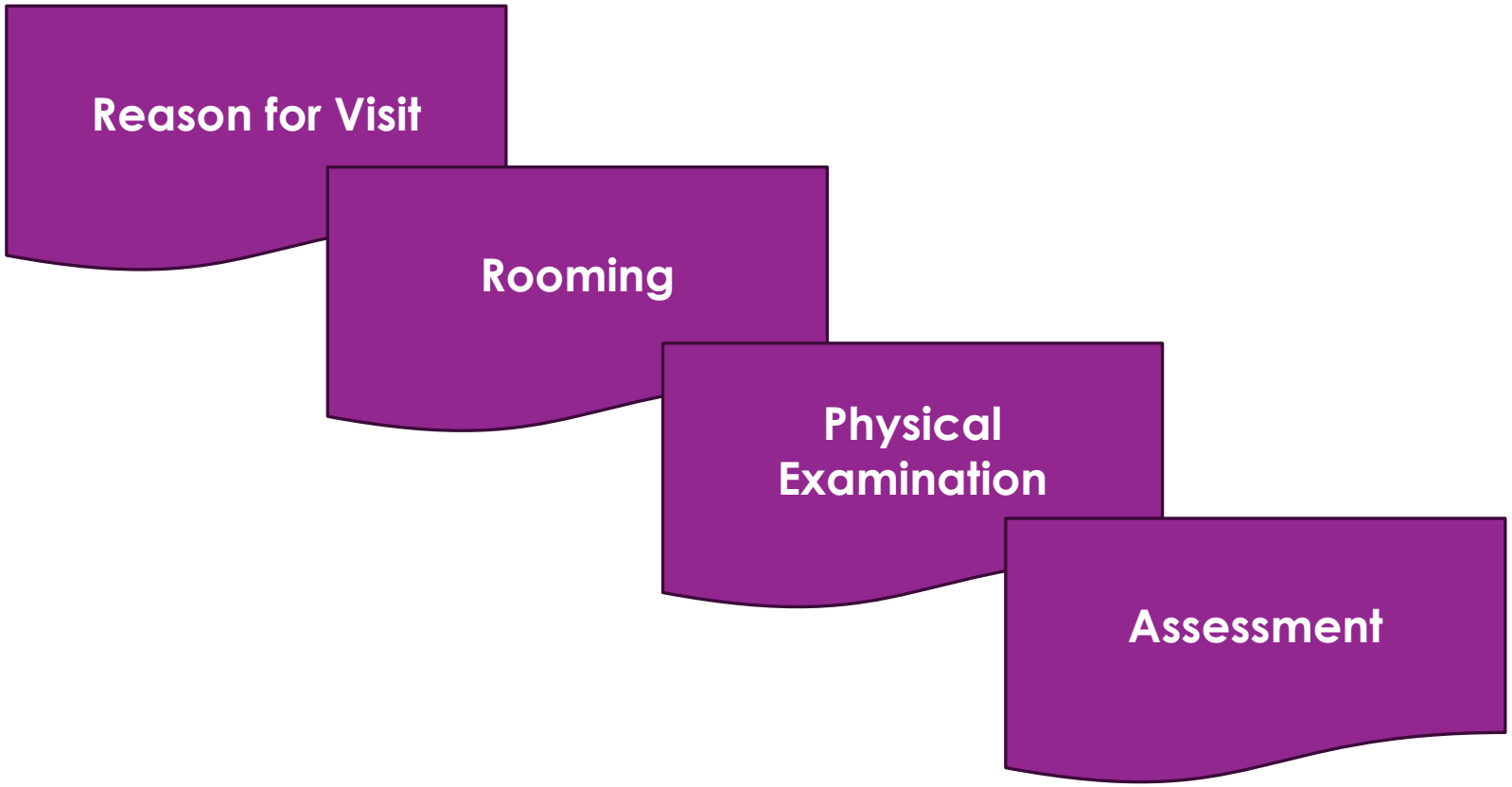
Intraoral Examination





Patient Objective Findings




Reason for Visit
Rooming
Physical Examination
Assessment

Assessment

- Extraoral Assessment
- Intraoral Assessment
- Dental Assessment

Differential Diagnosis Mnemonic

I diopathic

A utoimmune/Immune-mediated

M edication-related

D evelopmental

R eactive/traumatic

I nfectious

V ascular

E ndocrine/Metabolic

N eoplastic/potentially malignant

Assessment

- **Extraoral Assessment**
  - **Within normal limits**
- **Intraoral Assessment**
  - **Medication-related salivary gland hypofunction**
    - Alprazolam
    - Sertraline
    - Fexofenadine
    - Spironolactone
  - **?Sjogren disease**
  - **Candidiasis**

Differential Diagnosis Mnemonic

I diopathic

A utoimmune/Immune-mediated

M edication-related

D evelopmental

R eactive/traumatic

I nfectious

V ascular

E ndocrine/Metabolic******

N eoplastic/potentially malignant

DH

Dawn Hudson
Female, 45 y.o., 5/12/1981
MRN: 61690460
Visit in Pro... 00:43
Code: Not on file (no ACP docs)

Isolation: None

Care Team: No PCP
Coverage: None

Allergies: No Known Allergies

2:00 PM DENTAL TREATMENT 3
for Dry Mouth; Cavity / Caries
No procedures
Appointment Scheduled

NO PREVIOUS VISIT

CARE GAPS
- Colorectal Cancer Screening
- DTaP/Td/Tdap Vaccine (1 - T...
- CERVICAL CANCER SCREENI...
- Breast Cancer Screening (M...

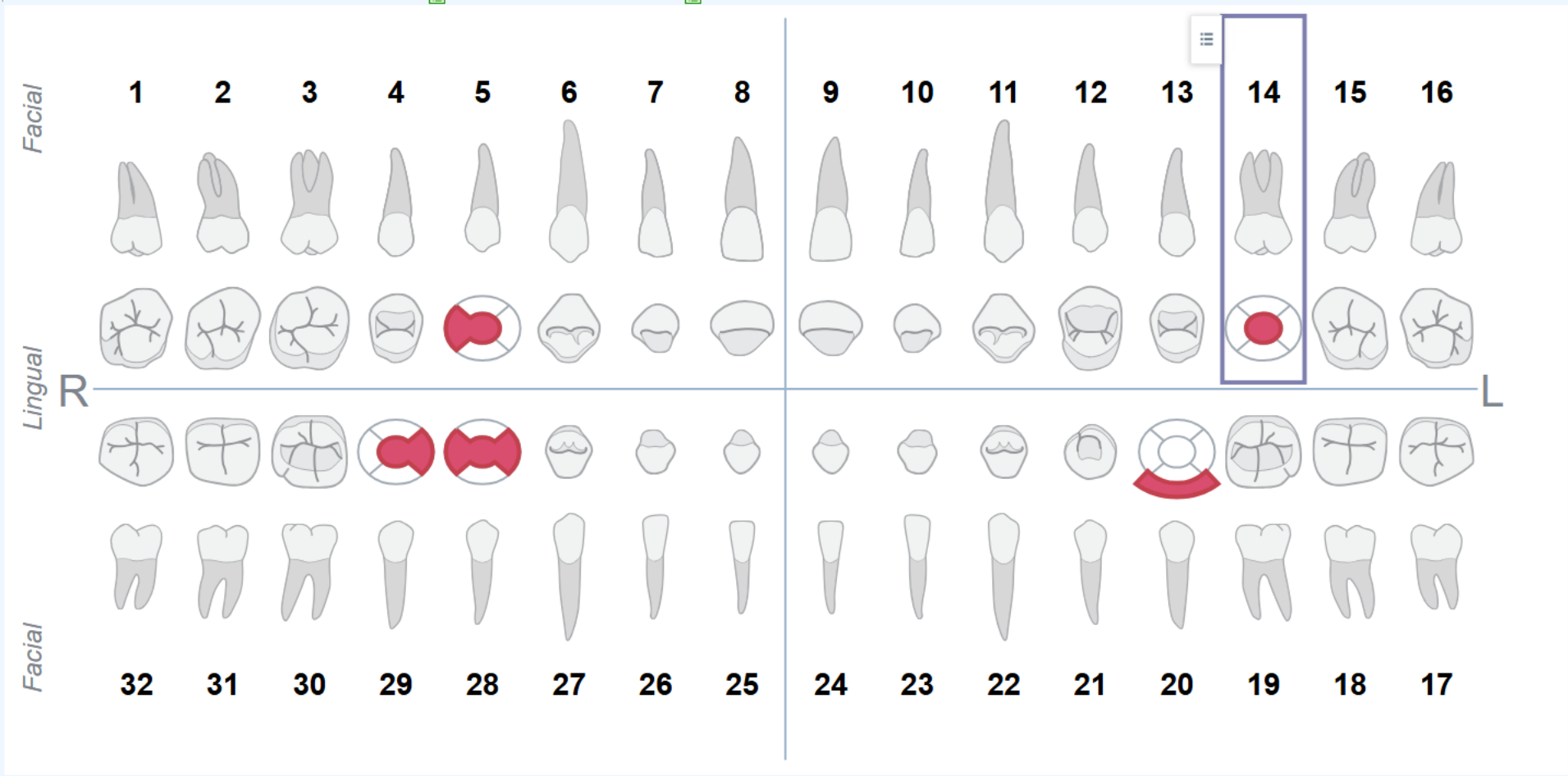
Show 3 more

PROBLEM LIST (0)

Tooth Chart

Hard Tissue | Periodontal

Plaque/Calculus | Auto-Plan Procedures | Edit Existing Treatments



Add a hard tissue comment

Open Sidebar

Assessment

- Dental Assessment
  - Multiple caries:
    - #5-DO
    - #14-O
    - #20-B(V)
    - #28-MOD
    - #29-MO

UT Health San Antonio

UTHSCSA Caries Risk Assessment

Patient Name: D. Hudson Age: 45 Pt. # 0123456 Student Name: Team A student Lilly

How often do you brush? *1 X a day* Floss? *1X a week*
Type of toothpaste used: Crest 3D white
Do you brush your teeth before bedtime? (Yes) / No
Do your gums bleed when your brush? Yes (No)
Do you use a mouthrinse? Yes / (No) Type: _____
Does your mouth feel dry? (Yes) / No
What relieves your dry mouth? *Nothing so far*

Do you use breath mints? Yes / (No) Type: _____
Do you chew gum? Yes / (No) Type: _____
Do you drink milk or eat cheese every day? Yes (No)
How many snacks do you eat per day? 3-4
Type of snacks: crackers, peppermints, fruits, peanut butter
How many beverages do you drink per day? 3-4
Type of beverage: 2 cups of coffee, water, sweet tea

When was your last dental visit? 3 days ago Have you had a filling in the past 3 years? (Yes) / No
Do you drink alcohol (Yes) / No If Yes, how many ounces per day? 5 oz per week Type of alcohol: wine
Do you use tobacco? Yes / (No) If No, have you ever used tobacco in the past? Yes / (No)

INTERVIEW PATIENT FOR INFORMATION ABOVE DASHED LINE:

ORAL DISEASE RISK FACTORS	Initial Evaluation		Re-evaluation	
(Check where applicable)	Yes	No	Yes	No
1. Medical & Social History				
Autoimmune disease (eg,Sjogren's, RA)		X		
Hyposalivary medications	X			
Radiation therapy		X		
Physical disability		X		
Eating disorder/GERD		X		
Tobacco and alcohol	X			
Recreational drugs		X		
2. Predisposing Oral Conditions				
Exposed roots	X			
Deep pits & fissures		X		
Tooth wear (Erosion, Abrasion)	X			
Plaque/Calculus	X			
Malocclusion / Crowding		X		
Appliances		X		
3. Caries				
Cavitated lesions	X			
Radiographic lesions	X			
White spots/Incipient lesions	X			
Recent restorations (past 3 yrs.)	X			
4. Periodontal Conditions				
Pockets (mark the deepest pocket in mm)	3mm			
Diabetes	X			
Cigarette smoking (Never, <10 cigarettes daily, ≥ 10 cigarettes daily)		X		
Radiographic bone loss		X		
Furcation involvement		X		
History of scaling and root planning		X		
History of surgery for pocket reduction		X		
5. Dietary				
Sugary snacks	X			
Sugary drinks/soda	X			
6.Protective Factors				
Fluoridated water		X		
Fluoride toothpaste / mouthrinse	X			
Xylitol gum / mints		X		
Chlorhexidine rinse		X		
Adequate calcium intake	X			
7. Saliva* *(see protocol)*				
Salivary flow	X			
Salivary pH	X			
Buffering capacity	X			
Streptococcus mutans count	X			

Interpret findings and determine overall risk	OVERALL DISEASE RISK					
	Initial Evaluation			*Re-evaluation*		
Caries *(Tooth decay)*	(High)	Mod	Low	High	Mod	Low
Periodontal disease	High	(Mod)	Low	High	Mod	Low
Oral cancer	Elevated		(Low)	High	Mod	Low

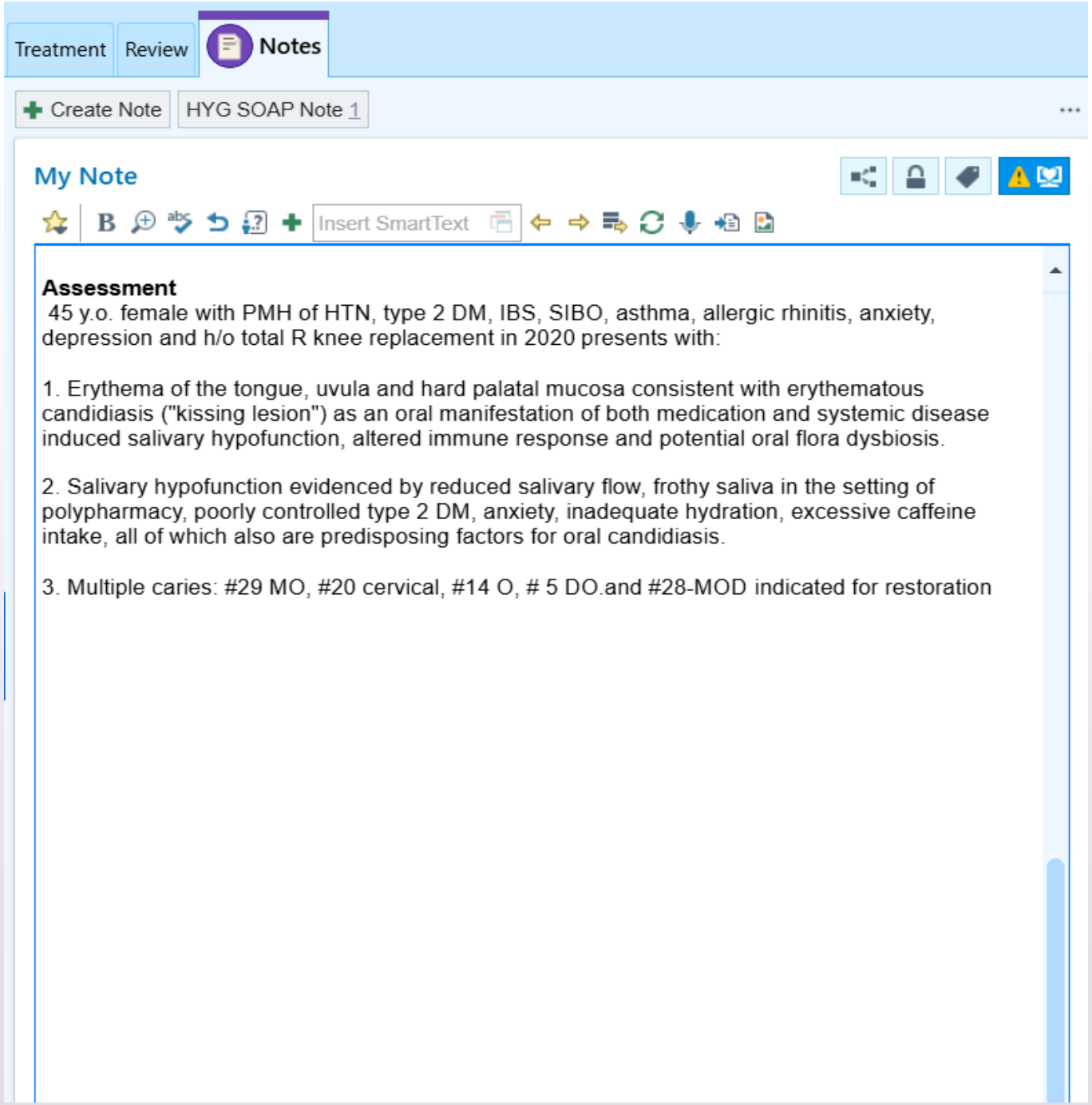
PREVENTIVE TREATMENT PLAN	
(Check if recommended)	Code
Oral Hygiene Instruction & Plaque Control	
■ Brush twice a day with fluoride toothpaste, ■ Floss daily	1330
■ Prophylaxis	1110
□ Gross debridement	4355
□ Scaling & root planing per quadrant* *(see protocol)*	4341
Diet	
□ Dietary assessment* (see protocol)	1310.3
■ Dietary & oral health counseling:	
□	
Saliva	
■ Unstimulated flow rate & *Streptococcus mutans* count	0425
■ Saliva re-test (at re-eval, if *Streptococcus mutans* high)	0425.1
Xerostomia: ■ Salivary products □ Rx: medications ■ Saliva flow stimulation counseling	1305
Fluoride	
■ Professional application (Fluoride varnish, APF, neutral NaF)	1204
□ OTC (ACT/Fluoriguard, Oral B 0.05% NaF)	1301
■ Rx (Prevident 1.1% NaF, Gel-Kam 0.4% SnF_2) □ 1 (at night) ■ 2 (morning and night)	9630.1
□ Remineralization: Tooth # __ __ __ __ __ __ __ __ Surface __ __ __ __ __ __ __ __	1204.1
■ Topical Fluoride varnish	1206
□ Rx Fluoride supplement (NaF tablets)	9630.5
Fluoride Alternatives	
□ Hydroxyapatite	
□ Calcium phosphate products	
Antimicrobials	
□ 0.12% Chlorhexidine rinse* *(see protocol)*	9630.4
Other	
□ Sealants: Tooth # __ __ __ __ __ __ __ __	1351
■ Xylitol gum: 0.6 g/ stick (between meals for 10 minutes)	
Tobacco	
□ Cessation counseling □ Cessation program referral	1320
Caries Risk Re-evaluation *Due Date* ■ 3 mo. □ 6 mo. □ 12 mo. _____	0420.2
Periodontal Re-evaluation *Due Date* □ 3 mo. ■ 6 mo. □ 12 mo.	0179
Oral Cancer Re-evaluation *Due Date* □ 3 mo. □ 6 mo. ■ 12 mo.	

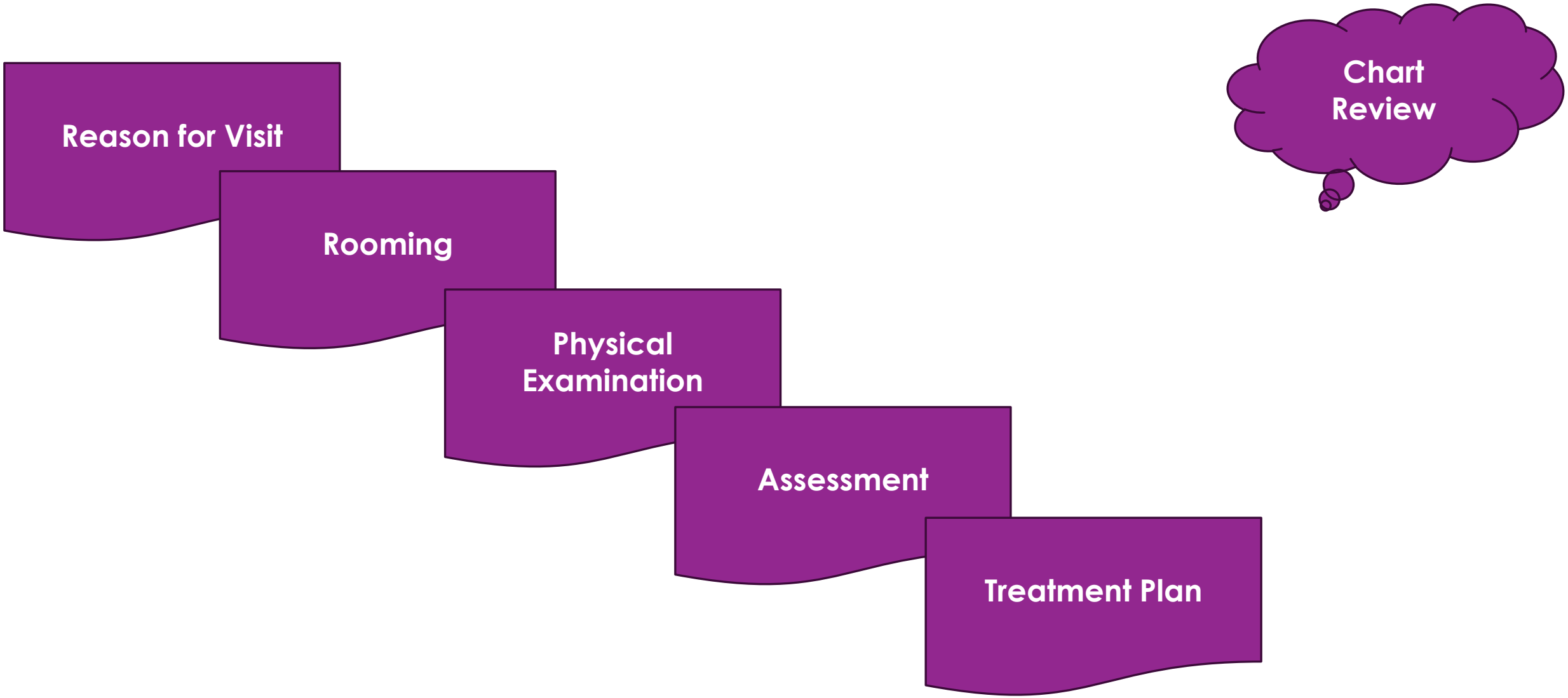
Student Signature _____ Faculty Signature _____

Initial Assessment Date: _____8/20/26_____ Reassessment Dates: _____11/20/2026_____

UTHSCSA Department of Comprehensive Dentistry *Revised 07/2019*

Patient Assessment




Reason for Visit
Rooming
Physical Examination
Assessment
Treatment Plan
Chart Review

Management of Xerostomia/SGH:

Addressing risk factors/complications

- Hydration
- Diet/caffeine
- Dental/oral hygiene
- Smoking and alcohol cessation/reduction
- Anxiety and stress
- Discontinuation/substitution of medications ***when possible***

Signs and symptoms management

- Systemic therapy
- Saliva substitutes
- Saliva stimulants
- Mechanical stimulation
- Electrostimulation

Hydration/Diet/Hygiene

- Address how much water are they drinking in a day
- Address how much caffeine they are drinking in a day
- Dietary considerations to reduce caries risk
- Review dental/oral hygiene (brushing, flossing, dentures, fluoride)
- Review appropriate dental/oral recall and maintenance visits

Smoking/Alcohol/Substance Use

- Encourage cessation

Anxiety/Stress

- Assess whether controlled or being addressed
- Inquire and consult about pharmacological vs. non-pharmacological strategies

Discontinuing medications

- Trial and re-evaluation conservative therapies aimed at modifiable risk factors first
- Consider discontinuation/substitution when appropriate in consultation with prescribing provider

Systemic therapies

Pilocarpine

Cevimeline

Pilocarpine (Brand name: Salagen)

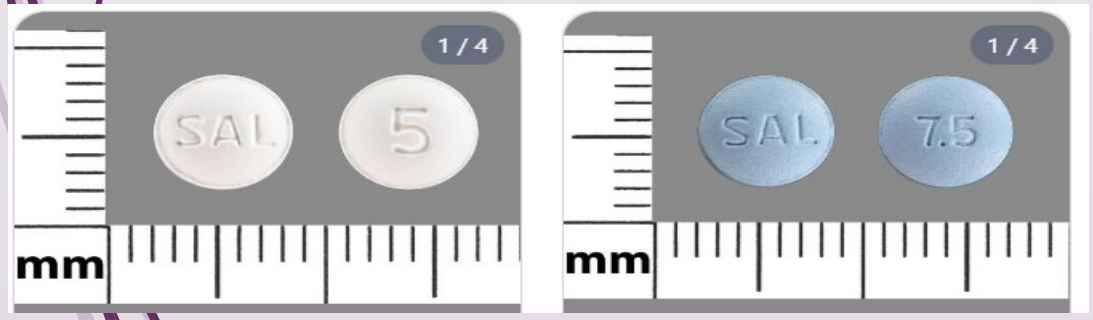
- **Drug class:** Cholinergic agonist/parasympathomimetic
- Muscarinic agonist
- Alleviates dryness by promoting saliva production
- Prescribed in a 5mg or 7.5 mg oral tablet, 3-4x/day
- Max dosage is 30 mg/day

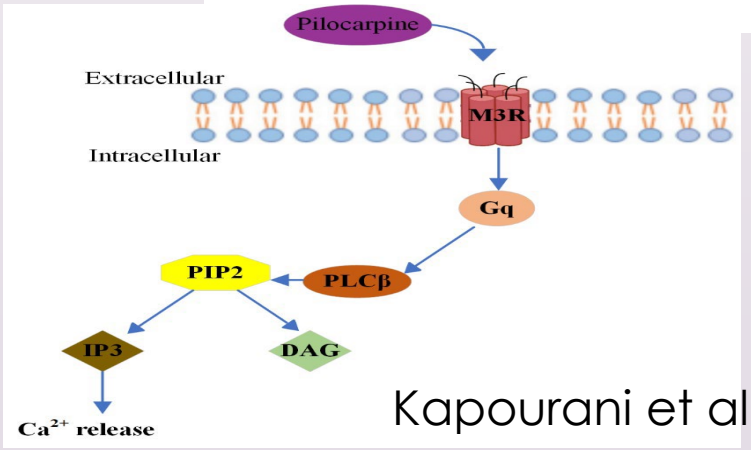
Contraindications:

- Hypersensitivity to pilocarpine
- Uncontrolled/severe asthma
- Narrow-angle glaucoma

Side effects:

- Excessive sweating
- N&V/Diarrhea
- Rhinitis
- Headache
- Palpitations/tachycardia
- Abdominal cramps
- Frequent urination
- Increased lacrimation





Kapourani et al, 2022

Cevimeline (Brand name: Evoxac)

- **Drug class:** Cholinergic Agonist
- Parasympathomimetic agent
- More selectivity for M3 receptor
- Prescribed in 30 mg capsules, taken by mouth TID
- Maximum daily dose: 90 mg
- More expensive, less insurance coverage

Contraindications:

- Hypersensitivity to cevimeline
- Uncontrolled/severe asthma
- Narrow-angle glaucoma

Side effects:

- Same side effects as pilocarpine
- Theoretically fewer side effects (greater selectivity)

Topical therapies

Saliva Substitutes

Saliva Stimulants

Saliva substitutes

- Palliative, lubrication, comfort
- Dry mouth rinses, sprays, gels, and lozenges
- Can also include anti-cariogenic agents like Xylitol
- Do not contain digestive or bactericidal enzymes

AI-generated image

Saliva stimulants

- Mechanical stimulation
- Electrical stimulation
- Gustatory stimulation

Examples:

- Chewing sugarless gum *can contain xylitol which is anti-cariogenic
- Dry mouth lozenges
- Sali-pen
- Extraoral massage of the salivary glands

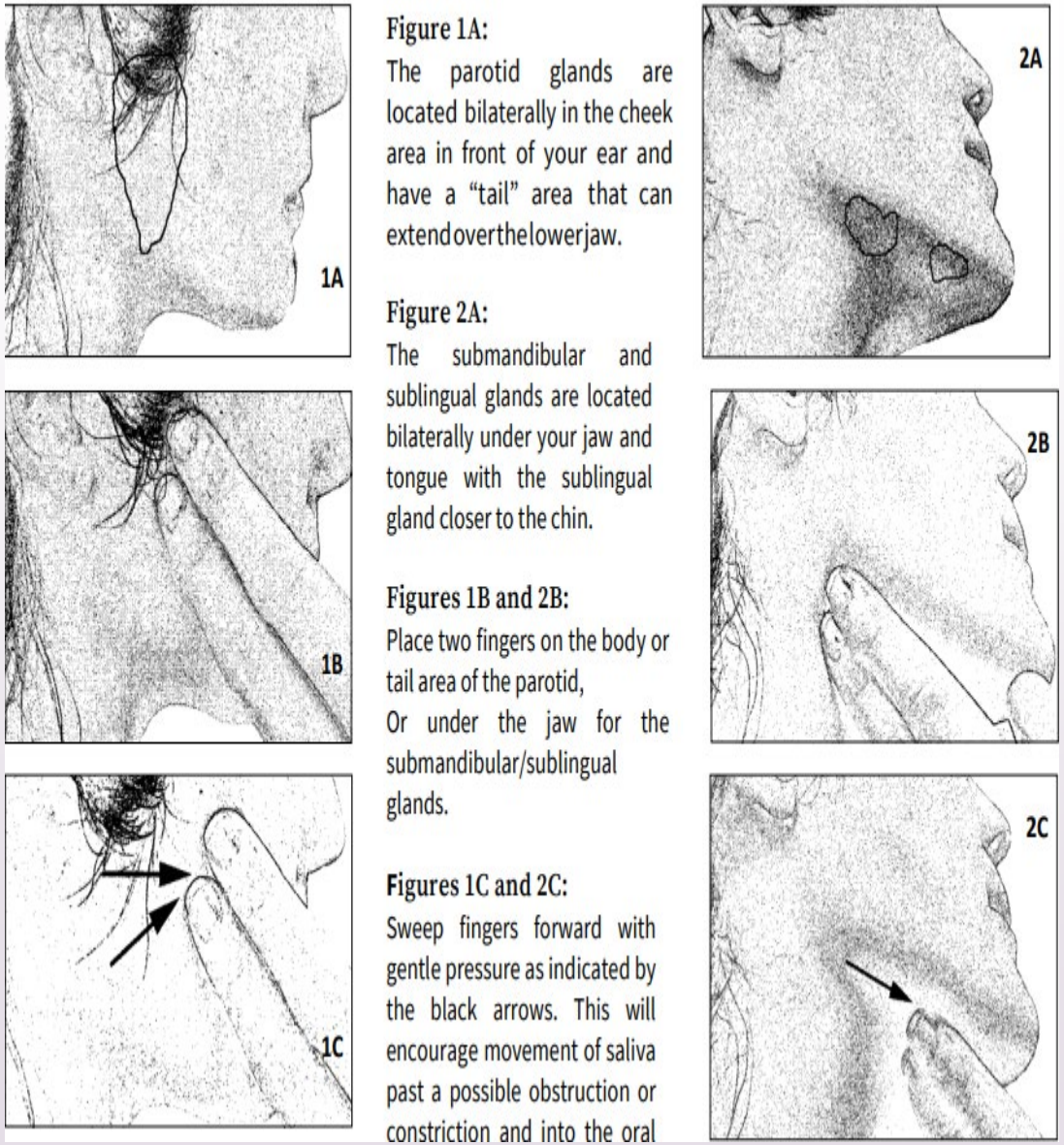


Figure 1A:
The parotid glands are located bilaterally in the cheek area in front of your ear and have a "tail" area that can extend over the lower jaw.

Figure 2A:
The submandibular and sublingual glands are located bilaterally under your jaw and tongue with the sublingual gland closer to the chin.

Figures 1B and 2B:
Place two fingers on the body or tail area of the parotid,
Or under the jaw for the submandibular/sublingual glands.

Figures 1C and 2C:
Sweep fingers forward with gentle pressure as indicated by the black arrows. This will encourage movement of saliva past a possible obstruction or constriction and into the oral

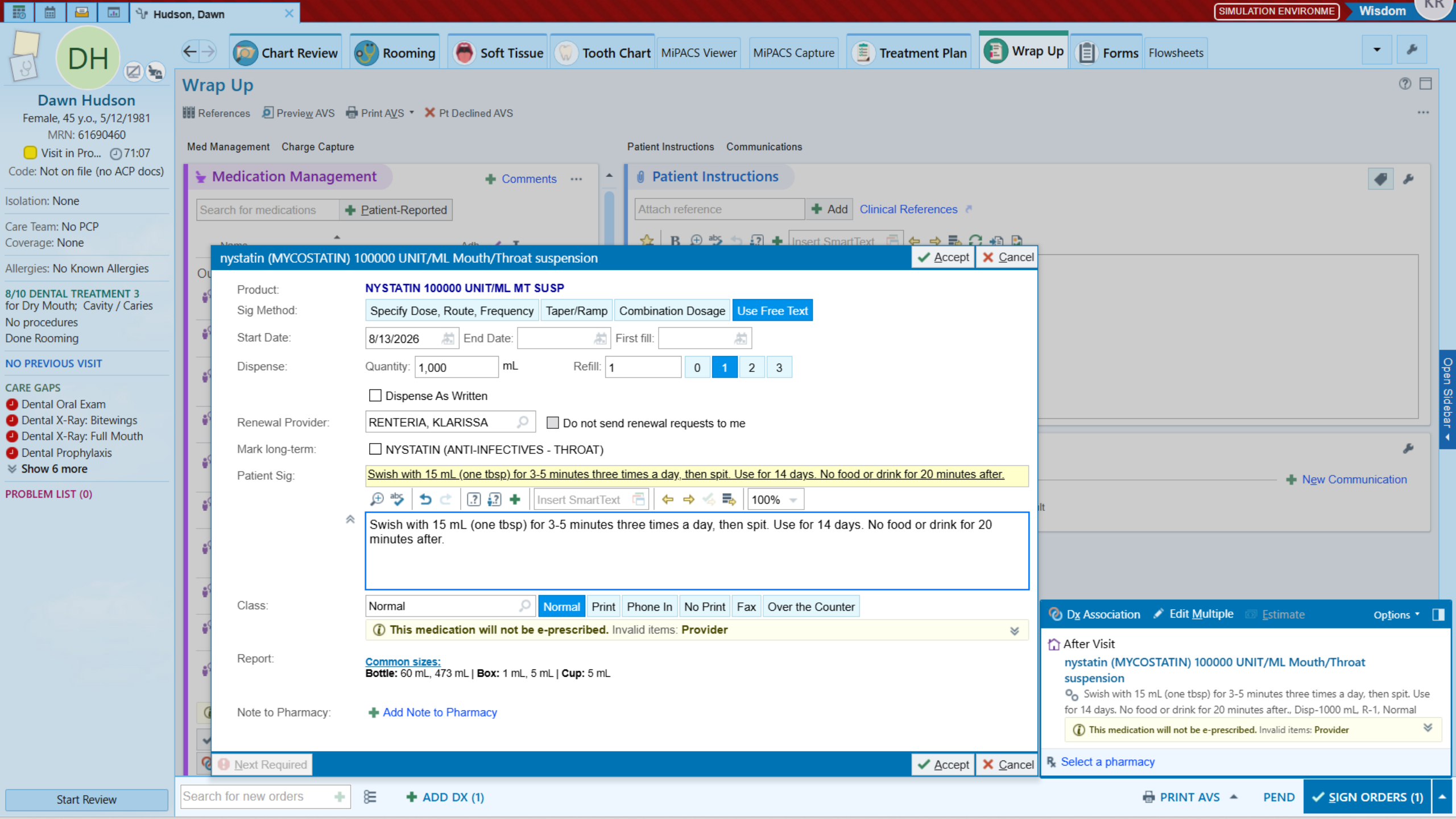
Dr. Ava Wu DDS, Sjogrens Foundation

Treatment plan

- Maintain adequate hydration of at least 8 cups/day. Reduce caffeine and soda intake.
- Recommend OTC saliva substitutes and rinses.
- Sugar-free candy or gum
- Should this patient try to stop meds?
- ?Pilocarpine/Referral to evaluate if patient has Sjogren disease

Treatment plan

- RX: Nystatin
- Follow-up in 2 weeks to assess response to antifungal therapy and oral dryness.
- Referral to PCP for assessment and optimization of glycemic control.


Hudson, Dawn
SIMULATION ENVIRONME
Wisdom
DH
Dawn Hudson
Female, 45 y.o., 5/12/1981
MRN: 61690460
Visit in Pro... 71:07
Code: Not on file (no ACP docs)
Isolation: None
Care Team: No PCP
Coverage: None
Allergies: No Known Allergies
8/10 DENTAL TREATMENT 3
for Dry Mouth; Cavity / Caries
No procedures
Done Rooming
NO PREVIOUS VISIT
CARE GAPS
Dental Oral Exam
Dental X-Ray: Bitewings
Dental X-Ray: Full Mouth
Dental Prophylaxis
Show 6 more
PROBLEM LIST (0)
Start Review
Chart Review
Rooming
Soft Tissue
Tooth Chart
MiPACS Viewer
MiPACS Capture
Treatment Plan
Wrap Up
Forms
Flowsheets
Wrap Up
References
Preview AVS
Print AVS
Pt Declined AVS
Med Management
Charge Capture
Patient Instructions
Communications
Medication Management
Comments
Search for medications
Patient-Reported
Patient Instructions
Attach reference
Add
Clinical References
Insert SmartText
nystatin (MYCOSTATIN) 100000 UNIT/ML Mouth/Throat suspension
Accept
Cancel
Product:
NYSTATIN 100000 UNIT/ML MT SUSP
Sig Method:
Specify Dose, Route, Frequency
Taper/Ramp
Combination Dosage
Use Free Text
Start Date:
8/13/2026
End Date:
First fill:
Dispense:
Quantity:
1,000
mL
Refill:
1
0
1
2
3
Dispense As Written
Renewal Provider:
RENTERIA, KLARISSA
Do not send renewal requests to me
Mark long-term:
NYSTATIN (ANTI-INFECTIVES - THROAT)
Patient Sig:
Swish with 15 mL (one tbsp) for 3-5 minutes three times a day, then spit. Use for 14 days. No food or drink for 20 minutes after.
Insert SmartText
100%
Swish with 15 mL (one tbsp) for 3-5 minutes three times a day, then spit. Use for 14 days. No food or drink for 20 minutes after.
Class:
Normal
Normal
Print
Phone In
No Print
Fax
Over the Counter
This medication will not be e-prescribed. Invalid items: Provider
Report:
Common sizes:
Bottle: 60 mL, 473 mL | Box: 1 mL, 5 mL | Cup: 5 mL
Note to Pharmacy:
Add Note to Pharmacy
Next Required
Accept
Cancel
Dx Association
Edit Multiple
Estimate
Options
After Visit
nystatin (MYCOSTATIN) 100000 UNIT/ML Mouth/Throat suspension
Swish with 15 mL (one tbsp) for 3-5 minutes three times a day, then spit. Use for 14 days. No food or drink for 20 minutes after., Disp-1000 mL, R-1, Normal
This medication will not be e-prescribed. Invalid items: Provider
Select a pharmacy
New Communication
Open Sidebar
Search for new orders
ADD DX (1)
PRINT AVS
PEND
SIGN ORDERS (1)

Treatment plan

- Dental Treatment Plan
- RX: Prevident

Dental Treatment Plan

Prophylaxis

Fluoride Varnish Treatment

Restoration of caries

#5-DO, #14-O, #20-B5, #29-MO, with RMGI + Composite

RX Prevident 5000 toothpaste

Dry mouth option is available and is SLS free

Recall every 3-4 months

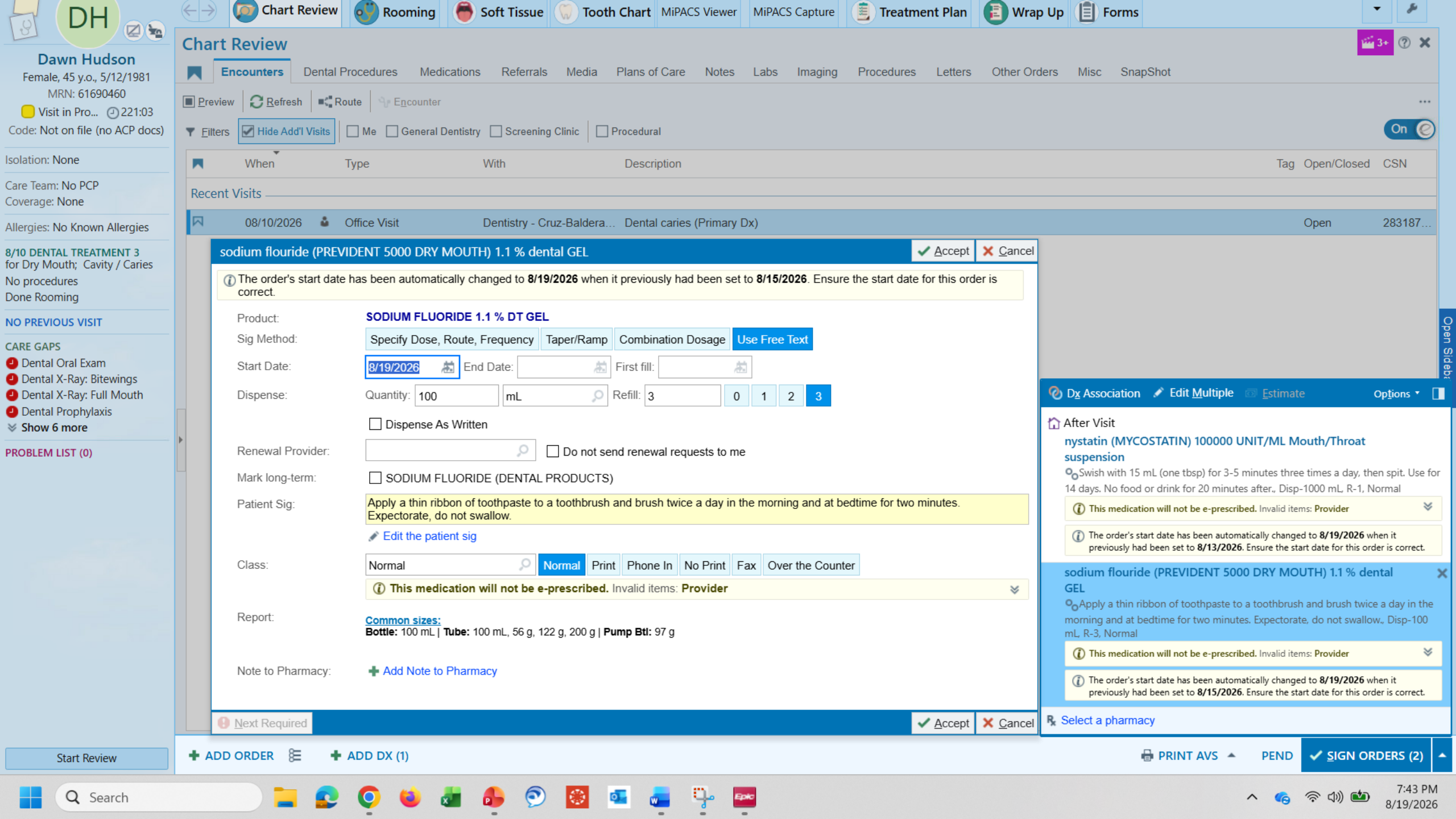


Chart Review
Rooming
Soft Tissue
Tooth Chart
MiPACS Viewer
MiPACS Capture
Treatment Plan
Wrap Up
Forms
DH
Dawn Hudson
Female, 45 y.o., 5/12/1981
MRN: 61690460
Visit in Pro... 221:03
Code: Not on file (no ACP docs)
Isolation: None
Care Team: No PCP
Coverage: None
Allergies: No Known Allergies
8/10 DENTAL TREATMENT 3
for Dry Mouth; Cavity / Caries
No procedures
Done Rooming
NO PREVIOUS VISIT
CARE GAPS
Dental Oral Exam
Dental X-Ray: Bitewings
Dental X-Ray: Full Mouth
Dental Prophylaxis
Show 6 more
PROBLEM LIST (0)
Start Review
Chart Review
Encounters
Dental Procedures
Medications
Referrals
Media
Plans of Care
Notes
Labs
Imaging
Procedures
Letters
Other Orders
Misc
SnapShot
Preview
Refresh
Route
Encounter
Filters
Hide Add'l Visits
Me
General Dentistry
Screening Clinic
Procedural
On
When
Type
With
Description
Tag
Open/Closed
CSN
Recent Visits
08/10/2026
Office Visit
Dentistry - Cruz-Baldera...
Dental caries (Primary Dx)
Open
283187...
sodium flouride (PREVIDENT 5000 DRY MOUTH) 1.1 % dental GEL
Accept
Cancel
The order's start date has been automatically changed to 8/19/2026 when it previously had been set to 8/15/2026. Ensure the start date for this order is correct.
Product:
SODIUM FLUORIDE 1.1 % DT GEL
Sig Method:
Specify Dose, Route, Frequency
Taper/Ramp
Combination Dosage
Use Free Text
Start Date:
8/19/2026
End Date:
First fill:
Dispense:
Quantity:
100
mL
Refill:
3
0
1
2
3
Dispense As Written
Renewal Provider:
Do not send renewal requests to me
Mark long-term:
SODIUM FLUORIDE (DENTAL PRODUCTS)
Patient Sig:
Apply a thin ribbon of toothpaste to a toothbrush and brush twice a day in the morning and at bedtime for two minutes. Expectorate, do not swallow.
Edit the patient sig
Class:
Normal
Normal
Print
Phone In
No Print
Fax
Over the Counter
This medication will not be e-prescribed. Invalid items: Provider
Report:
Common sizes:
Bottle: 100 mL | Tube: 100 mL, 56 g, 122 g, 200 g | Pump Btl: 97 g
Note to Pharmacy:
Add Note to Pharmacy
Next Required
Accept
Cancel
Dx Association
Edit Multiple
Estimate
Options
After Visit
nystatin (MYCOSTATIN) 100000 UNIT/ML Mouth/Throat suspension
Swish with 15 mL (one tbsp) for 3-5 minutes three times a day, then spit. Use for 14 days. No food or drink for 20 minutes after., Disp-1000 mL, R-1, Normal
This medication will not be e-prescribed. Invalid items: Provider
The order's start date has been automatically changed to 8/19/2026 when it previously had been set to 8/13/2026. Ensure the start date for this order is correct.
sodium flouride (PREVIDENT 5000 DRY MOUTH) 1.1 % dental GEL
Apply a thin ribbon of toothpaste to a toothbrush and brush twice a day in the morning and at bedtime for two minutes. Expectorate, do not swallow., Disp-100 mL, R-3, Normal
This medication will not be e-prescribed. Invalid items: Provider
The order's start date has been automatically changed to 8/19/2026 when it previously had been set to 8/15/2026. Ensure the start date for this order is correct.
Select a pharmacy
ADD ORDER
ADD DX (1)
PRINT AVS
PEND
SIGN ORDERS (2)
Open Sidebar
Search
7:43 PM
8/19/2026

Take Home Messages

- Most patients with SGH will report xerostomia but not all patients with xerostomia will have SGH
- Dry mouth is a sign/symptom, not a diagnosis
- The management of xerostomia is multi-disciplinary and multimodal
- Addressing risk factors are just as important as treating the signs & symptoms
- Salivary substitutes are for palliative care and do not contain the protective functions of saliva
- Patients should be educated and monitored for the adverse effects of systemic therapies for salivary gland hypofunction

References

- Stoopler, Eric T et al. "Common Oral Conditions: A Review." *JAMA* vol. 331,12 (2024): 1045-1054. doi:10.1001/jama.2024.0953
- Wolff, Andy et al. "A Guide to Medications Inducing Salivary Gland Dysfunction, Xerostomia, and Subjective Sialorrhea: A Systematic Review Sponsored by the World Workshop on Oral Medicine VI." *Drugs in R&D* vol. 17,1 (2017): 1-28. doi:10.1007/s40268-016-0153-9
- Chen, Austin et al. "Using the modified Schirmer test to measure mouth dryness: a preliminary study." *Journal of the American Dental Association (1939)* vol. 136,2 (2005): 164-70; quiz 229-30. doi:10.14219/jada.archive.2005.0137
- Kapourani, Afroditi et al. "A Review on the Role of Pilocarpine on the Management of Xerostomia and the Importance of the Topical Administration Systems Development." *Pharmaceuticals (Basel, Switzerland)* vol. 15,6 762. 18 Jun. 2022, doi:10.3390/ph15060762
- Plemons, Jacqueline M et al. "Managing xerostomia and salivary gland hypofunction: executive summary of a report from the American Dental Association Council on Scientific Affairs." *Journal of the American Dental Association (1939)* vol. 145,8 (2014): 867-73. doi:10.14219/jada.2014.44
- Sjögren's Foundation. "Salivary Glands Massage Patient Education Sheet." *Sjögren's Foundation*, https://sjogrens.org/sites/default/files/inlinefiles/Salivary%20Glands%20Massage%20Patient%20Education%20Sheet.pdf. Accessed 19 Aug. 2026.
- Liebenberg W. Return to the resin-modified glass-ionomer cement sandwich technique. *J Can Dent Assoc*. 2005;71(10):743-747.

Questions?

Email

renteriak@uthscsa.edu

tavarest@uthscsa.edu