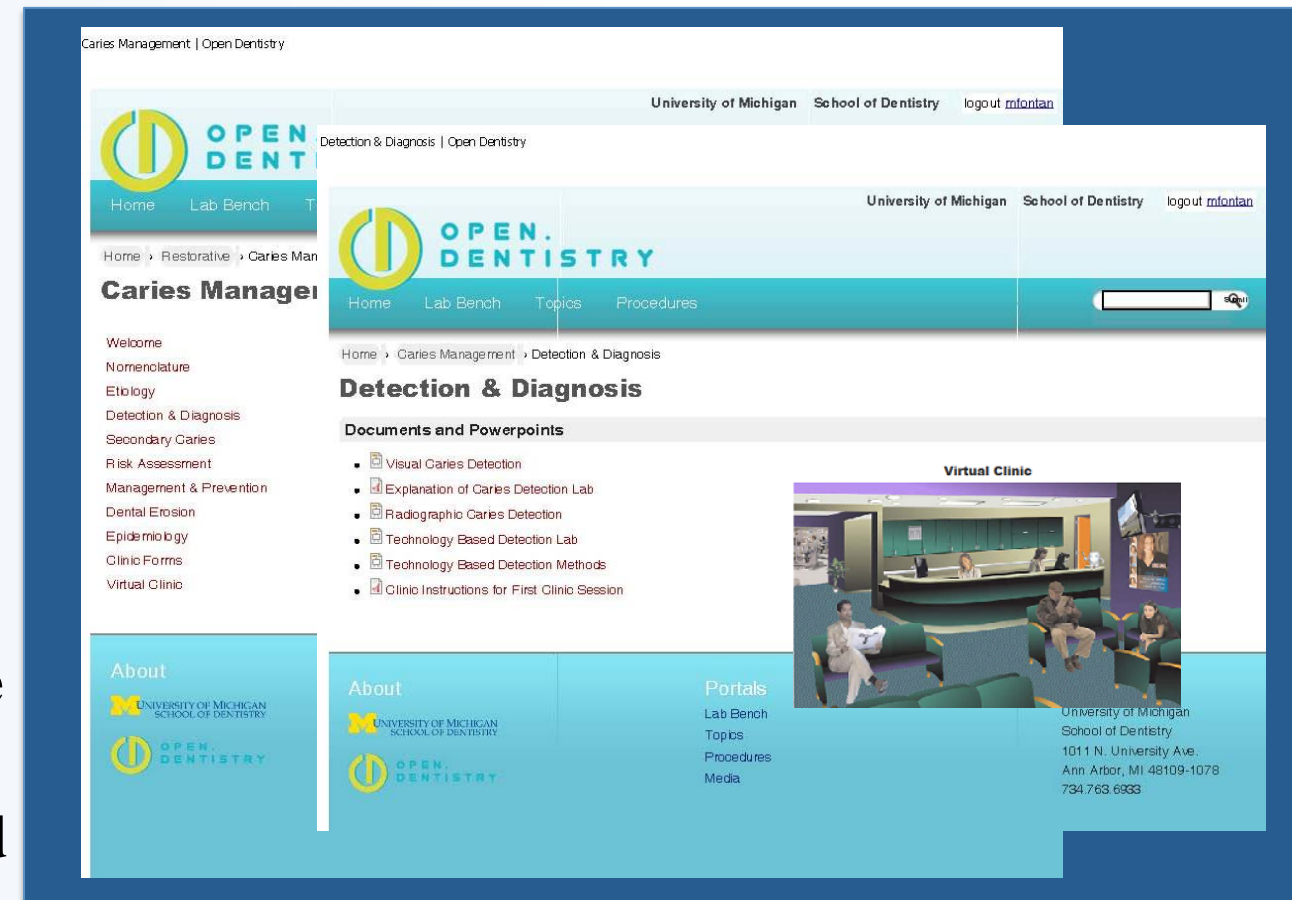


Assessing Critical Thinking and Hands-On Learning in Cariology in a New Curriculum

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GUIDELINES FOR A CARIOLOGY CURRICULUM FOR THE 21ST CENTURY

- Focus on disease prevention and health promotion
- Focus on minimal surgical intervention
- Risk based decision-making
- Based on best available evidence (enhancing translation of research findings into clinical practice to improve health)
- Patient/Community-centered



ASSESSMENT 1 DIDACTIC

The following scenario relates to the next three questions. (Questions # 1-3)

A 63 year-old male patient comes to your office for the first time. He just moved in town. His medical history is unremarkable, and he is not taking any medications. He always attends his regular check up dental visits. He has 10 teeth with sound fillings (done many years ago), and has no current active caries lesions. Frequency of carbohydrates in diet is low, and his unstimulated salivary flow is 0.3 ml/min. The patient has localized plaque and calculus accumulation in the lingual of his mandibular incisors, and he brushes twice daily with fluoride toothpaste. He likes to chew sugarless gum.

1. Based on the limited information provided, this patient should be classified for caries risk as being:
 - a) Not at risk (low caries risk).
 - b) At risk (moderate or high caries risk).
2. Of the following risk factors, which one alone has the highest sensitivity and reliability to predict future caries problems?
 - a) His diet
 - b) His salivary flow
 - c) His exposure to fluoride
 - d) His caries activity
3. An unstimulated flow rate value of 0.3 ml/min is highly indicative of caries risk.
 - a) True
 - b) False
4. An 8 year-old patient who has all his first permanent molars restored because of caries, and bilateral white opacities on the incisal edges of most of his permanent incisors, is automatically considered to be:
 - a) At risk of caries (moderate or high)
 - b) At low risk of caries
 - c) None of the above, caries risk cannot be assessed until more information is obtained and all other caries risk variables have been evaluated



24- Figure 5: How would you classify this surface using the ICDAS criteria?

- a. 2
- b. 3
- c. 4
- d. 5
- e. 6

ASSESSMENT 2 HANDS ON



Practical Examination (Real teeth):
Percentage of Correct Responses (Mean±SD; Paired-t test; p<0.001)

Pre-lab	Post-lab
75% ± 9%	89% ± 6%

Didactic Examination

(Caries Detection Assessment Results Based on Images):
 Responses to similar questions ranged: 90-100%

ASSESSMENT 3 CASE BASED

1. Examine the following two surfaces: 12 occlusal, and 30 occlusal. Describe whether the surface is sound or if there is any associated pathology. Be sure to use correct terminology. If describing caries lesions refer to both severity and activity.

2. Complete a Caries Risk Assessment for the patient in this case:

- Identify the patient's caries risk factors.
- Define and justify the patient's Caries Risk status (Low, Moderate or High)
- Provide a recommended recall interval for caries management.

3. Develop a detailed Caries Management Plan for this patient (you may use the UoM form as guidance, but do not include these forms!)

- Provide a rationale for each element of the management plan.
- Provide evidence-based resources to support your management plan. Utilize and cite quality, strong evidence resources (limit yourself to 2 for each recommendation), if available.
- Rank management plan elements based on the strength of the evidence

Case Study – Ashley Smith
 Whitney Yahn

Patient Ashley Smith is a patient with moderate caries risk. She has multiple restored carious lesions in her mouth, however since she has not seen a dentist in six years they are more than six years old. This would not classify her as moderate caries risk alone, however the patient has clinical and radiographic signs of caries that seem active. Along with the fracture visible on #13, there seem to be radiographically visible caries on #13, 19, 20, and 31. The caries on #31 is due to the mesial tilting on #32. Along with these visible caries, the patient has multiple other risk factors. While she has normal salivary levels, she has a high plaque score, has a poor diet in terms of caries prevention, inadequate protective factors, and conditions that affect her compliance.

First of all, the patient has a high plaque score of 59%, as well as has areas in her mouth that could easily accumulate and harbor plaque, such as a partially erupted third molar. As for diet, the patient eats many sugary snacks and candies between meals, as well as drinking multiple sweetened beverages between meals, such as soda and sweetened ice cream coffee drinks. The patient also lacks in the area of protective factors. While the patient does brush, she most often only brushes in the morning. She uses a fluoride filled dentifrice, however she is not consistently using one form and also uses a whitening form but has experienced some sensitivity. She also rarely flosses, and has not been to the dentist in over six years.

The following are recommendations for the management of the patient's caries risk.

1. Provide prescription high concentration fluoride dentifrice to be used two times a day, 5000 ppm with a low RDA due to her sensitivity. - Twice a day may not be necessary with such strong fluoride content, however since the patient does not often brush twice a day this will hopefully be enough if only used once a day.
 - o Marinkho, V, Higgins, J, Logan, S, and Sheiham, A. Fluoride toothpastes for preventing dental caries in children and adolescents. The Cochrane Database of Systematic Reviews, 2009; 1.
 - o Cochrane Systematic Review, Very strong evidence of a benefit.
 - o Marinkho, V, Higgins, J, Logan, S, and Sheiham, A. Topical fluoride (toothpastes, mouthrinses, gels or varnishes) for preventing dental caries in children and adolescents. The Cochrane Database of Systematic Reviews, 2009; 1.
 - o Cochrane Systematic Review, Based on children, Effectiveness increases with fluoride concentration

Clinical Experiences: Test cases (competency), e-Portfolios (sustenance of competency)



11/1	11/2	11/3	11/4	11/5
				DENT 532 8-10 am G378: Use of Sealants in Caries Management (Fontana)
DENT 519 1-2 pm G378: Class 3 Resin Composite Preparations (Krishnan)	DENT 519 1-2 pm G378: Curing Lights and Exam #2 Review (McLean)			
DENT 519 2-5 pm SIM Lab: Class 3 Resin Composite Preparations (Group A)	DENT 519 2-5 pm SIM Lab: Class 3 Resin Composite Preparations (Group B)			DENT 532 2-5 pm Old Lab: (Group B2) Caries Detection Lab - Part 1 (Fontana/Gonzalez/Peters/Sohn) (in Old Lab) Groups A1, A2 and B1 free this afternoon!
2-5 pm: Seminar (Piskorowski) then Clinic - Group B2	2-5 pm: Seminar (Fitzgerald) then Clinic - Group A2			
DENT 532 2-5 pm Old Lab: (Group B1) Caries Detection Lab - Part 1 (Fontana/Gonzalez/Peters/Sohn) (in Old Lab)	DENT 532 2-5 pm Old Lab: (Group A1) Caries Detection Lab - Part 1 (Fontana/Gonzalez/Peters/Sohn) (in Old Lab)			

The Cariology Curriculum involves a series of courses throughout the 4 years of the DDS curriculum that will be establishing:

- Didactic foundational knowledge (traditional lecture formats and online content delivery)
- Skills development
- Patient case discussions
- Clinical experiences

All of these designed to enhance and facilitate **active student learning, critical-thinking, problem-solving, and use of evidence-based information** for dental caries detection, diagnosis, risk assessment, prevention and management.