

# “Urgent Dental Care” – A preclinical patient case scenario as an aid to clinic preparation for treating a patient with urgent dental care needs

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## BRIEF REPORT

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## ABSTRACT

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### Background

Pre-clinical student competencies are usually assessed in only one specific area and not contextualized in a patient care scenario. Exposing preclinical students to a high fidelity simulated urgent care patient scenario will help the student develop critical thinking and intuitive dental treatment skills that will prepare them for actual urgent dental care (UDC) treatment in the clinic.

### Aims

Dental students, in the preclinical years, have difficulty in applying various disciplines of dentistry to an actual patient. The goal of this exercise is to contextualize several disciplines (diagnosis, material selection, oral pathology, electronic record keeping, patient interview and critical thinking) into a real patient case. The hypothesis is that providing a preclinical urgent care session in this manner will better prepare students for clinical UDC treatment.

### Methods

An urgent care patient scenario was developed that integrated multiple disciplines and contextualized common

urgent clinical situations that are encountered daily, focusing on interviewing skills, basic diagnostic skills, manipulation of electronic patient records, material selection and defence of selection, image and data procurement, prescription writing, critical decision making, oral medicine diagnosis, treatment planning for a focused need, and performance of dental treatment. Second year dental students are required to interview a first time (walk-in) urgent care patient to determine the chief complaint, diagnose the urgent problem (based on information obtained by interviewing the patient) and to make critical patient care decisions and self-assess their performance.

### Results

Students generally completed the session on time and in a satisfactory fashion. Preparation for the session was key and faculty calibration was essential.

### Conclusion

Completion of this case scenario better prepared the students for the clinic as indicated by student self-assessment, post course satisfaction surveys, narrative comments, and faculty assessments.

### Key Words

Critical thinking, patient interview, oral pathology, electronic record keeping, material selection, time management

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## Implications for Practice:

### 1. What is known about this subject?

There are no known case scenarios that are specific to contextualizing urgent dental care treatment in a preclinical setting that include diagnosis, critical thinking, material selection, patient record manipulation oral pathology and time management.

### 2. What new information is offered in this report?

The report explains a method of instruction that helps the student use learned knowledge in disciplines to formulate and execute a treatment plan for an urgent care patient.

### 3. What are the implications for research, policy, or practice?

Pre-clinical students can be introduced to actual patient care through use of simulated patient scenarios that allow them to utilize many of their learned disciplines in developing diagnosis and providing urgent dental treatment to simulated patients. Similar cases can be developed to emphasize other dental disciplines in unique cases.

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#### Background

Preclinical curriculum is designed to teach basic foundational knowledge. A dental education must build on basic understanding of dentistry (with additional knowledge in the biomedical sciences) that the student can apply to simulated clinical scenarios and ultimately clinical cases. The first two years in a typical dental curriculum are devoted to ensuring that the students acquire this foundational knowledge prior to dental treatment of patients. The challenge has always been to create a clinic atmosphere in the preclinical environment. Most assessments of preclinical patient skills are in the form of independent clinical performance assessments (ICPA) that test only one focused aspect of the clinical experience (specific restorative preparations, restorations, endodontic procedures etc.). Some sessions involving simulated patients have been developed using the case scenario basis, but most have been for testing purposes<sup>1,2</sup> or for defined areas of dental practice such as oral surgery,<sup>3</sup> geriatric,<sup>4</sup> or removable partial dentures.<sup>5</sup> Search of literature reveals no Urgent Dental Care (UDC) case scenarios have been developed that have electronic health record, manikin performance, and simulated patient components. UDC refers to treatment requiring immediate care, but not serious enough to require an ER visit. Simulated patient scenarios using an electronic health record, posted patient narrative and faculty acting as standardized patients, contextualizes learning concepts in preparation for patient care. The simulated patient also provides a realistic insight into actual routine clinic situations requiring multiple levels of critical thinking, decision making, organization and time management skills.

#### Case details

The rationale for including a UDC patient scenario in the preclinical curriculum, is to allow the student to apply acquired basic dental knowledge and perform basic dental procedures in the context of a simulated patient. The essence of the "Urgent Dental Care" session is to create a plausible, uncomplicated simulated patient that requires UDC and has common health conditions. The scenario is created that requires multiple areas of decision making that

allow the student to demonstrate their diagnostic abilities and skill in providing UDC. The complexity of this case is commensurate with the timing of the basic knowledge that the student has accumulated at that point in the curriculum. This simulated patient was created by representative faculty from the various teaching disciplines and specialties. This UDC patient scenario consisted of three parts:

#### The electronic health record (EHR)

The first component is the patient's electronic health record. Since this is a first time, walk-in UDC patient, the electronic health record (EHR) is blank. A photo of the fractured tooth, plus a matching radiograph of the area (LLQ) are included in the attachment section of the chart and the student is instructed that these were procured in their office today. An additional photograph of an area of oral pathology (black hairy tongue) is also provided. This electronic health record (Jane Doe) was created and duplicated to each student's active patient roster in the electronic health record at the beginning of the course. The blank EHR is to be used as a basic scaffold for this exercise regardless of which variation of the UDC case the student has (Appendix A)

#### The narrative part

The case scenario narrative component gives information about the patient as she presents for today's appointment. In this case, a rather complete narrative of the patient conditions is presented. Ostensibly this information was procured at the student's dental office prior to treatment. Some sketchy symptoms are presented in the narrative, and the student is expected to conduct a lengthy interview with the patient (faculty) to collect data for a differential diagnosis. The student must factor this information when considering today's treatment (blood pressure, oral pathology and special instructions for the students). The narrative aspect of this case was distributed on the day of the session to mimic the real life occurrences of UDC (Appendix B)

#### The faculty

The supervising faculties serve in the dual role as observing faculty (for assessment purposes) and the patient (for the student to interview and obtain information that will lead to develop a definitive diagnosis). The faculty information provided will lead to a pulpal diagnosis of either reversible pulpitis (minor inflammation from which the pulp is able to recover; characterized clinically by pain that disappears rapidly on removal of thermal stimulation) requiring a restoration of the broken tooth structure (UDC Case I) or irreversible pulpitis (inflammation of the dental pulp from

which the pulp is unable to recover; clinically, may be asymptomatic or characterized by pain that persists after thermal stimulation) that would require pulpal therapy to relieve the acute pain (UDC Case Ia).

The session was implemented in the Spring quarter 2016 for the second year dental students. They have at this time completed 6 quarters of preclinical curriculum. The class of 127 students was divided into 15 groups of eight students and one group of 7 students. One faculty member facilitated each group for a total requirement of 16 supervisors.

### Format

At this point in the student's pre-clinical curriculum, they had received instruction in UDC treatment, endodontic pulpal diagnosis and restorative dentistry commensurate with the level they would need to complete this exercise. The students also had sessions in patient interview methods with simulated live patients and were proficient in conducting a patient interview. The scenario requires the students to work independently, using the provided information in the patient narrative and the information obtained from the patient (faculty). The patient has not been seen before by this student and therefore does not have an electronic health record nor any recorded medical or dental history. All this information is obtained from the narrative sheets provided to the students, and any information derived from the patient interview. The student is provided with an EHR with the patient name Jane Doe. The EHR is blank with the exception of 3 images (a photo of the damaged tooth, a radiograph of the quadrant that contains the damaged tooth and a photo of the patient's tongue). All dental treatment procedures are to be performed on a typodont that is positioned in a dental manikin.

### Session components

**Patient presentation to the Instructor:** The students will receive the narrative portion of the test in the form of a printed sheet(s). The narrative portion will be for the same patient and contain current physical condition and medical and dental history. The two versions of the UDC patient vary only in the patient's subjective symptoms. UDC Case I states that "I broke a tooth and it **doesn't hurt**, but it feels sharp and ragged and it is cutting my tongue to shreds" (reversible pulpitis). The second UDC Case Ia states that "I broke my tooth and it **hurts** and feels sharp and ragged and it is cutting my tongue to shreds" (irreversible pulpitis). The only difference in the narrative scenario is the insertion of the indication that the tooth "hurts". It is up to the student to

interview the patient to determine the extent of the pain and diagnose the UDC as either reversible pulpitis (UDC Case I) or irreversible pulpitis (UDC Case Ia). During the patient interview (student/faculty), the student must ask pertinent, concise questions of the patient, to determine the type, duration, stimulus, intensity, and what relieves the pain. The faculty for Case I will give responses to all questions to lead the student to arrive at the diagnosis of reversible pulpitis and that the tooth needs to have a restoration placed (replaced). For Case Ia, the faculty will give responses to the student to lead them to believe the tooth has irreversible pulpitis and needs to have root canal therapy(RCT) initiated in the form of a pulpotomy and initial cleansing of the canals. It is expected that after the patient interview, there will be a period of time while the student enters information into the EHR, accomplishes the necessary evidence search to determine a differential diagnosis and ultimate diagnosis. The students will provide a concise and organized presentation of case facts to the supervising instructor prior to proceeding with patient treatment. In addition, the student is instructed to procure a radiograph in the radiology department (even though one is provided in the EHR attachments) and comment on the discoloration of the dorsum of the tongue (using data from the patient interview- the diagnosis is black hairy tongue from coffee and tobacco use). The student is also expected to write an appropriate prescription for post op pain and a complete daily treatment note in the electronic health record.

**Assessments:** The students were assessed by the faculty using case scenario specific assessment checklists. Unique checklists were developed for UDC Case I and UDC Case Ia. All dental procedures required in this case are familiar to the students and have been performed as part of coursework during first two years. Student's work independently and develop their own interview style with the faculty (diagnosis, treatment plan, restorations and pulpal access). Students are assessed not only on correct pulpal diagnosis and treatment plan, but also the thought process used to lead them to these decisions. Students self-assess their work using criteria sheets that were procedure specific. These criteria forms were created throughout the first and second year as part of dental curriculum. The forms were posted and the student was expected to print these forms in advance and complete them independently. Since there is much leeway in cavity preparation for UDC Case I, the student was allowed to create their own prep depending on how they interpret the remaining tooth structure and the material that was chosen. Each session was 3.5 hours in duration (the same as the

length of our clinic session) and was worth 3 per cent of the student's grade in the course for successful completion. The sessions were graded satisfactory or unsatisfactory. At the end of the session the students received their final results, and a verbal faculty assessment of their performance based on the criteria checklist, the student's self-assessments and other observations.

Remediation for unsatisfactory performance was conducted at the end of the course as a retest of the case in totality. Successful passing of this case scenario session is mandatory for successful passage of the course in which it is contained.

**Calibration sessions:** Students: were calibrated to the exercise in a lecture format using a PowerPoint presentation that was also posted to the electronic website. The electronic health record entry for the patient was also demonstrated. Student calibration session was 1 ½ hours.

Faculty: calibration to ensure uniformity in student assessment was presented in the form of a faculty guide and the demonstration of the electronic health record information. Faculty calibration was accomplished in a two-hour session.

Resources required to present this session, include access to electronic website to post sessional calibration presentations, assignments and criteria sheets. An accessible electronic health record system (preferably the same one as used by students in the clinic) also is required.

**The session requirements** for dental materials, instruments, pre-session and post sessions material for the students, pre-sessional faculty calibration, facility needs, faculty requirements and time allotments are all normal items provided in a dental lab setting typical of all dental schools.

## Results and Discussion

One hundred twenty-seven (127) DMD-2 students participated in this session during the Spring Quarter of the 2016. Using case specific assessment criteria, student self-assessment criteria and observations, faculty graded the students to have satisfactorily completed 85 per cent of all cases scenario challenges. 35 per cent of the students challenging UDC Case I ultimately chose (and convinced the patient to choose) amalgam as the permanent restoration for #18. 63 per cent chose and placed composite. One student opted to leave the remaining composite in the tooth and produced evidence that there would be some bonding of the new restoration to the old one. One student opted for and completed a CAD CAM ceramic restoration.

125 (98 per cent of the class) participants responded to a post session online evaluation with an overall rating of 4.63 out of 5 in the areas of clarity of objectives, organization, evaluation methods and overall rating. Narrative comments (55) were also positive.

As with any type of graded clinical performance exam, the results are only as good as the uniformity of its administration. Faculty calibration is critical and extensive. Faculty has been calibrated so that grading is uniform and results are consistent. Another limitation is the inability to truly create a clinical setting atmosphere when the patient is a manikin rather than a live patient.

## Conclusion

The concept of "Urgent Dental Care" was generated to simulate clinical situations that would occur on a typical urgent care clinical patient. The following conclusions were evident:

1. Developing a realistic urgent care patient scenario that contained components in numerous areas of the preclinical curriculum was a positive experience for the students, and gave a palpable feeling of how urgent patient treatment will be performed in the dental clinic and ultimately in general practice.
2. Contextualizing various basic dental knowledge components into this case forced the students to prepare ahead, verbalize a presentation of case facts to the faculty, make evidence based decision, organize questions to determine a diagnosis and formulate their plan of action to perform treatment and relieve the patient's urgent chief complaint.
3. Performing daily data entry such as entering medical and dental histories, manipulating the EHR to add radiographs and enter treatment notes, and defending diagnoses, treatment decisions and dental material selection were all pieces of this session that made it similar to a clinic experience.
4. Faculty responses, when role playing the patient, also added an interview aspect to the session. The introduction of two cases, with similar basic data, resulting in very different diagnoses and treatment planning based on accurate patient interview also added a level of unpredictability to the session.

The results of the post course evaluation indicated students found value in this type of session and helped anticipate the real nature of UDC in the clinic. The author are unaware of other courses commonly used in dental school education today that offer a similar level of pre-clinical training experiences in simulation of UDC case scenarios as provided by this session. The material and facilities needed to

accomplish these sessions are typical items that are found in every preclinical simulation lab.

### **Suggestions for expanding the role of “Urgent Dental Care” sessions**

This patient scenario session can be adapted as the students’ progress through the preclinical curriculum and treatment modalities can be added as their knowledge base increased. For instance, more complicated scenarios and more than one alternative (accidental chipping of teeth where some require RCT and other just restorative, a request by the patient to restore them immediately for an important occasion, or avulsion of a tooth and all the ramifications and decisions to replant or not). Case difficulty and inclusion of more critical thinking decisions and complexity of the dental treatment can increase toward the end of the second year. Patient case scenarios can be tailored to any phase of the curriculum.

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### **Studies of interest to support the brief report:**

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### **PEER REVIEW**

Externally peer reviewed.

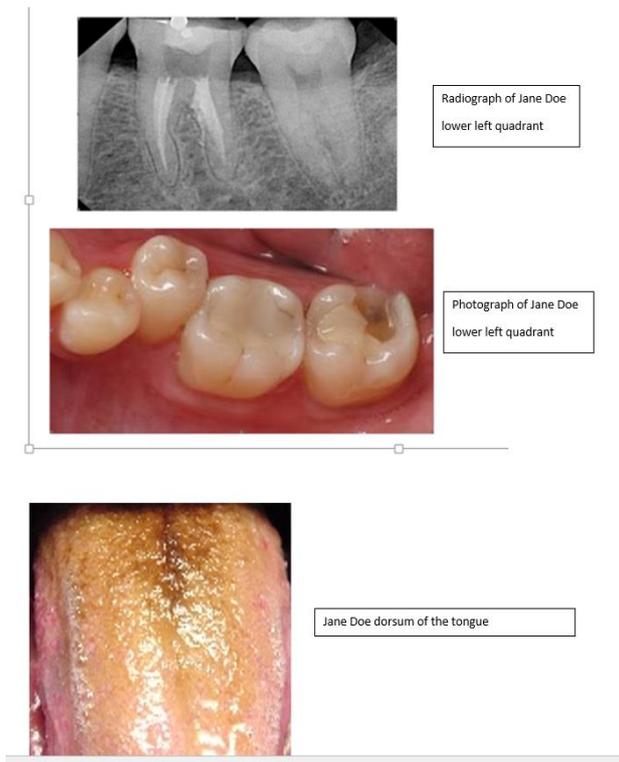
### **CONFLICTS OF INTEREST**

The authors declare that they have no competing interests.

### **FUNDING**

None

## Appendix A



- Brushes teeth with FI toothpaste twice daily
- Flosses on occasion ( twice weekly)
- Saliva flow is adequate
- Drinks 5 cups of coffee daily

### *A dental exam of the patient reveals:*

- The periodontium is within normal limits- no periodontal probings procured
- All teeth are present ( the LLQ is determined by the photo)
- Tooth # 18 has a fractured lingual cusp. No caries present.
- The patient also asks you to look at the dorsal surface of her tongue and tell her what is going on, is it serious and how to treat it?

Accumulate your diagnostic data and enter information into the patient’s medical and dental history in the EHR. Procure a radiograph of the area that you determine to be the source of this urgent care visit. Prepare your typodont to look like the picture attached to Jane Doe’s EHR record prior to presenting the case to your instructor. If you have any questions for the patient (sensitive to hot or cold, or wish to do some tests) the faculty supervisor will act as the patient and give you the results of your requested tests.

## Appendix B

### Case Narrative (distributed on the day of the session)

#### *Urgent Dental Care Scenario I*

**Jane Doe** is a new patient to your office and presents for an emergency exam. She states that “I broke my tooth yesterday and it doesn’t hurt, but feels sharp and ragged and it is cutting my tongue to shreds”.

#### *Current Physical Conditions:*

- 35 year old female
- Claims she is in good health
- Blood pressure 120/80
- Pulse 72
- 12 respirations per minutes
- No Known Allergies
- Temperature 98.6 F
- No medical problem upon interview
- Patient smokes 15-20 cigarettes per day
- The patient states she is taking no medications except for a multivitamin
- DOB 1-9-1982

#### *The following Dental History was obtained upon interview:*

- The patient has 2 dental checkups per year
- The patient has had no carious lesions during the last 4 years

1. Present the facts of the case-
  - a. Why the patient is here today
  - b. Health history ( including any new findings- entered into appropriate EHR)
  - c. Plan for today
2. Once the instructor has approved your plan, proceed with planned exercise
3. Have the assigned faculty check intermediate steps
4. Use the appropriate criteria forms as a guide and include a **self-assessment**.
5. Conclude the exercise with a note in the patient record (approved by the faculty)
6. The final assessment for this session will be satisfactory/ unsatisfactory. The exercise will be graded as a whole and include assessments of all the phases leading to and including treatment (just like in the clinic)
7. There will be no remediation for this exercise

#### *Tips:*

1. Before the session, assemble all materials, instruments, and criteria forms necessary to provide treatment for this exercise. Review all necessary procedures, previous course documents and literature to aid in providing patient care today.

2. The supervising faculty will assume the role of the patient for this exercise (in addition to assessing your performance). Ask any questions about subjective symptoms. If there are any pulpal tests you want to perform, ask the faculty for the results of the test that you require.
3. If you decide a restoration is needed, the decision of restorative material is your choice (as long as you can give evidence based reasons for your choice).
4. Provide for post op pain control

### ***Urgent Dental Care Scenario- # 1a***

**Jane Doe** is a new patient to your office and presents for an emergency exam. She states that "I broke my tooth yesterday and it hurts and feels sharp and ragged and it is cutting my tongue to shreds".

#### *Current Physical Conditions:*

- 35 year old female
- Claims she is in good health
- Blood pressure 120/80
- Pulse 72
- 12 respirations per minutes
- No Known Allergies
- Temperature 98.6 F
- Patient smokes 15-20 cigarettes per day
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- Brushes teeth with Fl toothpaste twice daily
- Flosses on occasion ( twice weekly)
- Saliva flow is adequate
- Patient drinks 5 cups of coffee daily

#### *A dental exam of the patient reveals:*

- The periodontium seems to be within normal limits- no periodontal probings procured
- All teeth are present ( the LLQ is determined by the photo)
- Tooth # 18 has a fractured lingual cusp. No caries present.
- The patient also asks you to look at the dorsal surface of her tongue and tell her what is going on, is it serious and how to treat it?

Accumulate your diagnostic data and enter information into the patient's medical and dental history in the EHR. Procure a radiograph of the area that you determine to be the source of this urgent care visit. Prepare your typodont to look like the picture attached to Jane Doe's EHR record prior to presenting the case to your instructor. If you have any questions for the patient (sensitive to hot or cold, or wish to do some tests) the faculty supervisor will act as the patient and give you the results of your requested tests.

1. Present the facts of the case-
  - a. Why the patient is here today
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2. The supervising faculty will assume the role of the patient for this exercise (in addition to assessing your performance). Ask any questions about subjective symptoms. If there are any pulpal tests you want to perform, ask the faculty for the results of the test that you require.
3. If you decide a restoration is needed, the decision of restorative material is your choice (as long as you can give evidence based reasons for your choice).
4. Provide for post op pain control