



LIBRARY TOOLKIT: PATHOPHYSIOLOGY - DENTISTRY

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OBJECTIVE

In August 2004, librarians at the Columbia University Augustus C. Long Health Sciences Library met with the faculty of the dental school to discuss creating a library toolkit for a Pathophysiology course for dental students. The objective was to create an online tool to teach dental students pathways leading to answers to clinical questions using carefully selected library tools and resources.

METHOD

The Toolkit is a set of html documents. The information is organized by resources and resource types, selected by librarians, on the subject of Pathophysiology. This poster features the central and most dynamic part of the Toolkit - the case studies component. Case studies and discussion questions have their own organization structure as shown on the right.

The librarians were provided with a syllabus that contained clinical case studies followed by a series of discussion questions. The case studies component was designed to guide students to the correct library resource(s) for answering the discussion questions. Elements of EBM (Evidence Based Medicine) were introduced to help students decide the type of question they were discussing: background, foreground, therapy or diagnosis etc. To answer a specific 'type' of question, the students were shown how to develop efficient search strategies using the appropriate library resources.

The screens were presented with navigation and design elements that were consistent throughout. This made the user comfortable and familiar with the Toolkit environment. With ease, the user may view all the questions consecutively or randomly.

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Case Studies

Cardiac Case Study #1 - Discussion

CC:
This was the first visit for a 38-year-old insurance salesman who presents with a chief complaint of pain in the mandibular right area for the past several weeks.

HPI:
About 15 years ago on a visit to the dentist the patient was informed of the large filling on the mandibular right first molar and that it would need a crown in the future. Approximately six months ago sensitivity to hot and cold began. It subsided for a while but returned about two months ago and has gotten progressively worse. Now he is unable to eat on that side of his mouth. The patient has had routine care all his life. Wore braces for three years. Had his wisdom teeth extracted at age 22. At the time of the oral surgery he relates an episode of syncope. However, the extractions otherwise were routine.

1. What the major and minor categories of rheumatic fever?
2. What kind of valvular damage do you think the patient has?
3. What is the history of valvular damage?
4. What medical treatments would the patient undergo and why?
5. What are the cardiovascular dynamics that are occurring and what considerations do you have for dental care due to these dynamics?
6. What other considerations would you have prior to the delivery of dental care?
7. What treatment plan modifications would you consider in providing dental care to such a patient?

The first cardiology case is presented, followed by a series of case discussion questions. Students may choose to view the strategy for each question by clicking on a question of their choice.

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Case Studies

Identify dental treatment modifications by carefully evaluating the patient's medical history. Patient assessment skills include knowledge and awareness of potential emergencies in patients with specific disorders or diseases. The following discussion will help identify the types of information resources available to help answer case discussion questions.

Before answering the case study questions, check to see what type of a question it is.

How do I know what kind of question is being asked?

Is it a background question?
Questions that require "general knowledge" regarding disease management or a disease process are referred to as "background questions" in the [evidence based medicine \(EBM\) literature](#).

Recommended sources for answering background questions are:

Narrative Sources:
Reference / Text Books
Harrison's, Statler

Dictionaries:
Stedman's Medical Dictionary
Consultation with a health professional
Other sources include [searching Medline \(OVID interface or PubMed interface\)](#) for good review articles or practice guidelines.

This is an introduction to answering the case studies discussion questions. Elements of EBM are introduced. The background question is defined and lists of recommended sources for answering these types of questions are offered.

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Is it a clinical question?

Clinical questions relate directly to patient care. Some clinical questions are general enough to be termed as "background questions". Others, however, are very specific questions and stem from a clinical concern for an individual patient. These types of questions are known as "foreground questions" in the EBM literature. The following is an example of a "foreground question": Is the administration of penicillin prior to invasive dental procedures recommended in patients at high risk for bacterial endocarditis? Clinical questions, (both background and foreground questions) can be classified into one of the following categories: a therapy question, a diagnosis question, an etiology question, a harm question, or a prognosis question. Foreground questions can only be answered by a rigorous search of relevant clinical studies in the medical journal literature.

Databases used to answer these types of questions:
Filtered EBM Databases:
[OVID EBM Resources](#)
[Cochrane Library](#)
[Dare](#)
[ACP Journal Club](#) and more...

There are several other databases you can search, to start try [searching Medline \(OVID interface or PubMed interface\)](#).

The above narrative provides a definition of a clinical question. It also describes a foreground question. EBM resources are listed.

RESULT

The Library Toolkit was integrated into the dental school curriculum and placed into Courseworks. It helped the faculty to incorporate more of the EBM components in teaching Pathophysiology to dental students.

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1. What are the major and minor categories of rheumatic fever?

This is a "background question" or a general question about a disease process or disorder. This type of question can be answered in a **textbook of internal medicine**, or a **pathophysiology textbook**. Since rheumatic fever does affect the heart, a textbook on heart disease may also be consulted by doing a search in [CLIO](#).

Type of Question	Library Resource to Use
Background or General Question	Look in a textbook. To find a textbook go to: CLIO You could start with these electronic books: Harrison's Stat Ref Micromedex These resources are available through the Health Sciences Library homepage at: http://library.cpmc.columbia.edu/hsl/

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2. What kind of valvular damage do you think the patient has?

You are asked to **diagnose** or evaluate the type of valvular damage the patient has. Although this is primarily a diagnostic question, when searching the literature, you need to search for articles where valvular damage is caused by rheumatic fever, or the etiology of valvular damage is rheumatic fever. Note, the patient's history includes, acute rheumatic fever at age 13, characterized by migratory arthritis and carditis; treated with antibiotics and bed rest. At age 37 he experiences shortness of breath and edema.

•A **textbook** will provide information on the pathophysiology of rheumatic fever.

•A **supplemental journal literature search** can also be done on valvular damage in patients with a history of rheumatic fever. Search [OVID Medline](#). A similar type of search can be done in [PubMed](#).

Type of Question	Library Resource to Use
Diagnosis / Etiology Question	Try the following search strategy in OVID Medline: 1. rheumatic fever [co,pa,pp] [apply the subheadings: complications, pathology, pathophysiology,] 2. heart valve disease [di,et] [apply the subheadings: diagnosis, etiology] 3. 1 and 2 [Combine the two sets]

Below are a few sample hits from the above search:

Lanna CC, Tonelli E, Barros MV, Goulart EM, Mota CC. Subclinical rheumatic valvitis: a long-term follow-up. [Clinical Trial. Journal Article] *Cardiology in the Young*. 13(5):431-8, 2003 Oct.

In this example a student is guided to evaluate and categorize questions by the following types: diagnosis, etiology, therapy, etc. In addition to resources a recommended Medline search strategy is provided and selected results are printed out.

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5. What are the cardiovascular dynamics that are occurring and what considerations do you have for dental care due to these dynamics?

The first part of the question is **general** enough and can be answered in a **textbook** (see [suggestions in question #1](#)). The second part is primarily a **clinical question** regarding how to proceed with dental treatment for a patient, whose cardiovascular dynamics have been affected by the complications of rheumatic fever. A literature search in [Medline](#) can be conducted.

Type of Question	Library Resource to Use
Clinical Question	Try the following search strategy in OVID Medline: 1. exp rheumatic fever 2. exp cardiovascular physiology and exp heart valve disease 3.1 and 2 [Combine the two sets] 4.limit 3 to dentistry journals PLEASE NOTE: The term "Cardiovascular Dynamics" maps to "Cardiovascular Physiology" in Ovid Medline (check scope note in Medline for definition). When you explode the term Cardiovascular Physiology, you also automatically explode the term Hemodynamic Phenomena. A similar type of search can be done in PubMed .

Navigation buttons "back to top" and "close window" (see black buttons above) offer flexibility in selecting questions to view. These buttons are displayed along with each case discussion question.

CONCLUSION

The EBM approach was not originally planned while creating the Library Toolkit. We found, however, that the components of EBM lent themselves naturally to incorporating cognitive approaches to the case discussion questions.