DEN207/111
A practical approach to EBD: How to search for evidence to inform clinical decisions

Maria Zych, Librarian
Dentistry Library, University of Toronto

Helen He, Head of the Dentistry Library
Dentistry Library, University of Toronto

Agenda

• 12:00 to 12:30 Formulate a question and search for evidence in context
• 12:30 to 1:00 Hands on searching in popular resources to find evidence
• 1:00 to 1:20 Time to work on assignment individually and ask any questions. The assignment is due on Friday, April 13th at 5:00 pm

Objectives for today

• Formulate a clinical question to facilitate searching for evidence
• Identify the nature of a clinical question and create a PICO framework to help you search
• Select the appropriate resources where you can find evidence.
Why should we learn how to search for evidence?

- There is a growing body of dental literature covering new treatments and studies that address effectiveness.
- Knowing how to search for and use the best current evidence is a fundamental skill in clinical practice.
- Familiarize yourself with resources that can help you find relevant information to answer your questions.

How should we search for evidence?

- Once you identify the nature of the question, framing it is a key step in the process of searching for evidence:
  - Is it a background or foreground question?
  - If foreground, what is the nature of the question?
- Creating a search strategy is another important step:
  - This requires breaking the question up into main concepts.
Identify the nature of your question

BACKGROUND QUESTIONS
Deal with foundational knowledge such as definitions and mechanisms of actions
- “What are the concerns when using antibiotic prophylaxis in Dental Patients?”
- “What is chronic periodontitis?”
- “How does the laser caries detection system work?”

Identify the nature of the question

FOREGROUND QUESTIONS – directly inform clinical decision making
- Therapy or prevention
- Harm or etiology
- Diagnosis
- Prognosis

Identify the main components

- After you have identified the nature of the question, you need to identify the main components to form a search strategy.
- One common way to translate a research question into a clinical question is using the PICO framework
- There are variants to the PICO framework depending on the nature of the question and context
Identify the main components

PICO Framework

P (patient, problem, population)
- What is the patient/patient? What is the clinical problem or concern with the patient?

I (Intervention)
- What is the intervention, diagnostic test, medication, prophylactic brush? (change, add, list)

C (Comparison)
- Do you need to compare the intervention? If relevant, mention, depending on the question type.

O (Outcomes)
- What outcomes are you trying to achieve? Reasons, measure or avoid?

Identify the best study design

Background Question
- Textbooks – search the library catalogue
  - Dental management of the medically compromised patient
  - Preventive dentistry
  - Emergencies in the dental office
  - Miller's essentials of oral medicine and dentistry
  - Drug information for dental professionals
- Drug Databases e.g.
  - Rx
  - Comp for dentistry
- Internet
  - MedlinePlus
Identify the best study design

Foreground Questions (which level of evidence do we need?)

1. Summaries and Guidelines (comprehensive resources):
   - JCDA Oasis – Answering Clinical Questions and Chairside Decision Support
   - AHA Clinical Practice Guidelines
   - Canadian Medical Association Dentistry Practice Guidelines
   - UpToDate
   - DynaMed Plus
   - TRIP Database

2. Synopses and Systematic Reviews
   - Cochrane Database of Systematic Reviews
   - PubMed
   - PubMed Clinical Queries
   - TRIP
   - SUMSearch 2
   - Evidence Database from American Dental Association
   - Evidence-based Dentistry
   - Journal of evidence-based dental practice

3. Non-appraised research (original research, primary studies):
   - PubMed
   - PubMed Clinical Queries
   - EMBASE
Identify the best study design

- Therapy or prevention:
  - Randomized controlled trials > cohort > case control > case series
- Harm or etiology:
  - Observational studies
- Prognosis:
  - Cohort > case control > case series
- Diagnosis:
  - Cross-sectional studies, blind comparison to a gold standard

Translating the Question into Search Terms

- MEDLINE: Biomedical focus, English-speaking
- EMBASE: Biomedical focus, English-speaking
- Cochrane Library: Mostly reviews, other publications types
- Web of Science or Scopus: Interdisciplinary (Are you looking for subjects that span disciplines, such as biomaterials, behaviour, policy, engineering, etc.)
- CINAHL: Allied health focus
- PsychINFO: Quantitative and qualitative methodologies
Advanced searching

- Do you need to be comprehensive? Such as when writing a systematic review or scoping review (2)
- Use of filters (only retrieve reviews, or RCTs; date limits, certain population type)
- Find the gold standard

Advanced searching

- When using a database, try to find the thesaurus words that best fit your concepts
- In MEDLINE the thesaurus terms are called MeSH terms (Medical Subject Headings)
- They are not always available

Advanced searching

Use of Boolean operators in advanced searching: improve precision (AND), NOT or sensitivity (OR)
Advanced searching

• Include grey literature: these are items that are published, but not commercially, such as dissertations and theses, government publications, some patient educational materials, some conference proceedings, statistical data, etc.
• These can be found online with a simple search engine search, such as Google or a targeted search engine such as TRIP.

Advanced searching

• Other common functions:
  – **Truncation**: most databases use symbols such as *, * for truncation, e.g. Dent* in PubMed retrieves dental, dentistry, dentist, dentifrice, etc.
  – **Adjacent/Near**: use of command word for two words in proximity of each other such as “oral surgery” or “oral surgeon” or “oral and maxillofacial surgery”
    • MEDLINE: (oral ADJ3 surg*)
    • Cochrane Library: (oral NEAR3 surg*)

Advanced searching

• Use a PICO framework. Once you have the chart filled out, you can select an appropriate database and start your search.
• Generally this step is iterative and can change as you formulate your research question
Literature appraisal and selection

- After conducting a search, you still have to select relevant literature that will address your question or research need.
- Critical appraisal is important for selecting the appropriate evidence for your question.

Scenario

A 22 year patient calls 4 hours after you removed her wisdom tooth and complains about bleeding, pain and severe swelling. You prescribed her some antibiotic prophylaxis and have to find out why it is not effective.

Scenario – Identify the nature of the question

- Foreground
- Therapy
Scenario – Identify the main components

<table>
<thead>
<tr>
<th>P</th>
<th>I</th>
<th>C</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient/Population and/or Problem</td>
<td>Intervention</td>
<td>Comparison/Control (if applicable)</td>
<td>Outcomes (or Effects)</td>
</tr>
<tr>
<td>Third molar extraction</td>
<td>Antibiotic prophylaxis</td>
<td>No prophylaxis</td>
<td>Dental swelling, Ferguson wound deviation</td>
</tr>
</tbody>
</table>

Patient/Population and/or Problem

Clavulanic acid swelling

Intervention

Clavulanic acid

Comparison/Control (if applicable)

Placebo

Alternate Words (Synonyms)

Metronidazole

Study design

Find Cochrane Review

Find practice guidelines

Find RCT

Find systematic review and meta-reference resource

Find an entry in a clinical

Scenario – Identify the best study design

Primary sources

Systematic review and meta-analysis

RCT

Cochrane review

Reference resource
Questions

References