With so many studies continually published, how do you keep track? Practice makes perfect: Strategies for Keeping Up with Research

June 15th, 2017
PICO Exercise

Most EBD questions can be broken down into 4, independent, conceptual parts.

1. The population or participants. P
2. The intervention or indicator. I
3. The comparator or control. C
4. The outcome. O

Types of questions.

1. Prevalence What is frequency of the problem?
2. Etiology or risk factors What causes the problem?
3. Diagnosis Does this person have the problem?
4. Therapy What is the best treatment for the problem?
5. Prognosis Who will get the problem?

What is your original question?

________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

Fill in the PICO elements for your question

P:______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
I:______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
C:______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
O:______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________

Write Question in PICO format

In <POPULATION> does <INTERVENTION> compared to <COMPARISON> result in <OUTCOME>?  

________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

Is this a Prevalence, Etiology, Diagnosis, Therapy, or Prognosis question?

________________________________________________________________________________________
Welcome!

With so many studies continually published, how do you keep track? Practice makes perfect: Strategies for Keeping Up with Research

DAGMAR ELSE SLOT, RDH, PHD
JULIE FRANTSVE-HAWLEY, RDH, PHD
Evidence-Based Health Care: “The integration of best research evidence with clinical experience and patient values”

Shared Decision-Making
5 steps to the EBD Process

- Ask the question
- Access the evidence
- Appraise the evidence
- Apply in practice
- Assess the outcome
5 steps to the EBD Process

1. Ask the question
2. Access the evidence
3. Appraise the evidence
4. Apply in practice
5. Assess the outcome
• Know what you are seeking
• Know when you’ve found the answer
• Help to find it quickly
• Identify search terms

Fig 3-1 Framing the right question is an important part of providing excellent patient care.
Step 1: Framing the Answerable Question

P: Population or Problem

I (E): Intervention or Exposure

C: Comparison (Optional)

O: Outcome
<table>
<thead>
<tr>
<th>Question</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is frequency of problem?</td>
<td>Prevalence</td>
</tr>
<tr>
<td>What causes problem?</td>
<td>Etiology / risk</td>
</tr>
<tr>
<td>Does person have problem?</td>
<td>Diagnosis</td>
</tr>
<tr>
<td>What is the best treatment for problem?</td>
<td>Therapy</td>
</tr>
<tr>
<td>Who will get the problem?</td>
<td>Prognosis</td>
</tr>
</tbody>
</table>
In patients with periodontal disease, will short-term systemic antibiotics, when compared to surgery, reduce pocket depth?
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Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?
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Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?

Exposure
Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?
Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?

Comparison
Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?
Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?

Outcome
Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?
Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?

**What type of question is this?**
Etiology/Risk

**What are your search terms?**
Can you put something on my teeth so I won’t get more cavities?

Can fluoride varnish prevent root caries?
In adults at high caries risk, does fluoride varnish reduce future caries incidence?

**P** - Adults at high caries risk

**I** - Fluoride varnish

**C** - None (or other type of fluoride)

**O** - Caries incidence
PICO Exercise

*Translate these into PICO Questions:*

1. Can sealants be placed on a tooth with an incipient lesion?
2. Is partial caries removal a reasonable alternative to a complete restoration?
3. Is fluoride varnish or gel better at preventing caries?
4. Does periodontal disease cause heart disease?
5 steps to the EBD Process

- Ask the question
- Access the evidence
- Appraise the evidence
- Apply in practice
- Assess the outcome
Guidelines

Systematic Review

RCT

controlled study without randomization

Non-experimental descriptive studies (i.e. cohort and case-control studies)

Expert committee reports or opinions or clinical experience of respected authorities

Primary Literature

Secondary Literature
Primary Clinical Studies
- Inconsistent Results
- Difficult to find all appropriate articles
  - PubMed

Secondary Systematic Reviews & Guidelines
- All relevant studies
  - Shows the contradictions
  - Methods are transparent
  - EBD Website, TRIP, Cochrane, PubMed, Guidelines.gov

Tertiary Synopses & Summaries
- Includes Critical Appraisal
  - EBD Website, TRIP
Tertiary Summary EBD Website

ADA Center for Evidence-Based Dentistry™

EVIDENCE
Evidence
Browse Evidence Database
Guidelines
Critical Summaries

EDUCATION

RESOURCES
Plain Language Summaries
Systematic Reviews

ABOUT

ADA WEBSITES

Search

About the ADA Contact Join/Renew Login
Systematic Reviews

In the hierarchy of evidence, systematic reviews are preferable to narrative reviews for answering focused clinical questions. They are conducted according to transparent and repeatable processes considering all of the published evidence, not just that of which the reviewer may have prior knowledge or favor. The process also includes assessing the quality of each study, the overall quality of the body of evidence, and a summary of the clinical results. A systematic review typically involves:

- An exhaustive search for studies (the evidence).
- Procedures to maximize objectivity and minimize bias.
- Selection of best available evidence having the strongest study design.
- Critical appraisal of the quality of each study.
- A summary of the results of the included studies.
- Interpretation of the evidence for clinicians and researchers.

Please note: Due to technical difficulties, the evidence database is not fully functional. We are working on it to...
<table>
<thead>
<tr>
<th>Subcategory</th>
<th>Evidence Type</th>
<th>Article Title</th>
<th>Journals/Notes</th>
</tr>
</thead>
</table>
Limited evidence exists that glass ionomer restorations in permanent teeth offer a lower risk of developing carious lesions at margins compared with amalgam restorations.

Carlos Flores-Mir, DDS, DSc, FRCD(C); Mike John, DDS, MPH, PhD; Debora Matthews DDS, MSC.

Overview

Systematic Review Conclusion
Carious lesions are less common at the margins of single-surface glass ionomer restorations than at the margins of amalgam restorations after restorations have been in permanent teeth for six years.

Critical Summary Assessment
The authors of a systematic review of eight studies found glass ionomer restorations to have a substantial effect in preventing secondary caries compared with amalgam restorations.

Evidence Quality Rating
Limited Evidence
Tertiary Summary

Search for "dental sealants"

333 results

All Secondary Evidence

→ Evidence-based Synopses 25
→ Systematic Reviews 27
→ Guidelines

→ Aus & NZ 5
→ Canada 1
→ UK 6
→ USA 31
2. Fissure Sealants Arrest Caries Progression in The Primary Dentition With Non-Cavitated Occlusal Caries
UTHSCSA Dental School CAT Library 2013

3. Bisphenol–A is released after placement of some dental pit and fissure sealants
The Dental Elf 2013

4. Bisphenol–A is released after placement of some dental pit and fissure sealants
The Dental Elf 2013

5. Five-year retention rates of resin-based dental sealants higher than glass-ionomers or compomers
ADA Systematic Review Critical Summaries 2013

6. Pit and fissure sealants versus fluoride varnishes for preventing dental decay in children and adolescents
Cochrane Database of Systematic Reviews 2010
Search Exercise:
TRIP:  http://www.tripdatabase.com

• How many citations did you find?
• What is the highest level of the evidence?
• What are the overall conclusions?
Searching for Guidelines

- Guidelines
  - Systematic Review
    - RCT
    - Controlled study without randomization
    - Non-experimental descriptive studies (i.e. cohort and case-control studies)
    - Expert committee reports or opinions or clinical experience of respected authorities

Secondary Literature
ADA. Center for Evidence-Based Dentistry™

EVIDENCE

Education

Guidelines

Critical Summaries

Plain Language Summaries

Systematic Reviews

About
33 results for "dental sealants", by quality

   info@guideline.gov (NGC) 2013

   info@guideline.gov (NGC) 2013

   American Dental Association 2005
Secondary Guideline NGC

National Guideline Clearinghouse

Search Tips | Advanced Search | About Search

oral cancer
Search

oral cancer
Run an advanced search on this term

Search within:
GO

Sort results by: Relevance (what's this?) Publication date

Filter results by: All Years

1-20 of 309 Next >

   NGC:008498
   HealthPartners Dental Group - Professional Association. View all guidelines by the developer(s)

2. Evidence-based clinical recommendations regarding screening for oral squamous cell carcinomas.
   2010 May. NGC:008055
   American Dental Association - Professional Association. View all guidelines by the developer(s)

   2012. NGC:006647
   Royal Australian College of General Practitioners - Professional Association. View all guidelines by the developer(s)
Search Exercise:
NGC:  http://www.guideline.gov

• How many citations did you find?
• What is the highest level of the evidence?
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Searching for Systematic Reviews

- Guidelines
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Secondary Literature
ADA. Center for Evidence-Based Dentistry™

Evidence
- Browse Evidence Database
- Guidelines
- Critical Summaries

Resources
- Plain Language Summaries
- Systematic Reviews
Absence of carious lesions at margins of glass-ionomer and amalgam restorations: a meta-analysis


AIM: To report on the absence of carious lesions at margins of glass ionomer cement (GIC) and amalgam restorations. METHODS: Six Anglophone and 1 Lusophone databases were searched for articles up to 5 January 2008. Inclusion criteria for articles were: (i) titles/abstracts relevant to topic; (ii) published in English, Portuguese or Spanish language; (iii) reporting on a randomised control trial. Exclusion criteria were: (i) insufficient random allocation of study subjects (ii) operator and subject not blinded, where appropriate; (iii) not all entered subjects accounted for at trial conclusion; (iv) subjects of both groups not followed up the same way. Articles were accepted only if they complied with all the criteria. Ten articles complied with the inclusion criteria and were selected for review. From these 4 were rejected and 6 articles reporting on 8 separate studies accepted. Due to aspects of heterogeneity, studies were sub-grouped before meta-analysis. RESULTS: Significantly less carious lesions were observed on single-surface GIC restorations in permanent teeth after 6 years as compared to restorations with amalgam (OR 2.64 - CI 95% 1.39 - 5.03, p= 0.003). No studies investigating multiple-surface restorations on permanent teeth were identified. Studies investigating carious lesions at margins of restorations in primary teeth showed no difference between both materials after 3 and 8 years. CONCLUSIONS: Carious lesions at margins of single-surface GIC restorations are less common than with amalgam fillings after 6 years in permanent teeth. No difference was observed in primary teeth. More trials are needed in order to confirm these results.
27 results for "dental sealants", by quality

1. Pit and fissure sealants versus fluoride varnishes for preventing dental decay in children and adolescents
   Cochrane Database of Systematic Reviews 2010
   [Options: Share this, Add to BMJ portfolio, DOI, CPD/CME, More]

2. Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents
   Cochrane Database of Systematic Reviews 2009
   [Options: Share this, Add to BMJ portfolio, DOI, CPD/CME, More]
Secondary Systematic Review

PubMed

PubMed comprises more than 21 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher websites.

Using PubMed
- PubMed Quick Start Guide
- Full Text Articles
- PubMed FAQs
- PubMed Tutorials
- New and Noteworthy

PubMed Tools
- PubMed Mobile
- Single Citation Matcher
- Batch Citation Matcher
- Clinical Queries
- Topic-Specific Queries

More Resources
- MeSH Database
- Journals in NCBI Databases
- Clinical Trials
- E-Utilities
- LinkOut
PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use PubMed directly.

**Clinical Study Categories**
- **Category:** Therapy
- **Scope:** Broad

**Systematic Reviews**
- **Filter** citations for systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, and guidelines. See related sources.

**Medical Genetics**
- **Topic:** All
- **Filter** citations to topics in medical genetics.

Sample Results of Clinical Study Category Query
Sample Results of Systematic Reviews Query
Sample Results of Medicinal Genetics Query
PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use PubMed.

"Pit and Fissure Sealants"[Mesh]

Clinical Study Categories

Category: Therapy
Scope: Broad

Results: 5 of 1686

- Caries management by risk assessment.
  Takula NF, Wolff MS, Schenkel AB.
- Cost-effectiveness models for dental caries prevention programmes among Chilean schoolchildren.
  Marifio R, Fajardo J, Morgan M.
- Caries prevalence in 12-year-old Cypriot children.
  Frangoulis A, Schinas D.

Systematic Reviews

Results: 5 of 75

- Guideline on pediatric restorative dentistry.
- Indications for fissure sealants and their role in children and adolescents.
  Mejare I.
- Longevity of materials for pit and fissure sealing results.

Searching for Clinical Studies

- **Guidelines**
- **Systematic Review**
- **RCT**
  - controlled study without randomization
- Non-experimental descriptive studies (i.e. cohort and case-control studies)
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**Primary Literature**
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"Pit and Fissure Sealants"[Mesh]

### Clinical Study Categories
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   Mariño R, Fajardo J, Morgan M.

3. **Caries prevalence in 12-year-old Cypriot children.**

### Systematic Reviews
- **Results: 5 of 75**

1. **Guideline on pediatric restorative dentistry.**

2. **Indications for fissure sealants and their role in children and adolescents.**
   Mejare I.
Search Exercise: Pubmed Clinical Queries

• How many citations did you find?
• What is the highest level of the evidence?
• What are the overall conclusions?
5 steps to the EBD Process

1. Ask the question
2. Access the evidence
3. Appraise the evidence
4. Apply in practice
5. Assess the outcome
STEP 3: Appraise the Evidence

• Tools
  • Study design
  • Level of detail
  • Intended application
  • Personal preference

• Resources
  • Critical appraisals/summaries
STEP 3: Appraise the Evidence

• Does this study address a clearly focused question?
• Did the study use valid methods to address this question?
• Are the valid results of this study important?
• Are these valid, important results applicable to my patient or population?
## Critical Appraisal Worksheets

**English**

- [Systematic Review](http://www.casp-uk.net/casp-tools-checklists/casp-systematic-review-checklist.html) Critical Appraisal Sheet
- [Diagnosis](http://www.casp-uk.net/casp-tools-checklists/casp-diagnosis-checklist.html) Critical Appraisal Sheet
- [Therapy / RCT](http://www.casp-uk.net/casp-tools-checklists/casp-therapy-rct-checklist.html) Critical Appraisal Sheet

### CASP Checklist

<table>
<thead>
<tr>
<th>CASP Systematic Review Checklist</th>
<th>CASP Qualitative Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASP Randomised Controlled Trial Checklist</td>
<td>CASP Case Control Checklist</td>
</tr>
<tr>
<td>CASP Diagnostic Checklist</td>
<td>CASP Cohort Study Checklist</td>
</tr>
<tr>
<td>CASP Economic Evaluation Checklist</td>
<td>CASP Clinical Prediction Rule Checklist</td>
</tr>
</tbody>
</table>
10 questions to help you make sense of a review
(A) Are the results of the review valid?

Screening Questions

1. Did the review address a clearly focused question?

HINT: An issue can be ‘focused’ in terms of

- The population studied
- The intervention given
- The outcome considered
2. Did the authors look for the right type of papers?

HINT: ‘The best sort of studies’ would

- Address the reviews question
- Have an appropriate study design (usually RCTs for papers evaluating interventions)

Is it worth continuing?
3. Do you think all the important, relevant studies were included?

HINT: Look for
- Which bibliographic databases were used
- Follow up from reference lists
- Personal contact with experts
- Search for unpublished as well as published studies
- Search for non-English language studies
4. Did the review’s authors do enough to assess the quality of the included studies?

HINT: The authors need to consider the rigour of the studies they have identified. Lack of rigour may affect the studies’ results. ("All that glisters is not gold" Merchant of Venice – Act II Scene 7)
5. If the results of the review have been combined, was it reasonable to do so?

HINT: Consider whether

- The results were similar from study to study
- The results of all the included studies are clearly displayed
- The results of the different studies are similar
- The reasons for any variations in results are discussed
(B) What are the results?

6. What are the overall results of the review?

HINT: Consider

- If you are clear about the review’s ‘bottom line’ results
- What these are (numerically if appropriate)
- How were the results expressed (NNT, odds ratio etc)

7. How precise are the results?

HINT: Look at the confidence intervals, if given
8. Can the results be applied to the local population?

HINT: Consider whether

- The patients covered by the review could be sufficiently different to your population to cause concern
- Your local setting is likely to differ much from that of the review
9. Were all important outcomes considered?

HINT: Consider whether

- Is there other information you would like to have seen

10. Are the benefits worth the harms and costs?

HINT: Consider

- Even if this is not addressed by the review, what do you think?
5 steps to the EBD Process

1. Ask the question
2. Access the evidence
3. Appraise the evidence
4. Apply in practice
5. Assess the outcome
1. Are the results valid?

Quality
- Are the studies well designed and executed?
- What are the types of studies are there?

Quantity
- How many studies are there?
- What are the population sizes?

Consistency
- How consistent are there results?
1. Are the results valid?

2. What are the results?

   • Certainty of the effect
   • Magnitude of the effect
1. Are the results valid?

2. What are the results?

3. Can the results be applied to my patient?

   - Is the population similar?
   - Is the provider similar?
   - Is the setting similar?
5 steps to the EBD Process

Ask the question
Access the evidence
Appraise the evidence
Apply in practice
Assess the outcome
Learn More
Introduction to Evidence-Based Medicine

ADA. Center for Evidence-Based Dentistry
Series on Statistics

A series of discussions designed to help you become a more discriminating reader of research articles and how they apply to your practice

McMaster University
Inspiring Innovation and Discovery

McMaster Evidence-Based Clinical Practice Workshops
June 8-12, 2015

Learn from Dr. Gordon Guyatt, and world-renowned experts.

McMaster Evidence-Based Clinical Practice Workshops
Publications for Dental Hygiene

Evidence-Based Dentistry for the Dental Hygienist
Edited by
Julie Frantsve-Hawley
RDH, PhD
Thank you!

frantsvehawley@gmail.com
Survey Access Code

CLL94-H0159

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Save the Date!

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