

Formulating Answerable EBD Questions*

The PICO principle.

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

Therapy (Best evidence in randomized controlled trials)

Therapy covers a wide range of interventions from drugs to surgery to lifestyle change (eg: diet and exercise) to social (eg: education).

Question 1: In patients with periodontal disease, will short-term systemic antibiotics, when compared to surgery, reduce pocket depth and/or increase attachment gain?

- P: patients with periodontal disease
I: short-term systemic antibiotics
C: surgery
O: reduced pocket depth and increased attachment

Question 2: For orthodontic patients, would professional fluoride varnish, when compared to home fluoride toothpaste use, reduce incidence of white spot lesions?

- P: orthodontic patients
I: professional fluoride varnish
C: fluoride toothpaste
O: white spot lesions

Question 3: Do red heads require more dental anesthesia than blondes or brunettes to have pain free dental care?

- P: Anesthesia
I: Red hair
C: Blonde, brunette, black hair
O: Pain

Etiology (Best evidence in randomized controlled trials, but ethics may mandate cohort studies)

Etiology examines risk factors or causes of disease. In this sense they are the “opposite” of therapy. They deal with harmful outcomes.

Question 1. Are children with high *S. mutans* counts, when compared to children with low *S. mutans* counts, at increased risk of caries?

- P: children
I: high *S. mutans*
C: low *S. mutans*
O: caries

Question 2. Are adults with amalgam fillings [or endodontic therapy, or periodontal disease], when compared to adults without amalgam [or endodontic therapy, or periodontal disease], at increased risk of systemic disease?

- P: Adults
- I: Amalgam fillings
- C: No amalgam
- O: Systemic disease

Frequency (Best evidence found in cohort studies)

Frequency or prevalence is about how many people in a population have a disease or problem. It may relate to beneficial or harmful outcomes.

Question 1. For children drinking fluoridated water, when compared to children drinking non-fluoridated water, what is the prevalence of caries? (benefit)

- P: Children
- I: Drinking fluoridated water
- C: Drinking non-fluoridated water
- O: Caries

Question 2. For children drinking fluoridated water, when compared to children drinking non-fluoridated water, what is the prevalence of adult fluorosis? (harm)

- P: Children
- I: Drinking fluoridated water
- C: Drinking non-fluoridated water
- O: Fluorosis

Diagnosis (Best evidence found in cross-sectional studies with consecutive sampling)

Diagnostic questions examine test accuracy in a given group when compared to other tests.

Question 1. For children and adults, will ICDAS, when compared to visual-tactile examination, result in a more accurate diagnosis?

- P: Children and adults
- I: ICDAS
- C: Visual-tactile
- O: Accurate caries diagnosis (increased sensitivity, specificity, likelihood ratio)

Question 2. For adults, will cheek swab DNA testing, when compared to visual examination, result in more accurate oral cancer diagnosis?

- P: Adults
- I: ICDAS
- C: Visual-tactile
- O: Accurate cancer diagnosis

Prognosis (Best evidence found in cohort/survival studies)

Prognosis is about predicting outcomes, usually harmful.

Question 1: Will individuals with malocclusion, who do not have orthodontics, when compared to individuals with orthodontics, be at increased risk for periodontal disease [or TMD/TMJ]?

- P: Malocclusion
- I: Orthodontics
- C: No orthodontics
- O: Periodontal disease [TMD/TMJ]

Question 2: Do children with early childhood caries have a higher incidence of otitis media?

- P: Children
- I: Early childhood caries
- C: No caries
- O: Otitis media

Phenomena (Best evidence found in qualitative studies or surveys)

Phenomena can relate to any aspect of practice or health care. They normally involve only 2 of 4 PICO elements (eg: population and outcome).

Question 1: Are new parents concerned about the oral health of their children?

P: New parents

O: Children's oral health

Question 2: Are dentists concerned about reduced practice income?

P: Dentists

O: Practice income

Your Question:

P:

I:

C:

O:

Searching structure

Step	Searching principle	Searching example
1	(P OR synonym 1 OR synonym 2)	(orthodontics OR braces)
2	(I OR synonym 1 OR synonym 2)	(fluoride varnish OR fluoride gel)
3	(C OR synonym 1 OR synonym 2)	(fluoride toothpaste)
4	(O OR synonym 1 OR synonym 2)	(dental white spots)
5	1 AND 2 AND 3 AND 4	1 AND 2 AND 3 AND 4

Step	Searching principle	Your search
1	(P OR synonym 1 OR synonym 2)	
2	(I OR synonym 1 OR synonym 2)	
3	(C OR synonym 1 OR synonym 2)	
4	(O OR synonym 1 OR synonym 2)	
5	1 AND 2 AND 3 AND 4	1 AND 2 AND 3 AND 4