FORMULATING PICO QUESTIONS

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## Dr. Shayesteh Jahanfar, University of British Columbia

WE ASK QUESTIONS ALL THE TIME

- Ask a clinical question
  - 'Quick and dirty' search
  - Find the best available paper
  - Apply it to a patient
- Ask a research question
  - Comprehensive literature review prior to framing research question
  - Systematic review comprehensive all search for studies meeting inclusion criteria
- Ask a question to guide policy
  - Comprehensive search sometimes addressing more than one question to write a policy brief

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WE ASK QUESTIONS ALL THE TIME

- Background questions
  - Seek basic knowledge
  - What is Gerstmann-Straussler-Scheinker Disease ?
  - → Textbooks, reference guides, Google

- Foreground (clinical) questions
  - Seek specific information to make clinical decisions
  - Is acupuncture helpful in the treatment of back pain?
  - → Evidence from: Research (1º & 2º), EB clinical guidelines, HTAs

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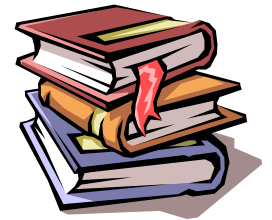
BACKGROUND QUESTIONS

- Usually of a general nature
- e.g. student interested about care of a ventilated patient in ICU...
  - *'What is nosocomial pneumonia?'*
  - *'How does it differ from community acquired pneumonia?'*
  - *'When should antibiotics be used to prevent or treat nosocomial pneumonia?'*
- Text books, reference books, guides
- MEDLINE?

FOREGROUND QUESTIONS

- Specific questions for a clinical situation

  - *'In patients who are intubated and mechanically ventilated, is a semirecumbent position more effective than a supine body position for reducing the incidence of nosocomial pneumonia?'*

  - *'In geriatric patients who are hospitalised, does inadequate caloric intake increase their risk of death?'*

- Answers to such questions don't appear in textbooks

TYPE OF QUESTION

NOVICE ——————————► EXPERT

Foreground question / Background question
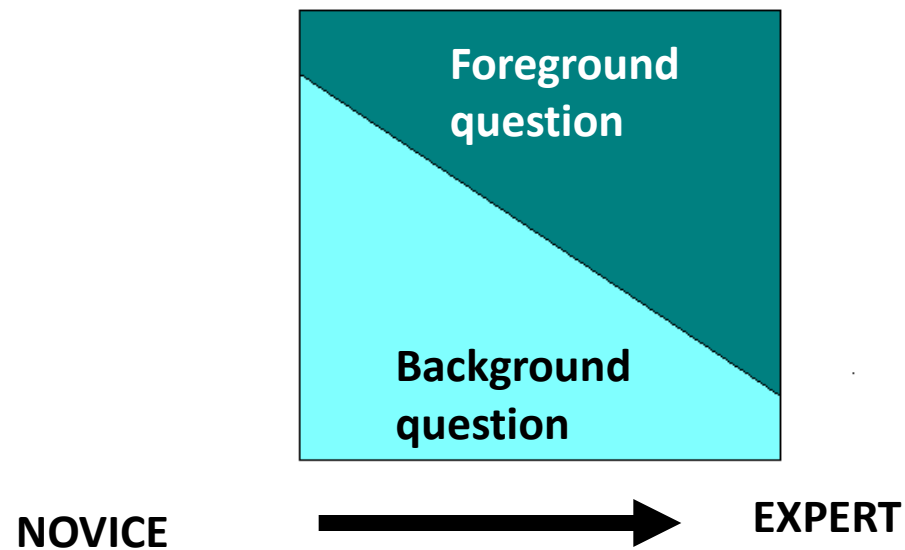
Users' Guide to the Medical Literature. (2002) A manual for Evidence Based Clinical Practice Ed Gordon Guyatt, Drummond Rennie.

1	Is thrombophilia one of the criteria for diagnosing acute rheumatic fever?	B / F
2	Does coffee cause breast cancer?	B / F
3	What is the risk of a 4 cm undiagnosed abdominal aneurysm causing death?	B / F
4	What is moderate hypertension?	B / F
5	What is the definition of small for gestational age?	B / F
6	What is the most common organism causing pneumonia in school aged children?	B / F
7	In a diabetic patient with hypertension and renal failure which drug reduces blood pressure most effectively with the least side effects?	B / F
8	Would inhaled steroids reduce hospital admissions in a child with severe recurrent acute exacerbations of asthma	B / F
9	What are the recognised side effects of beta-blockers?	B / F

1	Is thrombophilia one of the criteria for diagnosing acute rheumatic fever?	**B** / F
2	Does coffee cause breast cancer?	B / **F**
3	What is the risk of a 4 cm undiagnosed abdominal aneurysm causing death?	B / **F**
4	What is moderate hypertension?	**B** / F
5	What is the definition of small for gestational age?	**B** / F
6	What is the most common organism causing pneumonia in school aged children? (contextual)	**B / F**
7	In a diabetic patient with hypertension and renal failure which drug reduces blood pressure most effectively with the least side effects?	B / **F**
8	Would inhaled steroids reduce hospital admissions in a child with severe recurrent acute exacerbations of asthma	B / **F**
9	What are the recognised side effects of beta-blockers?	**B** / F

Begin at the beginning

FORMULATE A CLEAR CLINICAL QUESTION

SEARCH FOR THE EVIDENCE

APPRAISE THE EVIDENCE

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WHY FORMULATE THE QUESTION?

- Clarify the problem in your own mind

- Break down the question to its basic components

- Define the evidence you will need to answer it

- Identify terms to help you search more effectively

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USE SPECIFIC TERMS

- "best" or "quickest" or "most effective".
- Questions with these types of words are very difficult to answer from the literature.

EXAMPLE OF A POORLY FORMULATED QUESTION
WHAT IS THE BEST TREATMENT FOR ASTHMA?

- Think about how you would search a database for "best treatment for asthma".
- A search for "asthma" in PubMed retrieves
  - 125279 records (as @ March 2012)
- A search for "**asthma treatment**" retrieves
  - 69508 records as @ March 2012
- "Best asthma treatment"
  - 1248 records as @ March 2012

How lone would it take to look through all these articles!

Clinical (foreground) questions: examples

- Is progesterone supplementation effective in preventing preterm birth in women with such a history?

- Does spironolactone reduce mortality in heart failure?

- What is the best treatment for sleep problems in infancy?

- Is a nebuliser more effective than a spacer device in children?

- We use a framework called **"PICO"** to make the process of asking an answerable question easier
- (but it is still tricky and takes practice).
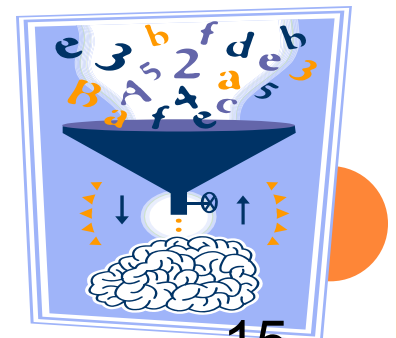
CONVERT THE QUESTION TO PICO

PICO stands for

    Patient (or **P**opulation)

    Intervention (or **I**ndicator)

    Comparison (or **C**ontrol)

    Outcome

PARTICIPANTS

- define disease (definitions may change)   - impaired glucose tolerance (IGT)

- severity, stages   - mild

- setting (hospital, community)   - attending hospital

- age (rationale for range)   - pregnant women

- sex   - female

- other illnesses   - without previous IGT

- any exclusions?   - no risk factors for IGT

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INTERVENTIONS

- define intervention
- dose, duration, frequency, route
- any drug in the class?
- define optional and essential elements of intervention (who must do what, how must it be done)
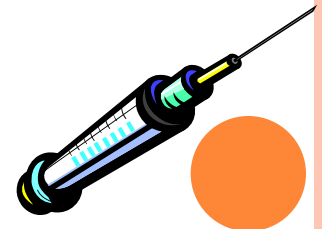
COMPARATOR

- specify the comparator
- placebo
- nothing
- usual care
- other intervention

OUTCOME

- what outcomes are important, and to whom?
- have scales or measurement tools been validated?
- use of surrogate outcomes - related to "real" outcome?
- primary vs secondary
- other non-reported outcomes

A TYPICAL CLINICAL QUESTION

I

O

Does oseltamivir help prevent A/H1N1

- Who are the <u>patients</u> of interest?
- What are the <u>interventions</u> we are interested in?
- <u>Compared</u> with what?

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Building questions… be specific

	Ask	Example
P	Who are the group of patients?	Patients with COPD
I	What intervention do I want to evaluate?	Oseltamivir
C	What is the main or usual alternative?	Usual care or placebo
O	What could the intervention really affect?	Prevention of H1N1 in exposed individuals

A well formulated question

P

In patients with COPD exposed to H1N1 does Oseltamivir reduce the

I

risk of

O

H1N1 compared to usual care?

C

A POORLY FORMULATED QUESTION

I

P

Do spacers work for children with acute asthma?

REFORMATTED CLINICAL QUESTION

P In children with asthma receiving bronchodilators

I is delivery via MDI and spacer

C as effective as delivery via nebuliser

O in reducing asthma symptoms?

MDI = metered dose inhaler

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REFORMATTED CLINICAL QUESTION

P   In children with asthma receiving bronchodilators

I   is delivery via MDI and spacer

C   as effective as delivery via nebuliser

O   in reducing asthma symptoms?

MDI = metered dose inhaler

TYPES OF CLINICAL QUESTIONS

- Therapy
- Prognosis
- Diagnosis
- Aetiology

FOUR TYPES OF CLINICAL QUESTIONS.

- **Therapy:** determining the effect of different treatments on improving patient function or avoiding adverse events

- *Is it useful to give antibiotics for patients with Preterm Prelabour Rupture of Membranes?*

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FOUR TYPES OF CLINICAL QUESTIONS.

- **Harm/Prognosis:** ascertaining the effects of potentially harmful agents (including the very therapies we would be interested in examining in the first type of question) on patient function, morbidity, and mortality

- *Is using HRT harmful?*

- *What is the chance of survival for patients diagnosed with Ovarian Cancer Stage 1 C*

FOUR TYPES OF CLINICAL QUESTIONS.

- **Diagnosis**: establishing the power of an intervention to differentiate between those with and without a target condition or disease

- *What good is chest wall percussion at picking up pneumonia?*

- *What is the best test for diagnosing dengue haemorrhagic fever?*

FOUR TYPES OF CLINICAL QUESTIONS.

- **Aetiology/risk Factors:** estimating the the causes or factors associated with a disease
- *What is the aetiology of lung cancer?*
- *What are the risk factors for breast cancer?*

What type of question is it?

Question about…	Best study design
Intervention/Therapy	Randomised controlled trial (or Systematic review of RCTs)
Diagnosis/Screening	Accuracy: cohort Effect on health outcomes: RCT
Prognosis/Harm	Longitudinal cohort Sometimes RCT
Aetiology/Risk factors	Randomised controlled trial (if ethical) Cohort for rare exposure Case control for rare outcome

FOCUSED CLINICAL QUESTIONS GENERATED FROM CLINICAL SCENARIOS

1. The clinical question: Jimmy Coryza is a 14 year old with seasonal allergies. You wonder: should I prescribe a nasal corticosteroid or a non-sedating anti-histamine?

Patient or problem	**I**ntervention	**C**omparison	**O**utcome

Type of Question _____   Study Type _____

FOCUSED CLINICAL QUESTIONS GENERATED FROM CLINICAL SCENARIOS

2. The clinical question: When taking temperature in children which works best? The tympanic or axillary thermometers

Patient or problem	Intervention	Comparison	Outcome

Type of Question _____   Study Type _____

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3. A women whose 2 older sisters both have breast cancer (one premenopausal and one postmenopausal) asks whether cutting out all

caffeine in her diet would reduce her risk of breast cancer

Patient or problem	Intervention (or Exposure)	Comparison	Outcome

Type of Question _____   Study Type _____

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FOCUSED CLINICAL QUESTIONS GENERATED FROM CLINICAL SCENARIOS

4. Clinical scenario: A 50 yr old menopausal woman at OPD. She is hypertensive, leads a sedentary lifestyle and smokes. She wants to discuss "osteoporosis" and HRT. Her 75 year old mother has been recently diagnosed with breast cancer.

Patient or problem	Intervention	Comparison	Outcome

Type of Question _____   Study Type _____

WHERE TO FIND THE EVIDENCE

- Having pico-ed your question you can now easily identify search terms to search for an article to answer the question

- Since systematic reviews are the highest form of evidence you should look in the Cochrane Library first and if you can't answer it there then you go to MEDLINE

http://www.ncbi.nlm.nih.gov/sites/entrez

http://www.thecochranelibrary.com