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How to ask clinical questions you can answer

As we showed you in the Introduction, almost every time you see a patient you will need new information about some element of their diagnosis, prognosis or management. Sometimes the question will be self-evident (e.g. what's the starting dose of this new non-steroidal anti-inflammatory drug?) and sometimes the necessary information will be at your fingertips (e.g. your local or national drug formulary). Many times, however, the question will not be so self-evident, especially to learners at early stages of their clinical careers (we'll give a real-life example in a moment), and the necessary information will be in the form of external evidence that you will have to track down. For most clinicians, the efforts required to both ask an answerable question and track down the best external evidence are so formidable that, when coupled with our very limited time for reading and keeping up to date, most of our information needs never get met.

This chapter will describe a strategy for accomplishing the first step of formulating answerable questions (and the next chapter takes on the challenge of searching for the best external evidence). If you think you already know how to ask answerable questions (although you might want to make sure by trying the first example!), skip the early portions of this chapter and go straight to the section on how to teach the asking of answerable clinical questions. But remember that until you become good at asking answerable questions you're likely to waste a lot of your scarce searching and reading time and not only remain frustrated, but continue to slide down that slippery slope of clinical entropy.

Because EBM begins and ends with patients, we will use a patient encounter to remind us how clinical questions arise and to show how they can be used to initiate evidence-based learning. We will also introduce you to some teaching tactics that can help you coach others to develop their question-asking skills.

Suppose two things: first, that you've just learned that an administrative meeting you were to attend later today has been canceled, giving you a free hour to think and learn. Second, suppose that you've just finished examining a 73-year-old retired grocery clerk who complained of pro-

gressively worsening shortness of breath on minimal exertion. She had first noted her shortness of breath while carrying groceries home 3 weeks ago and it had progressed to the point where she became breathless climbing one flight of stairs or making her bed. In addition, both of her ankles had, for the first time, become quite swollen at the end of the day. She'd had an uncomplicated inferior myocardial infarction 18 months ago as her first ever manifestation of coronary heart disease (and had not been placed on prophylactic beta-blockers). Her only other medication was ibuprofen (a NSAID), which she had taken for the past 6 months for painful knees. She had had no chest pain, fever, cough or sputum. On examination her blood pressure was 145/85 and her pulse regular at 88 beats per minute. She exhibited elevated neck veins, bilateral crackles in her lower and mid-lung fields, a third heart sound but no murmurs and pitting edema to her knees. The remainder of her history and physical examination was normal.

At this point in the case, we hope that you recognize the opportunity to make conscientious, explicit and judicious use of current best evidence in making decisions about the care of this individual patient: that is, the opportunity to practice EBM. Whether sorting through her clinical findings, selecting diagnostic tests, considering her prognosis, starting to plan her treatment or contemplating whether some of her current therapy might be doing her more harm than good, you face several decisions about this patient. In every one of them you could combine your individual clinical experience with the best external evidence.

But to capitalize on such 'targets of opportunity' for EBM, you'll need to be able to track down published evidence as described in Chapter 2, judge its scientific validity and importance as described in Chapter 3 and then decide with your patient how best to put the evidence into practice, as described in Chapter 4. And as a prerequisite for all the rest, you'll need to start by using an additional fundamental skill for evidence-based medicine: asking well-built clinical questions.

Based on the foregoing, why not practice building some questions about our patient? In the three boxes below, write

one question in each box, concerning some important piece of information you'd like to have to provide better care for this patient:

1.

2.

3.

How and from where do clinical questions arise? They can arise from virtually any point in the clinician's work with patients. During or after a patient encounter, you may discover a specific decision or action that you don't know enough about to tackle confidently. The size of this 'knowledge gap' can range from minuscule, such as the written symbol for a

unit of measurement you need to write on a prescription, all the way up to complete lack of familiarity with a condition, test or treatment. Regardless of their size, finding these knowledge gaps can cause you to experience some negative reactions, including chagrin or even anxiety and shame (the latter included in the causes for 'burnout' among clinicians). Finding such knowledge gaps can also cause positive responses such as asking questions and searching for their answers and we suspect you'll agree that channeling your nervous energy into the latter has some wonderful potential.

Over the years, we've found that most of our clinical questions arise from the central tasks of clinical work and we came up with more than a dozen of them in trying to understand and help this patient. Eight of them were:

1. In patients suspected of having heart failure, how well do clinicians agree with each other about the presence of 3rd heart sounds? A question about the precision of the clinical examination.

2. In an elderly woman with preexisting coronary heart disease, can ibuprofen precipitate heart failure? A question of determining etiology.

3. In heart failure patients with both coronary heart disease and exposure to ibuprofen, which one of the latter is the more likely explanation? A question about making a differential diagnosis of heart failure.

4. In patients with heart failure, how accurate is the bedside test for post-Valsalva systolic overshoot in predicting left ventricular function? A question of selecting a diagnostic test.

5. In an elderly woman with coronary heart disease, by how much does the appearance of heart failure shorten her life? A question about predicting prognosis.

6. In coronary patients who develop heart failure on ibuprofen, would simple drug withdrawal plus diuretics suffice or should they be offered an angiotensin-converting enzyme (ACE) inhibitor as well, in order to alleviate the heart failure? A question about selecting therapy.

7. In patients with heart failure, would long-term ACE inhibitor therapy prevent recurrences and improve the quality of life? A question about attempting secondary prevention.

8. In order to improve my understanding of the action of ACE inhibition, would I gain more from an hour going to the library and looking at a textbook or 10 minutes on the ward computer, looking at a CD version of that same text? A question about seeking self-improvement.

The eight sorts of questions we can pose about this or any other patient are listed in Table 1.1. To benefit patients and clinicians, such questions need to be well built, by which we mean both directly relevant to patients' problems and phrased in ways that direct your search to relevant and precise answers. In practice, well-built clinical questions usually contain four elements, summarized in Table 1.2:

Table 1.1 The central tasks of clinical work or where clinical questions arise from

- 1. Clinical findings:** how to properly gather and interpret findings from the history and physical examination.
- 2. Etiology:** how to identify causes for disease (including its iatrogenic forms).
- 3. Differential diagnosis:** when considering the possible causes of a patient's clinical problem, how to rank them by likelihood, seriousness and treatability.
- 4. Diagnostic tests:** how to select and interpret diagnostic tests, in order to confirm or exclude a diagnosis, based on considering their precision, accuracy, acceptability, expense, safety, etc.
- 5. Prognosis:** how to estimate the patient's likely clinical course over time and anticipate likely complications of the disease.
- 6. Therapy:** how to select treatments to offer patients that do more good than harm and that are worth the efforts and costs of using them.
- 7. Prevention:** how to reduce the chance of disease by identifying and modifying risk factors and how to diagnose disease early by screening.
- 8. Self-improvement:** how to keep up to date, improve your clinical skills and run a better, more efficient clinical practice.

Table 1.2 The four elements of well-built clinical questions

	1. Patient or problem	2. Intervention (a cause, a prognostic factor, a treatment, etc.)	3. Comparison intervention (if necessary)	4. Outcome(s)
Tips for building	Starting with your patient, ask 'How would I describe a group of patients similar to mine?' Balance precision with brevity	Ask 'Which main intervention am I considering?' Be specific	Ask 'What is the main alternative to compare with the intervention?' Again, be specific	Ask 'What can I hope to accomplish?' or 'What could this exposure really affect?' Again, be specific
Example	'In patients with heart failure from dilated cardiomyopathy who are in sinus rhythm...'	'... would adding anticoagulation with warfarin to standard heart failure therapy...'	'... when compared with standard therapy alone...'	'... lead to lower mortality or morbidity from thromboembolism. Is this enough to be worth the increased risk of bleeding?'

1. the patient or problem being addressed;
2. the 'intervention', whether by nature or by clinical design (a cause, a prognostic factor, a treatment, etc.) being considered;
3. a comparison intervention, when relevant; and
4. the clinical outcome or outcomes of interest.

When we look at these four elements in each of the eight questions we posed, they map out as shown in Table 1.3 and we were able to track down relevant and precise answers to all but the last of them (which was judged self-evident).

Go back and look at your questions. Do they have these four components to them? Wouldn't they be improved (in terms of specifying the best search for the most useful external evidence to integrate with your clinical expertise and form the most useful answer) if they did? Go back and revise any that do not have these four components and see whether you agree that they now look more answerable.

Three common problems that arise when we try to pose answerable questions are:

1. When you're puzzled by a patient but don't know where to start. If a patient's case puzzles you but you're not sure what you're stuck on, try scanning Table 1.1 and asking yourself, for each of the eight clinical tasks, whether you have any uncertainties. If you can't confidently and quickly answer 'No!', you've just found a knowledge gap (and remember to congratulate yourself for finding it, rather than hiding it or scolding yourself for not knowing something).

2. When you're having trouble stating the question (unless you solve this problem you're at risk of failing in the subsequent steps of practicing EBM!). Try saying your questions out loud or writing them down with all four components included. If you are stuck, use Table 1.1 to locate where you are stuck. Then build your question in two steps, first specifying the clinical task and then filling in all 4 components explicitly (e.g. 'do persons with insulin-dependent diabetes who are treated with an intensive insulin regimen have fewer long-term complications or a lower mortality rate than those treated with a traditional insulin regimen?'). If you're in the

Table 1.3 Examples of questions for each clinical task asked about our patient with heart failure

Clinical tasks	Elements of the Question			
	1. Patient or problem	2. Intervention	3. Comparison (if relevant)	4. Outcome(s)
1. Clinical examination	Heart failure	3rd heart sound	Other examiners	Precision
2. Determining etiology	Coronary heart disease	Ibuprofen		Heart failure
3. Making a differential diagnosis	New onset heart failure	Coronary heart disease	Ibuprofen exposure	Likelihood of different causes
4. Selecting diagnostic tests	Heart failure	Bedside Valsalva test	ECHO	Accuracy
5. Predicting prognosis	Coronary heart disease	Development of heart failure	No heart failure yet	Mortality
6. Selecting therapy	Heart failure	ACE inhibitor	Diuretics alone	Correction of heart failure
7. Attempting prevention	Heart failure	ACE inhibitor	No ACE inhibitor	Recurrence, quality of life
8. Seeking self-improvement	ACE inhibitors	To the library	To the CD-ROM	Better understanding

habit of writing down clinical questions to answer later, consider dividing the paper into four columns, one for each element of the question, so that you can quickly enter each component without necessarily writing out the complete sentence. For an example of this tactic, reexamine Table 1.3.

3. When you have more questions than time. This will almost always be the case and you'll need to develop a strategy for deciding where to begin. Keep in mind that lifelong learning means learning in many small increments over a long period of time and attempts to do it all at once are both impossible and bound to frustrate. Factors to weigh up in deciding which question to answer this week include:

- Which question is most important to the patient's well-being?
- Which question is most feasible to answer within the time you have available?
- Which question is most interesting to you?
- Which question are you most likely to encounter repeatedly in your practice?

Teaching the asking of answerable questions

Good questions are the backbone of both practicing and teaching EBM and patients serve as the starting point for both. The challenge to the teacher is to identify questions that are both patient based (arising out of the clinical problems of a real patient under the learner's care) and learner centered (targeted at the learning needs of this learner). If you've read the previous sections on asking focused questions and you've become proficient at asking questions yourself, you're well on your way to accomplishing this task.

As with most clinical skills, you will teach this best by example, that is, by modeling the formation of good clinical questions in front of your learners. In doing so, you can also model admitting and identifying knowledge gaps, an important element of effective teaching. You can show them explicitly what you did, noting each of the four elements of good questions, and then point out how such questions are both relevant and searchable and thus potentially answerable.

The four main steps in teaching clinical learners how to ask good questions are listed in Table 1.4:

1. recognizing potential questions in learners' cases;
2. selecting the 'best' question to focus on;
3. guiding learners to build that question well;
4. assessing learners' question-building performance and skill.

To do this you need to be proficient at building questions, and you need several attributes of good clinical teaching in general, such as good listening skills, enthusiasm and a willingness to help learners develop. Note that teaching question-asking skills can be integrated with any other clinical teaching, right at the bedside or other site of patient care, and it needn't take much additional time. In fact, it'll save learning time in the long run, as your learners become much more efficient in articulating what they need to know and how to learn it.

Once you and your learner(s) have formulated an important question, how are you going to keep track of it and follow its progress towards a clinically useful answer? It may be just one of several questions you formulate during a single encounter and it may not be answered for days. One tactic we've used for keeping track, the educational prescription* shown in Figure 1.1, helps both teachers and learners in five ways:

1. It specifies the clinical problem that generated the question.
2. It states the question, in all of its key elements.
3. It specifies who is responsible for answering it.
4. It reminds everyone of the deadline for answering it (taking into account the urgency of the clinical problem that generated it).

* You can photocopy the educational Rx as it appears in the figure or consult the World-Wide Web page for the Centre for Evidence-Based Medicine in Oxford for information on how to obtain educational Rx's in duplicate (on pressure-sensitive paper) in the form of A-4 sheets or in NHS-sized prescription pads.

Table 1.4 Key steps in teaching how to ask questions for EBM

1. **Recognize:** how to identify combinations of a patient's needs and learner's needs that represent opportunities for the learner to build good questions and hone question-asking skills.
2. **Select:** how to select from the recognized opportunities the one (or few) that best fits the needs of the patient and the learner at that clinical moment.
3. **Guide:** how to guide the learner in transforming knowledge gaps into well-built clinical questions.
4. **Assess:** how to assess the learner's performance and skill at asking pertinent, answerable clinical questions for practicing EBM.

5. Finally, it reminds everyone of the steps of searching, critically appraising and ultimately relating the answer back to the patient.

As you can see from all the foregoing, forming questions is the essential, initial step in learning how to practice evidence-based medicine. As such, it ought to be central to the everyday care of patients. How can you use the educational prescription in clinical teaching? The number of ways are limited only by your imagination and your opportunities for teaching. Educational prescriptions have been incorporated into familiar clinical teaching settings from work rounds and attending/consultant rounds to morning reports and noon conferences. Some general practitioners we know write them on real prescription blanks and toss them in a tray that they and their colleagues review from time to time, taking the recurring themes up as a shared activity throughout the partnership.

Although some teachers set aside special times for 'filling' educational prescriptions, we favor 'dispensing' them as part of the everyday routine. How might you insure that this integration takes place? One tactic is to make the specification of clinical questions an integral part of presenting a new patient to the practice. For example, the members of Dave Sackett's general medicine inpatient clinical team, when presenting new patients to him at the end of one of their



EDUCATIONAL PRESCRIPTION

Date and place to be filled _____

THE PATIENT PROBLEM _____

EDUCATIONAL TASKS TO BE COMPLETED BEFORE THE SESSION:

Learner:	Task:
_____	_____
_____	_____
_____	_____
_____	_____

Presentations will cover:

- i. HOW you found what you found
- ii. WHAT you found
- iii. The VALIDITY & APPLICABILITY of what you found
- iv. How what you found will ALTER your MANAGEMENT of the patient
- v. How WELL you think you DID in filling this Rx

Figure 1.1 An educational prescription

'takes' (a 12-hour period during which they've admitted about 15 seriously ill referrals from general practitioners or the emergency room), have to tell him '30 things in 3 minutes' about each admission. As shown in Table 1.5, the final element of their presentations is the specification of an important question to which they need to know the answer and don't. If the answer is vital to the immediate care of the

Table 1.5 A patient presentation that includes an educational prescription

1. The patient's surname.
2. The patient's age.
3. The patient's gender.
4. When the patient was admitted.
5. The chief complaint(s) that led to admission. For each complaint, mention the following:
 6. Where in the body it is located.
 7. Its quality.
 8. Its quantity, intensity and degree of impairment.
 9. Its chronology: when it began, constant/episodic, progressive.
 10. Its setting: under what circumstances did/does it occur.
 11. Any aggravating or alleviating factors.
 12. Any associated symptoms.
13. Whether a similar complaint had happened previously. If so:
 14. How it was investigated.
 15. What the patient was told about its cause.
 16. How the patient has been treated for it.
17. Pertinent past history of other conditions that are either of prognostic significance or would affect the evaluation or treatment of the chief complaint(s).
 18. And how those other conditions have been treated.
19. Family history, if pertinent to chief complaint or hospital care.
20. Social history, if pertinent to chief complaint or hospital care.
21. Their:
 - a. ideas (what they think is wrong with them)
 - b. concerns (about their illness, and other issues)
 - c. expectations (of what's going to happen to and for them).
22. Their condition on admission:
 - a. acutely and/or chronically ill
 - b. severity
 - c. requesting what sort of help.
23. The pertinent physical findings on admission.
24. The pertinent diagnostic test results.
25. Your concise, one-sentence problem synthesis.
26. What you think the most likely diagnosis is.
27. And the other items in your differential diagnosis.
28. Any further diagnostic studies you plan to carry-out.
29. Your estimate of the patient's prognosis
30. Your treatment plans.

31. How you will monitor the treatment.
32. And what you will do if the patient doesn't respond to treatment.
33. The educational prescription you would like to write for yourself in order to better understand the patient's pathophysiology, clinical findings, differential diagnosis, diagnosis, prognosis, therapy, prevention or other issue in order to become a better clinician.

patient, it can be provided at once by another member of the clinical team, perhaps by referring to the record (such as a one-page CAT*) of the answer generated from posing that same question on an earlier occasion. Most often, however, its answer can wait for a few hours or days and its formulation can be initiated as an educational Rx.

For even more fun, try having your learners write educational prescriptions for you. This role reversal can help in several ways:

- the learners must supervise your question building, thereby honing their skills further;
- the learners see you admitting your own knowledge gaps and practicing what you preach;
- it adds fun to rounds and sustains group morale;
- your learners begin to prepare for their later roles as clinical teachers.

That concludes this chapter on the first step in practicing and teaching EBM: asking questions that can be answered. Since your learners will want to move quickly from asking questions to finding their answers and since they will need lots of help developing their searching skills, our next chapter will address this second step in practicing and teaching EBM.

* Or 'critically appraised topic', a one-page summary of the answer to a clinical question. CATs are described in detail in section 3b6, page 152 onwards.

Further reading

Oxman A D, Sackett D L, Guyatt G H, for the Evidence-Based Medicine Working Group. Users guides to the medical literature: 1. how to get started. *JAMA* 1993; 270: 2093–5.

Richardson W S, Wilson M C, Nishikawa J, Hayward R S A. The well-built clinical question: a key to evidence-based decisions (editorial). *ACP J Club* 1995; 123: A12–13.