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Obstacles to answering doctors' questions about patient care with evidence: qualitative study

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Abstract

Objective To describe the obstacles encountered when attempting to answer doctors' questions with evidence.

Design Qualitative study.

Setting General practices in Iowa.

Participants 9 academic generalist doctors, 14 family doctors, and 2 medical librarians.

Main outcome measure A taxonomy of obstacles encountered while searching for evidence based answers to doctors' questions.

Results 59 obstacles were encountered and organised according to the five steps in asking and answering questions: recognise a gap in knowledge, formulate a question, search for relevant information, formulate an answer, and use the answer to direct patient care. Six obstacles were considered particularly salient by the investigators and practising doctors: the excessive time required to find information; difficulty modifying the original question, which was often vague and open to interpretation; difficulty selecting an optimal strategy to search for information; failure of a seemingly appropriate resource to cover the topic; uncertainty about how to know when all the relevant evidence has been found so that the search can stop; and inadequate synthesis of multiple bits of evidence into a clinically useful statement.

Conclusions Many obstacles are encountered when asking and answering questions about how to care for patients. Addressing these obstacles could lead to better patient care by improving clinically oriented information resources.

Introduction

Doctors are urged to practise evidence based medicine when faced with questions about how to care for their patients.¹ They are advised to ask questions that can be answered with evidence and to evaluate the results of original research.¹⁻³ But this advice may be difficult to follow in the pressurised atmosphere of a busy practice.⁴⁻⁶ Doctors are overwhelmed by the amount of information available, yet they often cannot answer their questions about specific clinical problems.^{5 7-9}

We aimed to describe the range of obstacles that occur when trying to obtain evidence based answers to real clinical questions, and to build a taxonomy that

characterises the problems that arise when searchers attempt to answer doctors' questions. Doctors need up to date, high quality answers at the point of care within minutes.⁵ Before these objectives can be met with new information systems, the problems with current resources and search strategies need to be described.

Methods

Selection of questions

We collected 1101 questions from 103 family doctors in Iowa. Briefly, after each consultation an observer asked the doctor to report any questions that occurred about how to care for the patient. We collected straightforward questions ("What is the dose of metformin?") as well as vague uncertainties that would normally be kept to oneself ("I'm not sure what this rash is, but I'm going to call it a contact dermatitis for now."). From these 1101 questions we selected a random sample of 200 questions. Through an iterative process of reviewing questions, creating a classification scheme, coding questions, and revising the classification scheme, we developed a method of identifying questions that were potentially answerable with evidence. This led to the development of an "evidence taxonomy" (box).^{10 11} Using this taxonomy, we found that 106 questions (53% of the original 200) could potentially be answered with evidence.

We agreed on three criteria for selecting the two questions to be answered by all investigators: the question should be clearly stated, there should be a high likelihood of finding good quality evidence to answer it, and the answer should potentially have an impact on patient care. By using these criteria we selected "What is the proper treatment of gastro-oesophageal reflux disease (GERD)?" and "What should I use for atopic dermatitis?"

Answering questions

We did not follow a standardised search strategy because we wanted to study obstacles related to the strategy. We searched textbooks, journal articles, and various computer applications, but we did not seek individual consultations with humans. Working independently, the investigators completed searches that they thought were sufficient to avoid missing important evidence. While searching, the investigators used a modified "think

Evidence taxonomy used to classify 200 questions from family doctors

I. Clinical (n=193)

A. General (n=141)

1. Evidence (n = 106)
 - a. Intervention (n = 71)

“What is the drug of choice for epididymitis?”
 - b. No intervention (n = 35)

“How common is depression after infectious mononucleosis?”
2. No evidence (n = 35)

“What is the name of that rash that diabetics get on their legs?”

B. Specific (n=52)

“What is causing her anaemia?”

II. Non-clinical (n=7)

“How do you stop somebody with five problems, when their appointment is only long enough for one?”

formulate a question, search for relevant information, formulate an answer, and use the answer to direct patient care. Most of the obstacles were supported by the data we obtained, but a few were primarily generated from the previous experiences of the investigators or from the literature.

Several obstacles seemed particularly salient because they recurred in the various procedures for data collection, and they were characterised as fundamental problems by the investigators and practising doctors. These were the excessive time required to find information, difficulty modifying the original question, which was often vague and open to interpretation, difficulty selecting an optimal search strategy, failure of a seemingly appropriate resource to cover the topic, uncertainty about how to know when all the relevant evidence has been found so that the search can stop, and inadequate synthesis of multiple bits of evidence into a clinically useful statement.

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aloud” method to write field notes that documented the obstacles they encountered.^{12 13}

Development of the taxonomy

We used three data sources to develop the initial taxonomy. The primary source consisted of obstacles documented in field notes written by the investigators as they attempted to answer the questions. The second source comprised frustrations that the investigators had encountered while answering other clinical questions. The third source consisted of problems reported in the literature.¹⁴⁻¹⁶ The obstacles were described and organised into a taxonomy by using qualitative text analysis. The taxonomy was developed with an approach in which initial “codes” (obstacles described in the “think aloud” field notes) were augmented with obstacles described in the literature and previously encountered by the investigators.¹⁷

Validation of the taxonomy

To help validate the taxonomy, we first asked four volunteers (two medical librarians and two university family doctors) to answer four additional questions from the same dataset. Each volunteer coded their own field notes and identified obstacles that were not optimally characterised in the existing taxonomy. Secondly, we asked 21 practising doctors (purposely selected from a list of former trainees from practices in Iowa) to describe on paper the problems they encountered when attempting to answer one of their own questions. Thirdly, we completed 16 half day observation periods involving four randomly selected practising doctors in Iowa (four observation periods per doctor). We asked these doctors to “think aloud” as they attempted to answer their own questions. Based on these three additional sources of data, we added four obstacles to the taxonomy. The final version of the taxonomy was approved by all investigators.

Results

The box shows examples from the taxonomy of obstacles, with descriptions of each obstacle (a full list of the taxonomy is available on bmj.com). The taxonomy was organised according to the steps in asking and answering questions¹⁸⁻²⁰: recognise a gap in knowledge,

Obstacles to answering clinical questions

(extracts from the full list which is available on bmj.com)

1. Obstacles related to recognising an information need

- 1.1. *Doctor's lack of awareness of an information need.* The doctor makes decisions about patient care, completely unaware of a gap in knowledge.
- 1.2. *Doctor's suppression of a recognised information need.* On some level the doctor is aware of a gap in knowledge but suppresses it due to time pressures, embarrassment, personal characteristics, or characteristics of the clinical setting.

2. Obstacles related to formulating the question

- 2.1. *Inability to answer patient specific questions with general resources.* Patient specific questions (“What is this rash?”) and vague cries for help (“I don't know what to do with this patient”) cannot be answered by a general resource.
- 2.4.4. *Difficulty modifying questions to fit the PICO format (patient, intervention, comparison, outcome).* Sackett et al suggest four elements for clinical questions: patient or problem, intervention, comparison, and outcome.¹ However, many clinical questions do not involve interventions, comparisons, or outcomes.¹⁰

3. Obstacles related to seeking information

- 3.1.4. *Ready availability of consultation which leads to a referral rather than a search.* Practising doctors may refer patients to consultants if they believe excessive time and effort would be required to learn enough about the problem to feel comfortable managing it themselves.
- 3.2.1. *Uncertainty about where to look for information.* It can be difficult to decide which resources will be most helpful and what should determine the selection of resources. Time available? Familiarity with resource? Type of question?
- 3.3.10. *Inability to interact with a general resource as one could with a human resource.* Most general resources do not allow real time interaction with the searcher as could happen with a human resource. There can be no follow up questions.
- 3.5.1. *Failure to address the clinical question.* Available studies have not adequately addressed the question (for example, “Is smoking a risk factor for sinusitis?”).

4. Obstacles related to formulating the answer

- 4.1. *Failure to directly or completely answer the question.* Once the relevant information has been gathered, the searcher fails to directly or completely answer the doctor's question (for example, owing to the inadequacy of available information or an inadequate synthesis of adequate information).
- 4.3. *Answer directed at the wrong audience.* Answers for patients may not be helpful to doctors.

5. Obstacles related to using the answer to direct patient care

- 5.1. *Answer not trusted.* A seemingly adequate answer may not be used if the doctor does not trust the source.

The obstacles related to evidence fell into two main categories. Firstly, the available evidence was inadequate to directly answer the question either because studies had not addressed the question ("Is smoking a risk factor for sinusitis?") or because the studies that had addressed the question provided incomplete information. For example, when answering the question about treating gastro-oesophageal reflux disease, we found rigorous comparisons between lansoprazole and placebo and between omeprazole and placebo but the comparisons between lansoprazole and omeprazole were less definitive.²¹⁻²³ Secondly, even when the evidence was adequate to answer the question, further obstacles hindered its use in the clinical setting. Available evidence often consisted of individual study results, which had not been synthesised or interpreted for clinicians. The following field notes were written by one of the investigators as he attempted to answer the question, "What should I use for atopic dermatitis?"

Therapies include: ciclosporin—possibly effective; borage oil—probably not effective; UVA1—works; primrose oil with water and oil emulsion—probably effective; topical doxepin—probably not effective; mite elimination—likely to be effective; topical cromolyn—likely to be effective; topical tacrolimus—probably effective; SEZ ASM 981—possibly effective.

Each investigator spent a median of 95 minutes (range 13 to 639 minutes) answering the question about gastro-oesophageal reflux and 45 minutes (range 17 to 374 minutes) answering the question about atopic dermatitis.

The final version of the taxonomy comprised 59 obstacles. The four volunteer coders used 35 problems to code their field notes and made four suggestions to improve the taxonomy. For example, both librarians noted their lack of medical training as an obstacle to formulating an answer. Ten of the 21 practising doctors responded to our request to describe obstacles that arose as they answered one of their own questions. All of the obstacles reported by these doctors had been described in the existing taxonomy. Also, we collected 96 questions during 16 office observations from four additional practising doctors. These data led to the addition of four obstacles to the taxonomy: failure to initiate a search due to doubt about the existence of relevant information, ready availability of consultation, which leads to a referral rather than a search, uncertainty about the meaning of null search results, and resource not clinically oriented.

Discussion

Obstacles arise when searching for evidence based answers to doctors' questions: we identified 59. Among the most salient were inadequate time to search for information, failure of the resource to address the topic, and inadequate synthesis of multiple bits of evidence into a clinically useful statement. Practising doctors often decided not to pursue their questions because they doubted the existence of useful information in available resources.

Implications

After quantifying and prioritising the obstacles we found, the taxonomy we developed could be used to

What is already known on this topic

Doctors are encouraged to search for evidence based answers to their questions about patient care but most go unanswered

Studies have not defined the obstacles to answering questions in a systematic manner

A comprehensive description of such obstacles has not been presented

What this study adds

Fifty nine obstacles were found while attempting to answer clinical questions with evidence; six were particularly salient

The obstacles were comprehensively described and organised

write recommendations for authors as they attempt to produce clinically useful material. Authors will be most effective if they anticipate the needs of busy clinicians who often have only a minute or two to find information.⁵ For example, authors who name the drug of choice for a specific condition could include essential prescribing information (dosage, drug interactions, safety in pregnancy), so that the clinician does not waste time consulting another resource. Clinically oriented resources could be written in a question and answer style rather than a disease and topic style. The ongoing surveillance of doctors' changing questions could help keep resources current. Questions without adequate answers could help guide research and funding priorities. Until such research is completed, such questions may prompt the use of holistic clinical care and other alternatives. We often found it helpful to modify questions from the way they were originally stated by the doctor. Such modifications could be developed into recommendations for doctors, as they formulate their questions, and for intermediary searchers, who may play a larger part in the future, as they help doctors practise the best medicine.²⁴

Conclusions

To meet the needs for clinical information, doctors must be aware of their gaps in knowledge and then formulate questions that can be addressed by available resources or patient specific consultations. When faced with a gap in knowledge, doctors must decide whether to do the best they can with their current knowledge or to expand that knowledge by formulating and answering a question. Practising doctors do not have time to search multiple sites or scroll through long text. Nor do they have time to search multiple textbooks or perform literature searches for most of their questions. They need to pick the right resource the first time, the information in that resource needs to be readily found, and all the information must be there. Although it remains to be shown, we believe that systems designed to overcome the obstacles we identified will improve the asking and answering of questions and potentially patient outcomes.

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A memorable patient

No other medicine but only hope

On a busy surgical receiving day my last patient is an elderly gentleman. As I approach, I see he is reading the Bible, and my heart sinks somewhat. Already that day I have listened, unprovoked, to a rude limerick, an election manifesto, and a rendition of *Yesterday*. I have no wish to add a sermon to this list. I introduce myself and apologise he has been kept waiting.

He smiles, "Kept myself occupied," and motions to the book.

"The good book," I mumble.

"Several good books," He corrects me. "The complete works." He shows me the spine of his black leather book. The word *Shakespeare* is embossed in gold leaf.

"Which one are you reading? My favourite is..."

Before I can finish, he replies, "*Measure for Measure*," and, of the entire canon, names the obscure play I was about to say.

A peculiar choice, a play that oscillates uneasily between tragedy and comedy. My favourite for personal rather than scholarly reasons—a sunny sixth form classroom and an eloquent teacher with an encyclopaedic literary knowledge.

We talk about the comedy of it, of a madam named Mistress Overdone, of Claudio's euphemistic crime of "groping for trouts in a peculiar river." We forget ourselves such that we could be standing in the foyer of a plush West End theatre instead of a grubby NHS cubicle. He has visited Stratford upon Avon and speaks highly of it. I tell him of Juliet's house in Verona, where millions of lovers have scribbled their names on the walls. We both agree we'd like to visit the rebuilt Globe Theatre; it is then he fixes my gaze and says that maybe I can go for him.

This returns me to the hospital with a jolt. I take his history, and his play indeed seems set to end in tragedy. Three months of progressive dysphagia portends something sinister; the twin harbingers of weight loss and anorexia compound this suspicion. I tell him that he will need an endoscopy, and he asks what we might find. I mumble evasively about "numerous possible causes," but he shakes his head and quotes me Lucio:

"Our doubts are traitors,

"And make us lose the good we oft might win,

"By fearing to attempt." (Act I.iv)

And so I tell him: "Yes, one of the possibilities is that there might be a growth. A tumour." He actually looks relieved when I say this. It is only when I consider he has probably been waiting for weeks to hear it that I understand why.

I ask him how he feels about what we have just discussed. He smiles then, the same warm smile as when I mistook his book for the Bible, and says:

"Thy best of rest is sleep;

"And that thou oft provok'st, yet grossly fear'st

"Thy death, which is no more." (Act III.i)

I am still on the ward when he returns from his endoscopy, and someone hands me his notes. I feel like I am about to discover Ophelia floating in the pond but make myself turn to the report. And there, in words more poetic than anything in the sonnets, I read the beautiful phrase "Benign inflammatory stricture."

On quiet nights now you can find me hidden away in the duty room, reading the complete works, still trying to fathom the lessons of that episode. Something about not judging a book by its cover, perhaps, but I believe there may have been another lesson, a lesson about stories—how one shared story could brighten up my entire week, how a well thumbed book could provide my patient with enough armour he could look serious illness in the eye and not so much as blink.

Simon Stephenson *medical house officer, Western Infirmary, Glasgow*

We welcome articles of up to 600 words on topics such as *A memorable patient*, *A paper that changed my practice*, *My most unfortunate mistake*, or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disk. Permission is needed from the patient or a relative if an identifiable patient is referred to. We also welcome contributions for "Endpieces," consisting of quotations of up to 80 words (but most are considerably shorter) from any source, ancient or modern, which have appealed to the reader.