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ORIGINAL ARTICLE

General practitioners' perceptions of introducing near-patient testing for common infections into routine primary care: A qualitative study

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Abstract

Objective. Near-patient tests are promoted for guiding management of common infections in primary care with a view to enhancing the effectiveness of prescribing decisions and containing antimicrobial resistance. Changes in clinical practice should be based on appraisals of the factors that might influence change, viewed from the perspective of those expected to implement the change. We therefore explored the views of general practitioners concerning the possible introduction of near-patient tests for managing common infections. **Design.** Qualitative semi-structured interview study. Interviews were recorded and analysed using thematic content analysis. **Setting.** General practices in south-east Wales, UK. **Subjects.** A total of 26 general practitioners (GPs) from high fluoroquinolone antibiotics prescribing practices and 14 GPs from practices that prescribed fluoroquinolones close to the south-east Wales mean. **Results.** There was strong enthusiasm for a hypothetical near-patient, finger-prick blood tests that could distinguish viral from bacterial infections. Many GPs emphasized that such tests would be valuable in “selling” decisions not to prescribe antibiotics to patients. Concerns included limited additional useful information to guide prescribing above clinical diagnosis alone, that patients might deteriorate even if the tests correctly identified a viral aetiology, and that GPs would need to be convinced by research evidence supporting uptake. Several indicated that tests would be useful only for a limited number of patients and they were concerned by time pressures, apparatus maintenance and quality control, cost, and possible objections from patients, especially children. **Conclusions.** Despite GP enthusiasm for the concept of a rapid test to distinguish viral from bacterial infection, strategies to promote uptake would be enhanced if concerns were addressed regarding the importance and feasibility of such tests in daily practice.

Key Words: *Antibiotics, family practice, near-patient tests, physician views, point of care tests, primary care, qualitative research*

Infections are the commonest acute reasons why people consult [1]. Despite reductions in overall antibiotic prescribing in the community, there is still wide variation within and between countries in antibiotic prescribing which cannot be explained by differences in the epidemiology of infections [2,3]. Changing levels of antibiotic prescribing have been associated with reduced levels of antimicrobial resistance [4,5]. Previous research has identified a number of factors that influence GPs' decisions on whether or not to prescribe antibiotics in primary care. These include patient expectation and demand, personal habit, a desire to preserve the doctor–patient relationship, and the doctor's personal characteristics [6–10]. Some experts have suggested that an aetiological diagnosis should be made

wherever possible before antibiotics are prescribed [11]. Near-patient tests have been promoted as a way of targeting antibiotic treatment more appropriately, reducing antibiotic prescribing overall, and

Introducing changes in clinical practice should be based on in-depth appraisals of the factors that might influence change.

- General practitioners are enthusiastic about the concept of a rapid test to distinguish viral from bacterial infection.
- Strategies to promote uptake of such a test would be more effective if GPs' concerns were addressed regarding the *importance* and *feasibility* of such tests in daily practice.

thus ultimately acting as a tool to contain antibiotic resistance [12]. Indeed, in some countries, near-patient tests such as C Reactive Protein (CRP) have become part of the routine management of many common infections. In other countries, including the UK, such tests are seldom used in primary care. The theoretical background for our study is that promoting change in clinical practice, including the increased use of near-patient tests by clinicians, should be based on a “diagnostic analysis” to identify factors likely to influence the proposed change [13]. Lasting behaviour change is more likely if the proposed change is considered important (outcome expectations) and the individuals concerned are confident that ongoing change is feasible for them (efficacy expectations) [14,15]. Little is known about how clinicians practising in countries where near-patient tests are seldom used for guiding management of infections view the introduction of near-patient tests for common infections. We hypothesized that the introduction of near-patient tests would be more successful if more were known about the views of those who would be expected to use the tests. We therefore conducted a qualitative research study which explored UK general practitioners’ (GPs) perspectives on the possible introduction of near-patient tests for the management of infections in primary care.

Material and methods

Questions about near-patient testing were included in an interview study of GPs’ perceptions on the management of infections, antimicrobial resistance, and the use of fluoroquinolone antibiotics in primary care [16,17]. Qualitative research methods were chosen because we sought to identify issues important to the GPs themselves that we may not have considered, rather than simply quantifying our preconceived notions through the use of a fixed-response survey. A semi-structured interview guide was used, which included open questions about ways in which the management of common infections could be improved and a specific question about how GPs might respond to the introduction of a rapid, near-patient test that could distinguish viral from bacterial infections on the basis of a finger-prick blood test. We hypothesized that views on the management of infections and antimicrobial resistance would differ according to the GP’s level of fluoroquinolone antibiotic prescribing, and so purposively sampled respondents in the first instance from the 19 highest fluoroquinolone prescribing practices in south-east Wales, identified through seven quarters of Prescribing Audit Report and Catalogues (PARC) data. GPs were approached initially by

letter explaining the purpose of the study, followed by a telephone request for an interview. All GPs who were interviewed provided written informed consent. When 26 interviews had been conducted and no new themes emerged from these interviews, we recruited a theoretical sample of GPs from 13 practices that prescribed quinolone antibiotics close to the south-east Wales mean. We continued interviewing until no new themes emerged, which resulted in another 14 interviews. Interviews were conducted in GPs’ surgeries, audio-recorded, transcribed, and analysed using NUDIST software to aid organization and coding of data [18]. Interviewing and analysis were iterative in that emerging themes informed subsequent interviewing. A proportion (20%) of the data was double coded in order to maintain reliability. The study team discussed coding, emerging themes, and the interview guide throughout data collection and analysis. We sought to identify commonly expressed themes as well as unusual cases. This paper focuses specifically on data generated by the open question and subsequent probes about near-patient testing to distinguish viral from bacterial common respiratory infections. A thematic content analysis was conducted on GPs’ responses. This method of analysis is essentially a process of summarization, categorization, and counting frequency of responses [19]. GPs’ accounts were summarized into three basic categories: enthusiastic, moderately positive, and concerned. The reasons given for their attitudes were then categorized and counted. Data from GPs from high fluoroquinolone prescribing practices were compared with data from the practices that prescribed fluoroquinolone close to the south-east Wales mean.

Results

Twenty of the 40 GPs we interviewed expressed great enthusiasm for the concept of an efficient and effective near-patient test for common infections. A further 16 GPs were moderately positive about the potential introduction of a near-patient test to guide management of common infections, but nevertheless held some reservations. Four GPs expressed more significant concerns about the introduction of near-patient testing.

Positive responses

Typical comments included:

Oh my God it would be like Christmas, it would make my day. (GP23, high fluoroquinolone prescribing practice)

Oh yes we would love one of those, wouldn't we, it would be a great toy. (GP31, average fluoroquinolone prescribing practice)

Of the 20 extremely positive GPs, 11 spoke about the usefulness of being able to distinguish viral from bacterial infections. All but one of these were from high fluoroquinolone antibiotic prescribing practices.

I'm fascinated in this idea of near-patient test for viruses, I think that's fascinating. I've been so many times looking at, trying to work out some kind of rationale to decide whether a thing is viral or bacterial. (GP26, high fluoroquinolone prescribing practice)

Twelve of the 20 positive GPs suggested it would be particularly useful in helping "to sell" decisions not to prescribe antibiotics to their patients, for example:

Yes, if it was available, then yes. Then at least we can, um, even explain to the patient that, look, we have done it, it is a viral thing and the antibiotics are not going to work for this condition, then you can justify what you are saying to the patient. Because nowadays, patients want the evidence as well. (GP1, high fluoroquinolone prescribing practice)

Concerns about the "importance" of change

One GP felt that distinguishing viral from bacterial infection was not that important given that the course of the infection would be similar regardless of aetiology:

Even those throat infections that are bacterial, a lot of them are self-limiting anyway. And there is a lot of work to suggest that even if you do use antibiotics for the bacterial sore throats, you will reduce the illness by a day or two. So that is not necessarily going to alter things. (GP4, high fluoroquinolone prescribing practice)

Interestingly, this GP was from a high fluoroquinolone prescribing practice, which ran counter to the general trend of respondents from this group stressing the importance of being able to distinguish viral from bacterial infections.

Two GPs argued that even if the new test could distinguish viral from bacterial infection this would not be helpful in situations where uncomplicated viral illnesses develop into something more serious:

But would it be relevant to otitis media developing two days after the onset of a viral URTI? ... Right, well, if you said, "Well here's a little pin prick test that predicts two days from now they are going to have otitis media" that would be brilliant, and I would say "Yes please

may I have one of those?" (GP10, high fluoroquinolone prescribing practice)

Two emphasized that they would need to be provided with solid evidence concerning the performance of the test in accurately distinguishing viral from bacterial infection.

Eight GPs specifically mentioned that the test would be used only intermittently, for example, in situations where they were unsure of the aetiological cause on the basis of the clinical presentation, or in a situation of deadlock with a patient who definitely wanted antibiotics. Typical quotations include:

Because of constraints of time, I don't think one would do it every time because you know, our clinical skills of picking up bacterial versus viral are fairly good, but I think if we, if I ever got to an impasse with the patient who was welded to the chair, then it might be quite useful. (GP12, high fluoroquinolone prescribing practice)

I don't think I would use it on necessarily everybody, because like all tests, it's going to be wrong sometimes isn't it? And it's going to be those that you're unsure whether to prescribe for. Again there is that group that are clearly definite that they're not going to get, and it's the definite who are going to get. ... (GP31, average fluoroquinolone prescribing practice)

Concerns about feasibility (ongoing implementation)

Several raised concerns about the practicalities of implementing such potential diagnostic technology. For example:

I can imagine there will be a lot of implications in maintaining this equipment with calibration and all the things that go with maintaining near-patient testing. ... It would be useful, probably more useful in the winter ... maybe four months of the year. (GP9, high fluoroquinolone prescribing practice)

Three raised concerns about the costs involved and asked who would meet these additional costs. Three were concerned about the additional time taken up by near-patient testing in what was already a busy surgery. One expressed his concerns at some length:

In an ideal world yes ... I have seen 17 patients [so far] today. And each is given 10 minutes of appointment. If you end up admitting one, or end up doing some examinations, it takes longer. ... So in an ideal world, yes, I could test urines. I could test various things. H.pylori and various other things. ... (GP2, high fluoroquinolone prescribing practice)

While several suggested that patients would welcome the tests, three were concerned about acceptability to adult patients, and three specifically mentioned concerns about acceptability to children:

It might not work so well for children as they are scared enough about a spatula in the throat, never mind a pinprick. (GP 30, average fluroquinolone prescribing practice)

Discussion

Principal findings

This interview study with a purposive sample of GPs from high fluroquinolone antibiotic prescribing practices and a theoretical sample of GPs from practices prescribing fluroquinolone antibiotics close to the south-east Wales mean revealed high levels of enthusiasm for a possible near-patient, finger-prick blood test that could distinguish viral from bacterial infections. Many emphasized that such a test would be particularly valuable in “selling” decisions to patients not to prescribe antibiotics.

However, several concerns were raised about the importance of changing clinical practice in this way. Some GPs felt that such tests would add little to the performance of clinical diagnosis alone; that even if such tests could correctly identify viral infections, this did not rule out the possibility of deterioration and the development of complications; that these tests would be useful for a limited number of patients, and that they would have to be convinced by research evidence supporting the use of the tests. A systematic review found that there was a general lack of rigorous evaluations of near-patient tests in primary care [20]. However, qualitative research on the use of spirometry in primary care has found that it is associated with practice-related factors such as the presence of nurses to undertake the task, and practitioner-related factors such as clinician training and interest in the tests [21]. Concerns about their confidence in their ability to implement relevant changes in practice included time pressures; maintenance and quality control issues; cost; and patient acceptability, notably in children.

Interestingly, apart from GPs from high fluroquinolone prescribing practices more frequently specifically mentioning the value of distinguishing viral from bacterial infections, views did not differ markedly between the two samples. GPs who feel that distinguishing viral from bacterial infections is worthwhile might prescribe antibiotics more often since they wish to avoid “missing” an infection that might benefit from treatment. This needs further research. Systematic reviews of the effect of anti-

biotic treatment for common infections generally include studies that did not seek to make an aetiological diagnosis and so patients suffering from viral and bacterial infections are included [22–25]. Outcomes were found to be similar for those treated and those not treated with antibiotics.

Strengths and weaknesses of the study

It is possible that although GPs were from practices that as a whole frequently prescribed fluroquinolone antibiotics, those consenting to be interviewed were themselves not responsible for this aspect of the practice’s antibiotic prescribing. We were only able to obtain prescribing data at the level of practice and not at the level of the individual GP. These interviews asked about GPs’ perceptions concerning the possibility of introducing a new near-patient test, and do not reflect accounts regarding their actual use.

Implications

Based on these accounts, an ideal test for use in general practice to help manage common infections would identify which patients will benefit from treatment (and not just aetiology), predict deterioration and complications, be well supported by research evidence, be cheap and easy to maintain, and acceptable to patients, especially children. Strategies to promote the uptake of near-patient tests for these conditions may be enhanced through taking these perceptions into account.

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