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What do tests do for doctors? A qualitative study of blood testing in UK primary care

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Abstract

Background

Rates of blood testing are rising with significant geographical variability. Most research into diagnostic testing focusses on the role of tests in diagnostic decision-making.

Objective

The aim of this study was to explore the non-medical motives for blood testing by considering *what tests do for doctors*, through qualitative interviews with general practitioners.

Methods

We undertook twenty-three in-depth semi-structured interviews with UK general practitioners. Reasons for performing recent inflammatory marker blood tests were explored by reviewing GPs pathology inboxes to ground discussions in real-life clinical practice. Interviews were transcribed verbatim and analysed using a grounded theory approach.

Results

Blood tests offer doctors a tool to manage uncertainty; within a context of increased litigation, risk aversion and reduced continuity of care. Tests can also be offered as a 'gift' for patients, a way to be seen to be 'doing something'; in the social context of time pressures and perceived patient pressures. There was a tension however. On the one hand doctors talked about using tests for reassurance and as a 'gift' offering 'truth'. Yet paradoxically, they also discussed the challenges of uncertainty and anxiety from inconclusive test results.

Conclusion

Our study emphasises that defining 'unnecessary' blood testing may not be as simple as determining medical criteria for testing; psychosocial reasons may be equally valid and interlinked. Further research is needed to help GPs manage uncertainty within the context of a risk averse society, and to explore the congruence and dissonance between doctors' and patients' perceptions of testing.

MeSH keywords:

Primary Health Care

Diagnostic Tests, Routine

Qualitative Research

Diagnosis

Uncertainty

Background

Laboratory testing rates in the UK are increasing (1) with significant cost implications for the NHS. Variability in laboratory testing rates between GP practices are found which cannot be accounted for by sociodemographic indicators (2). Some variability may reflect inappropriate laboratory testing, with estimates from a UK Department of Health-commissioned review in 2008 calculating that approximately 25% of pathology tests were unnecessary, representing a huge potential waste (3).

A large body of literature, including systematic reviews (4), have evaluated strategies to improve the 'appropriateness' of blood tests; mostly defined in terms of reduced testing rates or improved adherence to guidelines. Few have considered the non-medical motives for testing, yet as Little *et al* stated in 1998 '*if psycho-social agendas are important in ordering investigations, then clinical guidelines which discuss only medical criteria may not be effective in reducing 'inappropriate' investigations*' (5).

Questionnaires have demonstrated that tests commonly fulfil non-diagnostic roles such as providing reassurance and reducing uncertainty (6). Qualitative studies looking broadly at factors influencing testing rates were systematically reviewed by Whiting *et al* who classified reasons for testing into; diagnostic factors, therapeutic and prognostic factors, patient-related factors, doctor-related factors and policy and organization related factors (7). In-depth exploration of doctors' non-medical reasons for blood testing are limited. One Dutch study exploring testing in diagnostic uncertainty showed that multiple factors could influence doctors; personal routines, tolerance of diagnostic uncertainty, time pressure and tactical motives for test ordering (8). Further exploration is warranted, especially given the current pressures of rising workload in UK general practice (9) and rising blood testing rates (1).

We undertook qualitative interviews with GPs, exploring their use of inflammatory marker blood tests in primary care. We have previously explored the role of these tests in the diagnostic process (10). In this paper we present data to explore the non-medical motives for blood testing by looking at the question '*what do tests do for doctors*'?

Methods

Recruitment

Primary care practices within the Bristol area were invited to participate via the e-bulletin of the West of England Clinical Research Network. Purposive sampling ensured a diversity of participants in terms of gender, years qualified, and practice role. In total twenty-three GPs were interviewed (**table 1**).

Interviews

JW carried out the interviews which took place in participants' GP practices. GPs were paid £60 for participating. Bristol University Faculty of Medicine and Dentistry Research Ethics Committee gave ethical approval. Interviews were face-to-face, in-depth and semi-structured, and continued until data saturation was achieved. GPs were invited to discuss recent cases of inflammatory marker testing by reviewing their pathology inbox to identify relevant cases. Prompts included reasons for testing, expectations of tests, management of results and explanation to patients. Results about the diagnostic utility of inflammatory markers have been published separately (10). Although questions focused on inflammatory marker tests much of the discussion related to blood testing generally. The interviewer emphasised that the research process was non-judgmental, and all interviews were confidential and anonymised, without names or practices linked to the comments. Interviews were audio-recorded using an encrypted device and lasted approximately 30 minutes.

Analysis

JW transcribed the first two interviews verbatim to increase familiarity with the data; thereafter an independent transcription service was used. Transcripts were checked, corrected and anonymised prior to analysis. Data collection and analysis were conducted concurrently, with early interviews informing questions for subsequent interviews. Data were read and re-read to aid familiarity. JW led thematic analysis, using NVivo. Two independent researchers (JW and IdeS) derived codes from four early transcripts, which were compared and refined in discussion to develop a single coding framework. The coding framework was applied to further transcripts and revised as necessary. Once coded, data were grouped into key categories or 'themes' arising from the data in interaction with the original research questions using a grounded theory approach.

Results

Aside from their role in diagnosis, blood tests also fulfil two main non-medical roles for GPs. First, blood tests can be used to help doctors manage uncertainty and anxiety; secondly they can act as a 'gift' for patients during consultations.

Testing to manage uncertainty

As shown in previous studies, all doctors talked about using blood tests for 'reassurance' both for patients and themselves. We found doctor anxiety and patient anxiety were intertwined and difficult to separate out:

What's the reason for the testing? Is it your concern? The patient's concern? Patient pressure on yourself? Or maybe sometimes your own concerns about are you getting the diagnosis right or not wanting to miss something? Int24, female, salaried, 21yrs experience

Some attributed the anxiety and pressure to test as coming from patients; claiming that '*patients love tests*' or '*like to be investigated*'. Others reflected that this anxiety came more from the need to provide '*reassurance*' for themselves:

I don't think it's patient anxiety, because if I told the patient, don't worry about it, I think they'd be quite happy to leave it and trust you.' Int5, male, partner, 6yrs experience.

Furthermore, doctors recognised that anxiety was fed by wider cultural values and pressures arising from a societal tendency towards risk aversion and health anxiety:

I think that as a nation people in general are more anxious about their health and that is transferring also to health professionals. Int1, male, salaried, 2yrs experience.

Test guidelines could help contain doctors' anxiety by providing structure and certainty. However, in general practice '*you do follow guidelines obviously but the conditions which fit the box are a minority*' (Int20, female, locum, 2 years' experience). In the absence of clear guidelines for vague or non-specific symptoms GPs developed their own unwritten mental shortcuts or heuristics, including

'batteries' of blood tests, often based on habit and experience rather than guidelines:

Someone who loses weight, someone who is very tired, someone who is just unwell in a non-specific way and you don't have a clue what's going on with him and you just do everything, a baseline battery of tests to orient yourself. Int20, female, locum, 2yrs experience.

Although admitting in the interview that this was not ideal practice, doctors reflected that these patterns of blood testing, once engrained could become self-perpetuating, making it difficult for them to think or question the rationale for them. Falling back onto these habits might be a way of helping doctors feel safe and provide a feeling of familiarity in the face of uncertainty.

It becomes more of a routine and then you forget why exactly you're doing it and then you kind of... it becomes a habit and you think it's something that you perhaps ought to do. Int23, female, salaried, 1yr experience.

Certain contexts such as doctors fear of litigation, previous experience of missing a diagnosis, being a trainee, and managing unknown patients tended to increase doctors' feelings of uncertainty and anxiety, leading to increased blood testing (see **table 2**).

Tests as a 'gift'

Tests in themselves were a way of providing action, a way to be seen to be 'doing something' and moving things forward. It was felt to be much harder to 'do nothing' and satisfy the patient:

It's like their chit for coming, it's their prescription, it's their leaflet, it's their whatever else, it's their referral. And I think it's a lot harder to get someone to walk in and walk out without giving them anything. Int7, male, partner, 7yrs experience.

The blood test could therefore be offered as a 'gift' for the patient, equivalent to a drug or referral. This allowed the doctor to show the patient that they were 'taking them seriously', 'affirming' them and showing they were being 'listened to'. The actual process of doing a blood test was perceived as satisfying for the patient and could provide 'healing in itself':

They sort of get a blood test as a sort of substitute for giving an antibiotic, like a sort of gift to the patient...and then they go away and are probably relieved that they've now been listened to and so that's healing in itself. Int9, female, partner, 23yrs experience.

That the test was part of the social interaction with the patient, rather than solely part of the diagnostic process, was well illustrated by one GP who suggested that if the two roles could be separated, then blood testing rates would be lower:

If you could say to every patient have the consultation, not make any decisions about it, and then write to them about what decisions, what tests need to happen, the number of blood tests people do would halve because you're not having that negotiation. Int7, male, partner, 7yrs experience.

The test's ability to perform the role of 'gift' was predicated on its power to offer something 'real' or 'objective', the promise of 'answers' or 'certainty'. Blood tests were described as a way of distinguishing between things that were 'real' or 'in your head'.

I think it's to have some validation that it's real ... they can almost go back and then say to relatives and other people and say 'look, I have got something, this test shows I've got it; it's not something I'm making up.' And I think that's quite a powerful thing. Int17, male, locum, 1yr experience.

Using the test as a 'gift' to manage the social interaction helped GPs manage challenging contexts such as pressure from patients, repeat attendance, time pressures, and lack of alternative treatment options (**table 3**).

The paradox of tests

Doctors reported telling patients about tests in terms of finding answers and providing objectivity. Normal or significantly elevated test results were considered helpful in providing reassurance or diagnosis. Yet there appeared to be a shift in how tests were described at follow up, with borderline or abnormal test results described in terms of uncertainties and risks:

You have to say you know if this test comes back or when it comes back and it's not normal, you know 'I'm not sure', and they say 'well why are you not sure?' and I say 'well it is not that kind of test really'. Int19, female, partner, 13yrs experience.

Patients were perceived to see tests as providing '*black and white*' answers, and doctors were perhaps complicit in perpetuating this perception. This could lead to challenges explaining results:

I think they are expecting me to say to them that everything is fine, that they don't need to worry. Probably most of them are expecting me to know by that that they don't have cancer as well. Which of course, if we discussed the tests specifically that is something I would disabuse people of. Int6, male, partner, 25yrs experience.

It was recognised that blood tests could therefore create anxiety and uncertainty for patients and doctors:

It is harmful because it causes stress and also because sometimes it throws up things that are only slightly wrong, but then you know one has a duty to follow it up and that means more tests, more stress and ultimately err you know some people just have slightly odd results. Int19, female, partner, 13yrs experience

So on the one hand, blood tests were used by doctors as '*reassurance*', to manage doctor-patient anxiety fed by wider cultural pressures arising from societal risk aversion and health anxiety. On the other hand, doctors talked about the reality of uncertainty in test results, which could paradoxically increase anxiety for doctors and patients.

Discussion

Summary of findings

Our research confirms that tests are more than just a tool for diagnosis, they also fulfil several non-medical roles for the GP in the consultation. It is tempting to see 'non-medical' motives for blood testing as being 'inappropriate'. However as Van der Weijden (8) concluded:

'GPs order tests for many purposes in the consultation, and non-medical motives may be just as rational and legitimate in the overall context of a particular patient's care as the medical decision making process'.

Our results show that these 'medical' and 'non-medical' motives for blood testing are closely interwoven; testing 'for reassurance', for risk management, and to reveal truth can have both biomedical and psychosocial rationale.

Links with existing literature

We have confirmed the findings of previous studies demonstrating non-medical reasons for testing. By exploring the perspective of *what do tests do for doctors* we have reframed these into two main domains. First, tests offer doctors reassurance in the face of uncertainty, particularly within a social context of increased litigation and risk aversion and reduced continuity of care. Second, tests can be offered as a 'gift' for patients, a way to be seen to be 'doing something' perceived as 'healing', particularly in the social context of time pressures and perceived pressures from patients.

Testing to manage uncertainty. The finding that blood tests help doctors manage uncertainty is in keeping with previous studies that have shown that doctors order more tests in medically unexplained symptoms (11). Some doctors in this study had a perception that patients wanted tests and sometimes 'pressurised' them to perform tests; previous studies also found doctors' perception of patient pressure is a strong predictor of investigation, referral and prescribing in primary care (12). Questionnaire and qualitative studies have challenged this, showing that most patients want explanation and emotional support rather than tests (13, 14). Although doctors in our study perceived that normal tests offered reassurance, systematic reviews found that normal diagnostic tests offer little reassurance for patients (15).

Qualitative studies into antibiotic prescribing have shown that patients and doctors can sometimes be talking at cross purposes about the 'seriousness' of the illness, with patients' expressions of anxiety perceived as a pressure for antibiotics (16). Similarly, it is possible that doctors misinterpret patient anxiety as a pressure for tests.

Tests as gift. We found that doctors use tests as a means of managing the psychosocial dynamic of the consultation, as a powerful 'revealer of truth' and 'gift'. This is in keeping with previous research, which found that patients hold high expectations of tests, perceiving them as 'like magic' (17).

Our findings suggest that doctors were sometimes complicit in perpetuating a view that tests provide 'truth' or 'certainty', whilst at the same time rationally being aware that tests cannot always provide definitive answers. Sah et al discussed how this can lead to '*investigation momentum*', which is where the psychological uncertainty experienced after an inconclusive test leads to additional testing in the '*relentless pursuit to resolve uncertainty*' (18). This is in keeping with the perspectives of Simpkin and Schwartzstein (19) that '*although physicians are rationally aware when uncertainty exists, the culture of medicine evinces a deep-rooted unwillingness to acknowledge and embrace it*'. This may lead to potential conflict between the quest to provide a 'gift' which will 'reveal truth' and the reality of inconclusive tests leading to increased uncertainty.

Limitations and implications for future research

A strength of this study was the use of real life cases which ensured data were grounded in daily clinical practice, thereby reducing the chances of cognitive biases or doctors presenting an idealised practice of what they think they '*should*' do. The focus of the interview was to discuss inflammatory marker blood tests which are by nature non-specific tests; this may lead to biases in the issues discussed, leading to an emphasis on uncertainty and unexplained symptoms. This research was limited to blood testing in primary care, rather than wider laboratory, imaging and endoscopy testing, where different issues surrounding access and risk may lead to different types of uncertainty. Interviews were carried out by JW, a GP academic registrar, allowing interviewees to feel comfortable discussing cases with a fellow clinician with shared understanding. However, this could influence the reflexivity of the interviewer who had her own *a priori* experiences of testing. Although it was emphasised that interviews were non-judgmental, some doctors may have felt uncomfortable discussing areas of clinical practice where they felt uncertain, defensive or deficient, and may therefore have reinterpreted their diagnostic argument for testing from intuitive to more rational thinking. Similarly, doctors who were less confident about testing may have declined to take part. In future work, it would be interesting to interview both doctors and patients, to explore the congruence and dissonance between doctors' and patients' perspectives. Further insights about the use of tests would come from observing the social interaction, exploring how doctors and patients discuss tests in the consultation.

Conclusions

The Academy of Medical Royal Colleges has called for doctors to take responsibility for cutting waste, with overuse of diagnostic tests being one of three core areas of suggested focus (20). The potential harm to patients has also been highlighted, with the initiative 'choosing wisely' (21) aiming to identifying areas of practice which are not supported by evidence, are free from harm, and truly necessary. Our study emphasises that defining 'unnecessary' blood testing may not be as simple as determining medical criteria for testing; psychosocial reasons may be equally valid and interlinked with medical criteria, and guidelines need to consider both aspects to alter doctors' blood testing rates. Further research and education is needed to help GPs manage uncertainty within a risk averse society.

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Table 1: Characteristics of participants (n=23)

		Male	Female
Role	GP Partner	6	6
	Salaried GP	1	4
	Locum GP	3	1
	GP Registrar		2
Years' experience	Newly qualified/trainee (first 5 years of qualification)	2	4
	Experienced (>5year experience)	8	9

Table 2: Factors influencing doctors' use of tests as a tool for risk management, uncertainty and anxiety

Factors influencing doctors testing rates	Example quotes
Lack of continuity	<i>I suspect I will have a lower threshold for doing blood tests, because I have more uncertainty, because I won't know the patient.... And you fill uncertainty by doing more investigations, probably. Especially if there's a risk of you missing something nasty. Int11, male, locum, 16yrs experience</i>
Fear of litigation	<i>You know, medico-legally, you know, these days you need to exclude every possible thing... so it's a good thing to have a test to back you up. Int16, female, partner, 14yrs experience</i>
Training	<i>I think in hospital you do [blood tests] on everybody that walks through the door, so it, yeah, you probably, I probably do do it more than I maybe should. Int8, female, GP registrar.</i>
Experience	<i>You do have bad experiences that change your thresholds for doing stuff and that kind of peaks and troughs - you do loads of them after you have a miss. Int7, male, partner, 7yrs experience</i>

Table 3: Factors influencing doctors' use of tests as a tool for managing the social interaction with patients

Factors influencing doctors testing rates	Example quotes
Time pressures	<i>There's not enough GPs, and perhaps GPs think, well, at the end of the day, this is what the patient wants. I can spend 25 minutes talking to the patient, but the patient really wants a blood test, and do you know what? I'm going to spend five minutes getting a blood test.</i> Int4, male, partner, 17yrs experience
Managing repeat attendance	<i>I think they, they'd had it for a while and had repeatedly attended. So I think, they wanted something more, I think they were probing for more investigations so I suggested some routine bloods.</i> Int12, female, GP registrar
Managing lack of treatment options	<i>Sometimes you are complicit, saying look, I don't have anything to offer, let's do a blood test, and they're sort of, oh that's great, that's what I want.</i> Int4, male, partner, 17yrs experience
Doctors' perception of patient pressures	<i>Patients are much more conscious of what's going on with them, they want answers, that they want clear answers. So you're pressurised to go to the 'nth degree.</i> Int20, female, locum, 2yrs experience