

ORIGINAL RESEARCH

Smoothing the passage of patients from primary care to specialist respiratory opinion

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Abstract

Aims: To assess whether information in general practitioner (GP) referral letters provides a basis for selection of diagnostic tests in patients referred for specialist respiratory advice.

Methods: We undertook a prospective study within a respiratory outpatients department to compare the diagnostic tests planned at three stages of the referral/specialist consultation process: i) using the GP referral letter alone; ii) using the referral letter and patient history; iii) using the referral letter, patient history, and clinical examination.

Results: Analysis of the content of GP referral letters revealed wide variations in referral information. A high proportion of tests selected using the referral letter alone were altered after specialist history-taking and examination. Far fewer changes were recorded between history-taking and examination.

Conclusions: Neither literature review nor our study support a system which bases diagnostic test selection on GP referral letters alone. However, our findings suggest that approaches which include specialist history-taking in advance of face-to-face consultation merit further investigation.

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Keywords respiratory, referral letter, information, diagnostic tests, consultation, primary care, secondary care, outpatients**Introduction**

Most patients are managed successfully in their entirety within primary care. In other cases, specialist advice and/or specialist investigations may be required to aid symptom and disease management. Referral processes vary according to the healthcare system in operation, some of which permit direct patient access and self-referral to specialists. However, within the UK's National Health Service (NHS), patients access specialist services via referral from primary care. At present many patients referred for a specialist opinion under the NHS often undergo multiple hospital attendances for consultation and investigations. Streamlining or omitting some of these attendances may be possible through a more optimal use of time and available information.

As a first step in a review of processes, the potential for a "straight to test" system was considered. Specifically, we

questioned whether information available from the general practitioner (GP), in the form of the initial referral letter, was sufficient to determine the investigations needed prior to a first specialist consultation. For the system to be changed to permit the selection of tests on this basis, referral information would need to be sufficiently complete and accurate to ensure a safe and effective system, and would need to be provided consistently by different GPs, in different regions, and irrespective of referral system. Therefore, we undertook a detailed literature review of studies analysing the content of GP referral letters. Twenty-four studies were identified, covering a wide range of specialties¹⁻⁷ and different referral systems.⁸⁻¹⁰ Several evaluated the impact of guidelines¹¹⁻¹⁴ or use of structured referral forms^{15,16} on referral information. Although the review provided some international diversity,¹⁷⁻²⁰ these analyses obviously only apply within a system where specialist

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services are accessed via GP referral. However, where this system is in use, studies show that key information is frequently omitted from referral letters and that use of generic templates and guidelines does not optimise this process. Two studies in Finland^{20,21} specifically evaluated asthma referrals from primary care to a specialist respiratory outpatients department. However, no 'straight-to-test' systems using information from referral letter alone were identified within a respiratory setting.

In view of this, and the inconsistencies in referral information evident from the literature review, we undertook a small prospective study within our own department. The study was designed to test the feasibility of a referral process which determines diagnostic tests and investigations on the basis of the GP referral letter alone within a UK NHS respiratory medicine outpatients department.

Methods

Fifty consecutive new patient referrals to a respiratory medicine outpatients department were studied. No breakdown or evaluation of the contents of the referral letters was undertaken; instead a more 'real world' approach was adopted, focussed upon whether the referral letters, as they stood, could provide a sufficient and consistent basis for selecting diagnostic investigations required by patients (Figure 1).

Two specialist respiratory consultants participated, one a consultant for 28 years and the other for 12 years. For each new referral the consultant reviewed the referral letter in the clinic prior to seeing the patient. At this point (stage 1) they recorded which diagnostic investigations, if any, they would order on the basis of the information in the referral letter alone. They then saw the patient in clinic in the usual way. After taking a full history they stopped and again recorded which investigations they would now order on the basis of the information in the referral letter and the history obtained from the patient (stage 2). At the end of the consultation the consultant recorded the actual diagnostic plan

Table 1. Total number of alterations in planned investigations at each stage in the referral/consultation process.

| | Tests added | Tests removed | Total number of alterations |
|--------------------|-------------|---------------|-----------------------------|
| Stage 1 to Stage 3 | 63 | 23 | 86 |
| Stage 2 to Stage 3 | 12 | 2 | 14 |

30/50 patients (60%) had tests added between stages 1 and 3
14/50 patients (28%) had tests removed between stages 1 and 3

based upon referral information, a full history from the patient and clinical examination (stage 3). The results were then analysed to identify what proportion of planned investigations remained unchanged between stages 1 and 3, and conversely, what proportion of investigations determined on the basis of the referral letter alone would have been altered by the end of the process (Table 1).

Results

Thirteen different types of test were ordered at stage 1 (on the basis of the GP referral letter alone), with 88 tests planned in total and a median of 2 (range 0-5) tests per patient. At stage 2 (referral letter + history-taking) this increased to 16 types of test, a total of 118, and a median of 3 (range 0-5). By stage 3 (referral letter + history-taking + clinical examination) 18 different tests were planned, total number 128, and a median of 3 tests per patient (range 0-6) (see Figure 2). Overall, the number of planned tests increased by 46% between stage 1 and stage 3.

There were distinct differences in the tests ordered at the

Figure 1. Study design.

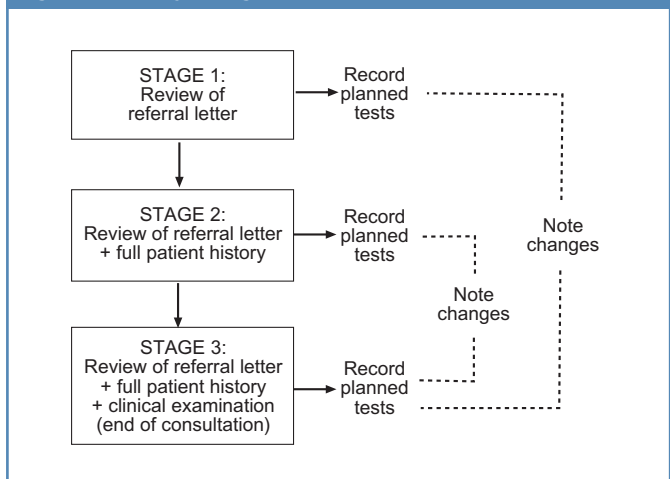


Figure 2. Boxplot to illustrate the alteration in number of planned investigations per patient at 3 stages in the consultation process.

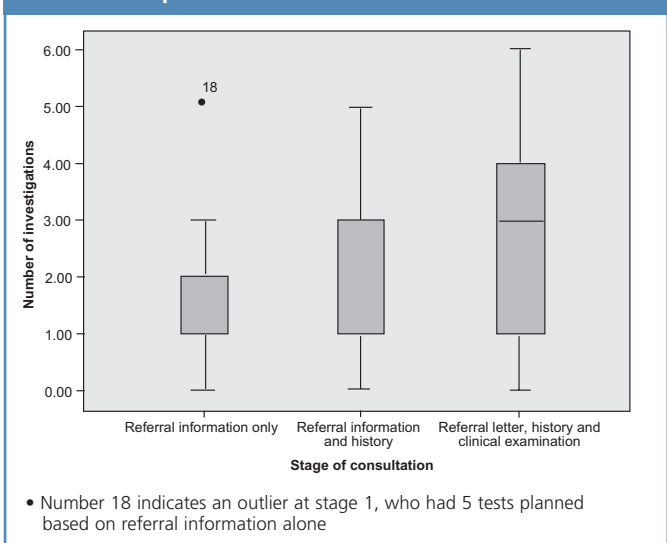


Table 2. Examples of the alteration in the proportion of different tests planned at the 3 stages of the process (% of total).

| | Stage 1 | Stage 2 | Stage 3 |
|---------------------------------|---------|---------|---------|
| Chest x-ray | 31 | 20 | 18 |
| Blood tests | 10 | 19 | 17 |
| Lung function tests | 19 | 17 | 16 |
| CT thorax | 5 | 10 | 10 |
| Home peak flow monitoring | 14 | 11 | 10 |
| Sleep studies | 8 | 6 | 5 |
| Cardiorespiratory exercise test | 1 | 1 | 2 |
| Asthma exercise test | 2 | 5 | 5 |
| Spirometry | 5 | 2 | 2 |
| Sputum examination for TB | 1 | 2 | 2 |

three stages, in type and number, with a higher agreement demonstrated between stage 2 and 3 (Table 2). Specifically, the proportion of more specialised or invasive tests (e.g. CT scans or bronchoscopies) increased after history-taking and clinical examination, while simpler and more accessible tests tended to decrease proportionately. Chest radiography, for example, decreased from 31% of the total planned tests at stage 1 to 18% at stage 3. Certain tests were made safer or more specific at stages 2 and 3 as a result of the additional information obtained. Examples include specifying sitting and lying vital capacity as part of lung function testing, identifying a latex allergy prior to arranging sleep studies, or requesting specialised blood tests (e.g. alpha-1 antitrypsin levels, thyroid function or immunoglobulin tests).

A total of 86 alterations were made to the planned tests between stage 1 and stage 3, with only 14 alterations between history-taking and the end of the consultation. The number of tests added and removed between the three stages is summarised in Table 1.

At each stage four patients were identified as not requiring any tests, but these were not the same patients throughout the process.

In general, a high proportion of patients in this study (72%) required an alteration to the diagnostic investigations thought to be necessary between review of the GP referral letter and end of the specialist consultation. However, only 20% of diagnostic plans were altered between history-taking and clinical examination.

Discussion

Current review of the literature shows that the quality and quantity of content in GP referral letters varies markedly not

just between specialties,¹ but between regions,²² between medical and surgical referrals,²³ and between paper and electronic referrals.¹⁰ The absence of previous investigation results was noted in more than 50% of the referral letters in three separate studies,^{3,22,24} patients' medical history was not routinely included in referral information,^{13,16,25} and allergies^{16,23} and clinical findings^{5,17,18,22} were generally poorly recorded. These omissions may be due in part to the fact that there is no real consensus amongst different specialties on the ideal information to be included in a referral letter, beyond an agreement on broad information categories. However, this does not alter the fact that the content of referral letters rarely permits accurate selection of investigations, chiefly because the information essential to this process is lacking, or because known inconsistencies in referral information suggest that it may be incomplete. The only previous studies of respiratory referral letters relate to patients with asthma, and show similar omissions to those in other specialty areas with, for example, only 50% of referral letters recording the results of necessary investigations,²⁰ and 41% recording current medications.²¹

Our study has obvious limitations in that the number of patient referral letters evaluated was small and the setting was limited to one NHS respiratory outpatients department. However, we have shown clearly that the tests ordered on the basis of a referral letter were substantially fewer than those ordered at the end of the consultation. The planned tests were also less diverse and tended to lack specificity. This could reflect an inadequately informed and potentially more cautious diagnostic approach using referral letter alone – in particular with regard to tests which are more expensive, invasive or complex (see Table 2). The removal of 23 planned tests between stage 1 and stage 3 of the study certainly indicates that referral information was insufficient to provide a reliable basis for test selection, and specific omissions were identified relating to allergies and co-morbidities.

No economic evaluation was carried out, but our findings suggest that a straight-to-test system based solely on information in the referral letter would result in unnecessary costs to the healthcare provider and the patient, due to redundant diagnostic testing and repeated hospital attendances for the correct tests (63 tests added after history-taking and clinical examination). A streamlined process aimed at providing a one- or two-stop shop would not be possible with this degree of inaccuracy, and there would be obvious ethical implications if patients underwent unnecessary investigations. Use of referral letters alone to select investigations cannot be supported from either the literature review or our study.

Given that a straight-to-test system on the basis of the referral letter alone is not currently feasible, the other possible

alternatives are as follows;

- Direct test access for GPs
- Standardised referral letters
- Shared electronic records
- Same-day testing
- Specialist history-taking by e-mail or telephone

'Direct access' systems in other specialties have demonstrated some favourable outcomes relating to waiting times, costs, patient satisfaction, effectiveness and safety.^{9,26-29} However, the figures on over-investigation in direct access pathways have implications for cost-effectiveness, patient ethics, and increased demand on diagnostic services.^{8,30} Direct access systems may also be less helpful in respiratory medicine than in other disciplines because of the sheer diversity of diseases (more than 40 common disorders) and the fact that certain symptoms such as breathlessness are shared with disorders of other systems (e.g. heart disease, pulmonary vascular disease, anaemia, obesity and hyperthyroidism).

National strategies have been shown to have some beneficial effects on the quality of referral letters. However, when asthma referral letters were evaluated against objective criteria³¹ at several disease centres in Finland following the establishment of a National Asthma Programme, 44-45% were still considered to be of poor quality, and the inclusion of necessary information remained inconsistent despite specific referral recommendations.^{20,21} Many specialties have produced and promoted standardised referral letters, guidelines and referral criteria, plus or minus specific education for GPs,^{2,14,26,27,32} as a means to improve referral information. There has been some success with the use of structured forms;^{15,16} however, the results are equivocal¹⁹ and passive dissemination of guidelines has not been found to be an effective strategy to improve referral information.^{2,11,13,33,34} Additionally, this approach leads to an unwieldy proliferation of national and local guidelines.

Theoretically, the establishment of shared electronic medical records could provide an alternative source of reliable information upon which to base test selection. Electronic health records are rapidly expanding, with the development of intra- and inter-site integration in a number of healthcare systems.^{35,36} However, the implementation is not straightforward, and important questions regarding the nature of recorded information, patient and healthcare provider access, and the overall impact on co-ordination of care, have yet to be resolved.³⁷ We therefore need to consider new approaches to streamline processes when specialist opinions are required.

Greater availability of same-day testing at the time of attendance for consultations would be advantageous and has proved effective elsewhere.^{38,39} However, the potential range of investigations indicated by our study would cause difficulties

for same-day availability, especially as the tests frequently require patient preparation, post-investigation care (e.g. bronchoscopies, CT scans), or an extended time period for completion (e.g. sleep studies, peak expiratory flow monitoring).

Ideally, accurate, up-to-date information would still be useful in advance of patient outpatient attendance to enable co-ordination of tests, patient preparation and service planning. The study undertaken within our department suggests that this may be possible through specialist history-taking in advance of face-to-face consultation. A close agreement on test selection after history-taking (stage 2) and physical examination (stage 3) was demonstrated; both the variety and proportions of planned investigations remained broadly similar (Table 2) between these two stages, and only 14 tests were altered (Table 1). Only two tests were removed between history-taking and the end of the consultation, and planned tests were made more specific, indicating a greatly reduced risk of unnecessary or repetitive testing. Information pertaining to allergies and co-morbidities was also obtained at stage 2, allowing for a diagnostic process that was more accurate, safer and more ethically sound than one based solely on referral information. A key advantage of this approach would be the establishment of a dialogue between the specialist and the patient at an early stage in the referral process. Early effective communication would provide the patient with the opportunity to volunteer information, and to question and clarify planned investigations, and would therefore have potential benefits for patient satisfaction and compliance.^{40,41}

The means by which a specialist history could be obtained requires further investigation. Systems which permit specialist history-taking by telephone, e-mail or letter have potential, although each is subject to limitations imposed by patient characteristics as well as access to, and comfort with, the technologies.⁴² The use of e-mail to facilitate triage and diagnosis has been successfully piloted in neurology¹⁵ and telephone consultations are already a common feature of primary and secondary care services in a large number of healthcare systems.⁴³⁻⁴⁵ Further study is now required to evaluate their effects on the management of new referrals and to determine which best facilitates a more streamlined process and patient-centred experience.

Conclusion

In respiratory medicine, a previously neglected area of study, our results suggest that accurate selection of tests is unlikely to be possible from the GP referral letter alone. Protocols or standardised letters will probably not be any more effective in respiratory medicine than in other specialties, and direct access systems are hampered by the diversity and non-specific

Summary box

A literature review of the quality and content of referral letters revealed only two previous studies specifically in respiratory medicine. Studies that have been performed in other areas do not lead to specific recommendations for altering letters to permit specialists to arrange appropriate investigations in advance. This study in a UK NHS respiratory outpatients clinic has shown that the investigations thought to be needed changed significantly after specialist history-taking compared to the tests chosen after reading the GP referral letter alone, but were only slightly altered by subsequent specialist clinical examination. To reduce the number of attendances made by patients for investigations, more study is needed on how specialists can take histories in advance and how to increase the availability of tests at the time of specialist consultation.

presentation of respiratory conditions. History-taking in advance of a specialist consultation alongside increased availability of same-day testing offers a way forward, and further investigation is now required to determine the most appropriate and effective means to achieve this.

Conflict of interest declaration

None relevant to this study.

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