

Key points

- › The spectrum of disease seen by health services has changed over time, but in many cases the mode of consultation has remained the same.
- › Patients can be encouraged to attend either by making consultations more convenient or by using reminders.
- › Preparation and follow-up are vital aspects of a successful consultation.
- › Patients who are helped to understand their treatment may be more compliant.

Royal Hallamshire Hospital Medical Out-Patients

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Optimal consultations for those with respiratory illness

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Educational aims

- › To increase awareness of the need for specialist consultation clinics to be configured in a manner that is convenient for patients with long-term respiratory conditions.
- › To encourage clinicians to consider the problems associated with non-attendance of patients in specialist clinics.
- › To provide clinicians with the necessary knowledge to improve patient satisfaction with specialist outpatient consultations.

Summary

Consultations with those with respiratory disease increasingly involve those with long-term conditions. Such conditions merit greater attention being paid to the selection of simple treatment regimens, self-management education, enhancing compliance and good communication. The design and running of a respiratory consultation service can be enhanced by addressing the best use of the time before the consultation, the consultation itself and methods for reinforcing messages during follow-up.

Over the past few decades, there has been a gradual change in the health burden from infectious to non-infectious diseases and an increasing focus on long-term care [1]. Increasingly, health services need to focus upon the delivery of chronic care for long-term disorders such as diabetes, hypertension, asthma, chronic obstructive pulmonary disease (COPD) and sleep apnoea syndromes. The management of long-term conditions necessitates more emphasis during follow-up consultations upon:

- the selection of effective and easy-to-use treatments and regimens;
- self management advice;
- enhancing compliance; and
- providing alternative and new methods of follow-up.

At the same time, patients are being

encouraged to take more responsibility for their own care, with the development of health policies designed to empower patients [2]. As a consequence, patients may become more vocal about preferences regarding treatment and care.

Owing to the rising pressures on the healthcare system there is also a need for specialists to see more new patients. However, clinicians' time is often constrained by government policies [3], and competing demands for time, such as management and administration tasks, or research and clinical governance. Therefore, both healthcare professionals and patients need to optimise follow-up care so that it is as efficient and productive as possible. This report will discuss ways of recognising the problems and limitations of consultations and introduce new alternatives for improving respiratory care.

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Prior to the consultation

In the UK in 2004–2005, there were 13.1 million new outpatient attendances for a specialist opinion and 31.6 million subsequent attendances for follow-up appointments [4]. More than 75% of these were referred by primary care practitioners for advice or consultation; approximately 4% were referred for a specific procedure [4].

During 2004–2005, national "did not attend appointment" rates in England were 9.1% and 11.3% for first attendance and follow-up appointments, respectively [5]. However, these figures were much higher for respiratory medicine: 14.2% of patients missed their first consultation and 14.8% missed their follow-up

appointment. Many studies have examined why patients do not attend hospital appointments. Reasons include long intervals after referral, spontaneous improvement of condition and disillusionment with care [6]. A number of studies reported forgetfulness to be a common reason [7, 8]. Others include family or personal illness [8], or family and other commitments [9, 10]. Specifically, in asthma clinics, low perception of severity of disease, impaired mobility and frustration with long waiting times in outpatient clinics contributed to non-attendance [11, 12].

Improving the attendance rate can be achieved in several ways. Studies have shown the benefit of reminder telephone calls, and sending information to patients prior to the appointment can also significantly improve attendance [13–16]. Several studies have suggested benefits from using e-mail and SMS text messaging to provide reminders to patients [17, 18].

The problems of non-attendance may have been addressed partially in the UK with the new Choose and Book system (www.chooseand-book.nhs.uk), which gives patients more flexibility, allowing them to pick convenient times and dates for their consultation. However, most outpatient consultations still take place during working hours between 09:00 and 17:00, Monday–Friday. Studies have shown that patients would like to have their appointments "out of hours" [19, 20]; one study showed that 62.5% of cardio-respiratory patients wanted weekend or evening clinics [20]. Considering the fact that some patients live with a long-term respiratory condition for 40–50 years, we need to consider greater flexibility in clinic hours to reduce the need for patients to take time off work.

Figure 1
Example of a leaflet for new patients attending an outpatient consultation.

5. Checking that you have understood what has been discussed.
A lot of information is given and received during a consultation and most of us find it difficult to remember or to understand everything that has been said. Please do not hesitate to ask the Doctor to repeat or to explain anything that you did not understand.

If the doctor gives you a prescription, but you are not sure how to take the medicine or for how long, please ask the doctor, nurse or pharmacist to write down the information for you here:

Medicine 1 _____ (Name)
Take _____ times a day for _____ / continuously.

Medicine 2 _____ (Name)
Take _____ times a day for _____ / continuously.

Medicine 3 _____ (Name)
Take _____ times a day for _____ / continuously.

Training of hospital staff
This is an organisation where medical students, nurses and other staff are trained and where qualified medical and nursing staff come for further training. Medical students sometimes attend consultations as an important part of their training. Patients play a very important part in the teaching work of the hospital and we appreciate your co-operation. However, if you do not wish to participate in this training, please tell the Receptionist before you go in to see the Doctor. It will not affect your treatment in any way.

Comments and suggestions
We aim to provide the best possible service and staff will be happy to answer any questions you may have. If you have any suggestions or comments about your visit, please either speak to the clinic staff, fill in a comment card or contact the Patient Advice and Liaison Service (PALS). PALS staff are able to listen to your concerns, suggestions or queries and help sort out problems on your behalf.

Alternatively, you may wish to express your concerns in writing to:
Derek Smith, Chief Executive
Hammersmith Hospitals NHS Trust,
Hammersmith Hospital, Du Cane Road,
London W12 0HS

Hammersmith Hospitals **NHS**
NHS Trust

**PREPARING FOR YOUR
OUTPATIENT
APPOINTMENT**

Information for patients

This consultation is for your benefit and it is often helpful to think in advance how you wish to use the time with the doctor to your best advantage.

Before your appointment, you may find it helpful to consider the following:

1. Your symptoms
It is often helpful to think about the major things that are concerning you and to make a list of them to discuss with the doctor:

2. Past illnesses and operations
The Doctor is likely to want to know whether you have been ill in the past. You might wish to make a note of any illnesses or operations before you come for your appointment.

3. Your medicines
The Doctor will need to know which medicines you are currently taking. It would be helpful if you brought either a repeat prescription form or the medicine packets to your appointment so that the Doctor can check the medicines you are using.

4. Your questions or concerns
For example, you may wish to ask the doctor:

- What treatments are available for my condition?
- What are the risks and benefits of the various treatments?
- How long will the treatment last?
- Is there anything I can do to help myself?
- What should I do if my condition doesn't improve or gets worse?
- Is there a local support group or national association for my condition?

You can write your questions and the answers that the doctor gives you in the spaces provided below and overleaf.

1. _____

2. _____

3. _____

4. _____

Preparing patients for their consultation

Many patients seeing a specialist for the first time have not been prompted to think through what they want to obtain from the consultation. Furthermore, time within a consultation may be short and sometimes patients have not brought to the consultation information that would aid the doctor in their management [21]. For these reasons, some clinicians have found it useful to send patients leaflets outlining how they may prepare for their consultation (figure 1). This may contain information for the patient about the whereabouts of the clinic, what they should bring with them to the clinic (e.g. all their current

medication), and it may give the patient a space to record their medical and surgical history, so that this information is obtained in advance and time is not wasted during the consultation trying to recall the details. Such leaflets can also encourage the patient to list the questions they wish to ask the doctor. Unexpressed fears and concerns can act as a barrier to subsequent optimal outcomes.

It is also important to consider whether all referrals are appropriate, and specialists may wish to consider providing easier telephone or electronic access so that referring physicians can check the appropriateness of the referral in advance or ask whether any investigation should be carried out before referral to the specialist. Direct access to respiratory investigations by the general practitioner (GP) may also obviate the need for a specialist opinion [22, 23].

During the consultation

Doctors have been shown to be poor at identifying patients' expectations during consultations [24]. This can lead to patient dissatisfaction and reduced compliance. However as PECK *et al.* [25] have shown, this may be due to patients presenting at their appointment with vague expectations.

VAN BAAR *et al.* [12] showed that patients have two main motives for attending respiratory follow-up appointments. These were the wish to improve disease control and the realisation that

non-attendance might jeopardise their relationship with their doctor. In this study of asthma patients, patients stated that the follow-up appointment helped them understand and control their asthma and keep up to date with new treatments.

Increasingly, guidelines suggest that patients take more control and selfmanage their conditions [1]. However whether patients want and are able to do this is another matter. The first British Asthma Guidelines in 1990 [26] stated that, "as far as possible, patients should be trained to manage their own treatment rather than be required to consult a doctor before making changes". A subsequent Cochrane systematic review has shown that patients who self manage their asthma have fewer days off work, lower nocturnal symptoms and fewer hospitalisations [27]. A Cochrane review of COPD self management has shown that action plans aid people with COPD in recognising exacerbations and taking appropriate medication, although further work is required to assess whether this improves outcomes in COPD [28]. In the INSPIRE study [29], 88% of patients with asthma stated that they were very confident that they could self-manage their asthma, but using Asthma Control Questionnaire (ACQ) scores to classify patients demonstrated that just over half of the patients had uncontrolled asthma, one-fifth had "not well-controlled" asthma and only 28% had well-controlled asthma [30]. Patients' perception of their asthma control during the previous week was different from the ACQ results. Patients with uncontrolled asthma wrongly scored their asthma as being "relatively

Key aspects in improving outpatient consultation

Preparing patients for their consultation

Telephone reminders significantly increase attendance rates for specialist consultations

Information leaflets and additional information sent to patients prior to their appointment improve attendance

Patients would like the opportunity to attend consultations "out of hours"

During the consultation

Patient motivation to attend follow-up includes a desire to understand how to control their respiratory condition

Patients may overestimate their level of asthma control and specific questions need to be asked

Eliciting and relieving patients' fears and concerns is essential

Patients with functional illiteracy may not admit that they do not understand treatments or investigations

Alternative styles of consultation

Telephone consultations are useful for suitable patients who have difficulty attending hospital follow-up

Video and telemedicine may be useful tools for measuring day-to-day control of symptoms

Tools such as pictograms, cartoons and videos are a useful aid for reinforcing important messages for patients

good". RABE *et al.* [31] found, in a study of 2,803 subjects, that 46% had daytime symptoms, 30% experienced sleep disturbance one a week and 63% reported limitation in activities including sports, household activities and jobs [31]. This illustrates that patients' beliefs that their asthma is well controlled may differ from physicians' goals. In consultations, physicians need to ask questions designed specifically to objectively assess whether a condition is being optimally managed. An example, for asthma, is the Royal College of Physicians' "Three Questions" [32].

A vital part of the consultation is the exchange and reinforcement of information between clinicians and patients. Good communication has been related to greater satisfaction for both doctors and patients [33] and also better compliance [34].

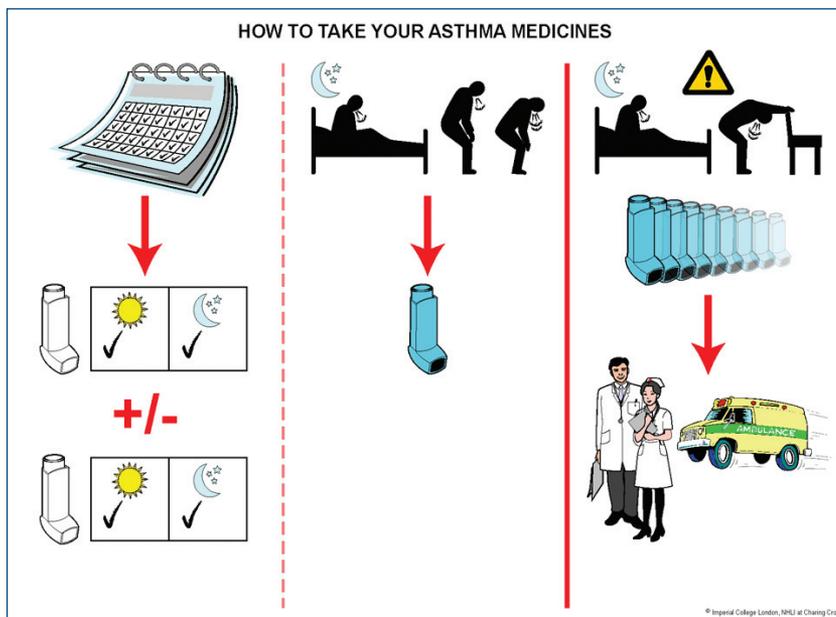
Clinicians and healthcare professionals may also have difficulty recognising which patients have reduced literacy skills and may thus fail to modify their consultation to ensure full patient understanding. Studies in the US among asthma patients, and studies in the UK in other patient groups, have shown unexpectedly high levels of functional illiteracy (approximately 15%) [35, 36]. As a consequence of low literacy skills, health information is often not understood by patients, which results in patients knowing and understanding less about their disease [35, 37, 38] and having poorer health outcomes [39–41]. Patients with health illiteracy have been shown to have more difficulty understanding and using medication properly [35]. It is important to remember that patients with low literacy skills often feel there is some stigma associated with

this and have often not even confided in family members. Sometimes they will make excuses about written material, claiming that they have forgotten their spectacles, or they will say that their writing is messy and ask for help.

Two tools have been widely used with patients to measure literacy levels objectively. The first is the Rapid Estimate of Adult Literacy in Medicine test [42], which is a medical word-recognition and pronunciation test. Patients read three lists of words, which increase in complexity. They receive a score from 0–66 and an American school grade level. The second is the "TOFHL" (test of functional health literacy in adults) test, which measures numeracy and reading comprehension [43]. However, while useful in research, these tools sometimes distress patients, and in clinical practice a realisation of the size of the problem of functional illiteracy is probably all that is needed to ensure that other methods are used to reinforce advice. These may include tools such as pictograms, leaflets or videos [44–49]. Pictorial representations have been shown to improve recall of medical instructions in a clinical setting [47], and pictograms have been shown to be an effective tool, enhancing consultations and aiding understanding [50]. Figure 2 shows an example of a pictorial asthma treatment plan that can be used as an alternative to a written plan. These tools are useful for reinforcing important messages in all patients, not just those with reduced literacy skills. Any information given out during a consultation should be easily understood and useable. Patient information leaflets should be as simple as possible, well designed and suit their purpose [51]. The "reading age" should be checked and targeted at the appropriate patient group. Flesch reading ease and Flesch Kincaid reading grades can be determined using software available on most desktop computers.

Time constraints often limit the effectiveness of consultations, but doctors frequently do not give patients enough time to discuss their problems and air their fears and concerns. In some studies, doctors have been shown to interrupt patients within 18 seconds of the patient starting to talk [52], even though patients will often only talk spontaneously for, on average, 92 seconds [53]. Patients generally want to see the same doctor each time they come for a consultation and they want the doctor to give them enough time to say what they want to say [54].

Figure 2
An example of a pictorial asthma treatment plan for metered-dose inhalers.



Specifically, patients with respiratory disease are reported to want information about their medications, side-effects, any new treatments, what causes the disease and what will happen in the future [55]. In the UK's National Patient Survey, only 42% of patients stated that someone had told them enough about the side-effects of their medication [56].

Consultations can be stressful events for patients and they take place in an environment that is often perceived to be alien. One study, by FALVO *et al.* [57], has shown that after their consultation, patients remember very little (less than 50%) of what they were told. Another study has shown that patients and doctors often have different views regarding the key messages that should be taken away from a consultation [58]. This situation can be improved in several ways: by giving the patient an information leaflet with details of their individual medication, for instance [59]. As part of the UK National Health Service plan [2], letters sent from a specialist to a patient's GP are now routinely copied to the patient. A further step is to dictate these letters in front of the patient so that the patient can highlight any discrepancies [60]. However, patients often do not fully understand the terminology within the letters they receive and letters to the referring doctor have been shown to be quite difficult for patients to read [61]. We have designed a respiratory glossary (figure 3) and shown that this seems to be a useful tool in aiding respiratory patients' understanding of letters sent to their GP [62].

Are there alternatives to the traditional face-to-face consultations? Traditional face-to-face consultations can be difficult for patients to attend, and often mean taking time off work or school. Previous studies have shown that patients would like the opportunity to attend "out of hours" or weekend clinics. However, this is not always possible, especially for patients who also require additional investigations, such as X-rays, at the same time. Some patients' conditions, though, are such that it is suitable for them to have a telephone consultation with the doctor (figure 4).

Telephone consultation has been used extensively for asthma reviews in primary care and has increased the number of patients reviewed [63]. Our experience is that such telephone consultations have few drawbacks, are more convenient for appropriate patients and produce patient satisfaction equivalent to that recorded after face-to-face consultations. Patient confidentiality

is one of the key issues with telephone consultations, and it is important to check that you have the correct person when starting the call, that it is still convenient to have a telephone consultation and that the patient is in a suitable confidential environment. It is necessary to have reviewed the case notes fully prior to making the call as it is difficult to read the notes during a telephone consultation and gaps or silences may be confusing to patients. It is also important to review and summarise what the patient has said at a few points throughout the consultation, in order to ensure there has been no misunderstanding. At the end of the consultation it is useful for both the patient and clinician to summarise and repeat any key points and for the clinician to inform patients of what will happen next, regarding the organising of the next appointment or investigations, for instance.

Other new technologies for medical consultations also merit consideration. Studies of video consultations have been carried out, especially in dermatology in New Zealand. Such strategies may need to be trialled in respiratory clinics [64]. Mobile phone monitoring systems are now being used, which report patients' day-to-day symptoms back to the clinician [65]. E-mail consultations and other methods of telemedicine are also increasing in popularity and need evaluation [17, 66–68].

Specialist outreach clinics as part of a multi-dimensional intervention can improve access, use of services and other outcomes [69]. However, one study has shown they provide limited interaction between specialists and practice staff, and have little educational impact [70]. In practice, the improvements in patient satisfaction

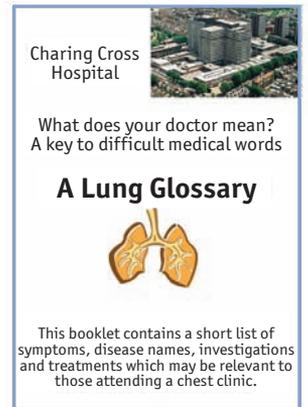


Figure 3

A respiratory-specific glossary booklet produced for patients attending respiratory clinics. It is sent to patients, along with a copy of a letter to their GP, to aid understanding of the letter.



Figure 4

Telephone consultations may be suitable for about one-third of patients needing follow-up for respiratory conditions.

Educational questions

1. What percentage of the hospital patient population has been shown by studies to have functional illiteracy?
 - a) 5%.
 - b) 15%.
 - c) 30%.
2. What percentage of the content of a consultation can patients recall?
 - a) <50%.
 - b) >50%.
3. On average, for how long will patients spontaneously talk within a consultation if they are not interrupted?
 - a) 62 seconds.
 - b) 92 seconds.
 - c) 122 seconds.

Suggested further reading

How user friendly is your outpatient department? A guide for improving services. London, Royal College of Physicians, 2004.

Nielsen-Bohman L, Panzer AM, Kindig DA. Health Literacy: A Prescription to End Confusion. Washington, National Academies Press, 2004.

Vitocca M, Scalvini S, Spanevello A, Balbi B. Telemedicine and home care: controversies and opportunities. *Breathe* 2006; 3: 148–158

and reduced waiting lists are offset by the increased travelling times and time spent away from secondary care for those hospital specialists participating in programmes. The cost benefit of providing outreach clinics as an alternative to hospital outpatient consultations is probably minimal.

Conclusion

Much medical care is still delivered in the same manner that it was 30, 40 or more years ago.

Whilst there is no need to change a system that delivers good results, the system has to recognise that the types of illnesses we see are now very different to those seen previously, and that patients are increasingly as busy as doctors are. Long-term supervision of long-term respiratory conditions will be most satisfactory for doctor and patient when both arrive optimally prepared, at mutually convenient times and have a discussion that reflects a partnership of care, whether that is undertaken face-to-face, on the telephone or using new technology.

References

1. *Stepping Stones to Success: an Implementation, Training and Support Framework for Lay Led Self-management*. London, Expert Patients Programme, 2005.
2. Department of Health. *The NHS Plan: a plan for investment, a plan for reform presented to Parliament by the Secretary for Health by Command of Her Majesty*. London, The Stationery Office, 2000.
3. *The Working Time (Amendment) Regulations 2003*. London, The Stationery Office, 2003.
4. The Information Centre. *Reporting Patient Journeys: Hospital Outpatient Activity in 2003–04 and 2004–05 (First Report and Quality Assessment of Experimental Data from Patient Level Record Systems)*. London, National Health Service, 2006.
5. Department of Health. *Consultant outpatient attendances, all specialities, NHS organisations 2004–2005 Quarter 4. dataset QMOP*. www.performance.doh.gov.uk/hospitalactivity/data_requests/download/outpatient_attendances/op_05_q4_specialty.xls. Date last updated: May 27, 2005. Date last accessed: February 9, 2007.
6. Hamilton W, Round A, Sharp D. Patient, hospital, and general practitioner characteristics associated with non-attendance: a cohort study. *Br J Gen Pract* 2002; 52: 317–319.
7. Murdock A, Rodgers C, Lindsay H, Tham T. Why do patients not keep their appointments? Prospective study in a gastroenterology outpatient clinic. *J R Soc Med* 2002; 95: 284–286.
8. Pal B, Taberner DA, Readman LP, Jones P. Why do outpatients fail to keep their clinic appointments? Results from a survey and recommended remedial actions. *Int J Clin Pract* 1998; 52: 436–437.
9. Sharp DJ, Hamilton W. Non-attendance at general practices and outpatient clinics. *BMJ* 2001; 323: 1081–1082.
10. Richardson A. Failed appointments in an academic orthodontic clinic. *Br Dent J* 1998; 184: 612–615.
11. Gruffydd-Jones K, Nicholson I, Best L, Connell E. Why don't patients attend the asthma clinic? *Asthma Gen Pract* 1999; 7: 36–38.
12. van Baar JD, Joosten H, Car J, et al. Understanding reasons for asthma outpatient (non)-attendance and exploring the role of telephone and e-consulting in facilitating access to care: exploratory qualitative study. *Qual Saf Health Care* 2006; 15: 191–195.
13. Hardy K, O'Brien SV, Furlong N. Information given to patients before appointments and its effect on non-attendance rate. *BMJ* 2001; 323: 1298–1300.
14. Dockery F, Rajkumar C, Chapman C, Bulpitt C, Nicholl C. The effect of reminder calls in reducing non-attendance rates at care of the elderly clinics. *Postgrad Med J* 2001; 77: 37–39.
15. Gatrad AR. A completed audit to reduce hospital outpatients non-attendance rates. *Arch Dis Child* 2000; 82: 59–61.
16. Roberts N, Meade K, Partridge MR. The effect of telephone reminders on attendance in respiratory outpatients clinics. *J Health Serv Res Policy* 2007; 12: 69–72.
17. Partridge M. An assessment of the feasibility of telephone and e-mail consultation in a chest clinic. *Patient Educ Couns* 2004; 54: 11–13.
18. Leong KC, Chen WS, Leong KW, et al. The use of text messaging to improve attendance in primary care: a randomized controlled trial. *Fam Pract* 2006; 23: 699–705.
19. Churchill AJ, Gibbon C, Anand S, McKibbin M. Public opinion on weekend and evening outpatient clinics. *Br J Ophthalmol* 2003; 87: 257–258.
20. Feeney CL, Roberts NJ, Partridge MR. Do medical outpatients want 'out of hours' clinics? *BMC Health Serv Res* 2005; 5: 47.
21. Keeble W, Cobbe SM. Patient recall of medication details in the outpatient clinic. Audit and assessment of the value of printed instructions requesting patients to bring medications to clinic. *Postgrad Med J* 2002; 78: 479–482.
22. Hassett R, Meade K, Partridge MR. Enhancing the accuracy of respiratory diagnoses in primary care: a report on the establishment of a Community Respiratory Assessment Unit. *Prim Care Respir J* 2006; 15: 354–361.
23. Wolfenden H, Bailey L, Murphy K, Partridge MR. Use of an open access spirometry service by general practitioners. *Prim Care Respir J* 2006; 15: 252–255.
24. Perron NJ, Secretan F, Vannotti M, Pecoud A, Favrat B. Patient expectations at a multicultural out-patient clinic in Switzerland. *Fam Pract* 2003; 20: 428–433.
25. Peck BM, Ubel PA, Roter DL, et al. Do unmet expectations for specific tests, referrals, and new medications reduce patients' satisfaction? *J Gen Intern Med* 2004; 19: 1080–1087.
26. British Thoracic Society, Research Unit of the Royal College of Physicians of London, Kings' Fund Centre, National Asthma Campaign. *Guidelines for management of asthma in adults: 1 - Chronic persistent asthma*. *BMJ* 1990; 301: 651–653.
27. Gibson PG, Powell H, Coughlan J, et al. Self-management education and regular practitioner review for adults with asthma. *Cochrane Database Syst Rev* 2003; 1: CD001117.
28. Turnock A, Walters E, Walters J, Wood-Baker R. Action plans for chronic obstructive pulmonary disease. *Cochrane Database Syst Rev* 2005; 4: CD005074.
29. Partridge MR, Molen TV, Myrseth SE, Busse WW. Attitudes and actions of asthma patients on regular maintenance therapy: the INSPIRE study. *BMC Pulm Med* 2006; 6: 13.
30. Juniper EF, Svensson K, Mork AC, Stahl E. Measurement properties and interpretation of three shortened versions of the asthma control questionnaire. *Respir Med* 2005; 99: 553–558.

31. Rabe KF, Vermeire PA, Soriano JB, Maier WC. Clinical management of asthma in 1999: the Asthma Insights and Reality in Europe (AIRE) study. *Eur Respir J* 2000; 16: 802–807.
32. British Thoracic Society, Scottish Intercollegiate Guidelines Network. British guideline on the management of asthma. *Thorax* 2003; 58: Suppl.1, i1–i94.
33. Lewin SA, Skea ZC, Entwistle V, Zwarenstein M, Dick J. Interventions for providers to promote a patient-centred approach in clinical consultations. *Cochrane Database Syst Rev* 2001; 4: CD003267.
34. Apter A, Reisine S, Affleck G, Barrows E, Zuwallack R. Adherence with twice-daily dosing of inhaled steroids: socioeconomic and health-belief differences. *Am J Respir Crit Care Med* 1998; 157: 1810–1817.
35. Williams M, Baker D, Honig EG, Lee T, Nowlan A. Inadequate literacy is a barrier to asthma knowledge and self-care. *Chest* 1998; 114: 1008–1015.
36. Gordon M, Hampson R, Capell H, Madhok R. Illiteracy in rheumatoid arthritis patients as determined by the Rapid Estimate of Adult Literacy in Medicine (REALM) score. *Rheumatology* 2002; 41: 750–754.
37. Gazmararian JA, Williams MV, Peel J, Baker DW. Health literacy and knowledge of chronic disease. *Patient Educ Couns* 2003; 51: 267–275.
38. Williams MV, Baker DW, Parker RM, Nurss JR. Relationship of functional health literacy to patients' knowledge of their chronic disease: a study of patients with hypertension and diabetes. *Arch Intern Med* 1998; 158: 166–172.
39. Gazmararian J, Baker D, Parker R, Blazer DG. A multivariate analysis of factors associated with depression: evaluating the role of health literacy as a potential contributor. *Arch Intern Med* 2000; 160: 3307–3314.
40. Schillinger D, Grumbach K, Piette J, et al. Association of health literacy with diabetes outcomes. *JAMA* 2002; 288: 475–482.
41. Weiss BD, Hart G, McGee DL, D'Estelle S. Health status of illiterate adults: relation between literacy and health status among persons with low literacy skills. *J Am Board Fam Pract* 1992; 5: 257–264.
42. Davis TC, Long SW, Jackson RH, et al. Rapid estimate of adult literacy in medicine: a shortened screening instrument. *Fam Med* 1993; 25: 391–395.
43. Baker DW, Williams MV, Parker RM, Gazmararian JA, Nurss J. Development of a brief test to measure functional health literacy. *Patient Educ Couns* 1999; 38: 33–42.
44. Partridge MR. Asthma education: more reading or more viewing? *J R Soc Med* 1986; 79: 326–328.
45. Plimpton S, Root J. Materials and strategies that work in low literacy health communication. *Public Health Rep* 1994; 109: 86–92.
46. Murphy PW, Chesson AL, Walker L, Arnold CL, Chesson LM. Comparing the effectiveness of video and written material for improving knowledge among sleep disorders clinic patients with limited literacy skills. *South Med J* 2000; 93: 297–304.
47. Houts P, Bachrach R, Witmer J, Tringali C, Bucher J, Localio R. Using pictographs to enhance recall of spoken medical instructions. *Patient Educ Couns* 1998; 35: 83–88.
48. Delp C, Jones J. Communicating information to patients: the use of cartoon illustrations to improve comprehension of instructions. *Acad Emerg Med* 1996; 3: 264–270.
49. Sechrest RC, Henry DJ. Computer-based patient education: observations on effective communication in the clinical setting. *J Biocommun* 1996; 23: 8–12.
50. Houts P, Doak C, Loscalzo M. The role of pictures in improving health communication: a review of research on attention, comprehension, recall, and adherence. *Patient Educ Couns* 2006; 61: 173–190.
51. Davis TC, Wolf MS, Bass PF III, et al. Low literacy impairs comprehension of prescription drug warning labels. *J Gen Intern Med* 2006; 21: 847–851.
52. Beckman HB, Frankel RM. The effect of physician behavior on the collection of data. *Ann Intern Med* 1984; 101: 692–696.
53. Langewitz W, Denz M, Keller A, Kiss A, Ruttimann S, Wossmer B. Spontaneous talking time at start of consultation in outpatient clinic: cohort study. *BMJ* 2002; 325: 682–683.
54. Ratcliffe J, Van Haselen R, Buxton M, Hardy K, Colehan J, Partridge M. Assessing patients' preferences for characteristics associated with homeopathic and conventional treatment of asthma: a conjoint analysis study. *Thorax* 2002; 57: 503–508.
55. Caress AL, Luker K, Woodcock A, Beaver K. An exploratory study of priority information needs in adult asthma patients. *Patient Educ Couns* 2002; 47: 319–327.
56. Commission for Health Improvement. National Patient Survey 2003. www.healthcarecommission.org.uk/nationalfindings/surveys/patientsurveys/nhspatientsurvey2003.cfm. Date last accessed: February 9, 2007.
57. Falvo D, Tippy P. Communicating information to patients: patient satisfaction and adherence as associated with resident skill. *J Fam Pract* 1988; 26: 643–647.
58. Parkin T, Skinner TC. Discrepancies between patient and professionals recall and perception of an outpatient consultation. *Diabet Med* 2003; 20: 909–914.
59. Sandler DA, Heaton C, Garner ST, Mitchell JR. Patients' and general practitioners' satisfaction with information given on discharge from hospital: audit of a new information card. *BMJ* 1989; 16: 1511–1513.
60. Lloyd BW. A randomised controlled trial of dictating the clinic letter in front of the patient. *BMJ* 1997; 314: 347–348.
61. Roberts NJ, Partridge MR. How useful are post consultation letters to patients? *BMC Med* 2006; 4: 2.
62. Brown C, Roberts NJ, Partridge MR. Does use of a glossary aid patient understanding of the letters being sent to their general practitioner? *Clin Med* 2007. (In press.)
63. Pinnock H, Bawden R, Proctor S, et al. Accessibility, acceptability, and effectiveness in primary care of routine telephone review of asthma: pragmatic, randomised controlled trial. *BMJ* 2003; 326: 477–479.
64. Oakley AM. Teledermatology in New Zealand. *J Cutan Med Surg* 2001; 5: 111–116.
65. Ryan D, Cobern W, Wheeler J, Price D, Tarassenko L. Mobile phone technology in the management of asthma. *J Telemed Telecare* 2005; 11: 43–46.
66. Neville R, Warner F, McCowan C, Hoskins G. E-mail consultations: two years' experience from asthma information. *Br J Gen Pract* 2000; 50: 256–257.
67. Car J, Sheikh A. Email consultations in health care: 2 - acceptability and safe application. *BMJ* 2004; 329: 439–442.
68. Car J, Sheikh A. Email consultations in health care: 1 - scope and effectiveness. *BMJ* 2004; 329: 435–438.
69. Gruen R, Weeramanthri T, Knight S, Bailie R. Specialist outreach clinics in primary care and rural hospital settings. *Cochrane Database Syst Rev* 2004; 1: CD003798.
70. Gillam SJ, Ball M, Prasad M, Dunne H, Cohen S, Vafidis G. Investigation of benefits and costs of an ophthalmic outreach clinic in general practice. *Br J Gen Pract* 1995; 45: 649–652.

Suggested answers

1. b
2. a
3. b