

# Mayo Clinic Proceedings

## Medication Literacy Is a 2-Way Street

Effective spoken and written communication of information about medicine to patients is crucial to the success of treatments. The effectiveness and safety of medicines cannot be maximized unless patients understand their role in the medicine-taking process. However, we generally communicate this information badly. Great effort and much time and money are devoted to the front end of developing medicines, but at the end of that process, when the medicine is actually handed over to patients, much is left to chance.

Hospital discharge offers a good opportunity for exploring how to communicate with patients to support the best use of their medicines. Two articles in this issue of *Mayo Clinic Proceedings* examine what happens when people are discharged from the hospital with new medicines.<sup>1,2</sup> Both throw into sharp relief the inadequacies of support systems for patients' use of medicines at home, the medicines on which the success of much of modern health care is based.

Kripalani et al<sup>1</sup> followed up patients after hospital stays for acute coronary syndrome. They found that 22% had not filled their prescriptions and that 21% had some difficulty understanding the purpose of their medicines. In their patient population, literacy skills were limited. The second article by Maniati et al<sup>2</sup> featured a group of relatively well-educated patients given at least 1 new medicine while in hospital. When telephoned at home 1 to 2 weeks later, 14% were not aware they had been given a new medicine, and 36% did not know the name of the medicine or its purpose. As the authors rightly point out, success of outpatient treatment could hinge on patients' understanding of their new medications. Knowing the name and purpose of a medicine is clearly central to being able to use it appropriately.

Arrangements for postsurgical follow-up are routinely made for patients who are discharged after surgery. Without this care, success of the surgery could be compromised. However, we appear not to follow the same principles when we prescribe medicines for patients in ambulatory care or at discharge. Providing information and support is especially important for patients who receive long-term therapy or who must self-administer medications indefinitely. However, doctors and pharmacists do not seem to be giving instructions to many people in ambulatory care about how to use their medicines.<sup>3,4</sup>

[See also pages 529 and 554](#)

When information is given orally, much will be forgotten, and so patients need back-up documents to which they can refer at home. However, we know from studies in the United States and the United Kingdom that written information, such as labels and leaflets, do not currently meet patients' needs.<sup>5,6</sup> A recent systematic review of the evidence found that most people do not value the leaflets they receive.<sup>7</sup> The review showed that people want both spoken and written information, but they do not want the latter to substitute for the former. It is interesting that neither of the featured articles refers at all to written information on medicines. This suggests that such information was either not provided or not thought to be of value.

The system for transmitting written information on medicines is fragmented; patients might receive a leaflet, now called Consumer Medicines Information (CMI), that is generated in the pharmacy via computer. Most patients in the United States receive this leaflet with their medicines. Some also receive a package insert produced by the manufacturer or a Medication Guide (required and approved by the Food and Drug Administration).<sup>8</sup>

Patients might receive 1 or more of these leaflets when discharged from the hospital, depending on the drug and the location where it was dispensed. The CMI leaflets, the most often distributed of the leaflets, have been found to be

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poorly understood by many patients.<sup>5</sup> A comparison of CMI leaflets from the United States, Australia, and the United Kingdom found that only 50% of US leaflets gave information about contraindications and precautions, such as preventing drug interactions.<sup>9</sup> Information on the medicine container, which all patients should receive as a minimum, has also been shown not to meet patients' needs in the United States.<sup>10,11</sup> This finding concurs with similar research undertaken in the United Kingdom more than 20 years ago.<sup>12</sup> Written information that people receive with their medicines needs to be improved.

Even if patients do receive usable spoken and written information, it could be argued that this information is still not sufficient. Once patients return home with their medicines (whether from the hospital or the physician's office), both passive and active methods of communication must be available. Maniaci et al<sup>2</sup> found that 32% of patients did not know whom they would ask if they had any questions about their medicines. Such "after-sales service" is routine in many sectors but not in medicine. We know that 50% of people using long-term medicines do not take them as prescribed.<sup>13</sup> This fact was reflected in the 48% of patients in the Kripalani study<sup>1</sup> who reported some level of nonadherence. Kripalani et al found that 22% of patients had not had their prescriptions filled, and UK research showed that a substantial proportion of patients who were newly prescribed long-term medication quickly became nonadherent.<sup>14</sup>

Follow-up is crucial for patients taking medicines at home, especially in the first few months. Such continuing engagement with patients after discharge or consultation needs to be considered, given that patients are often under stress and are likely to be less receptive to information when in hospital, particularly when they have just been told they have a serious illness that requires lifelong treatment. For example, in the study by Kripalani et al, patients might have had severe chest pain.

Detailed information and advice about medicines is not best imparted when patients leave the hospital or have just been given a diagnosis. Such information might be better communicated a few days after their return home. Again, in ambulatory care, discussing new medicines might be more appropriate after patients have had time to absorb the information about diagnosis and treatment. In both these studies, investigators contacted patients by telephone, which is one potential route for providing patients with support at home.<sup>15</sup> Over the longer term, regular review of patients' medication is needed. Such clinical medication review has been shown to be effective and acceptable<sup>16</sup> and to provide a welcome opportunity for patients to talk about any problems they have with their medicines.<sup>17</sup> Pharmacists are well placed to undertake medication reviews, although the evidence of effectiveness is equivocal.<sup>18</sup>

Both the articles published in this issue of *Mayo Clinic Proceedings* invoke the term *health literacy*, an area that is rightly receiving attention internationally and is often mentioned in statements about public health.<sup>19</sup> The landmark Institute of Medicine report, *Health Literacy: A Prescription to End Confusion*,<sup>20</sup> defines the *capacity* of the recipient of information in terms of ability to understand health information and make appropriate decisions about health. However, such literacy becomes relevant only if patients are actually presented with information that can be interpreted and understood. Maniaci et al<sup>2</sup> note that patients had "limited comprehension and understanding of medications; thus, functional health literacy of the study population was poor." This cannot necessarily be inferred because it could be that the information was unavailable to patients or was not understandable; *health literacy* and *health knowledge* are not the same. The authors note that patients in this study were relatively well educated, and a more relevant conclusion might be that their knowledge was poor because they had not been given any information or that information they had been given was inadequate (rather than that their health literacy was poor). In the United Kingdom, the term *medication literacy* has been used in a government document that also recommended the use of more "benefit" information in medicine leaflets, along with a "headline" section.<sup>21</sup>

Improving patients' ability to understand and make appropriate decisions depends on both improving their literacy and improving the quality of information they are given. As the Institute of Medicine report notes, responsibility has to be shared. We need to help patients improve their literacy skills; at the same time, we need to develop information and support that require as few skills as possible.

Of the 4 categories of adherence-improving interventions cited by Osterberg and Blaschke<sup>22</sup> in their review of medication adherence, 2 are related to communication: patient education and improved communication between physicians and patients. For written information to be effective, it needs to be read and understood. In the study by Maniaci et al,<sup>2</sup> only 11% of patients recalled being told about adverse effects, and only 22% could name at least 1. Patients also need to know how likely these adverse effects are, and better ways of expressing this risk have been proposed.<sup>23</sup> In Europe, pharmaceutical companies now have to test their patient leaflets (which must be supplied with all medicine packs) on potential users, assessing whether they can find and express in their own words the key points in the leaflet.<sup>24</sup>

The US Surgeon General has noted that "The rapid advance of medical discovery has far out paced [sic] our efforts in patient education."<sup>25</sup> Others have noted that, al-

though progress is being made, the pace of change in health literacy is not fast enough.<sup>26</sup> We do need to improve health literacy, but it does not matter whether people have high or low levels of health literacy if they are not given usable information to interpret and understand; problems relating to medication and health literacy are a 2-way street.

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1. Kripalani S, Henderson LE, Jacobson TA, Vaccarino V. Medication use among inner-city patients after hospital discharge: patient-reported barriers and solutions. *Mayo Clin Proc.* 2008;83(5):529-535.
2. Maniaci MJ, Heckman MG, Dawson NL. Functional health literacy and understanding of medications at discharge. *Mayo Clin Proc.* 2008;83(5):554-558.
3. Metlay JP, Cohen A, Polsky D, Kimmel SE, Koppel R, Hennessy S. Medication safety in older adults: home-based practice patterns. *J Am Geriatr Soc.* 2005;53(6):976-982.
4. Svarstad BL, Bultman DC, Mount JK. Patient counseling provided in community pharmacies: effects of state regulation, pharmacist age, and busyness. *J Am Pharm Assoc.* 2004;44(1):22-29.
5. Krass I, Svarstad BL, Bultman D. Using alternative methodologies for evaluating patient medication leaflets. *Patient Educ Couns.* 2002;47(1):29-35.
6. Raynor DK, Savage I, Knapp PR, Henley J. We are the experts: people with asthma talk about their medicine information needs. *Patient Educ Couns.* 2004;53(2):167-174.
7. Raynor DK, Blenkinsopp A, Knapp PR, et al. A systematic review of quantitative and qualitative research on the role and effectiveness of written information available to patients about individual medicines. *Health Technol Assess.* 2007;11(5):1-160.
8. Shrank WH, Avorn J. Educating patients about their medications: the potential and limitations of written drug information. *Health Aff (Millwood).* 2007;26(3):731-740.
9. Raynor DKT, Svarstad B, Knapp P, et al. Consumer medication information in the United States, Europe, and Australia: a comparative evaluation. *J Am Pharm Assoc.* 2007;47(6):717-724.
10. Davis TC, Wolf MS, Bass PF III, et al. Low literacy impairs comprehension of prescription drug warning labels. *J Gen Intern Med.* 2006;21(8):847-851.
11. Wolf MS, Davis TC, Shrank W. To err is human: patient misinterpretations of prescription drug label instructions. *Patient Educ Couns.* 2007 Aug; 67(3):293-300. Epub 2007 Jun 22.
12. Barber ND, Raynor DK. Understanding medicine labels: the effect of plain English. *Pharm J.* 1989;242:13-17.
13. Haynes RB, McDonald HP, Garg AX. Helping patients follow prescribed treatment: clinical applications. *JAMA.* 2002;288(22):2880-2883.
14. Barber N, Parsons J, Clifford S, Darracott R, Horne R. Patients' problems with new medication for chronic conditions. *Qual Saf Health Care.* 2004; 13(3):172-175.
15. Haynes RB, Yao X, Degani A, Kripalani S, Garg A, McDonald HP. Interventions for enhancing medication adherence. *Cochrane Database Syst Rev* 2000;(1): CD000011. DOI:10.1002/14651858.CD000011.pub2.
16. Zermansky A, Petty D, Raynor DK, Freemantle N, Vail A, Lowe CJ. Randomised controlled trial of clinical medication review by a pharmacist of elderly patients receiving repeat prescriptions in general practice. *BMJ.* 2001;323(7325):1340-1343.
17. Petty D, Knapp PR, Raynor DK, House AO. Patients' views of a pharmacist-run medication review clinic in general practice. *Br J Gen Pract.* 2003; 53(493):607-613.
18. Holland R, Smith R, Harvey I. Where now for pharmacist led medication review [editorial]? *J Epidemiol Community Health.* 2006;60(2):92-93.
19. Ratzan SC, Parker RM. Health literacy—identification and response [editorial]. *J Health Commun.* 2006;11(8):713-715.
20. Nielsen-Bohman L, Panzer AM, Kindig DA, eds, Institute of Medicine of the National Academies. *Health Literacy: A Prescription to End Confusion / Committee on Health Literacy, Board on Neuroscience and Behavioral Health.* Washington, DC: National Academies Press; 2004.
21. Medicines and Healthcare Products Regulatory Agency Committee on Safety of Medicines. Always read the leaflet: getting the best information with every medicine: report of the Committee on Safety of Medicines Working Group on Patient Information. London, UK: TSO The Stationery Office; 2005. <http://www.mhra.gov.uk/home/groups/pl-a/documents/publication/con2018041.pdf>. Accessed April 2, 2008.
22. Osterberg L, Blaschke T. Adherence to medication. *N Engl J Med.* 2005; 353(5):487-497.
23. Knapp PR, Raynor DK, Berry DC. Comparison of two methods of presenting risk information to patients about the side effects of medicines. *Qual Saf Health Care.* 2004;13(3):176-180.
24. Raynor DK. Communicating with patients on the risks and benefits of pharmaceuticals. *Eurohealth.* 2006;12(1):15. [http://www.euro.who.int/Document/Obs/Eurohealth12\\_1.pdf](http://www.euro.who.int/Document/Obs/Eurohealth12_1.pdf). Accessed March 31, 2008.
25. Carmona RH. Health literacy: a national priority. *J Gen Intern Med.* 2006;21(8):803.
26. Parker RM, Kindig DA. Beyond the Institute of Medicine health literacy report: are the recommendations being taken seriously [editorial]? *J Gen Intern Med.* 2006;21(8):891-892.