

## Good prescribing: better systems and prescribers needed

Simon Maxwell MD PhD

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See related research articles by Shojania and colleagues and by Villeneuve and colleagues, published Mar. 23

Prescribing is at the core of the therapeutic efforts made by doctors both in hospital and in primary care. Observational studies have highlighted the challenges to delivering high-quality clinical outcomes for patients in both settings. Avoidable adverse effects of medicines are a common cause of admission to hospital<sup>1</sup> and occur frequently in those who are admitted.<sup>2</sup> Medication errors are also common. A recent prospective observational study in the United Kingdom showed that 10% of prescriptions in hospital contained errors and that senior doctors were culpable almost as frequently as recent graduates.<sup>3</sup> Patients are often denied some of the most evidence-based treatments while being maintained on those that are unnecessary.<sup>4,5</sup> Finally, rates of adherence to long-term therapy are often low,<sup>6</sup> which calls into question the confidence that patients have in their physicians and the medicines they prescribe.

For prescribing to be of high quality, it should be safe, effective, cost-effective and patient-centred.<sup>7</sup> Perhaps we should not be surprised that it often falls short of this ideal. Prescribing is a complex task that requires diagnostic skills, knowledge of medicines, communication skills, an understanding of the principles of clinical pharmacology, appreciation of risk and uncertainty and, ideally, experience. The demands placed on prescribers are also rising because of the increased choice of medicines available, expanding indications for drug treatment, greater complexity of treatment regimens and associated polypharmacy, and a growing elderly patient population. The other major challenge is the pace of change in therapeutics. New evidence on effectiveness, emerging safety signals and changing costs means that what is considered good prescribing today may not necessarily be so in a year.

The sheer volume of prescriptions means that some poor outcomes are inevitable. However, every effort should be made to improve quality and minimize risk. Two research articles published recently in *CMAJ* illustrate the difficulties in achieving such improvements. In the first, Shojania and colleagues report their findings from a systematic review of randomized studies evaluating improvements in processes of care from computer reminders delivered to clinicians during routine electronic ordering or charting activities.<sup>8</sup> Across the 28 trials (reporting 32 comparisons), the authors found that computer reminders improved adherence to processes of care (appropriate prescribing or ordering of tests) by a median of only 4.2%. Systems that required users to enter a response provided larger improvements (median 12.9%). The largest

### Key points

- Prescribing often falls short of the ideal of being safe, effective, cost-effective and patient-centred.
- Improving prescribing practices and clinical outcomes is an important challenge for all health care providers.
- Interventions targeted at individual prescribers and the systems in which they work can help to improve prescribing.
- Important approaches include undergraduate and postgraduate education, local formularies, incentive schemes, review and feedback on prescribing, and computerized physician order entry with decision support.

effect (median 16.8%) was seen in one institution with a well-developed, “homegrown” clinical information system. Although there is little information about the baseline performance or clinical outcomes, these modest gains should make us reconsider the extent of our expectations for computer reminder systems.

In the second article, Villeneuve and colleagues report on their investigation into the efficacy of a collaborative model involving family physicians and community pharmacists in improving the care of patients with dyslipidemia.<sup>9</sup> The pharmacists counselled patients about their medications and lifestyle changes, requested laboratory tests, monitored the effectiveness and safety of medications and patients’ adherence to treatment, and adjusted medication dosages. Compared with patients assigned to receive usual care (presumably reflecting a more cautious or cost-effective approach of the pharmacists), patients in the collaborative care group were much less likely to receive high-potency statins, had more visits with health care professionals and more laboratory tests, and were more likely to have their lipid-lowering treatment changed and to report lifestyle changes. After a year of follow-up, the mean reduction in low-density lipoprotein (LDL) cholesterol in the collaborative care group was small and only slightly better than the reduction in the usual care group (crude difference  $-0.2$  mmol/L; adjusted difference  $-0.05$  mmol/L).

From the Clinical Pharmacology Unit, University of Edinburgh, Clinical Research Centre, Western General Hospital, Edinburgh, UK

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Taken together, these articles imply that achieving meaningful improvements in prescribing behaviour is difficult. However, any pessimism should be mitigated by the apparent success of the pharmaceutical industry. With a careful and well-funded combination of attractive literature, development of personal relationships, product placement, and educational events often involving subtle support for new products by key opinion leaders, the pharmaceutical industry very effectively manages to change prescribing habits. As Moynihan put it, "Food, flattery and friendship are all powerful tools of persuasion, particularly when combined."<sup>10</sup> But the industry is also methodical in its approach: drug representatives get to know their physicians, analyze what they do and use this as the basis for seeking change.<sup>11</sup>

Could publicly funded health care systems be as effective as the pharmaceutical industry? Although they cannot flex the same financial muscle, they do have power, as employers and regulators, to exert their own influence on individual prescribers and the environments in which they work.

Prescribers could be better equipped to confront the pressures they face. First, and foremost, all doctors need to start their careers with a firm understanding of clinical pharmacology, the science that underpins rational use of medicines. This will enable them to critically evaluate the many sources of information they get and respond to change. Medical schools should respond to the widespread concerns about adverse medication events by making competence in prescribing a prominent feature of their curricula and assessments. This education process should continue into the postgraduate years, with protected time to attend professional development programs led by the service rather than by the pharmaceutical industry. Prescribers are influenced by meaningful feedback on quality markers, such as antibiotic use,<sup>12</sup> and should be given information that allows them to reflect on and change their current prescribing practices. Clinical units should audit adverse medication events at regular intervals.

Health care systems could do more to improve matters. The development of formularies can change prescribing practice, especially if they are locally owned and supported.<sup>13</sup> Incentive schemes are also an effective means of promoting the use of evidence-based and cost-effective prescribing.<sup>14</sup> The checking and review of prescriptions by prescribing colleagues and other professionals such as nurses and pharmacists could be embedded into routine practice. Pharmacists not only prevent errors reaching patients<sup>3</sup> but can also support the prescribing process by educating patients and improving clinical outcomes.<sup>9,15</sup> Notwithstanding the reservations that

arise from the study by Shojania and colleagues,<sup>8</sup> computer reminder systems, and their associated decision support tools, will play an increasingly important role in minimizing error and helping physicians to make good prescribing choices. However, despite their increasing sophistication, these reminder systems do not prescribe, they simply provide further information on which decisions can be based. Prescribers will still be called upon to make judgments about warnings and other information alerts that will, ultimately, be influenced by their individual training and instincts.

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**Correspondence to:** Prof. Simon Maxwell, Clinical Pharmacology Unit, University of Edinburgh, Clinical Research Centre, Western General Hospital, Edinburgh EH4 2XU, UK; [s.maxwell@ed.ac.uk](mailto:s.maxwell@ed.ac.uk)