

The importance of good prescribing support when determining patients' risks and benefits cannot be underestimated

Stephen Chapman, professor of prescribing studies at Keele University, and his team have devised a computer-based system that can be used to determine specific prescribing recommendations for patients with type II diabetes, based upon individual patients' known risks. In this article, Stephen tells us how using his decision tool we could all 'win at the prescribing game'

The challenges of prescribing

After years of wishful thinking, lobbying and political manoeuvring independent prescribing by pharmacists is now a reality. Having staked their claim to be experts on medicines, their management and their uses, pharmacists now have the opportunity to 'up their game' and take full responsibility for diagnosis and treatment if they want to be an integral part of the prescribing team. It is becoming a crowded arena, however. For physicians, it's obviously familiar territory, while nurses have a strong numerical advantage. Both of these practitioner groups have the added bonus of being on home ground, particularly when working in primary care chronic disease management clinics.

For pharmacists in primary care, the majority of prescribing takes place in the context of clinics so differential diagnosis may not always be the issue. Taking a comprehensive clinical history is important as are the necessary clinical skills, such as measuring blood pressure correctly — again the nurses have an advantage here because they have been doing this for years.¹ Beyond this, comes the penultimate act of the interview — the choice of the drug for intervention.

The final component is possibly the most important — making sure that the patient understands their medication and

how to take it. Adherence to medicines has historically been poor — particularly in long term conditions. The WHO considered it to be the most important modifiable factor that could improve health outcomes.² It therefore follows that if a pharmacist can help with adherence their patient's health should benefit.

Some caution needs to be exercised here not to slip into a paternalistic or hierarchical approach — although as pharmacists we have a profound belief in the value of medicines, our patients may not share those views, or they may have very real concerns. These need to be explored thoroughly and an agreement or 'concordat' reached. Although it is perhaps frustrating for those who believe in the benefit of drug intervention, it is important to remember that after a concordant discussion a patient may still decide not to take their medicine — the key thing here is that both parties should understand why.^{3,4}

Many factors influence prescribing decisions

So, if prescribing was as straight forward as taking a history, selecting the right drug and ensuring a concordant interview, surely patients would be treated optimally all the time? We know that is not the case, and we know that there is much more to prescribing than the biomedical process.⁵ Variations in prescribing occur that cannot

be explained by factors such as demographics or morbidity patterns.⁶ The reasons for variation are manifold, and the influences brought to bear are legion. For instance, who says what about a medicine, rather than what is said has been shown to have a profound effect on drug choice.⁷ Also, the way clinical trial results are presented has been shown to have a considerable effect, to the extent that the same results presented in different iterations can change the prescriber's final choice.⁸

Evidence and liability; the need for guidelines

Pharmacists, in theory, should have some advantage here, because the majority have a background in critical appraisal. Indeed, if one is taking a legal viewpoint, pharmacists could be considered the 'senior partners' among new prescribers, and as such, standards are expected to be high. The Bolam defence will extend to pharmacists and they will be expected to prescribe at a level that will be 'judged against standards to be expected from a responsible body of his or her peers'.⁹

Possibly the best way to demonstrate that you are prescribing in a way deemed appropriate by the relevant authorities is to follow evidence-based guidelines. Research has shown that pharmacist supplementary prescribers follow guidelines better than doctors.¹⁰ But can this be easily sustained by

Decision support

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independent prescribers who may be dealing with several different therapeutic areas (and in theory, anything in the *BNF*)? The ideal, as requested by Dougal Jeffries in his letter to the *British Medical Journal*¹¹ is to have a computerised algorithm available at the point of prescribing. Such tools have already been demonstrated to consistently improve clinical practice.¹²

Decision analysis and decision support

Our first foray into the development of decision support systems was set against the background of sub-optimal prescribing of aspirin in the secondary prevention of stroke. At that time, it was suggested that health care professionals had difficulties making risk-benefit assessments for the use of aspirin in patients such as the elderly and those with complex co-morbidities.

One helpful definition of computerised decision support is the 'provision of assessments or prompts specific to the patient and selected from a knowledge base on the basis of individual patient data'.¹³ This and other literature on the subject, suggested that the patient-specific element of decision support would help place the relevant information regarding the risks and benefits of taking aspirin into perspective. In other words, decision support should be able to define potential patient outcomes for the 'individual' patient that might present to a health care professional as opposed to the 'average' patient quoted in clinical trials.¹⁴

The basis of the Keele decision support tool profiles and model values

The system that we developed at Keele used an extensive series of patient profiles based on a combination of nine risk factors including age, time since onset of first stroke, gender, presence of diabetes and hypertension, and concurrent use of a non-aspirin non-steroidal anti-inflammatory drug (NSAID). The profiles and model values were identified after a comprehensive literature search in addition to a primary analysis of stroke patient data held on the General Practice Research Database (GPRD). In practice, the user entered the

Box 1. Selected GP quotes from evaluation of decision support system

GP 3: 'This is the kind of thing you would want to have in the consultation ... you immediately get reassurance that this is the right course of action, and you can explain it to the patient using the [pictorial images]'

GP 4: '... it's not going to take long ..., but the amount of additional information you give to the patient is great. The amount of extra confidence you have in making the decision which previously hasn't really been possible ... will make us sleep a lot easier ...'

GP 9: 'I would be very tempted to do this on everyone. You give them then a very specific, very individualised risk. At the moment we are quoting the average figure'

GP 15: 'I think the thing itself is excellent, it's concise ... I don't think you can make it any clearer'

individual patient profile into the computerised decision support system through a series of drop-down menus. This then generated a screen that displayed a prescribing recommendation plus explicit risk-benefit information, both in terms of preventing a subsequent event and also any increased risk from GI bleed. More detailed risk information was also available to the user in a variety of graphical formats, illustrated in Figure 1.

Evaluation of the stroke decision support tool

The system was evaluated among a group of 15 local GPs who were asked to work through a series of hypothetical case studies that we had developed, each outlining patients with complicating co-morbidities. First, each practitioner completed an initial questionnaire before being given a demonstration of the tool and the opportunity to familiarise themselves with it. Each GP was then asked to complete a second questionnaire, but this time with access to the tool. This was followed by a semi-structured interview with each GP.

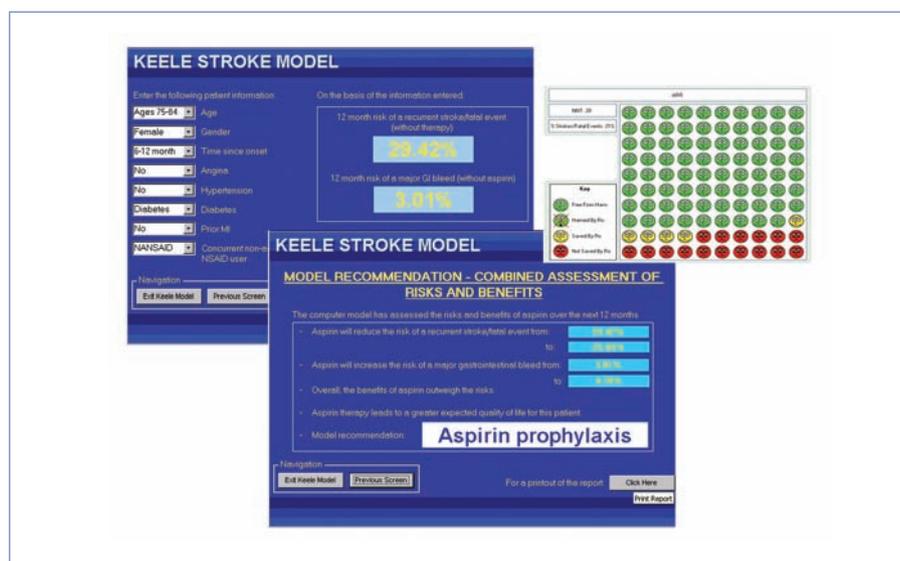


Figure 1. Keele stroke model drop-down screens obtained when the user inputs their patient profile data into the computerised decision support algorithm. Prescribing information and explicit risk-benefit information is created for individual patients in a variety of formats as shown here.

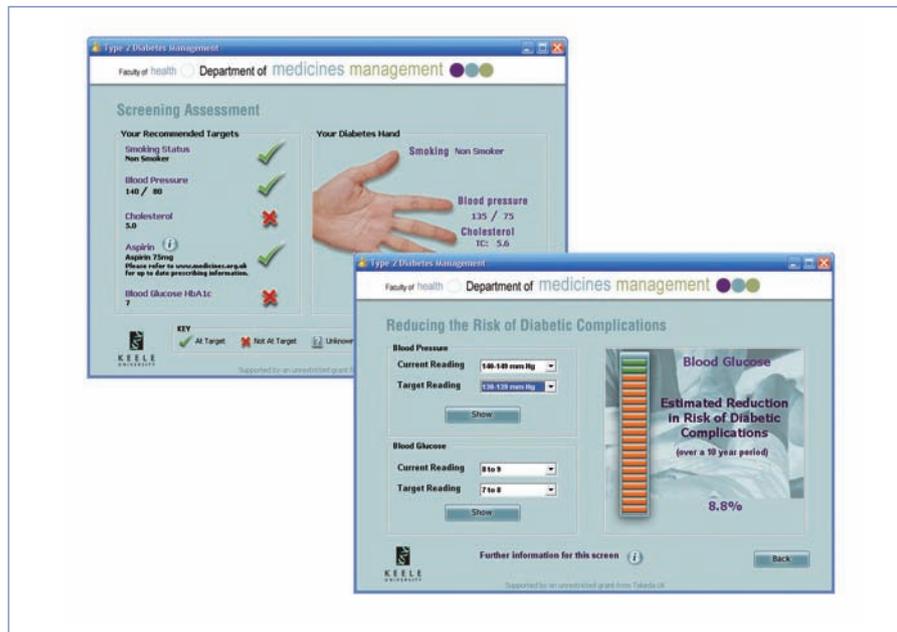


Figure 2. Drop-down screens from the diabetes decision support tool showing how patients can be prompted to manage their specific risk factors, such as smoking, and help reduce their overall risk by taking measures to lower their blood pressure and cholesterol and manage their HbA1c.

In each questionnaire we explored GPs' views about decision-making, their certainty in the decisions they made for each hypothetical case study and issues around decision conflict. Our research concluded that the GPs felt more certain of their decision-making and made decisions more in line with national guidelines when they used the tool. Furthermore, the research suggested that the tool made decision-making easier, improved GPs' feelings of being supported and also improved the quality of decision-making,¹⁵ illustrated by their comments in Box 1.

Diabetes decision support tool

Our most recent decision support tool, on the management of type II diabetes, was launched nationally in Easter 2007. Initially, the team at the Department of Medicines Management at Keele University undertook a full critical appraisal of the evidence base in type 2 diabetes and then a technique known as Markov modelling was applied. Markov modelling is a mathematical framework, which enables us to map out a 'tree' of potential decisions with each branch representing a 'yes' or 'no' option in the decision making process. The

tree defines the possible outcomes associated with the respective condition and then probabilities and clinical values are added. This formed the basis of the support tool.

Decision support should be able to define potential patient outcomes for the 'individual' patient that might present to a health care professional as opposed to the 'average' patient quoted in clinical trials.

Because we intended to make the tool available nationally we wanted to ensure it was practical and user-friendly as well as having robust content. To that end, we consulted with an external panel of health care professionals and patients while it was being developed and refined. This process was particularly important in developing those components that focused on patient communication. For example, we wanted the tool to demonstrate the importance of patients managing other risk factors, such as smoking, blood pressure and cholesterol — the 'diabetes' hand — as well as the reduced risk associated with managing their HbA1c (Figure 2). In addition, the tool is also able to print a personalised record of the consultation for the patient to take

Box 2. Non-medical prescribers' views on the diabetes decision support tool

From a survey of delegates at a National Prescribing Centre conference who had the diabetes decision support tool demonstrated to them, 25% of whom were pharmacists, we obtained the following views on their perceived potential value of the diabetes tool:

- More than 75% of respondents said they felt it would also be beneficial as a patient consultation / communication tool
- 91% of delegates said that they thought the tool would be very helpful (46%) or helpful (45%) in assisting them to make more informed treatment decisions
- 82% of delegates said that they would be extremely likely (39%) or quite likely (43%) to use the tool in their work
- 86% highlighted 'specificity to individual patients' as the tool's most attractive feature
- More than 89% of respondents said that they would like to be notified when future decision support tools became available.

The diabetes decision support tool is available, free of charge, to all UK health care professionals. For further information readers are invited to contact Simon Thomas at Keele University (tel: 01782 715458; s.thomas@mema.keele.ac.uk).

Decision support

Because we intended to make the tool available nationally we wanted to ensure it was practical and user-friendly as well as having robust content. To that end, we consulted with an external panel of health care professionals and patients while it was being developed and refined.

away with them. So, while the clinical evidence and treatment recommendation form the backbone of the tool, we hope that those features that are designed to provide overt support to a concordant consultation offer similar value in practice.

Evaluating the diabetes decision support tool

In January of this year we demonstrated the tool at a NPC Conference for non-medical prescribers (2007) — 25% of whom were pharmacists. Via paper questionnaires and keypads we then asked a series of questions in order to establish their views on the potential value of the diabetes tool in practice (Box 2). Their feedback was very favourable.

Since its launch, more than 500 copies of the tool have been distributed in the UK and anecdotal feedback has been very encouraging to date. We are now exploring opportunities to develop the tool both in terms of new therapeutic areas — beginning with hypertension — and new applications. For example, a patient-screening prototype, using touchscreen technology, has been developed to calculate patients' osteoporotic fracture-risk. The device, which has the potential to be placed in community pharmacies, hospital clinics, practice waiting rooms and even supermarkets, is primarily designed for members of the public. It uses the principles of decision support to initially calculate their level of risk and then, in partnership with a community pharmacist, enables them to explore the benefits of appropriate treatment options.

The diabetes decision support tool is now available nationally to all health care practitioners free-of-charge. For further information, please contact Simon Thomas at Keele University (tel: 01782 715458; s.thomas@mema.keele.ac.uk). ✚

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Author's background:

Stephen Chapman is professor of prescribing studies and head of the School of Pharmacy at Keele University. He provides the academic lead on issues such as implementing evidence based medicine, prescribing databases and health service prescribing policies. He also heads a unit, which provides prescribing advice to the West Midlands Strategic Health Authorities and PCTs.

Professor Chapman's current projects include decision analysis support, and virtual patients for training of health care professionals. Professor Chapman's career spans the pharmaceutical industry, the Health Service and academia. He is co-editor of *Medicines Management* published by the *BMJ* Press and contributes widely to the peer-reviewed evidence base on prescribing, information and pharmacoconomics.

He was recently part of the benchmark developing team for the National Audit Office and sat on the expert panel for the Office of Fair Trading report into value for money from medicines. He is a member of the core scientific committee for the European Quality Indicators Group.

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