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Prescribing - What's all the fuss?

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BACKGROUND: Prescribing is a commonly used skill which has until recently been poorly taught in medical school curricula. This is despite the fact that there are a number of proven approaches to teaching better prescribing.

OBJECTIVE: The WHO Guide to Good Prescribing is discussed, with an example elaborating the steps involved in the process.

DISCUSSION: Central to this approach is the development of a rational and evidence based list of P- or personal drugs which the prescriber develops familiarity with and uses regularly for specific indications.

Have you noticed all the attention being paid to prescribing lately?

There's the National Prescribing Service, prescribing practice reviews, electronic prescribing, journal articles on prescribing, and the list goes on! What's it all about?

In fact, prescribing is a big issue. The BEACH data from 1999–2000 showed that at least one medication is prescribed in about 60% of general practitioner encounters, and the overall rate was 110 per 100 encounters.[1] So if you are seeing patients every 15 minutes, eight hours per day, five days per week, in a working lifetime of say 30 years, you are going to write about 250 000 prescriptions! The cost of prescriptions to the PBS was approximately $3.8 billion in 2000–2001.[2]

Now here is the problem: think back to your medical student training, and try to remember how much time was spent teaching prescribing. For most of us, it was usually a single lecture or two on basics such as: putting the date at the top and signing your name at the bottom. In fact, until recently the majority of medical school curricula have spent less than 1% of total teaching time on prescribing issues, with the majority of teaching time being spent on making a diagnosis.

Unfortunately, many do not appreciate that good prescribing is a skill, and one which needs to be learnt. Teaching therapeutics in medical schools has usually been drug centered, focusing on indications and side effects of different drugs, and prescribing is usually something one picks up by watching the behaviour of others. There has been little focus on the process of prescribing which involves making correct decisions about the choice of medication and individualising it for the patient sitting in front of you. Table 1 lists some of the characteristics of good versus bad prescribing.

In 1994 the World Health Organisation Action Program on Essential Drugs developed a manual on the principles of rational prescribing called the 'Guide to Good Prescribing'.[3,4] The focus of the manual was on the process of prescribing, and central to it was the development of P or Personal drugs. The rationale being that early in their career, prescribers generally develop a limited set of drugs which they will use regularly from then on.5 By using only a limited number of drugs, they become very familiar with dosage adjustments, adverse reactions etc. This choice however, is often made on irrational grounds, e.g. copying behaviour of teachers or peers without considering alternatives or knowing how to choose between them. Hence, despite the plethora of available antibiotics, most clinicians tend to only prescribe a limited number of these for the common indications, but if asked why they have chosen this particular agent, the answers given are frequently not well founded.

The WHO Guide to Good Prescribing (Table 2) was demonstrated to be effective in a randomised trial [5], and other authors have subsequently also recommended the P-drug approach to improving prescribing. [6–9] This approach is also the basis of a web based prescribing curriculum developed by the National Prescribing Service for senior medical students.[10]

Case history

Lionel is 62 years old and has had three documented blood pressures over 140/90 as well as 24 hour ambulatory blood pressure monitoring showing a mean daytime BP of 162/82. He is slightly overweight (BMI 28), is an ex-smoker, and drinks 2–3 glasses of wine per night. He has some arthritis in his knees that he takes Celebrex® (celecoxib) for. He also has diet controlled diabetes, with no evidence of diabetic complications.

Using the WHO Guide to Good Prescribing

1. Make the diagnosis

OK, this bit is easy: hypertension.

2. Set the therapeutic goal for the individual patient

The therapeutic goal is what you want your therapy to achieve put in terms of a meaningful outcome for the patient. A useful way of thinking of it is that the therapeutic goal is the answer to the patient's question: 'Why am I taking this medication'?

Hence, in our example of managing hypertension, the therapeutic goal is to prevent cardiovascular events rather than just reducing the blood pressure per se.

3. Decide on therapeutic approach

This is a decision about how best to achieve the therapeutic goal. For Lionel, this would mean using pharmacological as well as non-drug therapy (weight loss, salt restriction) to reduce his blood pressure. Consideration should be given to ceasing the Celebrex as this can aggravate hypertension. [11] This step also involves assessing and addressing his lipids, dietary advice, or consideration of aspirin as primary prevention as all of these are relevant in preventing a cardiovascular event, independently of blood pressure.

4. Choose a drug class

The choice is based on their comparative efficacy, safety, cost and suitability.

Efficacy

In terms of hypertension all drugs have similar efficacy for reducing blood pressure except for thiazides which are particularly effective for isolated systolic hypertension.[12] Our goal for Lionel is preventing cardiovascular events and some differences in outcomes are emerging from meta-analysis of hypertension studies, particularly showing that calcium channel blockers may not be as effective in preventing cardiac events[13]. There is also evidence from the HOPE study[14] that diabetic patients may get a mortality benefit from angiotensin converting enzyme (ACE) inhibitors independent of their effect on blood pressure. Angiotensin converting enzyme inhibitors would also be effective in

preventing diabetic renal complications, so in terms of efficacy, ACE inhibitors would be our first choice, followed by thiazides.

Safety

When considering the safety of a drug it is important to consider the frequency as well as the severity of adverse reactions. It is also important to recognise special groups who may be particularly at risk of adverse reactions. The incidence of withdrawal due to adverse reactions with different antihypertensives has been shown to be similar in blinded head-to-head studies.[13,15–17] However, some patients may have certain pre-existing conditions that place them at special risk of adverse effects with certain agents, e.g. gout with thiazides.

Cost

Cost includes consideration of the cost to the patient as well as to the community for subsidised drugs. It also needs to include consideration of costs associated with monitoring, treatment failure, and side effects.

Suitability

The convenience of a drug is a broad issue based on the drug's formulation, frequency of dosing, monitoring requirements, etc. An easy to swallow once daily tablet is available for most antihypertensives, but convenience would also be based on the choice of agents that do not require regular blood tests or other forms of additional monitoring, as well as the simplicity of dosing, e.g. one dose fits all versus careful titration to effect. So considering all of these issues we would choose an ACE inhibitor for Lionel.

5. Choose a generic drug within a class

Similar considerations of comparative efficacy, safety, cost and suitability apply, e.g. you may chose to prescribe atenolol instead of metoprolol because it is less lipophilic and less likely to result in central nervous system adverse reactions, as well as being a once daily medication. Among the ACE inhibitors the only difference is that captopril requires more frequent daily dosing. You may choose to prescribe ramipril because it was the drug used in the HOPE study.

6. Individualise dose, formulation, frequency and duration

The only individualisation that would need to be done for Lionel is the starting dose: a low dose of ACE inhibitor should be chosen and titrated up slowly because he is already taking celecoxib and the combination can result in acute renal failure in susceptible patients.[11] This would be another good reason to cease the celecoxib.

7. Verify the suitability of the chosen drug

Most suitability issues are related to safety and common examples are contraindications, drug allergies, or previous adverse drug reactions. For ACE inhibitors these are usually rare, e.g. angioedema, bilateral renal artery stenosis, unilateral renal artery stenosis to single functional kidney. Other suitability issues include the cost, method of drug administration, or in the case of children's antibiotics, the taste.

8. Write a correct prescription

This is the part they tried to teach you in that one hour lecture in medical school! As you can see, writing the prescription is only a small part of the whole prescribing process. It is useful to document the prescription in the case notes with the date, dose and indication to allow ease of review.

9. Provide information to the patient

This should include a discussion of the therapeutic goal as well as the therapeutic approach. Likely adverse reactions should be explained (e.g. cough with ACE inhibitors) as well as rare but serious reactions (e.g. angioedema with ACE inhibitors). Unfortunately, there never seems to be enough time to go over these issues adequately. It is helpful to give the patient some written information such as the consumers medicines information or other resource, ask them to read it and write down any questions for the next review.

10. Monitor for effects and adverse effects

This aspect of prescribing is often the worst carried out. Every prescription is really a therapeutic trial, as each patient may or may not have either efficacy or toxicity with a particular dose. So, if you don't monitor the patient, how will you know? Poor prescribing often results when patients continue to take ineffective costly medication that may be associated with adverse reactions, or result in a significant drug-drug or drug-disease interaction without any monitoring or follow up. No wonder so many patients are noncompliant! You should also not feel guilty about the need for review. Many cases of noncompliance and wasted prescriptions are due to patient adverse reactions or lack of efficacy, and if you can pick these up with relevant monitoring, both the patient and the health system will thank you.

In the case of Lionel he should be brought back for monitoring of his blood pressure, as well as renal function 1–2 weeks after commencement of the prescribed drug.

11. If necessary, alter prescription

The response may be to alter the dose, cease the medication, prescribe another agent or try alternative non-pharmacological approaches. If Lionel's blood pressure does not meet

targets, then the dose should be increased, and eventually a low dose thiazide should be added in.

Using a P-drug list

Now you may look at this and think it is far too much work for a 10 minute consultation! The important issue is that you only have to go through the process of choosing the correct drug for diabetic hypertensives once. You then add the ACE inhibitor that you have chosen to your P-drug list, and you prescribe it for all of your diabetic hypertensives from then on, unless there is a particular suitability issue. The choice takes a bit longer the first time, but it is then rational, appropriate and evidence based. It also has the benefit of saving time on future consultations because you know exactly what to prescribe. Also, when a new drug is being marketed for the treatment of hypertension, in order for it to become your first line treatment on your P-drug list, you have to see proof that it is better than the ACE inhibitor for diabetic patients. The angiotensin receptor antagonists have been shown recently to improve renal complications in diabetic patients with underlying nephropathy. However, these studies did not show a mortality benefit. Hence, you may wish to put an angiotensin receptor antagonist on your P-drug list for diabetic hypertensive patients with nephropathy.

Table 1. Characteristics of good and bad prescribing (modified from [1])

Good prescribing	Bad prescribing
Effective	Ineffective
Safe	Unsafe
Patient centered and individualized	Not patient centered
Acceptable to patient	Not suitable for patient
Appropriate (not too little or too much)	Inappropriate
Addresses expectations of patient	Causes patient distress & harm
Judicious use of resources	Higher cost
Well informed (evidence based)	Poorly informed
Based on unbiased information	Based on biased information
Low vulnerability to outside influences	Vulnerable to outside influence

Conclusion

Prescribing is an important behaviour that GPs regularly practice, but it has previously been poorly taught in medical schools. The WHO has developed a structured guide to good prescribing and the steps in this process are easy to learn and apply in day-to-day

practice. Central to this process is the development of a personal formulary (P-drug list) where a limited number of drugs are chosen for specific indications with choices being made on rational and evidence based grounds. By prescribing according to a well founded P-drug list, GPs can develop greater familiarity and confidence in their prescribing with improved outcomes for patients.

Table 2: World Health Organisation Guide to Good Prescribing Steps: (modified from [4])

1. Make diagnosis
2. Set therapeutic goal for the individual patient
3. Decide on the therapeutic approach
4. Choose a drug class
5. Choose a generic drug within a class
6. Individualise dose, formulation, frequency, and duration
7. Verify suitability of chosen drug
8. Write prescription
9. Inform patient
10. Monitor for effects and adverse effects
11. Alter prescription, if necessary

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