

Evaluation of drug information for cardiology patients

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1 Cardiologists and pharmacists at the University Hospital of Wales collaborated to write 20 individual leaflets incorporating guidelines for a range of drugs used in the treatment of cardiology patients. The Plain English Campaign advised on the intelligibility and presentation of the information.

2 One hundred and twenty-five patients from the Regional Cardiology Unit, University Hospital of Wales were randomly allocated to receive usual verbal counselling about their drug treatment with or without an individualised drug information wallet. Two weeks after discharge from hospital patients completed a postal questionnaire to determine their satisfaction with the information about their drug treatment and their understanding of it. Forty-nine questionnaires were returned from the leaflet group and 52 from the control group.

3 The provision of written guidelines resulted in significant improvements in patients' satisfaction with their drug treatment ($\chi^2 = 33.3$, $P < 0.001$) and their understanding of it ($P < 0.001$, Mann-Whitney test). Overall, patients who received leaflets were more likely to be aware of the potential side effects of their drugs but less likely to be apprehensive about them. Succinct guidelines concerning drug therapy can be assimilated by cardiology patients and provide them with a permanent record for future reference.

Keywords drug information cardiac drugs

Introduction

Cardiovascular disease contributes to the cause of death in half of all deaths in Wales. Patients with cardiovascular disease often require several drugs and to use them safely and effectively they require certain basic information (Hermann *et al.*, 1978; Ridout *et al.*, 1986). Smith & Stephenson (1984) and McMahon *et al.* (1987) have shown that between 74% and 90% of patients feel that the information given by health care professionals about prescribed drugs is inadequate. A minority of patients actually request information (McMahon *et al.*, 1987); the verbal advice they are given is often forgotten (Ley, 1979) and the medical terminology may be confusing (Boyle, 1970).

This study was designed to establish whether the provision of specially prepared drug information leaflets improves the understanding and recall of information relevant to the administration of cardiovascular drugs.

Methods

The study protocol was approved by the Joint Ethics Committee. On admission to the Regional Cardiology

Unit adult patients (over 18 years) who were able to read English were invited to participate in the study. On discharge, patients were randomly allocated to leaflet and control groups; patients receiving any cardiovascular drug for which a leaflet had not been prepared were excluded from the study.

All subjects received informal verbal counselling concerning drug therapy during their hospital admission. On discharge from hospital the leaflet group received an individualised drug information wallet with their discharge drugs. Randomisation at the time of discharge avoided any bias in the quantity or type of verbal counselling provided during the patients' admission.

The patient information wallet comprised an introductory leaflet giving general advice and leaflets on the individual drugs prescribed for the specific patient. Over the 10 months prior to July 1988, separate leaflets were prepared for angiotensin converting enzyme inhibitors, amiodarone, aspirin, β -adrenoceptor antagonists, digoxin, diltiazem, dipyridamole, glyceryl trinitrate tablets, patches and spray, loop diuretics, nifedipine, oral nitrates, potassium supplements, spironolactone, thiazide diuretics, verapamil and warfarin (Figure 1).

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Information about your drug treatment

- This booklet tells you more about your drugs.
- The names used for your drugs in this booklet are their 'proper names'. These are the same as on the medicine bottles that the hospital has given you. Your GP or chemist may give you the same tablets known by different names — the 'brand name'. Your GP may also use a tablet which combines several of your drugs.
- Make sure your doctor is aware of all the medicines you take before any new drug is started.
- Take each drug as directed on the bottle. If you forget a dose, take it as soon as you remember. If a drug causes unpleasant or unwanted effects, do not stop taking it without contacting your doctor.
- You may drive as usual or drink moderate amounts of alcohol unless the information about a particular drug tells you not to.
- You may need specific advice during pregnancy. *Please ask.*
- Destroy any drugs you no longer need by flushing them down the toilet.
- If you need any more information, *please ask.*

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Glyceryl trinitrate sublingual tablets ('GTN')

What they do

GTN is used to treat an attack of angina and it works very quickly when placed under the tongue. GTN relaxes the coronary arteries that supply blood to the heart. The tablets reduce the work of the heart and relieve angina.

Precautions

If an attack of angina continues for 20 minutes or more and is not relieved by GTN and resting, you should seek medical attention immediately.

You may get a throbbing headache, nausea and/or dizziness when you first start taking these tablets. These side effects normally wear off after a few weeks.

Other information

Once the angina pain has eased you may remove the tablet from your mouth and throw it away. This may reduce the chance of headaches. The tablet dissolves more easily if you moisten it in your mouth.

You must renew the tablets after 8 weeks once the bottle has been opened because the tablets gradually lose their effects.

It is useful to place a tablet under your tongue before doing anything that you know brings on an attack of angina.

The benefits of taking the tablets continue even in patients who need GTN every day.

You may take GTN for each attack of angina, even if you have several attacks in one day.

Beta-blocker

The proper name of your drug is

What it does

This drug reduces the work of the heart. It may be used to treat angina, control the heart rhythm or reduce high blood pressure — depending on the dose.

Precautions

It is a very safe drug. Rarely it causes cold hands or feet, stomach upsets or sleeping problems. This drug has to be used with caution by people with asthma or respiratory problems.

While taking this drug, a few men have difficulties with sexual intercourse because they cannot get an erection. This problem does go away if you stop taking the drug, but only do so after contacting your doctor.

Other information

This drug can be taken with or without food.

Warfarin

What it does

Warfarin makes your blood less likely to clot. This is particularly important for people with artificial or damaged heart valves and in certain other conditions where the risks of clotting are increased.

Precautions

The dose of this drug must be adjusted to the needs of your body and these needs can change. For this reason your blood needs to be tested regularly.

If you experience bruising or nosebleeds do not stop taking warfarin but be sure to tell your doctor.

Cuts take longer to stop bleeding in patients taking warfarin.

Do not take tablets containing aspirin while taking warfarin. Certain other tablets, especially those used to treat arthritis, can affect the dose you need. Do not take any new tablets without checking if it is safe to do so while taking warfarin.

Other information

Try to avoid drinking alcohol, *especially in large amounts*, as it may seriously upset the effect of this drug.

You may take warfarin with or without food.

Digoxin

What it does

Digoxin strengthens the heart's pumping action, so it is used to treat a weak heart. It is also used to control certain fast or irregular heartbeats.

Precautions

Most people taking this drug feel very well but loss of appetite, nausea, vomiting or blurred vision may occur if the dose of digoxin is too high for you. If you get any of these problems, do not stop taking these tablets but do tell your doctor so he can change your dose.

Other information

You may take digoxin with or without food.

Figure 1 Extracts from patient information wallet.

The information needs of patients identified by Ridout *et al.* (1986) were used to guide content. The staff of the Plain English Campaign provided advice on the design and presentation of the information.

Approximately 2 weeks after discharge patients were asked to complete a postal questionnaire (see Appendix) to determine their satisfaction with the information provided about their drug treatment and their understanding of the use of specific drugs. The questionnaire was designed in conjunction with a Clinical Psychologist and was tested on a pilot group of patients. The questionnaire was divided into four sections. In the first section patients were asked what information they had been given about their drug treatment and who had provided it. The second section assessed patients' satisfaction with the quantity, clarity and usefulness of the information, whether they were more or less worried by it and whether it could have been improved. The third section asked patients to specify what information about their drug treatment they had been given since hospital discharge and by whom. The final section assessed knowledge about a selected sample of drugs (glyceryl trinitrate, β -adrenoceptor antagonists, digoxin and warfarin) in those patients for whom the specific drugs were prescribed. Copies of the questionnaire and leaflets are available on request.

Comparisons between the leaflet and control groups were performed using the Mann-Whitney, χ^2 or Fisher exact test as appropriate.

Results

Study population

One hundred and ninety-five patients consented to participate in the study. In accordance with the protocol twenty-five patients were excluded because they were taking drugs for which leaflets had not been prepared. Forty-five patients were not randomised following consent as they were transferred to cardiac surgery wards or were discharged without medication. One hundred and twenty-five patients were randomized and participated in the study. Questionnaires were returned from 101 of the patients (response rate 81%). There were 49 patients in the leaflet and 52 in the control group (12 non-responders in each group.)

There were no significant differences in age or sex distribution with respect to the two groups (Mann-Whitney, χ^2 tests respectively). Details are given in Table 1. The patients in both the leaflet and control

Table 1 Details of patients in leaflet and control groups

	Leaflet (n = 49)	Control (n = 52)
Number of men	33	31
Number of women	16	21
Mean age (years)	52.2	52.6
Age range (years)	37-83	20-69

Table 2 Numbers of patients who recall receiving information before leaving hospital

	Leaflet (n = 49)	Control (n = 52)
Purpose of treatment	43	21
When to take it	46	46
How to take it	38	35
What to do if you miss a dose	30	4
Possible side effects	34	7
What to do about side effects	26	2
Whether you can drive	18	14
Whether you can drink alcohol	30	16

groups were taking a mean of 3.4 drugs (s.d. = 1.5) when discharged from hospital.

There were no significant differences in social class between the two groups. Demographic details of non-responders were similar to those who responded to the questionnaire.

Information given

A significantly greater proportion of patients in the leaflet group claimed to have been given information about the purpose of treatment, what to do about missed doses, possible side effects and what to do about side effects ($P < 0.001$). Five patients (all from the control group) could not recall being provided with information on any aspect of their drug treatment (Table 2).

Verbal information on drug treatment had been provided to patients on an erratic basis. Twenty-nine patients recalled that the information was given solely by a doctor, 12 by a nurse, 11 by a pharmacist and 43 by a combination of personnel. Ten (20%) of the leaflet group and seven (13%) of the control group were given further information in the 2 weeks following discharge (no significant difference). This was provided by their general practitioner (eight patients), community pharmacist (four patients), both (one patient) or the hospital doctor at an outpatient visit (four patients). There was no trend in the nature of the additional information provided to each group.

'Satisfaction' ratings

Thirty-six patients (73%) in the leaflet group compared with seven (13.5%) in the control group felt they had been given sufficient information about their drugs ($\chi^2 = 33.3$, $P < 0.001$). There was a significant difference between leaflet and control groups in response to the questions 'Was the information clear and easy to understand?' and 'Has the information been useful to you?' which were rated on 5-point scales ($P < 0.001$, Mann-Whitney test). Forty-four of the leaflet group rated the information as very clear or extremely clear compared with 17 in the control group. Nine of the control group felt that the information they were given was not clear (compared with none of the leaflet group.) Forty-one of the leaflet group and 17 of the control group rated the information they were given as very useful or extremely useful. One of the patients in the leaflet group and 20 controls felt that the information was only slightly or not at all useful.

Twenty-six of the leaflet group felt less worried about their drug treatment as a result of the information given, compared with 13 of the control group ($\chi^2 = 4.55$, $P < 0.05$). One patient in the leaflet group was worried after being told he was on maximal therapy; he was concerned about the apparent seriousness of his condition. This information had been provided during verbal counselling. Three patients in the control group were worried about the side effects of treatment. Two of these recalled a verbal explanation of the side effects (in one case by a nurse and in the other by a doctor).

Thirteen of the leaflet group compared with 33 of the control group felt their information could be improved ($\chi^2 = 32.7$, $P < 0.001$). Of those who received the leaflets, four would have liked information about why their drug treatment had changed. Three others wanted the opportunity to ask questions; two patients wanted more detail, two patients wanted information on missed doses and two patients felt that the information should have been provided when their drugs were originally started.

Drug-related questions

a) *Digoxin* Fourteen patients in the leaflet group and 20 controls were taking digoxin. Thirteen of the patients in the leaflet group recalled being advised about side effects compared with one of the controls ($\chi^2 = 26.2$, $P < 0.001$). There was no significant difference in the number of patients who said they would continue the drug but tell their doctor if side effects occurred.

b) *β -adrenoceptor antagonist* Thirty-two patients in the leaflet group and 30 controls were taking a β -adrenoceptor antagonist. Twenty-two patients in the leaflet group recalled being advised about side effects compared with seven controls ($\chi^2 = 12.83$, $P < 0.001$). There was no significant difference in the number of patients who said they would continue the drug but tell their doctor if side effects occurred.

c) *Glyceryl trinitrate* Thirty-three patients in each of the leaflet and control groups were taking glyceryl trinitrate. When asked 'what would you do if an attack of angina lasted for longer than 20 min even after rest and use of your GTN?', 29 of the leaflet group responded correctly compared with 18 of the control group ($\chi^2 = 8.94$, $P < 0.01$). Twenty-eight of the leaflet group compared with 17 controls were aware of the prophylactic use of the drug ($\chi^2 = 9.87$, $P < 0.01$).

d) *Warfarin* There were 23 patients in the leaflet group and 26 patients in the control group prescribed warfarin. All 23 in the leaflet and 25 of the controls were aware of the need for regular blood tests while taking the drug. Nineteen of the patients in the leaflet group compared with 10 of the controls were aware of the potential interaction of alcohol with the drug ($\chi^2 = 9.85$, $P < 0.01$).

Discussion

Much has been written about the need to provide patients with full information and explanations about their drug

treatment. Morris & Groot (1982) reviewed a number of US studies of the topic and found that on average, 77% of the population want written information about their medication. In a recent survey the Consumers Association found that 82% of patients felt that their general practitioner should spend more time explaining drug therapy (Watts, 1989). Whilst full and frank verbal discussion is obviously desirable it can be extremely time consuming. If it is going to be useful it also needs considerable thought about the language used and the priority of information to be provided.

Hospital inpatients have to cope with the anxiety and stress of their situation and are often also given information concerning their diagnosis, investigations, future management and prognosis. Ley (1979) showed that patients forget some of the information they are given. This was confirmed by Anderson *et al.* (1979) who also concluded that more is forgotten as the amount of information given increases. This does not mean that information should be withheld. In our view verbal counselling should be supplemented by written information presented in a clear and precise form.

The hypothesis tested in this study is whether the provision of specially designed information leaflets will assist patient recall and understanding of drug therapy. The findings of the study suggest that the hypothesis is correct.

In the group of patients who received leaflets there were significant improvements in satisfaction and understanding. Overall, patients receiving leaflets were more likely to recall the purpose of their treatment, possible side effects and what to do in the event of such effects occurring. Of particular interest was the fact that patients who received leaflets were less worried about possible side effects associated with their drug treatment. These findings support those of similar studies carried out in the community (Gibbs *et al.*, 1989a,b).

The effectiveness of therapeutic intervention in acute myocardial infarction depends, at least in part, on the speed with which patients receive treatment. Patients should therefore be clear about the need to seek immediate medical help if glyceryl trinitrate fails to relieve angina. This knowledge was significantly improved in the group receiving leaflets. Patients in this group were also more likely to be aware of the prophylactic use of glyceryl trinitrate.

Patients in the control group who were prescribed either digoxin or β -adrenoceptor antagonists were rarely given information about side effects. When asked 'what would you do if side effects occurred?' both groups nevertheless responded appropriately i.e. they said they would continue their tablets and tell their doctor.

Causes of patient non-compliance with respect to drug therapy are diverse, but key factors include the lack of appropriate drug information. Whilst this study was not designed to assess compliance, Ley (1982) has proposed a 'Cognitive model' which predicts significant correlations between understanding, memory, satisfaction and compliance. In support of this, Dodds (1986) confirmed that information leaflets which were easy to read did improve patients' compliance with antibiotic therapy. We would suggest that provision of written information will at least create the potential for better compliance and fewer errors.

The Association of the British Pharmaceutical Industry has recently recommended the inclusion of patient information in 'ready-to-dispense' packaged medications. To be of use, however, this information must be simple, easy to understand and relevant to the individual patient.

We have shown that the provision of written information can significantly improve patients' understanding of the rationale, mode of administration and precautions concerning their cardiovascular drug therapy. The approach also resulted in improved satisfaction concerning drug information. It is not proposed that written information will replace valuable direct verbal counselling

concerning drug therapy. However, the provision of succinct, understandable information leaflets may improve recall of relevant drug information, help to diminish anxiety and improve compliance with prescribed drug therapy.

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Appendix

No

CARDIOLOGY DRUG INFORMATION STUDY.

A SURVEY OF WHAT PATIENTS THINK ABOUT THE INFORMATION THEY ARE GIVEN IN RELATION TO THEIR DRUG TREATMENT.

Thank you for agreeing to participate in this study. Please complete the questionnaire as soon as possible and return in the enclosed postage-paid envelope.

For most questions all that is required is a tick in a box. Please tick ONE box for each question unless otherwise instructed. There are no right or wrong answers to questions in Sections A, B or C; we are mainly interested in your opinions.

SECTION A

1. Age 2. Sex

3. Current or most recent occupation
(housewives should state their husband's occupation)

4. The drugs that you were given when you left hospital are listed below. Please tick (✓) those that you now take and add any drugs that have been started since leaving hospital.

- A. ()
- B. ()
- C. ()
- D. ()
- E. ()
- F. ()
- G. ()
- H. ()

SECTION B.

1. BEFORE YOU LEFT HOSPITAL were you given any of the information listed below about your drug

treatment? (please tick *all* those boxes which are applicable)

- purpose of the treatment ()
- when to take it ()
- how to take it ()
- what to do if you miss a dose ()
- possible side effects ()
- what to do about side effects ()
- whether you can drive ()
- whether you can drink alcohol ()
- other (specify)

If you ticked *any* of the boxes in Question 1 continue. OTHERWISE GO TO SECTION C ON NEXT PAGE.

2. Who provided you with this information? (you can tick more than 1)

- hospital doctor () nurse ()
- pharmacist () other (specify)

3. How was this information provided?

- verbal explanation ()
- information leaflets ()
- both verbal and leaflets ()
- other (specify)

4. Were you given enough information?

- yes () no () cannot say ()

5. If no, is there any particular way it could have been increased

6. Was the information clear and easy to understand?

- extremely clear ()
- very clear ()
- moderately clear ()
- not really clear ()
- not at all clear ()

7. Has this information been useful to you?

- extremely useful ()
- very useful ()
- moderately useful ()
- slightly useful ()
- not useful ()

8. Were you more or less worried about your drug treatment by any of the information given to you about it?

- more () less ()
- no change () cannot say ()

9. If more, was there anything which particularly worried you?

10. Could the information have been improved in any way?

- yes () no () cannot say ()

11. If yes – is there any particular way it could have been improved?

SECTION C

1. Have you been given any additional information about your drugs SINCE YOU LEFT HOSPITAL?

- yes () no () cannot say ()

2. If yes, who provided you with this information? (you can tick more than one.)

- your G.P. () chemist ()
- district nurse () other (specify)

3. What information were you given? Please tick *all* those boxes which are applicable.

- purpose of the treatment ()
- when to take it ()
- how to take it ()
- what to do if you miss a dose ()
- possible side effects ()
- what to do about side effects ()
- whether you can drive ()
- whether you can drink alcohol ()
- other (specify)

SECTION D.

Please answer those questions about the drugs which YOU are taking. These will be marked with a cross (X). Please tick only ONE box for each question.

() **DIGOXIN**

1. Were you advised about possible side effects of this drug?

- yes () no () cannot say ()

2. If side effects occurred would you:

- stop taking the drug ()
- reduce the dose of drug ()
- continue the drug but tell your doctor ()
- not sure/cannot say ()

() **GTN**

3. If an attack of angina lasted for longer than 20 minutes even after rest and use of your GTN would you:

- try another tablet/spray ()
- seek medical advice immediately ()
- tell your doctor at your next appointment ()
- not sure/cannot say ()

4. Can GTN be used before any activity which usually brings on an angina attack?

- yes () no () cannot say ()

() **BETA-BLOCKER. i.e.**

5. Were you advised about possible side effects of this drug?

- yes () no () cannot say ()

6. If side effects occurred would you:
- stop taking the drug ()
 - reduce the dose of drug ()
 - continue the drug but tell your doctor ()
 - not sure/cannot say ()

9. Does alcohol interfere with the effect of this drug?
- yes () no () cannot say ()

10. Is it safe to take aspirin with this drug?
- yes () no () cannot say ()

() WARFARIN

7. When you are taking this drug does your blood need to be tested:

- only if you have problems with bruising ()
- regularly ()
- only when you first start ()
- not sure/cannot say ()

DATE QUESTIONNAIRE COMPLETED:

NOW PLEASE RETURN THIS FORM IN THE ENCLOSED POSTAGE-PAID ENVELOPE.

8. If you got nosebleeds or bruising would you:

- stop taking the tablets ()
- reduce the dose of tablets ()
- tell your doctor ()
- not sure/cannot say ()

THANK YOU VERY MUCH FOR YOUR
HELP WITH THIS STUDY.