
Reducing prescribing costs through computer controlled repeat prescribing

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SUMMARY. A small reduction in prescribing costs is reported from a general practice that has been using a computer for repeat prescribing for three years. The possible reasons for this are discussed. The information available from the Prescription Pricing Authority (PPA) and from practice workload measurements was found to be inconclusive. An elaboration of the computer-controlled system of repeat prescribing to provide a detailed cost analysis of this aspect of prescribing was devised, and the first results are presented. It is calculated that 27 per cent of prescriptions in the practice are produced from electronic records and that the average cost of these is not significantly greater than for prescriptions issued in other situations.

Introduction

THE possibility of saving on prescribing through the use of a computer has been of interest for several years.¹ This could come about by practice staff spending less time in dealing with repeat prescriptions and by incurring less wastage through the supply of smaller quantities of drugs. Saving could also result from a reduction in the number and a change in the kind of drugs prescribed made possible through the more regular review of prescribing that should be a feature of the system. Our partnership is a training practice with five principals and a trainee and a list of 9,750 patients. Since December 1981 we have been using a computer for running an age-sex register, structured problem summaries, screening, recall and repeat prescribing.² This system runs in compiled BASIC language at four megaHertz (MHz) on a TRS 80 model III computer with a five megabyte hard-disk drive.

Our own definition of 'repeat' prescribing has emerged. After the doctor has decided to continue treating with drugs for a defined period, the patient can then collect regular supplies without reference to the manual record on the part of practice staff. The system warns if supplies are being collected too frequently, and produces a printout of repeat prescriptions for copying details onto the manual record before review or at the time the doctor 're-authorizes' the repeat. For all other prescriptions the manual record is made available for reference, and full details of these prescriptions are entered. They include those for outpatient attenders, telephone consultations,

and for the inevitable occasion when supplies run out before the next consultation. This clear distinction enables staff and doctors to give more attention to such prescribing situations.

It could be argued that the advent of a computer in a practice is preceded by and leads to such enthusiasm and reconsideration of practice organization that improvements arise from these factors as much as from the computer *per se*. To assess the effect of the computer, we awaited the latest information on our practice prescribing from the Prescription Pricing Authority (PPA) for a month in 1983, information which was unknown to the practice at the time of recording. We received an extract of the PPA report via the Avon Family Practitioner Committee (FPC) at the end of February 1984 showing the cost of our prescribing compared with the averages for the area and the country for June 1983. Analysis of this report revealed an increase of prescribing costs over April 1982 of 19.7 per cent, compared with 23 per cent for the area and 24 per cent for England. In the previous two years there had been no significant difference in the percentage increases for practice and area. This represents a theoretical reduction in costs of £625 per month, or 2.7 per cent. At the time of writing, the practice had not received the PPA's detailed analysis form (PD8) that Harris and colleagues³ used for offering information and education on prescribing decisions, so further and more immediate information was sought from our own computer.

Method

The author adapted the computer system for the input of prices of the drugs in the practice's limited formulary⁴ and the practice manager inserted these prices within a few days. There was a further program to provide the detailed analysis of the cost of computer prescribing in the practice.

The number of days to be covered by the search is entered at the start, and the machine then searches through all the records to identify prescriptions that have been issued within this period. It then computes the number of dose units, or packs, for each item from the dose 'field' for that item (which cannot be in 'free text') and keeps a running count until the search is completed.

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Further calculation precedes the printout, which is arranged in descending order of total net ingredient cost per drug. Also shown is the cost per dose unit, or pack, the number of patients involved, and the total number of dose units prescribed for each item. An additional feature is the calculation of the average daily dose prescribed for that item and the average daily cost for the dosage, which gives a different picture of prescribing costs.

For this paper, a period of 20 days rather than one month was the input for searching. This was because the computer only records the date of the last prescription and the number of repeats issued in order to regulate supplies; and since most calculations are on a monthly basis, the proportion of prescriptions that happened to be issued a few days earlier than one month would be lost. (Another method would be to record each prescription in a separate file at the time of issue and then to calculate the cost at set intervals, to be defined and implemented regularly.)

It was found easiest to check for errors in entries by examining the printout for discrepancies and, when these had been corrected, rerunning the program since this takes only 15 minutes. For comparisons to be made, the proportion of days that represent actual working days needs to be considered, and the total figure multiplied by a factor which gives a total for one month.

Results

Figure 1 shows the top portion and end summary of a five-page printout. Figure 2 shows an analysis of the use of computer repeat prescribing, which is part of the same program. In order to determine the proportion of total practice prescribing represented by these results, figures produced by the PPA for the total number of prescriptions issued in various months in previous years were examined. Unfortunately — and it is this kind of occurrence which confounds attempts to measure prescribing — our own figures for June 1983 collected from the computer and from the receptionist were inflated by the hay fever season. The PPA reported 5,664 prescriptions — 250 more than usual for the practice — costing £22,425 and averaging £3.33 NIC per prescription. Taking

Cost Analysis of Computer Repeat Prescribing in last 20 days. 04/05/84
Listed in order of prescribing cost per drug/strength.

Drug/Item	Cost/ unit in pounds	Pati ents	Dose units /pack	Avgc dose	Avgc cost /day	Net ing cost /drug
TENORETIC	0.265	70	930	1.0	0.27	236.45
TRASIDEX	0.282	18	540	1.0	0.28	152.82
VENTOLIN INHALER UK -SALBUTAMOL	2.910	47	52			151.26
FELDENE -PIROXICAM	0.150	19	990	1.7	0.26	148.50
ZANTAC -RANITIDINE	0.457	5	270	1.8	0.32	127.59
TAGAMET 200MG 100 -CIMETIDINE	14.000	8	8			118.40
EUHPNDS 100MG TEMAZEPAM	0.649	44	2220	1.7	0.08	108.78
BRUFEN 400MG -IBUPROFEN	0.854	21	1900	3.1	0.17	106.92
DISTALGESIC	0.022	33	4150	4.2	0.09	91.50
TENORMIN 100MG -ATENOLOL	0.249	10	360	1.2	0.20	89.64
ALDACTONE 100MG -SPIRONOLACTONE	0.210	5	210	1.4	0.43	65.10
LEDERFEN 300MG -FENBUFEN	0.179	5	360	2.4	0.47	64.44
BEOTIDE INHALER	4.770	12	15			62.91
ALDOMET 250MG -METHYLDOPA	0.056	13	1050	2.7	0.15	50.00
Total of prescription items		1075				
Total cost of prescriptions from computer in last 20 days						2926.07
Average basic price per prescription						2.66
Total cost of prescriptions with 10% on cost						4644.56

Figure 1. The top portion and end summary of a five page printout.

Analysis of use of repeat prescribing system.

Number of repeat prescription records	1454
Number of records expired	220
Number of items prescribable in non-expired files	2660
Number of items on practice repeat prescription formulary	384
Number of items prescribed from this in last 20 days	272
Number of forms printed in last 20 days	570
Average number of items printed per form	1.0
Number of months authorised per item :-	
Months	1 2 3 4 5 6 7 8 9 10 11 12 13
Number	1 19 69 159 175 196 35 49 82 72 101 51 132
Average number of months authorised	7.7

Figure 2. An analysis of the use made of computer repeat prescribing.

into account the fact that the two months are not strictly comparable, it is calculated that computer prescriptions represent 27 per cent of total prescriptions. As regards cost, it is estimated that these repeat prescriptions cost approximately 5 per cent more than others and so represent 28 per cent of all costs. The latter figure was unexpectedly low, and it seems that the high cost of non-steroidal anti-inflammatory drugs and hypotensive agents is offset by the low cost of many established long-term maintenance drugs that are more frequently prescribed in a repeat situation.

Discussion

The extent to which our analysis provides an overall picture of practice prescribing may be questioned, not least the actual prices and the feasibility of updating them. Nevertheless, entering the prices is easy and the computer can assist in the task of calculation at the time of input. Significant price changes are notified by the pharmaceutical companies but otherwise it would only seem necessary to review a section of the practice formulary each month. Prices were taken from the February 1984 issue of *MIMS* or were supplied by our local chemist. The possible percentage error on inexpensive drugs is minimized in the overall picture by their small total cost. However, these prices have their own validity in that they represent the practice's best efforts at obtaining a perception of drug costs on which decisions can be based. As a proportion of regularly used preparations our formulary of 384 drugs (May 1984) needs only a little expansion to include those used in a consultation situation only. Indeed, even in these 'non-repeat' situations (which in our definition include requests relayed by third parties although always with reference to the records) much of the prescribing is 'continuation' therapy of a similar nature to 'repeat' prescribing and not 'new' prescribing. It is therefore claimed that the kind of analysis in Figure 1 represents a qualitative guide to prescribing costs.

Since the computer system identifies the prescriber, it is possible to run the analysis to show the prescribing costs incurred by each doctor in the partnership. However, in our practice the partners have shared lists for many years and have also co-operated in producing a limited formulary, so that we have not yet considered this particular analysis worthwhile. In this respect, the summary information from the PPA on number of prescriptions written and average basic price per prescription for each partner

seems unhelpful, as variations in workload for the month in question and percentage of elderly people treated are not averaged out. Most doctors recognize this but it could lead to either unwarranted complacency or unnecessary restriction.

Using a computer for repeat prescribing can have various effects. Enthusiasm for the technology could lead to 'repeats' being set up earlier than necessary and incorrect expectations being established. Awareness of this possibility led to a tendency to see a patient once more before authorizing a 'repeat'. The ease of issuing repeats could result in prescriptions recurring endlessly without reassessment of the case. To avoid this situation, our system sets a clear limit and a date for review by the doctor. Awareness of the formalizing of the process and the greater control effected could lead to some patients discontinuing non-essential treatment or opting for self-care — and thereby lead to a reduction in prescribing.

Prescribing smaller quantities follows naturally from an automatic system, and certainly in most cases it has not seemed right to use the computer to prescribe medication for any longer than 30 days. The amount of unused drugs has been estimated at 10 per cent; with smaller supplies wastage is reduced pro rata, when treatment is finally interrupted because of improvement, change of drug, side-effects, hospitalization or death, and more accurate estimation of remaining supplies is possible. Thus some patients request further supplies almost as soon as they start on a new pack; most of them underestimate the quantities left in bottles. There are some drugs that are so expensive compared with the cost of a consultation that they are unsuitable for repeat prescribing, and it seems that every prescription for them should be carefully calculated according to future review.

We have experienced remarkably little opposition from patients to our use of 30-day supplies as this was a continuation of practice custom. Prescribing larger quantities is not a limitation of the computer, but we have been unable to formulate rules which would be fair to all patients. This is a point of interest in which our practice will follow the norm, but there does seem to be a certain incompatibility between the move towards greater responsibility in prescribing and the dispensing of large quantities. Dispensing costs do of course rise in respect of the dispensing and container fee for each item, while the ingredient on-cost is related to the actual price of the quantities prescribed. In this way, prescribing small quantities can lead to greater costs where cheaper preparations are concerned, but this factor is not recognized in the information given to doctors by the PPA, which applies a uniform percentage (18 per cent) on-cost. Is this a recognition that it is not appropriate for the medical profession to consider dispensing costs in its prescribing strategy? Other factors such as the role of the pharmacist as health adviser and the stocking and deterioration of drugs also come into play. The computer could of course produce reasonably accurate figures of true dispensing on-costs if this were considered appropriate.

Our use of proprietary names may be disappointing to advocates of generic prescribing. For two years it has been possible for us to change all entries for a particular drug to a generic name by renaming what the code represents

— for example, VI to equal SALBUTAMOL INHALER BP in place of VENTOLIN INHALER. We have demonstrated this many times but not implemented it because in this practice we have experienced hostility when patients have received unfamiliar preparations through generic prescribing. It seems important for our patients to be able to recognize their medication. With the great potential for error in prescribing, we are reluctant to say to a patient that the medicine is the same but only seems different. In practice, the top and most costly entries in our print-out have been assigned no generic alternative to date.

Conclusion

It is suggested that with the improving speed and capacity of computers, the pricing of drugs in the surgery for the purpose of doctor information is feasible in large practices, and may be a better and more immediate method of feedback than information from the PPA. A further

MR NAME COLLEGE		COLLEGE GEORGE GP	FD
Age (months) 12 years		326C WELLS ROAD	27/06/84
Address GEORGE GP		55	
Pharmacy Stamp No of days treatment pack & quantity endowment		326C WELLS ROAD BS4 2DJ	Repeat Prescription copy - P1 Please keep until replaced. You should see doctor before ** 4 Dec 84 ** unless you are seeing doctor regularly. Please tick items you need.
Pharmacy Stamp No of days treatment pack & quantity endowment		NP	Pricing Office use only
1. TENORETIC 1 MAINE 30		TENORETIC 1 MAINE 30 3 / 6 31 May 84	7.95
2. HYDRALAZINE 50MG 1 BD 60		HYDRALAZINE 50MG 1 BD 60 3 / 6 31 May 84	1.05
3. BETNDVATE 0.1NT 30G ONE PACK		BETNDVATE 0.1NT 30G ONE PACK 3 / 4 31 May 84	1.30
Signature of Doctor		Date	YOU SHOULD HAVE YOUR BLOOD PRESSURE CHECKED AT LEAST ONCE EVERY SIX MONTHS
For major No of Prescriptions on form		From Family Practitioner Committee Dr. F. DIFFORD 324153 326 Wells Road BRISTOL BS4 2DJ Tel. 774526	
IMPORTANT: Read the notes overleaf before going to the pharmacy.			

Figure 3. Sample of an FP10 form produced by the computer system.

concept is that such information could be used as health economics education for patients. Figure 3 shows a sample form FP10 (Comp) produced by our system which displays the price per item on the repeat prescription 'slip'. This is similar to the usual FP10 that our computer prints except that we have not implemented the pricing function, which is a simple addition to the program.

References

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Acknowledgements

I am grateful to Mrs P. Hook, practice manager, and Mr R. Bick of Elliot's Pharmacy Ltd, for their help in pricing; and to my partners, Dr J.P. Telling, Dr K.R. Davies, Dr J.E. Fornear and Dr C.A. Reading, for their support during the preparation of this paper.

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