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ORIGINAL ARTICLE

Doctors' attitudes about prescribing and knowledge of the costs of common medications

C. McGuire · S. King · G. Roche-Nagle · M. C. Barry

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Abstract
Introduction Compliance with medical therapy may be compromised because of the affordability of medications. Inadequate physician knowledge of drug costs may unwittingly contribute to this problem.
Methods We measured attitudes about prescribing and knowledge of medication costs by written survey of medical and surgical non consultant hospital doctors and consultants in two University teaching hospitals ($n = 102$). Sixty-eight percent felt the cost of medicines was an important consideration in the prescribing decision, however, 88% often felt unaware of the actual costs. Only 33% had easy access to drug cost data, and only 3% had been formally educated about drug costs. Doctors' estimates of the cost of a supply of ten commonly used medications were accurate in only 12% of cases, too low for 50%, and too high for 38%.
Conclusions Interventions are needed to educate doctors about drug costs and provide them with reliable, easily accessible cost information in real-world practice.

Keywords Drug prices · Knowledge · Attitudes · Education

Introduction

In the present atmosphere of escalating global health-care costs a significant problem for many people is their inability to afford medical care. One aspect of escalating healthcare costs is the cost of prescription medications. For uninsured people as well as for many of those with some form of health insurance, outpatient prescriptions are very expensive for the patient. These costs can be significant making it difficult for the patient to afford the required medication. Drug prices have been shown to affect compliance regimens [1] and patients frequently report not purchasing or delaying the purchase of prescribed medications Table 1.

While physicians can easily access information on the efficacy and side effect profile of the various drugs they prescribe, information on actual cost is not always readily available. Expenditure on healthcare in Ireland, which is mainly derived from taxation, has increased considerably in recent years to an estimated 15 billion Euro in 2006/2007. Pharmaceuticals account for approximately 10% of total healthcare expenditure. Approximately one-third of patients receive their medications free of charge whilst the remaining two-thirds are subject to a co-payment threshold of 100 Euro per month as of Budget 2008, i.e. 1,200 Euro per year [2]. The threshold for the Drugs Payment Scheme has now been increased by 80% since 2002. Studies conducted in the 1990s and early 2000s found poor knowledge of medication costs among doctors [3–6].

Over the last decade, the rise of managed care with its emphasis on containing costs has had an enormous influence on the practice of medicine. Whether or not increasing cost-consciousness has influenced doctor's attitudes about prescribing and knowledge of medication costs is unknown, and no studies have examined attitudes and knowledge about drug costs among hospital physicians and surgeons in an Irish setting, who are the primary providers for a major proportion of adults.

The purpose of this survey was to measure attitudes about prescribing and knowledge of drug costs among hospital general medicine physicians and surgeons in two urban university teaching hospitals. We were interested in

C. McGuire · S. King · G. Roche-Nagle (✉) · M. C. Barry
Department of Vascular and Endovascular Surgery,
St Vincent's University Hospital, Dublin 4, Ireland
e-mail: grnagle@rcsi.i.e; grahamrochenagle@hotmail.com

Table 1 Physician sample characteristics

	Medical ($n = 49$)	Surgery ($n = 53$)
Intern	23	25
Senior house officer	14	12
Registrar	6	9
Consultant	6	7

assessing the extent to which doctors are willing to consider the cost of medications and a patient's insurance coverage in the prescribing decision and also sought to measure knowledge of actual drug costs. In addition, we were interested in assessing differences in knowledge and attitudes between attending physicians and surgeons. With respect to efforts to reduce drug expenditure in Irish hospitals, ward doctors hold a key position, as they decide which drug is to be used. A secondary aim of this study was to ascertain the level of knowledge of hospital doctors in regard to the costs of commonly used drugs.

Methods

The study was carried out as an anonymous questionnaire survey among medical and surgical staff in two university hospitals. Doctors were surveyed during or after one of the daily departmental meetings. They were not informed beforehand and were asked to fill out the questionnaire immediately. This approach insured that most physicians participated in the survey and that answers were given without any prior preparation. The survey included questions regarding demographic variables, attitudes (willingness to consider cost when prescribing), and knowledge of actual drug costs.

The following demographic variables were collected: level of training and specialty. Physicians were asked to agree or disagree with statements about the relevance of cost for prescribing, using a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree (Fig. 1, question 1–5) and agree or disagree with other statements

Prescribing Practices Questionnaire

1. **I believe cost is an important consideration when prescribing.**
2. **I am often unaware of actual drug costs.**
3. **I have easy access to drug cost information.**
4. **I am willing to sacrifice some efficacy for affordability.**
5. **I prefer brand-name drugs to generic regardless of cost.**
6. **Have you been formally educated about drug costs?**
7. **When patients are self-paying for medications do you give stronger consideration to the cost of medications?**

Fig. 1 Prescribing practices questionnaire

Can you give estimates of the cost of a supply of:

5 day supply of Augmentin (625mg TDS) _____

1 month supply of Losec (20mg) _____

One week of Triple therapy: Zoton FT (30mg BD) _____

Amoxicillin (1g BD) _____

Klacid (500mg BD) _____ Total Cost: _____

Two week supply of Zydol (100mg QDS) _____

Two week supply of Difene (75mg BD) _____

Six weeks of Plavix (75mg) _____

1 month supply of Coversyl (4mg) _____

1 month supply of Emcor (5mg) _____

Fig. 2 Cost of medication questionnaire

(Fig. 1, question 6–7). Ten drugs were chosen for their frequent and common use in the two hospitals by analysing the drug reference lists of the hospital pharmacies. The drugs were selected from a wide range of indications covering both inexpensive and expensive agents. The participants were not asked to classify the drugs, but simply to state a price for an average course of treatment outlined. The actual cost of each drug was calculated from the standard dosage and the average price that the patients would be charged in a community pharmacy. The questionnaire stated the generic name, a popular brand name, the average daily dosage (in mg) and the length of prescribed treatment. The estimated therapeutic costs were requested (in Euro). Absolute deviations in Euro of the physicians' estimates from the actual therapeutic costs of 10% were deemed to be accurate costings. The time required for filling out the questionnaire was about 10 min. We used χ^2, Fisher exact, and Wilcoxon tests to evaluate differences between medical staff and surgical staff and between the different grades. Two-sided values of $P \leq 0.05$ were considered statistically significant. All analyses were performed with PC SAS 6.12 statistical software (Statistical Analysis Systems Inc, Cary, NC) Fig. 2.

Results

A total of 102 hospital doctors from departments of surgery ($n = 53$) and medicine ($n = 49$) in two university hospitals completed the questionnaire. A total of 120 questionnaires was handed out and 102 (84%) were completed and returned. On average, the clinical experience of the doctors was 5 years. Physicians generally agreed (68%) with the statement, "cost is an important consideration when prescribing." However, almost 88% of physicians surveyed were often unaware of actual drug costs and 97% were never formally educated regarding drug costs. Only 33%

Table 2 Cost of medication results (€)

Drug	Cost	Acceptable range	Cost estimations			Mean estimate	Range of estimates
			Accurate	Below	Above		
Co-amoxiclav × 5/7	20.63	18.56–22.69	21	49	32	25.51	5–200
Omeprazole × 1/12	77.27	69.54–84.99	8	83	11	54.59	10–350
Zoton × 1/52	37.76	33.98–41.54	13	69	20	26.48	6–100
Amoxil × 1/52	21.53	19.38–23.68	20	56	26	18.58	5–100
Klacid × 1/52	55.54	49.99–61.09	8	78	16	26.09	5–80
Zydol × 2/52	38.14	34.33–41.95	10	69	23	18.58	6–100
Difene × 2/52	18.64	16.78–20.50	27	61	24	33.84	5–150
Clopidegrol × 6/52	123.40	111.06–135.74	7	69	26	120.54	30–350
Coversyl × 1/12	30.55	27.50–33.61	11	70	21	54.85	12–175
Emcor × 1/12	18.98	17.08–20.88	14	25	63	55.68	25–140

believed they had easy access to drug cost data. Almost 70% somewhat or strongly disagreed that they would sacrifice some efficacy for affordability and only 7% would consider it. Regarding insurance coverage, 54% of physicians gave strong consideration to the cost of medications when patients were self-paying. Only 16% of physicians preferred brand-name medications over generic drugs regardless of cost.

In order to measure physicians' knowledge of medication costs, we requested them to estimate the cost of a course of regularly prescribed medication. Of the ten commonly used drugs that we asked about, the majority of physicians (88%) were inaccurate in their estimates for costs of the drugs and accurate in their cost estimates for only 12%; 50% were underestimated and 38% were overestimated. The mean and range of estimations are demonstrated in Table 2. Comparing responses among participants, there was a trend toward more junior residents having more knowledgeable and cost-conscious responses but this did not reach significance ($P = 0.06$). There were no differences between the surgical and medical specialties or grades in any of the other attitudes or practices we examined, including preference for brand-name drugs, willingness to sacrifice efficacy for affordability, or prescribing attitudes for self-paying patients.

Discussion

Physicians' awareness of the cost of pharmaceuticals is poor in our study. With only 12% of estimates within 10% of the true drug cost and the median estimate 55% away from the true cost, many of the estimates appear to be wild guesses. Our results confirm the findings of previous studies that physicians believe that the costs of drugs are important, while their actual knowledge of costs was poor [5, 7–9]. MIMS Ireland, or Monthly Index of Medical Specialities Ireland, is an independently edited publication designed as a prescribing guide for doctors. It is not always available on wards and perhaps this explains the perceived lack of available information to doctors. In addition, it is important to realise the trade price given for all products does not include pharmacist dispensing fees. They are quoted to enable the prescriber to compare the cost of proprietary preparations and do not have any relation to the retail cost of the drug, nor of its cost if obtained on a private prescription.

Financial constraints are a reality in almost all aspects of medicine. Pharmaceutical expenditure ranges from 8.5 to 29.6% of health-care spending within Organisation for Economic Co-operation and Development countries and is increasing faster than other areas of health-care spending in almost all these countries [10]. The Health Service Executive currently spends in the region of €2 billion annually on medicines for patients: 15% in hospitals and 85% in the community. Since 1997 there has been a 370% increase in these costs, which is two and a half times ahead of medical inflation [11]. The reasons for this are multifactorial. Manufacturers make medicines, wholesalers deliver them to pharmacies and pharmacies provide them to patients. Like the manufacturers and pharmacies, Ireland's wholesalers are paid for their services, such as distributing medicines to pharmacies. The HSE has been paying up to 18% of the medicine costs for this wholesale service, twice the European cost. This was unilaterally altered to 8% by the HSE in March 2008 only to challenged by some pharmacies and the decision overturned by the High Court in September 2008 [11]. In addition, the population is aging and therefore there is more demand for both hospital care and medications. The cost of providing some of this modern medication, especially cancer medications is very expensive. Furthermore, the Irish population has greater

than ever access to information regarding health, new treatments and preventative actions and finally health is a becoming primary concern for consumers.

Most countries struggle to reduce pharmaceutical spending as escalating costs and limited resources threaten other budgetary priorities [12, 13]. Initiatives that have targeted doctors in the past to reduce pharmaceutical spending include guidelines, fund-holding, and others [14, 15]. One way of helping to control drug costs would be for physicians to autonomously choose the least-costly medication when there are no substantial differences in safety and effectiveness between the least and most expensive. Price variations within drug classes [16] or between drug classes are common, and if physicians were to choose therapeutically equivalent but less-expensive drugs, large scale savings could be realised. Since 1993, General practioners (GP) contracted to the GMS have been allocated individual drug budgets. There are no sanctions for exceeding the budget, but the doctor may retain 50% of any savings and use it to improve the services provided. Following this initiative they prescribe branded generic products more often than their hospital counterparts. A similar type scheme may promote more economically friendly prescribing at a hospital level.

In addition to budget concerns, doctors must consider drug costs to their patients. Increasing pharmaceutical costs negatively impacts patients in two ways. First, high direct expenses for those of limited resources may mean a choice between medicines and necessities such as food or clothing [17]. Alternatively, patients who do not take their medicine as directed or go without the potentially beneficial therapies entirely [17] often suffer negative health consequences [18]. Unfortunately, patients may be too embarrassed to tell their physicians when they cannot afford their medicines [19]. It is also important not to forget that renewal of prescriptions also incur a cost of a GP visit. In other European countries many medications are a lot cheaper and can be bought over the counter and thus saving prescription renewal costs.

In conclusion, the results of this survey of Irish hospital physicians suggest that a more economically efficient use of drugs could be achieved by an improved knowledge of daily therapeutic costs. In the movement to contain healthcare costs it is extremely important to recognize the consistent lack of appreciation of the cost of everyday medications and the absence of education in this regard. Further information on the costs of drug therapy together with the introduction of therapeutic guidelines for the more expensive drugs is needed in order to reach a higher standard of therapy at the best possible price.

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