

Hormone replacement therapy: assessment of present use, costs, and trends

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SUMMARY

Background. Hormone replacement therapy (HRT) is probably unprecedented as a drug in widespread preventive use by a predominantly well population, but there is little direct data on current trends in use.

Aim. To estimate trends in the use and cost of HRT in Britain.

Method. Government prescription data and therapy cost data were analysed to provide trends in costs and point prevalence of the use of HRT since 1980. Projections were estimated to the year 2000.

Results. In 1987, HRT was used by an estimated 2.2% of women aged 40 to 64 years in England, and by 1.0% in Scotland. By 1994 this had risen to 21.7% in England, 20.4% in Scotland, and 21.3% in Wales. Between 1980 and 1986, costs remained steady at approximately £11 million per annum for England and £1 million for Scotland (1994 values). Between 1987 and 1994 they rose to £87 million for England, £10 million for Scotland, and £6 million for Wales (1994 values). Projections suggest that, by the year 2000, 25.4% of women aged 40 to 64 years (95% CI = 20.1–30.7%) will be taking HRT at any one time, at a cost of £150 million (95% CI = £142m–£157m: 1994 values). This implies an 'ever' user prevalence of at least two-thirds of women in this age group.

Conclusion. Use of HRT for long-term therapy is widespread and rising. It is estimated that prevalence has increased tenfold since 1987. Average individual costs of therapy have fallen by one third. The level of reduced risk of osteoporosis and cardiovascular disease, and the balance with cost and potential increased risk of breast cancer, are not yet established and are in need of clarification.

Keywords: hormone replacement therapy; prevalence; costs; prescribing trends.

Introduction

HORMONE replacement therapy is in widespread use by Hpost- and perimenopausal women. Until the mid-1970s it was widely believed in Britain that HRT should be used only to relieve existing menopausal symptoms, using the minimum dosage and duration necessary.¹ From the mid-1970s there was a move to use it long term in response to growing opinion that it would be effective in preventing postmenopausal osteoporosis. Reports of case control studies in the US in the mid-1970s, showing an association between unopposed HRT (mainly conjugated equine oestrogens) and endometrial cancer, received widespread publicity and resulted in a rapid fall in the use of HRT. Hunt *et al*¹ showed that, in the UK, numbers of prescriptions

more than doubled between 1973 and 1976, and fell by one third in the following four years (Figure 1).

The complex combinations of risks and benefits associated with HRT¹⁻⁵ are not fully understood, and recent studies have focused discussion on the balance of these in long-term use.^{6,7} Randomized controlled trials in the US and UK⁸ are planned to assess risks over different time periods, but it will be many years before the full results are available. There is little information on the level of use by women in Britain, and available data are fragmentary. This paper sets out to assess present use and costs, and to map the recent trends in prescribing and prevalence of HRT in order to estimate what the future usage may be.

Method

Net ingredient costs

Data on net prescription costs and numbers of prescriptions by drug group are collected and held by the Department of Health, Welsh Common Services Authority, and the Scottish Office, who provided the annual data on current costs of prescriptions for HRT for this study. Data for British National Formulary 6.4.1.1 and drug groups dydrogesterone and norethisterone from 6.4.1.2, detailed by individual drug subgroups, were provided from 1980 for England and Scotland and from 1990 for Wales. These data are available as annual net ingredient costs for individual drugs or narrow groups of drugs. The costs correspond with the Monthly Index of Medical Specialties (MIMS)⁹ prices and provide the basis for reimbursement of pharmacists. In the analysis, an adjustment has been made to allow for a discontinuity in the series from 1990; data for 1980–1990 excluded certain minor costs, such as prescriptions submitted by prescribing doctors for items personally administered. On the advice of the Department of Health, an addition of 10% has been made to data prior to 1990 to allow for these exclusions and to make the data consistent with the coverage of the current prescription cost analysis system. Cost data for all years are adjusted to 1994 values to correct for inflation.

Prevalence estimates

There are few direct survey data on the prevalence of use of HRT, and the available data are fragmented and unrepresentative, being for limited years and specific areas only. The prescription cost data, on the other hand, give full national coverage, and allow a precise measure of trends in costs. They also provide an opportunity for estimating prevalence of HRT use in England, Scotland, and Wales using estimates of annual costs of therapy and population data of numbers of women in the age range. To make these estimates of prevalence, the annual net prescription cost for each preparation sub-group has been divided first by the cost of an annual course of the sub-group preparation for that year, to obtain an estimate of the number of women (in terms of person years of treatment) using that sub-group preparation during that year. The total number of women (in terms of person years of treatment) on HRT in each country is given by summing the estimates of numbers of women using each of these preparation sub-groups. Estimates of the prevalence of use of HRT for each year and country are given by dividing these estimates by the population of women aged 40 to 64 years (the usual, wide

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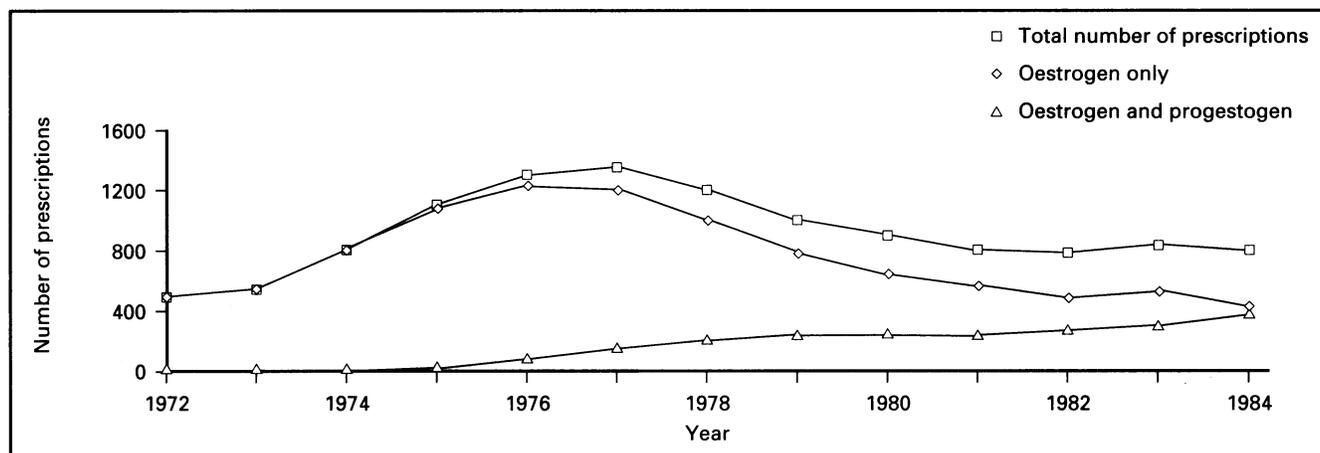


Figure 1. Hormonal preparations issued for the treatment of menopausal symptoms in the UK. Source: Hunt K, Vessey M¹.

age group that is likely to include most women using HRT). Implications of the methodology are discussed below. Similar methodologies have been used to estimate incidence and prevalence of oestrogen treatment in women in a Swedish population between 1977 and 1980,¹⁰ and of women using non-contraceptive oestrogens between 1966 and 1983 in USA based on three different subscription databases.¹¹

Projections

Projections of trends in HRT use have been estimated, fitting linear and quadratic models to data for England. The best fit was given by a quadratic time-dependent model fitted to the data on the rising curve of prevalence, and this has been used in a logistic regression for the projections and 95% confidence intervals to the year 2000.

Results

Costs

Net ingredient costs of HRT at 1994 prices are given in Table 1 for England, Scotland, Wales, and Great Britain. Between 1980 and 1986, the annual prescription costs remained steady at between £11 million and £12 million in England, and about £1 million in Scotland. From 1987, annual costs began to accelerate rapidly and, within the next seven years, National Health Service expenditure on prescriptions for HRT rose to £87 million in England in 1994 and £9.5 million in Scotland. Data for Wales are available from 1990, at which date use was low compared with either England or Scotland. Within the next two years, however, prescribing of HRT increased rapidly in Wales. In 1994, costs of HRT prescriptions in the whole of Britain were £102 million.

Prevalence

Estimates of point prevalence of HRT derived from the prescription data are given in Table 2 and Figure 2. These suggest that the use of HRT was stable between 1980 and 1987 at about 2% of women aged 40 to 64 years in England, and 1% in Scotland. Prevalence of use then rose steadily to reach 21.7% in England, 20.4% in Scotland, and 21.3% in Wales (21.5% in Great Britain) by 1994. In 1990, prevalence of use in Wales was relatively low at only a third of the rate for England and Scotland. In the past few years, use in Wales has risen rapidly to close the gap, and reached 21% by 1994. Survey estimates for single years from other sources and countries are shown for comparison in Table 2.^{10, 17}

Table 1. Cost of prescriptions for Hormone Replacement Therapy (£ million) (net ingredients costs at 1994 values).

	England £ million	Scotland £ million	Wales £ million	GB £ million
1980	10.688	0.970		
1981	11.307	0.881		
1982	11.069	0.926		
1983	11.662	1.059		
1984	11.340	1.090		
1985	11.325	0.983		
1986	11.965	1.077		
1987	13.657	1.269		
1988	20.795	1.755		
1989	36.023	3.125		
1990	42.626	4.257	0.759 ^a	47.642 ^a
1991	51.071	5.564	2.611 ^a	59.246 ^a
1992	64.699	7.173	3.941 ^a	75.813 ^a
1993	78.339	8.520	4.907 ^a	91.766 ^a
1994	86.641	9.507	5.709 ^a	101.857 ^a

^aData on dydrogesterone and norethisterone not provided for Wales 1990-1994. An adjustment of an additional 10% has been made to data for 1980-1990 to allow for a discontinuity in the series which excluded certain minor costs before 1990 (see first paragraph of Method).

Preparations in current use

Table 3 gives a breakdown of the main kinds of preparation in current use in England. In 1994, 5% of women on HRT used tibolone, a synthetic steroid that can control vasomotor instability in postmenopausal women but does not stimulate the endometrium and possibly has the advantage of reducing breakthrough bleeding. This contributed to 14% of the cost of HRT, being nearly three times the cost of other preparations. Since 1989, there has been a trend away from conjugated oestrogen plus progestogen (used by nearly a half of women on HRT in 1989 and by a quarter in 1994), towards oestradiol plus progestogen products (mostly given through patches) and tibolone. New products, such as continuous combined HRT, usually work without breakthrough bleeding, and products in gel form are also now being marketed.

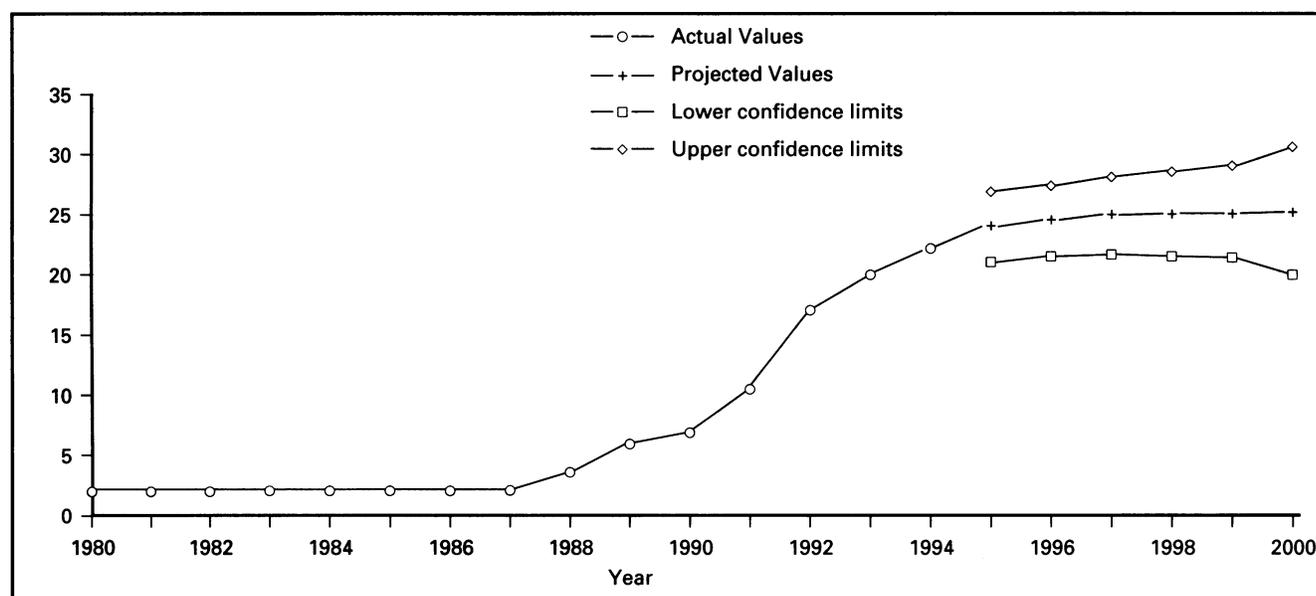
Projections

Figure 2 also shows a projection of prevalence (and 95% confidence intervals) of HRT use in England till the year 2000. This suggests a prevalence of 25.4% (20.1-30.7%) for women aged

Table 2. Estimates of percentage of women taking hormone replacement therapy at any point in time (ages 40 to 64 years unless otherwise stated).

	Estimates from prescription series				Estimates from prevalence surveys		
	England	Scotland	Wales	Sweden	UK	Finland ^e (45–64 years)	US ^f (50–65 years)
1978					3.0 ^a		
78/80						4.0	
1980	1.8	0.7		4–9 ^h			
1987	2.2	1.0				12.0	32.0
1989	6.5	4.1			8.2 ^b	19.0	
1990	8.0	6.2	2.4		9.0 ^c		
1992	17.8	16.5	17.7				
1993	20.1	18.5	20.5				
1994	21.7	20.4	21.3		20.0 ^g		

^aOxford,¹² ^bOxford,¹³ ^cGeneral Practice Research Framework (GPRF),¹⁴ ^dFinland,¹⁵ ^eUS (California),¹⁶ ^fStockton on Tees (ages 40 to 59),¹⁸ ^gSweden (ages 45 to 59).¹⁰

**Figure 2.** Prevalence of HRT (England). Projections to the year 2000.**Table 3.** Statistics regarding main hormone replacement preparations in current use in England in 1994 compared with 1989.

	Cost £ millions 1989	Cost £ millions 1994	% cost 1989	% cost 1994	% women 1989	% women 1994
Oestrogens (conjugated) plus progestogen	16.8	22.0	46.8	25.4	46.2	29.4
Oestradiol plus progestogen	7.3	18.9	20.3	21.9	9.4	17.2
Oestradiol	7.9	18.4	22.0	21.3	17.9	23.9
Tibolone	0.0	11.8	0.0	13.7	0.0	4.9
Oestrogens (conjugated)	2.3	7.7	6.5	8.9	19.5	20.6
Other preparations	1.6	7.6	4.4	8.8	7.6	4.0

40 to 64 years by the year 2000, steadying at 25.5% from the year 2001.

Discussion

These estimates show the extent to which use and costs of HRT have risen over the past few years and are clearly still on a rising curve. The estimates of point prevalence need careful interpretation. They are the average point prevalences, which are estimated

in terms of women-years of use of HRT in the population aged 40 to 64 years. The 25-year age range is used here, as in most other survey estimates, as it includes most users. It is not likely that many (or any) women will have continual therapy for such an extended period. If women taking HRT do so on average for 10 years (and the average is probably much less than this¹⁷), the 'ever' usage in the 40–64 year age range would be over 50% (and possibly considerably higher) compared with the 21% shown for the 'current' usage in 1994, and would reach two

thirds of women by the year 2000 (i.e. 2.5 times the point prevalence). An average use of five years would suggest a current 'ever' usage of 100% (i.e. five times the point prevalence). However, it is possible that, with the recent rapid rise in popularity of hormone replacement therapy, new users may be commencing therapy at all ages across the relevant age range.

As this 'novel effect' works through, the long-term 'current' prevalence may stabilize at a lower rate. Long-term prevalence is likely also to be strongly influenced by any new evidence relating to long-term risks and benefits. The analysis here is based on prescriptions made up for the patient (i.e. preparations received). It is possible that some women do not actually take the HRT they receive, and, to this extent, prevalence may be marginally over-estimated, although there are no data on this.

The estimates, calculated from national prescription data according to the formula above, are close to the recent sample survey estimates for the UK from the Medical Research Council (MRC) General Practice Research Framework (GPRF) (19% for 1993 compared with 20% above) and for Stockton (20% for 1994 compared with 21.5% above). They are, however, somewhat lower than estimates for the UK based on earlier surveys for Oxford (8.2% for 1989 compared with 6.5% from the estimates above for England) and for the UK from the MRC GPRF (9% for 1990 compared with 7.5% above for GB). This may indicate the above average usage in the earlier years in Oxford and the GPRF practices where prescribing may have been somewhat ahead of national practice at the time. Point estimates for Finland and California are also higher, even after taking into account the narrower age ranges. Prevalence in Finland in 1989 was similar to that in Britain in 1992/93, and the prevalence of 32% in California in 1987 for the age range 50 to 65 years is closer to our projections for the wider age group for the year 2000, indicating the concentration of usage in this older age group and, as might be expected, the slower uptake in the UK. It was reported from a survey in Seattle, USA (1973), that 51% of postmenopausal women had been exposed to replacement oestrogens with a median duration of 10 years;¹⁸ this is very close to our current estimates.

Conclusion

Use of HRT for long-term therapy is widespread in Britain, and is probably unprecedented as a drug in preventive use by a largely well population. Prevalence has increased tenfold since 1987. Average individual costs of therapy have fallen by one third. The level of reduced risk of osteoporosis and cardiovascular disease, and the balance with cost and potential increased risk of breast cancer, are not yet established and are in need of clarification.

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Improving Epilepsy Care

Date: 24.04.98 Friday 9.15am-4.30pm

Venue: The Manchester Postgraduate Health Sciences Centre, Manchester Royal Infirmary

Outline: An opportunity for general practitioners and practice nurses to audit practice care of epilepsy and to meet colleagues in other practices to develop ways of improving care.

Programme (provisional): To include advances in epilepsy care, the patient's perspective, interface between primary and secondary care group work.

Speakers: Dr Henry Smithson, RCGP/NSE Educational Fellow in Epilepsy, Cathy Bugler, Director of Information and Education National Society for Epilepsy, Brian Chappell, Lecturer Leeds Metropolitan University and NeuroEducation, Nicola Pickard Hon Sec. Epilepsy Specialist Nurse Association.

Cost: £20 per practice to include registration for one GP and one nurse per practice, audit package, coffee, tea and lunch. 12 hours PGEA applied for.

Details: Henry Smithson, The Surgery, Escrick, York, North Yorkshire YO4 6SH. Fax: 01904 728826; email: henrysmithson@compuserve.com