The pace of change in the hospital sector was at its fastest in the late 1980s, before the introduction of the 1991 NHS reforms. During 1986 to 1990-1 the rates of decrease in bed numbers and length of stay, and of increase in inpatient activity and throughput, were fastest. Only the rate of increase of day case treatment has accelerated more rapidly after 1991 (by a factor of four to five times its previous rate of growth).

The strong suggestion of an important interaction between the growth of the nursing home sector and the ability of the NHS to reduce the hospital bed stock should not be lost on those seeking to reform the hospital sector elsewhere. In particular, it may be necessary to substitute beds for beds (albeit low tech, low dependency beds) rather than simply be able to make beds "disappear" from the system entirely.

Finally, substantial increases in inpatient and day case admissions have taken place alongside more gentle increases in the volume of first attendances in the hospital ambulatory care sector. One viable interpretation of this trend is that improvements in therapeutic technology are as likely (if not even more likely) to increase the likelihood of admission to hospital as they are to shift treatment out of secondary care. Certainly, the "average" English person is now substantially more likely to be admitted to hospital than he or she was in 1982, but only marginally more likely to attend an outpatient department. Evidence from Scotland shows that the increasing likelihood of admission to hospital reflects both an increase in single admissions (more individuals admitted to hospital) and an increase in multiple repeat admissions (more admissions of the same individuals)[8]—but in the absence of linked record systems the English data cannot support such an analysis.

The maintenance and design of appropriate indicators and information systems for health service reform is a key lesson of the British experience. Some of the decentralising trends embodied in the 1991 reform package led to growing ignorance at central government level of what, elsewhere in the world, might be regarded as fundamental (and simple) information. Thus, the Department of Health collects a wide array of complex and sophisticated performance information from around the country[9 10]—but it is not possible from these routine data sources to say how many hospitals are run by the NHS in England, or how many of these hospitals operate an accident and emergency department. Some people might argue that the ability to say "This information is no longer collected centrally" has proved to be useful for governments and civil servants. Whether or not this is fair, those designing reform packages for the health sector elsewhere might wish to ensure that they have access to such vital, basic information if an effective ability to monitor the success of reform is to be retained.

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Economics notes

Discounting

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Until recently it has been common practice in economic evaluations to "discount" both future costs and benefits, but recently discounting benefits has become controversial. Discounting makes current costs and benefits worth more than those occurring in the future because there is an opportunity cost to spending money now and there is desire to enjoy benefits now rather than in the future. The reason why current spending incurs an opportunity cost relative to delayed spending is that a monetary investment yields a real rate of return and therefore there is a cost to spending money in the present.

For example, if £100 were invested with a nominal return of 10%, in one year's time it would be worth £110; if inflation was 4% this would result in a real return of £6 on every £100 invested. If for some reason £100 of healthcare spending were delayed for one year then (assuming prudent investment) we could expect that in one year's time we would have £106 for healthcare investment.

To take into account the opportunity cost of investing now rather than waiting one year we have to discount future costs. Therefore, if two healthcare interventions both released £100 in savings but for one we had to wait a year, then, all other things being equal, we would adopt the intervention that saved £100 now. This is because the £100 released now, if invested, would produce an extra £6 in a year's time (with a discount rate of 6%).

Failure to discount the future costs in economic evaluations can give misleading results. For example, an evaluation of cystic fibrosis screening revealed a cost of £80 000 for detecting and terminating one affected pregnancy.[1] This cost was compared with the future excess costs of treating an individual with cystic fibrosis, which was estimated to be £5000 a year over 25 years. As cystic fibrosis screening benefits (£125 000) outweighed the costs (£80 000) it was concluded that screening represented good value for money. However, if the averted costs had been

discounted (at 6%) then these would have been only £63 917, which alters the study's results (though not if the discount rate were only 4%).

Discounting future costs is uncontroversial and until recently so was the process of discounting health related benefits. The main argument against discounting health benefits is that health, unlike wealth, cannot be invested to produce future gains.[2] The Department of Health has thus recommended that health related benefits should not be discounted,[3 4] though more recent advice suggests future health benefits should be discounted but at a very low rate of 1.5%-2%.[5]

An important reason for discounting future costs and benefits is "time preference," which refers to the desire to enjoy benefits in the present while deferring any negative effects of doing so. Examples of human behaviour which implicitly discount future health effects abound. For instance smoking and drinking give current pleasure while incurring future (discounted) detrimental health effects. Indeed, research has indicated that smokers value future health benefits at a lower rate than non-smokers.[6] This desire to enjoy pleasurable benefits in the present time is often reflected in differential pricing of goods and services. Consider the hire of a video for home viewing. Despite the increased cost of newly released videos, many people are willing to pay the extra cost rather than wait until the price falls.

Failure to discount future health related benefits will tend to show more favourable cost effectiveness ratios compared with discounting. For instance, an evaluation of two view mammography for breast screening showed an undiscounted marginal cost per life year of £1200.[7] However, discounting the life years (at 6%) increased the marginal cost per life year by 74%, to £2092.

If future health benefits are not discounted this implies that health gains achieved this year and those achieved in 20 or 30 years are of equal value. As an example, let us assume that about £70 000 is available for hip fracture prevention in 100 women, and there are two strategies under consideration: 10 years of hormone replacement therapy (given to 50 year old women), which prevents 50% of fractures in 30 years' time; or 10 years of calcium and vitamin D (given to 70 year old women), which prevents 30% of hip fractures in 10 years' time.

In the table we show how discounting health benefits alters the relative cost effectiveness of the two interventions to prevent hip fracture. Without discounting, hormone replacement therapy produces a lower cost per avoided hip fracture than vitamin D and calcium. On the other hand if the hip fracture benefits are discounted, then the reverse is true.

In this example the decision on which preventive strategy to adopt is heavily influenced by discounting. Whether we discount health benefits, and at what rate, depends on how much value society places on current health benefits compared with future benefits. Intuitively it would seem best to be able to prevent hip fractures in the next 10 years rather than wait 30 years for this health benefit. What little research there has been into society's preferences about current health benefits compared with future ones suggests that people value current health benefits more highly than future ones and that people actually discount future health gains more highly than future wealth gains.[6] Many economists still hold the view that future health gains should be discounted.[9] In most economic evaluations the choice of discount rate will not affect the relative ranking of the interventions under evaluation. However, it is good practice to establish whether the evaluation results are critically affected by the discount rate by a sensitivity analysis using different discount rates.

Effects of discounting on the cost effectiveness of hip fracture prevention

	10 years of hormone replacement therapy*	10 years of vitamin D and calcium†
Cost of treating 100 women‡	£58 900	£75 100
No of fractures prevented§ (No of discounted fractures)	8 (1.39)	4.8 (2.68)
Undiscounted cost effectiveness ratio	£58 900/8 = £7362	£75 100/4.8 = £15 646
Discounted cost effectiveness ratio¶	£58 900/1.39 = £42 374	£75 100/2.68 = £28 022

*10 years' treatment reduces fractures by 50% in 30 years' time. †10 years of vitamin D and calcium reduces fractures by 30% in 10 years' time. ‡HRT costs from *MIMS*, calcium and vitamin D from Torgerson and Kanis.[8] §Assumes a 16% prevalence of hip fracture. ¶Discount rate=6%; formula $1/(1+r)^n$; r=discount rate, n=years into the future.

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Endpiece

Taking a lodger—19th century style

In *The Common Nature of Epidemics* by Southwood Smith (N Trübner, London, 1866) it is related that, some time back, the Statistical Society of London made a house to house examination in the parish of Marylebone. In the course of the inspection, apparently, one of the examiners "came to a house in which there was a remarkable room. It was occupied not by one family only, but by five. A separate family ate, drank, slept in each of the four corners of the room; a fifth occupied the centre." When the visitor asked a woman he found in the room how she existed, she replied: "Oh, indeed, your honour, we did very well until the gentleman in the middle took in a lodger."

The author, Dr Southwood Smith, was physician to the London Fever Hospital. He commented that every day he saw "the consequences of taking in such lodgers."

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