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Editors' view

From NCE to NICE: the role of pharmacoeconomics

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Medicines now cost the NHS more than £13 billion per annum, and account for around 10% of the overall budget. An ageing population, together with technological advances, means that the year-on-year rise in the total costs of medicines is likely to continue, despite the inevitable budgetary cuts in the wake of the economic downturn. The resulting scarcity of monetary resources necessitates trade-offs, which result in an opportunity cost, that is, the benefits forgone in the choice of one expenditure over others. The notion of opportunity cost is central to the activities of organizations such as the National Institute of Health and Clinical Excellence (NICE), the Scottish Medicines Consortium (SMC) and the All Wales Medicines Strategy Group (AWMSG), which are charged with making judgements on whether medicines are to be made available to NHS patients. The establishment of evidence-based medicine in the eighties, as the basis for more effective prescribing, was followed in the nineties by a recognition of the importance of value for money considerations for more efficient (cost-effective) prescribing. Health economic evidence, pharmacoeconomic if pertaining to medicines, is now accepted as an essential component of health technology appraisal both in the UK and further afield.

Contributors to this issue of the Journal describe the role of pharmacoeconomics from the perspectives of the NHS, academia and the pharmaceutical industry. The importance of clinical pharmacologists in bringing the comparatively young discipline of health economics to the forefront of clinical decision making is discussed by Walley [1], whose part 2 article follows a 15-year intermission since the publication of part 1, the first article on pharmacoeconomics in this Journal [2]. He also describes the application of pharmacoeconomics to the work of clinical pharmacologists, and how this has evolved over time. Indeed, trainees in clinical pharmacology are now required to acquire knowledge of the concepts of economic evaluation and of the cost effective use of medicines [3].

The methods of economic evaluations have become increasingly sophisticated; however, the underlying principle of assessing the cost-effectiveness of medicines relative to some existing alternative treatment(s), by comparing the additional costs to the health gains (typically expressed as quality-adjusted life-years, QALYs), has remained unchanged. The article by Edlin and colleagues [4] gives a peek inside the health economist's toolbox. They describe the use of cost effectiveness analyses for resource allocation, and the potential role of programme budgeting and marginal analysis as one way to link investment in the new, with disinvestment in the old [5].

NICE, SMC and AWMSG assess the cost-effectiveness of medicines according to their incremental cost-effectiveness ratios (ICERs). Medicines whose ICERs fall below the range of £20 000 to £30 000 per QALY gained are usually considered to represent good value for money, and are more likely to be approved for use in the NHS than medicines with ICERs that exceed this notional threshold. As the threshold is supposed to represent the marginal value of health, approving medicines whose ICERs fall on the threshold effectively results in no net gain in population health. It follows that approving medicines whose ICERs exceed the threshold would result in a net loss in population health. In such cases, negative recommendations are warranted, but are often unpopular, and viewed by some (most notably the pharmaceutical industry, the press and patient organizations) as 'denying patients the treatments they need'. That said, decisions are not wholly reliant on cost per QALY calculations, and medicines whose plausible ICER estimates exceed the threshold are sometimes approved. Rawlins and colleagues from NICE [6] detail the 'special circumstances' that apply in such cases.

To facilitate the entry of medicines that are otherwise not cost-effective to the UK market, the Pharmaceutical Pricing Regulation Scheme (PPRS) [7], implementing some of the recommendations of the report by the Office of Fair Trading on value-based pricing, makes an explicit

allowance of flexible pricing and patient-access schemes. Reviewed in this issue by Towse [8], these schemes link prices to health outcomes. They have evolved since the first scheme was introduced in 2002, at a projected cost of £500 million for patients with multiple sclerosis to receive beta-interferon and glatiramer acetate. Interim findings of that scheme are contraversial and hampered by missing data [9]. It has also been criticized by the MS Society which has since withdrawn its support [10], despite over 5500 patients gaining access to treatment who otherwise might not have. Newer schemes have also been criticized for not being practicable [11].

Towse [8] warns that any increase in the restriction of access to new medicines might impact on the choice of the pharmaceutical industry to locate in the UK. However, compared with some other health technology appraisal organizations internationally, NICE has been lenient in its recommendations [12] which begs the question where might they relocate? Health economics is gaining authority, even in laissez-faire USA.

A further implication of the PPRS [7] is the recommendation for generic substitution by pharmacists in primary care. The majority of prescriptions (83%) are already written generically, but an additional 5% of items prescribed are available as a generic. Reclaiming this missing 5% is estimated to save up to £41 million (about the same as was spent, needlessly, on esomeprazole in 2008 in the community in England [5]). However, not all drugs may be appropriate for generic substitution. Specific cases where substitution is not warranted, for instance where there are potential differences in bioavailability, are important to note. Johnston [13] argues against the switching of antihypertensives, as this might affect treatment effectiveness, reduce patients' adherence and incur greater costs as a consequence of additional contact with the health service resulting from uncontrolled hypertension. Duerden and I [14] disagree, and refer to a systematic review of studies comparing branded and generic cardiovascular medicines, which concluded that there was no evidence that brand-name drugs were superior to generics [15].

So what does the future hold? The pervasiveness of pharmacoeconomics has been noted before [16]. It already has significant influence on pharmaceutical industry decisions on areas for investment, the range of emergent new chemical entities (NCEs), 'go/no-go' decisions during drug development and, ultimately, the availability of new medicines. These influences will be felt more acutely, by the pharmaceutical industry, the NHS and patients. Economic calculations and appraisal criteria (e.g. special dispensation for life-extending, end-of-life treatments) by organizations such as NICE have evolved, and will continue to evolve. There will be a wider use of risk-sharing schemes; there will be pressures for more decisions to consider disease severity, prognosis, treatment innovation and other 'special circumstances'; analysts will make increasing use of QALYs derived from disease-specific health-related quality of life instruments; and consideration of the wider impact of treatments on the costs and benefits to carers and family members will be on the agenda. Unpopular decisions will carry on being made, and the politicization of NHS expenditure on medicines will continue. It remains to be seen whether NICE decisions will again be pre-empted by Ministers (as in the case of trastuzumab), or changes in the appraisal criteria introduced part way through a NICE appraisal (as with sunitinib). On the whole, NICE, SMC and AWMSG have actively embraced the principles and practice of health economics and achieved their aims very successfully. In contrast, the application of economics in local decision making remains amateurish and would benefit from pharmacoeconomic input. Responsible prescribing requires prescribers to be conscious of costs, but there are surprisingly few health economists employed by the NHS. This should be readdressed, particularly given the complexity of the methods for the explicit consideration of costs in making clinical decisions, and their inherent features that limit transparency.

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