



# Drug Pricing



The government intends to reform the way in which drugs purchased by the NHS are priced. It aims to ensure that drug costs more fully reflect clinical benefit and to improve patient access to new treatments. This note outlines current pricing policy and examines other options to evaluate drug pricing, including “value-based” pricing.

## Background

The NHS is the main buyer of pharmaceutical products in the UK. Prices for prescription drugs in the NHS are currently set through discussion between manufacturers and the Government. Prices for branded (on-patent) and generic (copies of off-patent brand) drugs are set differently. Though generics tend to be cheap, branded drugs are more expensive (sometimes very), and their prices are not necessarily based on their clinical value.<sup>1</sup> Pharmaceutical companies have long produced drugs based on relatively simple chemicals. These drugs (such as cholesterol-lowering tablets and antibiotics) are used to treat common diseases or infections and benefit millions of people, widely distributed across the population. The financial return for industry enables further investment on research and development (R&D) and generates profits.

In recent years, pharmaceutical R&D has slowed and has tended to concentrate on smaller markets such as conditions affecting fewer people or drugs tailored to meet an individual's needs. In many cases this involves developing more complex drugs. These may be tailored to treat particular populations of patients with specific diseases, often in conjunction with a diagnostic test.<sup>2</sup> For example, Herceptin targets a type of breast cancer, which affects one in four women diagnosed with the disease, by targeting a receptor that is abnormally expressed in cancer

## Overview

- Drugs purchased by the NHS are not always priced relative to their clinical value.
- The National Institute for Health and Clinical Excellence evaluates clinical and cost-effectiveness which can be controversial.
- The Office of Fair Trading argues that drug prices should reflect their clinical benefits and current policy wastes NHS resources.
- New measures implemented some aspects of value-based pricing in 2009. The Government has announced that it will implement value-based pricing but it is unclear whether this will save money, and details about the reform are unclear.
- The pharmaceutical industry welcomes the concept of value-based pricing, but is concerned about the impact on profits which are needed to make research viable.

cells of some women.<sup>3</sup> Thus Herceptin is ineffective for the three quarters of female cases that do not express this receptor. Personalised medicines can incur high R&D costs, leading to higher drug prices.<sup>2</sup>

The NHS faces difficult choices on how to allocate resources so that patients have optimum access to new treatments, which may be costly. The Association of the British Pharmaceutical Industry (ABPI) estimates that the NHS will save up to £2.7bn by prescribing generic rather than patented drugs by 2013, as many drugs are coming off patent. It argues that these savings could be used to fund innovative treatments. The government intends to launch a new Cancer Drugs Fund to increase patient access to cancer drugs; a consultation on how this will be implemented is expected in autumn 2010.

However, pressure to reduce the budget deficit may increase attention on making savings from the NHS drugs budget. The National Institute for Health and Clinical Excellence (NICE, see Box 1) evaluates the clinical and cost effectiveness of drugs, health technologies and clinical practice for the NHS.<sup>4</sup> It does not negotiate drug prices. Currently around 40% of drugs new to the UK market are evaluated by NICE every year.<sup>5</sup>

## Pharmaceutical Price Regulatory Scheme

### Main Elements of the Scheme

The prices of branded prescription medicines supplied to the NHS are currently controlled by the Pharmaceutical Price Regulation Scheme (PPRS), a voluntary agreement between the Department of Health (DH) and the pharmaceutical industry.<sup>6</sup> This regulates the profits that companies can make from NHS sales, and is typically re-negotiated every five years. The current scheme was launched in January 2009. The PPRS has two main elements for controlling drug prices:

- **profit control** using caps, (to a maximum of 29.4%), which are imposed after allowances for R&D expenditure.<sup>6</sup> This means that a company can adjust the price of new drugs within its portfolio, as long as the overall profit does not exceed the cap. However, in practice it is very difficult to estimate global companies' profits from the UK, and excess profits are rarely paid directly back to the DH, but may be offset by alternative mechanisms (for example through price cuts). The ABPI believes that due to the level of price cuts in recent years, profitability levels are lower, thus excesses rarely arise.
- **price cuts** are negotiated in each PPRS, usually for older drugs. The 2009 PPRS will deliver an overall price cut of ~5% over its five years of operation.<sup>6</sup> Industry prefers negotiated price cuts to the payment of excess profits back to the DH, to ease the administrative burden. Price cuts are negotiated across all drugs regardless of whether they are deemed cost-effective or not.

### The PPRS and International Pricing

One result of the PPRS is that the UK has a national list of drug prices which is widely used by other countries as a yardstick for setting their own prices. The Office of Fair Trading (OFT) estimates that up to 25% of world pharmaceuticals sales reference UK prices to some extent.<sup>1</sup> Companies are thus particularly sensitive about any agreement that reduces the UK list price of a drug as this can have a knock-on effect on the profits made on sales elsewhere in the world. Successive price cuts and exchange rate movements mean that UK prices are currently amongst the lowest in Europe.

### New Mechanisms in the 2009 PPRS

Recent years have seen debate about whether the PPRS is achieving the balance between allowing patients access to innovative medicines while ensuring value for money for the NHS and a fair return on investment for industry. The following sections look at some of the new mechanisms in the PPRS which aim to achieve these combined goals.

#### *Flexible Pricing*

The 2009 PPRS introduced provisions to allow companies to change the price of a drug after it has been marketed. Companies can apply for a price change if:

- new evidence becomes available about the effectiveness of a drug when used for existing purposes (indications).

#### **Box 1. The National Institute for Health and Clinical Excellence**

##### **Determining the Value of Drugs: Health Economics**

NICE evaluates both the clinical and cost effectiveness of new drugs on behalf of the NHS for England, Wales and Northern Ireland (the devolved administrations have separate bodies discussed below). The NHS has a fixed budget so any new drug recommended by NICE comes at the cost of other treatments.<sup>7</sup> NICE uses a health economics model to compare the therapeutic gains of a new drug to an existing treatment by using a tool called the Quality Adjusted Life Year (QALY) unit. QALYs are used to measure the gains (in life expectancy and quality of life) provided by drugs for different conditions in a consistent way (so that for example drugs for heart disease and hay fever are comparable). NICE applies a maximum value that the NHS should pay for a QALY. Prices over the value at which drugs are deemed to displace too many resources that could go to treating other patients are not considered cost-effective, except under exceptional circumstances. Each drug is considered on a case by case basis. Generally, however, if a treatment costs more than £20,000-£30,000 per QALY, then it would not be considered cost effective.<sup>7</sup>

In 2009, recognising the value that the public attaches to the end of life, NICE introduced "end-of-life" criteria, to increase flexibility when assessing certain, innovative new drugs. Treatments at end-of-life are generally expensive, including new cancer drugs. The scheme recognises that R&D costs are higher for these drugs, which target a small percentage of the population. Therefore no threshold for "end-of-life" economic value is set.

- evidence becomes available about the effectiveness of a drug for new indications. Companies can apply to change the price only of products launched on or after 1<sup>st</sup> September 2007.

In each case, NICE conducts a review using its standard methodology to evaluate whether the medicine represents value for money to the NHS at the proposed new price.

#### *Patient Access Schemes*

The 2009 PPRS placed greater emphasis on the use of Patient Access Schemes (PASs). These are proposed by a pharmaceutical company to improve the cost-effectiveness of a drug. There are two types of scheme:<sup>6</sup>

- **financially-based** - a company offers a discount on the new drug dependent on the number and type of patients it is used on, patient responses to treatment and the dose required. Tarceva®, a drug for non-small cell lung cancer, has a simple discount for NHS use.
- **outcome-based** - if a drug has proven clinical value, the company can re-negotiate a price increase. Conversely, where the company agrees a price with the DH and the clinical value is less than expected, a rebate is negotiated for the NHS. Velcade®, a cancer drug for multiple myeloma, is available through a scheme that provides a full NHS discount if the patient ceases to benefit.

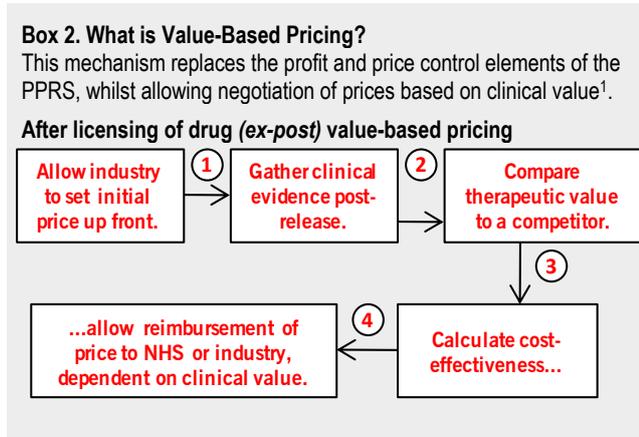
Often, patient access schemes are a combination of these two types. The NHS is presently operating 15 PASs.<sup>8</sup> Each scheme is specific for one drug to treat a disease in a subpopulation (or indication) of patients. For example, Iressa®, for non-small cell lung cancer, is given to cancer patients who have tested positive to a diagnostic test. The ABPI comments that such schemes are welcomed by pharmaceutical companies, as they are not reflected in a

drug's UK list price, and thus will not affect worldwide markets.

### Value-based Pricing

This approach links the price of a drug to cost-effectiveness based on clinical evidence (Box 2). It is the principle behind the patient access schemes that the DH introduced in 2009. In 2007, the OFT published a study of the PPRS that found that some branded drugs prescribed in large volumes were up to ten times more expensive than substitutes that deliver similar clinical benefits. It argued that where drug prices are out of line with value, the NHS is not making effective use of its funds, and that the mechanisms to control profits and price cuts do not reflect a drug's value to the NHS. For example, the statin *Atorvastatin* is ten times more expensive than *Simvastatin*, but has little increased clinical benefit for many patients.<sup>1</sup> The OFT suggested £500m could be saved if several drugs commonly used in the NHS were purchased on a value-based price scheme.<sup>1</sup> It concluded that:

- all branded drugs should be assessed alongside alternatives (including generics);
- the NHS is not making effective use of its resources;
- prices should be set according to their clinical benefit, by using value-based pricing (Box 2). Value-based pricing initiatives should be phased into the PPRS.



Some health economists argue that the new PPRS scheme has not gone far enough. Under the current scheme, drugs were priced (and prices capped) according to profits on NHS sales. Value-based pricing links cost to clinical evidence. Proponents state that value-based pricing would help to focus innovation and investment on patient needs. Others commend new elements in the PPRS - such as flexible pricing - as a step in the right direction but criticise the voluntary nature of the scheme, the fact that it does not cover all (branded and generic) drugs and the lack of details in how to apply it in practice. Some suggest that true value-based pricing may provide better value for the NHS.

### Policy Options

#### Maintaining the 2009 PPRS

Maintaining the PPRS scheme would incur no extra costs. One of its main advantages is that it is relatively inexpensive to run. However, the OFT report questioned whether it:

- delivers value for money for the NHS;
- delivers prices that truly reflect a drug's value;
- properly rewards innovation;
- provides stability required by the pharmaceutical sector.

In its response to the OFT report, the Department for Business, Innovation and Skills (BIS) noted that these considerations had been addressed in the negotiations leading to the 2009 PPRS.<sup>9</sup> It felt that the emphasis on encouraging generic substitution and the price cuts for branded drugs negotiated in the 2009 PPRS ensured that the NHS received value for money. It also suggested that the two new mechanisms – flexible pricing and PASs – provide a means to ensure that prices reflect the clinical value of drugs.<sup>9</sup> The BIS response suggests that in providing freedom of pricing for new products the PPRS rewards innovation, and notes that the 2009 PPRS also contained an innovation package.<sup>9</sup> Finally the department noted that the five year, voluntary nature of the PPRS is designed to create a stable environment for the pharmaceutical sector.

#### Administration of PASs

There are no fixed costs for PASs. Some offer simple discounts applied at the point of sale. Those involving dose capping or rebates are more complex. PASs are an administrative burden on the NHS and this is considered by NICE as part of its assessment. If an appraisal is positive, each healthcare trust is responsible for administering the scheme. NICE's Patient Access Scheme Liaison Unit works with industry to reduce the administrative burden, which will increase as more schemes are implemented. NICE and the ABPI suggest that pharmacy administration systems need to be enhanced to cope with discounts, free stock and rebates.

#### Impact of PASs on Global Drug Prices

Some pharmaceutical companies are concerned that countries that use the UK list price as a reference will be able to work out from NICE guidance the savings the NHS is making through PASs. While NICE does not negotiate prices, PASs are worked into their calculations on cost-effectiveness. Some industry commentators suggest that there are concerns that NICE guidance could be extrapolated backwards to work out the actual cost of the treatments, which could lead to a drop in their global profits.

#### Moving to a Value-based Pricing System

Changing to a value-based pricing scheme would involve set-up costs. The OFT argues that while costs would be high initially, it would provide long-term value for the NHS. Some companies (for example GSK and AstraZeneca) are open to the concept of value-based pricing, but argue that prices reflect a number of factors including R&D costs. Drugs for personalised treatments and rare diseases incur

increased R&D costs. The Government is yet to announce details of how it will implement value-based pricing. Industry would like more dialogue with the government on how value-based pricing will be employed. This liaison is key, as this sector is the third largest UK industry, investing £4.5bn in 2007 on R&D alone in the UK. The ABPI estimates that 1 in every 5 drugs produced has been developed in the UK.

#### *Impacts on NICE*

The OFT recommended several routes to implement value-based pricing. With one option, all drugs currently available on the NHS would have to be evaluated by NICE and its equivalents in the devolved administrations (the Scottish Medical Consortium and the All Wales Medicine Strategy Group).<sup>1</sup> The OFT suggested that a separate pricing unit in the DH should be set up.<sup>1</sup> NICE's processes and quality of decision-making are internationally regarded as the gold standard for health technology assessments, and NICE undertakes continual development to improve its processes. The cost of assessments varies between institutions; each NICE appraisal is estimated to cost between £75,000 - £150,000.<sup>1</sup> Appraisals account for £4.8m (8%) of NICE's annual £60m budget.

The OFT estimates that £6m a year would be required for the three bodies to conduct 90 assessments per year over 5 years.<sup>1</sup> Assessments vary in cost and intensity since well-established drugs do not require such in-depth analysis as novel substances. Other potential costs include £500,000 a year for a pricing unit in the DH.<sup>1</sup>

#### *Impact on Drug Research in the UK*

Industry requires reassurance from the Government that there will be return on investment through purchasing new medicines. Evidence suggests that the UK lags in taking up new medicines compared with other European countries. For example, the DH's Cancer Reform Strategy reports that the UK has a take up rate of new cancer medicines at 60% of that in other European countries.<sup>10</sup> Clinical trials compare a new drug against the best standard of care currently available (for example the latest available drug). Due to a number of factors, such as the poor take up of new medicines in the UK, companies sometimes carry out more clinical trials abroad. It is considered unethical to perform a clinical trial against older, less effective drugs.

### **Challenges in Assessing the Value of Drugs**

There are two elements in evaluating a drug. Licensing bodies assess the efficacy (success in providing a desired result) and safety of a new drug, while NICE measures the clinical and cost effectiveness of a new drug. Cost-effectiveness can be measured only once a drug has been licensed and in clinical use, allowing assessment over time, through comparison with other treatments. This can take a long time. NICE can perform an assessment at launch based on an estimate of cost-effectiveness taken from the pre-launch trials combined with modelling; information from industry is usually, but not always relevant to these

analyses.

For instance, one of the first PAS was for beta-interferon, used to treat multiple sclerosis (MS). NICE initially rejected the drug as not being cost-effective, a decision that was criticised by patient groups which claimed that it had not looked at the long-term benefits of treatment. The DH implemented a PAS to make the treatment more cost-effective. Ten years on, there is still no consensus as to whether this is a cost-effective treatment for MS.

### **Defining the Non-economic Value of Drugs**

The QALY (see Box 1) is criticised for being too blunt a tool for assessing a drug's value. It examines cost-effectiveness and clinical benefit from the patient's perspective. "Me-too" drugs - those which are very similar to existing drugs but may offer only minor additional clinical benefits - are often not cost-effective under the current system (as they offer small QALY gains). Key areas that the QALY analysis overlooks include the impacts on carers and family members as well as the wider social costs and benefits.

NICE argues that the QALY "is a tool, not a rule", and allows a "measure of benefit" that helps it to make decisions across a wide range of diseases. A report by Sir Ian Kennedy on behalf of NICE concluded that the QALY is the most effective, albeit imperfect, tool to determine a drug's "value".

Industry disagrees. For example, four treatments for Alzheimer's disease were deemed cost-effective by NICE for moderate to severe disease, but not for mild disease. Industry argues that from a patient's perspective, carers benefit from patients taking such drugs earlier in their illness and that the QALY does not take this into account. Clinical trials are geared towards providing safety and efficacy data to obtain market authorisation from regulatory agencies rather than assessing quality of life from patient or carer perspectives. NICE is providing early scientific advice to industry during clinical trials so that it can collect better evidence to include quality of life in assessments.

#### **Endnotes**

- 1 Office of Fair Trading, *The Pharmaceutical Price Regulatory Scheme*, February 2007
- 2 *Personalised Medicine* POSTnote 329 Parliamentary Office of Science and Technology, April 2009
- 3 [www.herceptin.com](http://www.herceptin.com)
- 4 Sir Ian Kennedy, *Appraising the Value of Innovation and Other Benefits: a short study for NICE*, July 2009
- 5 House of Commons Health Committee, *National Institute of Health and Clinical Excellence*, HC 27-1 (2007-2008), December 2007
- 6 Department of Health, *The Pharmaceutical Price Regulatory Scheme 2009*, December 2008
- 7 Claxton et al. Value based pricing for NHS drugs: an opportunity not to be missed, *British Medical Journal*, Vol 336 (2008), 251-254
- 8 Towse, A. Value-based pricing, research and development, and patient access schemes. Will the United Kingdom get it right or wrong? *British Journal of Clinical Pharmacology*, (2010) *In Press*
- 9 Department for Business, Innovation and Skills, *Government Response to Recommendations aimed at Government Contained in the OFT report: The Pharmaceutical Price Regulation Scheme*, June 2009
- 10 Department of Health, *Cancer Reform Strategy*, December 2009