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Chapter 4.

Ensuring Efficiency in Pharmaceutical Expenditures

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This chapter examines options for ensuring good value for money in pharmaceutical expenditure, keeping in mind both the short- and the long-term view. It then discusses the scope for improvement to existing policies and emerging alternative approaches.
Introduction

OECD countries collectively spent more than USD 550 billion on pharmaceutical products in 2005, accounting for about 1.5% of gross domestic product (GDP). Although pharmaceutical expenditure accounts for a relatively minor share of OECD countries’ spending on health care on average less than a fifth of total health expenditure) the share has been increasing over the past 20 years. Spending on pharmaceuticals is growing at an average rate of 5.7% per year, faster than average growth in expenditure on other types of health care, and faster than GDP.

Policy makers’ interest in pharmaceutical expenditure and its growth relative to the economy as a whole reflects the large public stake in financing. The public sector is the primary source of financing for pharmaceuticals, accounting for 60% of total pharmaceutical expenditure in OECD countries, on average. Nevertheless, households generally spend more out of pocket for pharmaceuticals than for other forms of health care. Among 17 countries for which data are available, the average share of out-of-pocket expenditure in total pharmaceutical expenditure in 2005 was 32%, compared to 18% for total health expenditure.

Variation in per capita spending on pharmaceuticals is notable in its relative consistency across OECD countries: half spent within 20% of the average in 2005. The United States spent the most (close to double the OECD average) and Mexico the least (less than half the average).

Differences in per capita expenditure levels reflect differences in the level of retail prices paid for pharmaceutical products and in the volume and mix of products consumed. Five countries (Canada, Iceland, Germany, Switzerland and the United States) had average retail prices that were 30% to 85% above the OECD average. Nine countries (Australia, the Czech Republic, Greece, Hungary, Korea, Poland, the Slovak Republic, Spain, and Turkey) had price levels between 68% and 81% of the OECD average. Differences in retail prices reflect not only differences in prices received by manufacturers for their products but also important differences in distribution costs (ranging from about 20% to 37% of retail prices) and value-added taxes (ranging from 0 to 21% of retail prices).

With the exception of the United States, the countries that consumed the most pharmaceuticals in 2005 (Australia, France and Spain) had below-average retail price levels. Mexico, New Zealand, Poland and the Slovak Republic, had the lowest level of consumption. Income per capita is positively correlated across countries with both the volume of pharmaceutical consumption and expenditure per capita. However, per capita income explains only one quarter of the variability observed in the per
capita volume of consumption across OECD countries, and even less of the variability in expenditure or price levels, indicating that other explanatory factors are at work.

Pharmaceutical markets differ notably in the availability and use of generic alternatives to original products that have gone off-patent, and in the extent to which significant savings are achieved through price competition in the off-patent market. Generic products accounted for just 14% of the global market in terms of value, although more than 40% of products sold in several large markets, including Germany, the United Kingdom and the United States, are generics. By contrast, generics have less than a 10% share of the market in terms of both volume and value in Belgium, Italy, Portugal and Spain.

Pharmaceutical policy making can have multiple objectives that must be balanced with one another to arrive at the policy mix that best reflects national priorities. The objective of ensuring affordable access to effective medicines runs up against strong pressures for public cost containment. There is also a tension between health system performance objectives and those pertaining to industry in several OECD countries which have, or aspire to have, a significant domestic pharmaceutical industry presence and activity.

But perhaps the most difficult trade-off in pharmaceutical policy is that between static efficiency (maximising consumer welfare by getting the most health value from today’s expenditures constrained by the limits of present technological capability) and dynamic efficiency (creating incentives for research and development of products that improve capacity to prevent health conditions and cure diseases in the future). Getting the best possible price or lowest possible expenditures for pharmaceutical products in the market today may mean having fewer and less innovative alternatives for the future.

This chapter is intended to help policy makers consider options for ensuring good value for money in pharmaceutical expenditure, keeping in mind both the short- and the long-term view. It is important to recognise that the appropriateness of particular policies depends heavily on national context and the weights ascribed to objectives when making trade-offs. The first section provides an overview of current policies and their impact on efficiency of pharmaceutical expenditure, noting key trade-offs with other goals. The second section suggests improvements and points out emerging alternative policies. A policy checklist summarises key considerations for policy makers seeking to enhance efficiency.
Current policies, instruments and experiences and their impact

While each OECD country has a unique mix of pharmaceutical policies, their policy environments share several common features that have important implications for the resulting market dynamics. First, all OECD countries have established systems of intellectual property rights (IPR) designed to foster innovation by providing innovators with rights that exclude unauthorised production and sale of an invention for a set period of time. Second, all have established regulatory authorities that authorise firms to market their products on the condition that they meet standards of quality, safety, and efficacy. Despite some cross-country variations in IPR and marketing authorisation, these types of policies all typically raise prices by limiting the potential for competition.

On the other hand, OECD countries show a great diversity in the coverage of the population against pharmaceutical expenditures, in pricing and reimbursement policies, and in policies used to influence the volume and mix of drugs used.

**Coverage of pharmaceuticals**

In an effort to promote affordable access to pharmaceuticals, all countries subsidise the purchase of pharmaceuticals for some or all of their populations. OECD governments generally treat pharmaceuticals (like health services generally) as a merit good, that is, a good whose consumption should not be determined solely by individual preferences and ability to pay. Here, there is a great deal of variation among OECD countries, ranging from financing of public clinics that provide pharmaceuticals to the uninsured in Mexico, to the tax subsidies for employer-sponsored health insurance benefits in the United States.

The coverage schemes that subsidise the amount individuals spend on pharmaceuticals and protect them against the risk of incurring high out-of-pocket costs also distort the pharmaceutical market, affecting both prices and volumes of consumption. They define the degree to which the pharmaceutical market is subsidised, with greater subsidies resulting in relatively lower consumer price elasticity of demand. While there is great cross-country variation in cost-sharing requirements, individuals in OECD countries typically bear much less than half the cost of their pharmaceutical consumption. As a result, consumption is greater than it would be if individuals paid the full cost.
Forms of pharmaceutical coverage: from uniform coverage by a single scheme to multiple plans offered by competing providers

Most OECD countries have a common scheme for pharmaceutical coverage: national regulations define the benefits covered (or excluded) and the level of cost sharing, though coverage may be provided by a single scheme or by multiple insurers, competing or not. By contrast, in a few OECD countries (e.g., the United States and Canada), pharmaceutical coverage is mainly supplied by competing insurers, which are free to define premiums, benefits covered, and the level of cost sharing.

This distinction is important in that it largely defines the market power of the payers or purchasers, which is determined by the number of potential customers represented (considered as a share of the total market for a product) and their willingness and ability to pay. Within a country, a system with a single purchaser or authority acting on behalf of payers collectively will have greater power to obtain price concessions from pharmaceutical sellers, compared to a system in which the national market features multiple schemes operating (and purchasing) independently. However, competing insurers or funds may be able to be more active or discriminating in their purchasing efforts to best meet the demands of those covered, to the extent that those persons are free to choose a competitor – including one that is more or less active in purchasing – if they are dissatisfied.

Formularies determine comprehensiveness of pharmaceutical coverage

Coverage schemes vary greatly in the range of benefits offered. In schemes with what are known as open formularies, every prescription drug approved for marketing is covered and the schemes generally act as price takers. Certain categories of medicines may be excluded, or particular products specified on a so-called negative list (as used in Germany and the United Kingdom, for example). Most coverage schemes adopt positive lists or closed formularies which list drugs covered by the scheme and associated restrictions (second course therapy, prescription by a specialist, prior authorisation, limitation of reimbursement to some indications, etc.), as well as the level of reimbursement or cost sharing. The criteria used to determine inclusion in positive lists varies, and may or may not include a formal assessment of the cost-effectiveness of a product relative to therapeutic alternatives.

Coverage restrictions are arguably blunt instruments compared with practice guidelines and other tools at the disposal of policy makers. Even so, they can be used to promote value-for-money in pharmaceutical spending,
steering consumption and reimbursement towards the most cost-effective medicines. Furthermore, coverage schemes that are empowered to select some drugs and exclude others within a therapeutic area, or that can grant preferred status for some drugs, benefit from increased purchasing power in price negotiations with pharmaceutical companies.

Cost-sharing mechanisms are used to contain and steer the demand for pharmaceuticals

Most drug coverage schemes in OECD countries require that users contribute to the cost of medicines they consume through prescription fees, co-insurance rates and, more rarely, deductibles. From the payer’s point of view, cost-sharing mechanisms shift costs towards users and can steer the demand for pharmaceuticals. Private insurers in the United States use tiered co-payments to orient patients’ demand towards the most cost-effective treatments (the cheapest therapeutic alternative). Public schemes less commonly use this option, other than in the case of generic substitution.

The downside of cost sharing is that it risks impairing access and compromising patient compliance with prescribed regimens. Cost sharing has been shown to be effective in reducing demand, although the effects fall disproportionately on people with lower incomes and the chronically ill. Lexchin and Grootendorst (2004) reviewed studies measuring the impact of increases in cost sharing on vulnerable populations (poor, beneficiaries of social assistance, people with chronic diseases and those with poor health status) in OECD countries. Virtually all studies demonstrated that increased cost sharing resulted in reduced use of medicines by low-income people and the chronically ill. Other studies showed that even less vulnerable groups can be affected by cost-sharing requirements, reducing their demand for essential drugs following an increase in co-payments (see, for example, Paris and Docteur, 2006, for a review of Canadian studies and Leibowitz et al., 1985).

Cost-sharing policies can be structured to limit the risk of affordability problems. Many OECD countries make special coverage provisions for those in need, including exemptions and caps on out-of-pocket spending. For example, Sweden uses a graduated cost-sharing mechanism whereby the co-payment diminishes as out-of-pocket payments increase over the course of a year. Total yearly outlays for patients are capped at SEK 1 800 (Moïse and Docteur, 2007b).
Reference pricing, setting common reimbursement amounts for a cluster of drugs, is a practice by which payers seek to get good value for money in pharmaceutical expenditure.

Under normal market conditions, informed consumers compare products to determine if added benefits are worth added costs. This is difficult in the case of pharmaceuticals, both because information on relative benefits is not always available at the time of decision making and because patients rely heavily on physicians to act as their agents in choosing appropriate medicines. The practice of setting a common reimbursement amount for similar products, leaving patients to pay the difference out of pocket if they use more expensive alternatives, is somewhat misleadingly known as reference pricing. Reference pricing is attractive in the sense that, theoretically, only those products with advantages valued by patients and their physicians should receive a premium price. In practice, however, manufacturers often prefer to price at the reference point rather than risk losing market share in imperfectly operating markets. In fact, the practice of reference pricing provides incentives for manufacturers to differentiate their products before market entry to the extent necessary to avoid inclusion in an established cluster, so as to achieve a price premium. If the product is not highly innovative, companies may seek to provide evidence of effectiveness for a new indication or for a targeted population.

Many OECD countries define fixed reimbursement amounts for clusters of products. Most often, clusters include only bio-equivalent off-patent products, but a small number of countries (e.g., Germany and the Netherlands) form broader clusters of products which are therapeutically equivalent, including patented drugs.

The net impact of reference price policies in terms of cost-containment is difficult to assess. First, such an assessment requires evidence on costs trends for clustered products. Second, one must also have similar evidence for those which are not clustered in order to capture all potential effects on pharmaceutical expenditure trends. Finally, assessment requires a sound empirical methodology that allows for the disentangling of the effect of the reference price policy from the effects of other concurrent policies and contextual market features, such as generic entry and penetration (Puig-Junoy, 2005). Results from an extensive review undertaken by the Cochrane collaboration showed contrasting results across a number of therapeutic classes (Aaserud et al., 2006).7
Pricing policies

Manufacturers can exploit a monopoly position when facing relatively inelastic demand for medicines. Because of this, many countries regulate prices for at least some portion of the pharmaceutical market. Two countries with pluralistic coverage schemes, Canada and Mexico, have established price regulation for on-patent pharmaceuticals to assure that prices paid by any part of the population, insured or not, are not excessive. In most other OECD countries, coverage schemes require manufacturers to accept price limits in exchange for subsidisation through reimbursement schemes, serving as *de facto* regulation for that part of the market covered by reimbursement. Even in the United States, manufacturers must submit to price regulation if they wish to be reimbursed under Medicaid and the Veterans Health Administration, the public schemes providing coverage to 19% and 2.6% of the US population, respectively.

Regulatory authorities use a common set of tools to define or limit the prices charged by pharmaceutical firms. The most common approaches are reviewed below.

External price benchmarking

External benchmarking of pharmaceutical prices in other jurisdictions is the most widely used technique to limit prices and reimbursement in OECD countries. Public authorities use it to assess the appropriateness of the proposed (or actual) price in relation to what is paid elsewhere. External benchmarking requires an explicit or implicit notion about how pharmaceutical prices ought to differ across countries. The reference pricing policies employed by OECD countries reflect different perspectives on these questions. European countries, for example, generally refer to each other, that is, they tend to choose countries with similar economic comparability or geographic proximity. Germany and the United Kingdom (both of which allow free pricing for new drugs at market entry and are often first- or early-launch countries), together with France, are the three countries most commonly referenced.

The way in which the benchmark prices are used also varies across countries. Most countries set the price level (often a ceiling) as a function of the average price of the benchmarked countries, or subset thereof. In Japan, external benchmarking is used to adjust the price of any new drug, positively or negatively, if it differs significantly from the average of the drug’s price in France, Germany, the United Kingdom, and the United States (Inazumi, 2008).
The rationale for selecting particular benchmark countries is not always explicit and thus the effects can be unpredictable. Despite very different contexts, price regulation in both Canada and Switzerland has reduced the gap in prices with the richest European countries, but increased the gap with US prices (Paris and Docteur, 2006; Paris and Docteur, 2007). In Mexico, on the other hand, there may be no impact on prices obtained by manufacturers because the system is loosely regulated and readily gameable (Moïse and Docteur, 2007a).

Widespread benchmarking is problematic. First, it provides manufacturers with incentives to launch first in countries that do not regulate pharmaceutical prices at market entry and with relatively low price elasticity of demand, in order to have the list prices in these countries referenced by others. Second, the use of confidential agreements between manufacturers and purchasers in some countries (in which the list price is disconnected from the price actually paid by purchasers) raises questions as to the appropriate price level for benchmarking purposes. If regulators of referencing countries rely on listed prices to make their decisions, they may pay higher prices than they intended. The less transparent the outcome of the negotiation process, the less predictable its impact on referencing countries.

External benchmarking practices may result in premiums for products based on their status as new market entrants, unless benchmarking is combined with considerations of a product’s value and cost-effectiveness. Furthermore, it provides firms with incentives to invest in the development of very marginal modifications of existing products (e.g., formulations, dosage) with no benefit to patients in terms of therapeutic effect in order to avoid benchmarking and parallel trade within the European Union.

**Internal reference pricing**

Internal reference pricing, *i.e.* pricing drugs by reference to therapeutic comparators, is used by some payers and regulators at market entry. The therapeutic advantages of a new drug are compared with existing competitors; regulators generally agree to grant a higher price to drugs with demonstrated therapeutic advantages. In principle, internal price referencing replicates what would happen in a well-functioning market in which well-informed consumers would accept higher prices for new goods only if these were utility-enhancing relative to alternatives. However, regulators have different views about what should be considered as a therapeutic advantage and are more or less inclined to grant premiums to products presenting incremental improvements.

At least four OECD countries (Canada, France, Japan, and Switzerland) consider the prices of similar products already on the market as a guide to
pricing new products with therapeutic comparators. In each country, products that are considered therapeutically superior can be priced at a premium compared to therapeutic alternatives. In Canada, the Patented Medicine Prices Review Board classifies new patented entrants in one of three categories, according to the level of novelty of the new product. Only the most innovative products are granted a premium for innovation. Japan, France, and Switzerland also consider the degree of new entrants’ innovativeness for the purpose of negotiating the prices of new drugs being considered for addition to the positive list.

Generic price linkage is a specific form of internal reference pricing used by several OECD countries. In those cases, the generic is priced at market entry at a discount relative to the price of the original product. For instance, generic drugs must be priced at least 50% below the price of the off-patent original in France, and in Switzerland, at least 30% below.

Promoting the greatest value in pharmaceutical expenditure requires that referenced products are priced to reflect their value. This may not always be the case in countries relying on external benchmarking to set prices for products that are first entrants in a therapeutic class. Beyond this, internal referencing still requires decisions as to which variations warrant paying more and how much more.

The impact of internal reference pricing on profits and research and development (R&D) incentives depend on the willingness of payers to recognise incremental innovation and to pay for it. Such policies may influence late stages of the R&D process, in which firms try to discover new applications for their products in order to differentiate them from potential competitors and obtain price premiums. This does not necessarily lead to more new products but to more applications, formulations, or other line extensions.

Pricing based on pharmaco-economic assessment

Cost-effectiveness analysis and other methods of pharmaco-economic assessment are used to put in perspective the incremental cost of a medicine with its incremental benefit in terms of relevant health outcomes.9 Formal cost-effectiveness studies can be used in two ways to determine whether a product will be reimbursed or subsidised and at which price:

- When therapeutic alternatives are available, incremental cost-effectiveness is usually used to make decisions as to whether the new product can be considered worth the additional cost.
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• When no therapeutic alternative is available, an implicit or explicit definition of a cost-effectiveness threshold is required (Eichler et al., 2004).

Cost-effectiveness is generally not assessed for pricing but rather to decide whether or not a product should be reimbursed at the price proposed by the manufacturer. Several OECD countries now undertake pharmaco-economic assessments, or closely review the assessments provided by pharmaceutical firms, in the course of coverage and pricing decisions. However, it is very difficult to assess the degree to which countries make effective use of pharmaco-economic assessment (Dickson et al., 2003; Drummond et al., 2003).

Pharmaco-economic assessment may be produced systematically or on a case by case basis. For instance, cost-effectiveness analysis is undertaken systematically for every new drug in Australia and Sweden, and for every new compound in Canada. By contrast, the National Institute of Clinical Excellence (NICE) in England and Wales uses pharmaco-economic assessment upon request, to recommend whether or not the National Health Service (NHS) should subsidise certain medicines, with the main objective of avoiding exclusion of those products from the formularies of primary care trusts.

Countries vary in how they evaluate costs and outcomes. For instance, in Sweden, costs and benefits are considered from a social perspective, rather than from the perspective of the payer, which is rather singular among OECD countries. The social perspective can be at odds with responsibilities and objectives of decision makers in charge of ensuring efficient use of resources allocated to the health system, however (Brouwer et al., 2006). Interventions deemed cost-effective at the societal level may well be costly and not cost-effective for the payer. OECD countries more typically use the payer perspective.

Another difference in the assessment of clinical outcomes is the extent to which surrogate endpoints (e.g. tumour shrinkage) are considered to be valuable outcomes, or whether the payer instead requires evidence of improvements in health and disability status. Decision-makers must also decide on how to proceed in the face of uncertainty about efficacy. The uncertain reliability of information submitted by pharmaceutical firms, including clinical and economic claims, present problems for decision makers. A study of decisions made by the Australian Pharmacy Benefits Advisory Commission showed that the probability of acceptance of a technology was higher – cost-effectiveness being constant – when the level of confidence in clinical claims was higher (Harris et al., 2006).
Assessment may be used to compare therapeutic alternatives within a therapeutic area or to compare the cost-effectiveness of health interventions across the health system as a whole. The latter approach supposes the definition of cost-effectiveness thresholds, in terms of cost per “quality adjusted life year” for instance, beyond which the health intervention – or pharmaceutical – will not be subsidised. Policy makers have been reluctant to define such thresholds explicitly; instead seeming to employ one or more implicit thresholds and to ignore them in special circumstances, as sometimes is the case for orphan drugs or for drugs treating life-threatening diseases for which no alternative treatment is yet available (Eichler et al., 2004).

In addition, there is the question of how cost-effectiveness thresholds should be set to recognise citizens’ willingness to pay for drugs. The World Health Organisation (2002) has suggested that a cost-effectiveness threshold equal to three times the GDP per capita per DALY (disability adjusted life year) could be a cut-off point for financing health interventions, suggesting that income is the main determinant of citizens’ willingness to pay. Some countries or schemes (for example several public plans in Canada) do not adopt official thresholds, but explicitly consider budget constraints in their assessment to decide whether the new treatment is affordable or not, given other priorities.

Finally, pharmaco-economic assessments can yield different results, depending on their focus. NICE assessments generally consider a class of products or different interventions, while other assessment bodies consider isolated products (Sweden) or even a product’s indications separately (Canada and Australia). Most often, regulators and payers respond to evidence that products are less cost-effective for certain indications by restricting listing of the product to cost-effective uses, rather than establishing distinct prices.10

OECD countries face a number of challenges in the exercise of pharmaco-economic assessment. First, its practice requires a multidisciplinary approach encompassing economics, pharmacology, epidemiology, biostatistics, and medicine. Smaller or lower-income countries may not have enough skilled scientists to carry out systematic pharmaco-economic assessments. For example, in both Mexico and the Slovak Republic, pharmaco-economic evaluations are one of several criteria assessed for reimbursement purposes by the respective authorities, yet there are clear shortfalls in the resources for properly evaluating these (Moïse and Docteur, 2007; Kaló et al., 2008).

Given fixed budget constraints, adoption of new and costly technologies (either high priced or with large population targets) are likely to divert health funds from other interventions that could be more cost-effective. In
order to avoid such distortions in fund allocations, the governments in England and Wales decided in 2002 that any positive recommendations of NICE should be allocated supplementary funds to allow local providers to purchase the new technology. Although any new technology approved is thus supposed to lead to supplemental funding, NHS authorities may incorporate future expected decisions in their annual budgetary exercise.

Pharmaco-economic studies are generally considered untransferable across countries because of differences in health care costs and epidemiological contexts. Therefore, one country’s use of pharmaco-economic assessment should not be expected to have any direct implications for the price or availability of medicines elsewhere. On the other hand, widespread use of pharmaco-economic assessment in pricing would foster price divergence, reflecting country differences. Yet, if countries consider each other pharmaco-economic studies, one would expect some influence on price convergence. Beyond this, some information resulting from pharmaco-economic studies is likely to be generalisable and transferable.\(^ {11}\)

Subject to the constraints of scientific progress, pharmaceutical R&D will target the types of conditions for which new therapies are rewarded by highest profits. The focus of recent innovations on life-style and minor conditions rather than on those that are life-threatening or disabling suggests that these are more profitable, given the level of R&D investment required in comparison with the returns on investment. Thus, current pricing and purchasing methods are either failing to take therapeutic value adequately into account, or societies have a greater willingness to pay for treatments for minor conditions. By differentiating prices or payments based on product value, pharmaco-economic assessment should encourage investment in more valuable innovations.

**Price-volume agreements**

As payers seek to minimise the trade-offs required by cost containment measures, they are increasingly experimenting with alternative approaches to purchasing and payment. Price-volume agreements, which focus more directly on achieving the desired level of expenditure on pharmaceuticals, are one such policy.

Given the low marginal cost of production, pharmaceutical firms may be willing to negotiate based on the total value of sales, rather than on a per-unit price basis. This would offer lower-income countries affordable access to medicines without potentially compromising the value of manufacturers’ sales elsewhere. However, the policy must be designed to ensure that products are not diverted to other markets.
Payers and purchasers, public or private, may make price-volume agreements at a product level in order to obtain price reductions when volume increases. The discounts and rebates on list prices consented to by manufacturers as part of product-specific price-volume agreements with purchasers or regulators are generally not known, since these agreements are most often confidential. The French authorities, for example, sometimes enter into agreements for products with high sales potential, with the price reduction taking the form of rebates, paid at the end of the year by the manufacturer with no consequences for the listed price. These rebates amounted to 0.94% of French companies’ turnover in recent years but are highly concentrated on a few products and firms (Cour des Comptes, 2004; Comité économique des produits de santé, 2007).

Evidence from the United States suggests that these discounts can be substantial, at least for some products. The US Federal Trade Commission (US FTC, 2005) obtained confidential information on contracts between a sample of pharmaceutical benefit management companies (PBMs) (including some of the largest) and 11 large pharmaceutical companies. It used these data to estimate the discounts granted by PBMs to plan sponsors on average wholesale prices in 2003. For brand-name drugs, discounts ranged from 16% to 27.9% of sales in contracts with less restrictive or open formularies, with larger discounts in contracts with more restrictive formularies (US FTC, 2005). In total, the FTC study revealed that manufacturers consented to rebates, on average, of USD 6.34 per brand prescription for inclusion of their drugs in PBMs’ formularies, 71% of which were concentrated on the top 25 brand name drugs.

Due to the increasing globalisation of the pharmaceutical industry, manufacturers view the confidential nature of price-volume agreements to be critical to their ability to segment markets for purposes of price differentiation. Even so, based on recent initiatives that facilitate information sharing in Europe and for developing countries, the trend appears to be towards greater transparency in official list prices. This creates a genuine risk of reduced availability in countries where markets cannot sustain top prices. Pharmaceutical firms may choose not to launch in these countries if they cannot negotiate high list prices with confidential discounts. In the public sector, decision makers may face a trade-off between transparency and ability to engage in value-based decision making on pharmaceuticals.

Risk-sharing arrangements

Health insurers and public plans seek to obtain maximum health benefits from their drug purchases. Yet often, reliable information on the outcomes of a product in general use is unavailable at the time of decision making. For this reason, a so-called outcome guarantee, or risk-sharing scheme, may be
attractive, particularly when outcomes are in question or the product has a prospectively large cost impact. Under a risk-sharing arrangement, a pharmaceutical company and coverage decision makers agree on the expected outcomes from a drug for a given indication. If the drug fails to fulfil these expectations, the pharmaceutical companies will (partly) refund the health service for the costs (Chapman et al., 2004). Reducing the risk associated with decision making makes it easier for patients and their doctors to try expensive medicines and for manufacturers to sell their products.

One of the most well-known examples of risk-sharing agreements is the scheme for multiple sclerosis drugs in the United Kingdom. Since May 2002, the NHS has paid for four multiple sclerosis products (Avonex, Betaferon, Copaxone, and Rebif) under an agreement made after these treatments were not recommended for use on the basis of cost-effectiveness grounds by NICE (National Institute of Clinical Excellence). The price of the drugs varies according to evidence regarding its effectiveness derived from patients participating in the scheme. If actual outcomes do not meet expectations, within a margin of tolerance, the company must lower the price of the product – which is about USD 20 000 a year per patient. Risk-sharing schemes have only rarely been used and overall results are not publicly available. In any case, periodic reviews of assessments are highly desirable since effectiveness in real use has sometimes proved to be different than claimed efficacy.

Other approaches used to influence demand and mix of pharmaceuticals

Governments and insurers may seek to influence the volume and mix of pharmaceuticals consumed for a variety of reasons, ranging from cost control to quality improvement, although policy makers in most OECD countries have focused more on prices than on other considerations. Coverage schemes differ significantly in how they seek to manage the volume and mix of pharmaceutical consumption; many schemes have few restrictions on choice by physicians and patients while others are active in efforts to affect physician, pharmacist or patient decision making.

Policies geared towards physicians

OECD countries use quite different approaches to influence the prescribing patterns of physicians. In some countries, self-regulation of the medical profession is the standard and initiatives to enhance prescription patterns are led by physicians and pharmacists, focus on quality and clinical effectiveness, and rest on continuing education, quality circles, peer review, and feedback (e.g. Switzerland).
In other countries, public authorities or health insurers have imposed or negotiated measures to improve quality or efficiency of prescribing practices. These measures include producing and diffusing clinical guidelines, with voluntary or mandatory compliance, as well as prescription monitoring and feedback. The success of these initiatives is often tied to some type of financial incentive. For example, the success of Sweden’s Drug and Therapeutic Committees, which try to change physician prescribing patterns at the local level, have been limited to cases where compliance with recommendations is in conjunction with financial incentives (Moïse and Docteur, 2007).

Some countries have used prescribing budgets in an attempt to control rising drug expenditures. Germany introduced collective prescribing budgets in 1993 for all general practitioners in a district. A collective penalty was applied if the budget was overspent. Although the number of prescriptions decreased, there was concern that this may have compromised the quality of care. The system eventually changed to individual prescription targets in 2001, which were, in turn, based upon regional budgets (Paris and Docteur, 2008). The effect of this new system, with soft, rather than hard, targets is disputed, based upon evidence from the United Kingdom (Walley and Mossialos, 2004) and the Slovak Republic (Kaló et al., 2008).

Policies directed towards pharmacists

Payment for pharmacy services is an important feature of pharmaceutical policies. Most OECD countries continue to link the remuneration of those services to ex-manufacturer prices through mark-ups, often regressive ones. Only a few countries disconnect pharmacists’ payments from drug prices, instead using fee schedules defining payment for different tasks of the pharmacist (such as dispensing and patient education).

Many countries have tried to increase the use of generics through policies that allow pharmacists to substitute a generic drug for the prescribed medicine. Most countries that permit generic substitution allow physicians to avert substitution by specifying that the prescription should be dispensed as written. Many also give the patient the right to refuse the substitution, sometimes with the patient paying some or all of the cost difference. Such is the case in Sweden, where generic substitution of the lowest-cost substitutable product (generic or parallel import) is mandatory, and frequent price reductions are possible. The policy seems to have been effective in generating price competition in the off-patent market and in increasing the market share of generics, and has reduced the average level of co-payments for prescribed medicines (Moïse and Docteur, 2007).
Improving policies

Reform or enhance reimbursement and pricing policies to ensure value for money

External and internal price referencing, the tools most widely used by OECD countries to arrive at prices for pharmaceuticals, are problematic in a number of respects. Prices derived through external benchmarking practices are unlikely to accurately reflect the product’s value to consumers (in terms of the health improvements, consumer convenience, and other benefits) in the country undertaking the referencing, given the practice of referencing to early-launch or high-sales countries over ones that are similar in terms of income, price level, health costs and health status. The practice of agreeing to confidential rebates that create a gap between the public list price and the actual price paid heightens this problem.

Therapeutic price referencing (or internal referencing) is better in this respect because it explicitly considers whether the added benefits from a new product are worth the added expenditure. Policies that limit reimbursement of similar products to a common level provide pharmaceutical firms with incentives to invest in differentiation of products to avoid inclusion in an existing group, but risk failing to reward incremental innovations when consumers lack information needed to assess value. With respect to innovation, the most problematic scenario is therapeutic referencing that does not allow manufacturers to price above therapeutic competitors, even when the product offers some improvement. Avoiding such potential distortions provides a rationale for policy makers to limit their interventions in the market to the definition of reimbursement levels or public purchase prices, while allowing pharmaceutical firms the freedom to define their sales prices. Under this approach, other policies may be needed to ensure equitable and affordable access to high-cost medicines.

Pharmaceutical reimbursement and pricing policies would be most enhanced by more intensive use of pharmaco-economic assessment as well as agreements linking prices to volumes of sales or to clinical effectiveness.

Increase the role of pharmaco-economic assessment

Efforts to link the level of expenditure for a given pharmaceutical to the value of the benefits offered by the new product – using tools such as pharmaco-economic assessment – are promising for several reasons. First, they can aid in negotiating payments based on considerations of a product’s ability to deliver desired outcomes. Policy makers need to ensure, however, that increased efficiency of pharmaceutical expenditure does not come at the
expense of efficiency of expenditure in the health sector more broadly. Ideally, pharmaco-economic assessment would be employed in a broader scheme of health technology assessment to make value considerations explicit in health expenditure decision making across the board, rather than for only one type of care.

Second, pharmaco-economic assessment should promote the right level and type of R&D investment, by giving better signals to industry as to which innovations are most highly valued. It can also be used as a tool to establish market-based incentives for investment in treatments for rare conditions.

Because the economic value of the therapeutic benefits (net of costs or savings associated with the use of a product) will vary across countries according to their income, health care costs, epidemiology, and other factors, new pharmaceutical products will have different values in different countries. Thus, adoption of pharmaco-economic evaluation on a widespread basis should result in national expenditures for innovative products differing based on income. At the same time, a move to value-based payment may well result in increased expenditures for certain types of pharmaceutical products in certain countries.

Pharmaco-economic assessment, as with health-technology assessment more generally, is a technically challenging and value-laden exercise. Nevertheless, the perceived value of making an explicit consideration of costs and benefits in price and reimbursement decision making has led about a third of OECD countries to move forward in this area, and several have developed programmes that can provide models for further advances.

Finally, pharmaco-economic assessment addresses one of the most common shortcomings of pharmaceutical pricing and reimbursement policies: the failure to make an explicit assessment of the benefits or expected benefits from a medicine and to use that assessment as a guide to willingness to pay for (or subsidise) new products, taking into account optimal use of the product among the population. Because such assessments link the level of expenditure for a given pharmaceutical product to the value of the benefits offered by the new product, their results can be used by manufacturers to assess willingness to pay for future innovations and should thus provide incentives for development of innovations with the greatest value to patients and society. To the extent that pharmaceutical producers profit more from innovations that have the greatest value to patients and society, they will face incentives to invest more in R&D to produce such therapies.

That being said, pricing and reimbursement policies based on pharmaco-economic assessment can be improved. First, while defining cost-effectiveness thresholds could help to steer innovation towards valued innovation, to date, purchasers have been reluctant to adopt them in a public
manner. While clearly such thresholds raise many ethical issues, they could be used by firms to estimate a range of expected returns on investments, according to different levels of effectiveness, price, and volume (Vernon et al., 2005). On the other hand, such thresholds may encourage firms to propose prices higher than they would do absent regulation as long as the threshold is not exceeded. This is a potential problem from a static efficiency perspective, but not necessarily so from the perspective of dynamic efficiency since such price premia may be desirable as a reward for valuable innovation.

Second, using a single cost-effectiveness threshold is problematic because it fails to distinguish among different types of conditions for which therapies may be more highly valued. The approach taken by Sweden is interesting in that multiple implicit thresholds are employed, allowing products to treat conditions for which need for new therapies is greatest to have higher thresholds (Moïse and Docteur, 2007b). Thus these products can be considered cost-effective at a higher price.

Third, although purchasers generally do not publish their cost-effectiveness thresholds, explicit thresholds may hold some promise as a means of providing incentives for investment in R&D to address orphan diseases. Hollis (2005) states that countries may gain from publishing their willingness to pay for orphan drugs as a way to encourage development by defraying the risk of investment.

Finally, there are practical considerations with regards to the systematic implementation of pharmaco-economic assessment in the pricing and reimbursement process. First, as discussed above, it may prove difficult for smaller, lower-income countries to implement. These countries could take advantage of pharmaco-economic assessments done in other countries, revising the inputs to reflect national circumstances. The further development of projects like EURONHEED (a European network of health economic evaluation databases) could help. Second, countries that implement systematic pharmaco-economic assessments need to consider the trade-off between assessments based on objective information and the cost of doing them in-house. Asking manufacturers to submit the results of pharmaco-economic assessments (as is done in Sweden, for example) is less costly (and may be the most realistic alternative in some countries) but may result in assessments that overestimate a product’s cost-effectiveness. To a certain extent this risk can be attenuated with vigorous scrutiny of submitted assessments.
Increase the use of volume-price agreements and assess the potential of risk-sharing agreements

Price-volume agreements and risk-sharing agreements represent another interesting development in pricing policy. These practices are attractive in that they focus on benefits obtained for a given level of expenditure rather than on unit price. This is consistent with the perspective of policy makers, who are concerned about the level of total expenditures and the value for money attained, and with reducing the risk associated with decision making when there is uncertainty as to either the size of the prospective market or the outcomes to be expected. It is also consistent with the interests of pharmaceutical firms who care about the return on investment achieved through sales revenues, a function of both price and volume. Thus, an environment in which all those who could potentially benefit from use of a drug had affordable access could be a win-win outcome for both parties.

Nevertheless, it should be noted that not all OECD countries are in a position to take full advantage of price-volume agreements at present. Reimbursement policy in a number of countries stipulates that all products in a therapeutic class that are approved for market must be reimbursed. This is justified as a means of providing equal access to the market for pharmaceutical firms, but may in some cases limit the scope for use of coverage restrictions that prefer one drug to another.

Steer demand for pharmaceutical products towards products offering the greatest value

Formulary management can help to steer prescription and demand for pharmaceuticals towards the most cost-effective drugs

Pharmaceuticals obtain market authorisation when there is evidence that they are more effective than a placebo and that their benefit/risk ratio is positive. Head-to-head clinical trials are not required. By contrast, more and more coverage schemes include some form of assessment of therapeutic improvements over competitors as input to the decision as to whether the drug should be reimbursed and at what price. In that regard, positive lists and closed formularies offer better opportunities than negative lists.

Coverage restrictions (such as limited to some indications, second step therapy, subject to prior authorisation) have shown to be effective tools to steer the demand for pharmaceuticals in some contexts (for instance, in public plans in Canada). However, they restrict patient and physician choice in a way that can be unpopular. Having a well-established system for
considering exceptional circumstances can help, although this can also impose a cost.

Finally, formulary management may include financial incentives to increase generic use, notably by tiered co-payments or through the setting of fixed reimbursement amounts for therapeutic alternatives. This latest solution appears to be the most efficient, since it caps the payer’s expenditures without reducing patients’ choice, at least for those patients who are willing and able to pay supplements.

\textit{A range of policies can be used to obtain savings when products go off-patent}

Generic uptake can also be encouraged through financial incentives for pharmacists. Policy makers should ensure that pharmacists do not earn less when they dispense generics as typically happens when mark-up are defined as a percentage of the ex-factory price. Coverage schemes can encourage generic dispensing either by a specific payment for substitution services or by a specific mark-up. In addition, solutions to enhance generic competition should be tested. The evidence suggests that countries which do not regulate generic prices could have lower prices than regulating countries. Making substitution mandatory is another solution to promote generic use. However, it presents the drawback of reducing choice for patients.

\textbf{Ensure a more efficient distribution chain}

Some of the large differences in distribution costs across OECD countries can be explained by the stringency of the law. For instance, some countries require wholesalers to supply the full range of available products and expect pharmacists to deliver all products with lengthy open hours, while other countries do not see the need to take this step to ensure accessibility. However, these requirements may not fully explain differences in distribution costs. For example, heavy regulation of pharmacists’ services may hamper competition between pharmacists.

\textbf{Conclusions}

Improvement in meeting the multiple objectives of pharmaceutical policy may well be possible without sacrificing cost control. Efforts to improve value for money in public spending on pharmaceuticals could free up resources that could be better spent enhancing the availability, accessibility, and appropriate use of effective medicines. As noted above, many OECD countries could get better value for their money by maximising
the use of generic alternatives to off-patent original products, fostering
generic price erosion through competition, ensuring efficient distribution
systems for prescription and over-the-counter products, and becoming more
sophisticated in their reimbursement pricing strategies. Box 4.1 provides a
checklist of potential policies for considerations, although these will not
necessarily be appropriate for all countries.

Box 4.1. Pharmaceutical policy checklist

Policy makers seeking to increase efficiency in their pharmaceutical expenditures should consult the following checklist to consider:

- obtaining value for money while promoting future innovation by considering
  relative cost-effectiveness in pricing and purchasing decisions, while ensuring that
  rewards to innovation are consist with the value of benefits offered.

- seeking opportunities for establishing price-volume agreements or confidential
  rebates when value-based unit prices cannot be established (due to risk of parallel
  trade, for example).

- exploring the potential for risk-sharing arrangements to reduce the financial risk
  presented by new medicines when information on costs and effects is insufficient.

- encouraging generic substitution and price competition in the off-patent market.

- creating incentives for physicians, pharmacists and patients to promote the
  appropriate prescribing, dispensing and use of medicines, recognising that
  expenditure includes volume/mix as well as price components.

- considering whether there are opportunities for efficiencies in the distribution chain.

- ensuring that overall health care spending efficiency is not compromised by efforts
  to improve efficiency of pharmaceutical expenditure.

At present, the lack of a firm foundation and framework for pharmaceutical pricing policy in many OECD countries is reflected in an eclectic mix of policies being employed in ways that are often internally inconsistent. For example, establishing reimbursement mechanisms for pharmacies that link fees to product prices is inconsistent with measures to encourage substitution of lower-priced generic products when these are available. Similarly, the practice of encouraging parallel imports of on-patent products to obtain the lowest possible price diminishes the innovation incentive embedded in the price differential, which is hard to reconcile with practices seeking to establish value-based prices within the country.

Policy makers need to be aware that they do not miss the forest for the trees in their drive to increase efficiency in pharmaceutical expenditure.
Promoting the use of the most cost-effective drug does not increase overall health care spending efficiency if it displaces more cost-effective non-pharmaceutical alternative therapies. Achieving efficiencies in health spending overall should be the objective; efficiencies in pharmaceutical expenditure should be a means to that end.
Notes

1. This chapter draws heavily on analysis presented in Pharmaceutical Pricing Policy in a Global Market (OECD, 2008), a report authored by the authors of the present article and by their former colleague Pierre Moïse.

2. This estimate is made by converting expenditures to a common currency and adjusting for differences in economy-wide purchasing power.

3. By adjusting pharmaceutical expenditures for cross-country differences in retail pharmaceutical prices, pharmaceutical consumption levels can be assessed.

4. Need, as proxied by health status measurement, is a typical standard by which an individual’s pharmaceutical consumption is assessed.

5. Several US purchasers of pharmaceuticals have more market power than do many universal coverage schemes in OECD countries, when measured in terms of population covered and income. For instance, the population covered by the Veterans’ Health Administration exceeds the population of one-third of OECD countries and one pharmaceutical benefits management company, Medco, manages the drug benefit for 60 million people.

6. The review included all studies published in English and French. Of the 24 studies found, all were based in the United States or Canada, with the exception of two studies which were based in Belgium and New Zealand.

7. Of 246 studies reviewed, only two provided reliable estimates of the impact of fixed reimbursement level policies on health plans’ drug expenditures. They both analysed the introduction of these schemes in the British Colombia health benefit for seniors.

8. In most countries, manufacturers are free to market their products at any price if the product is not eligible for (or proposed for) reimbursement.

9. Cost-effectiveness analysis is the most commonly used form of pharmaco-economic assessment. Other techniques, such as cost-benefit analysis or cost-utility analysis, might be used under certain circumstances (Dickson et al., 2003).

10. One could imagine a solution for variable pricing if the manufacturer produced different packages for different indications. However, various
actors in the distribution chain would face incentives to substitute a lower-priced equivalent product.

11. Boulenger *et al.* (2005) define generalisability as “the degree to which the results of an observation hold true in other settings” and transferability as “the data, methods and results of a given study are transferable if a) potential users can assess their applicability to their setting and b) they are applicable to that setting”.
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