

HEALTH



INTRODUCTION

The Issue

The impact of intellectual property rules and practices on the health of poor people in developing countries has generated substantial controversy in recent years. Although this predated TRIPS, and featured prominently in the TRIPS negotiations, impetus has been added by the coming into force of TRIPS,¹ and the dramatic rise in the incidence of HIV/AIDS, particularly in developing countries. For the developed countries, the pharmaceutical industry was one of the main lobbyists for the global extension of IP rights.² For developing countries, a major concern was how the adoption of intellectual property regimes would affect their efforts to improve public health, and economic and technological development more generally, particularly if the effect of introducing patent protection was to increase the price and decrease the choice of sources of pharmaceuticals.

We are aware of the importance of effective patent protection for the industry most directly involved in discovering and developing new pharmaceuticals. Indeed, without the incentive of patents it is doubtful the private sector would have invested so much in the discovery or development of medicines, many of which are currently in use both in developed and developing countries. The pharmaceutical industry in developed countries is more strongly dependent on the patent system than most other industrial sectors to recoup its past R&D costs, to generate profits, and to fund R&D for future products. Successive surveys have shown that the pharmaceutical companies, more than any other sector, think patent protection to be very important in maintaining their R&D expenditures and technological innovation.³ The industry understandably takes a close interest in the global application of IPRs, and generally resists the contention that they constitute a major barrier to access or a deterrent to development in developing countries. For instance, Sir Richard Sykes, the former Chairman of GSK, said in March this year:

“Few would argue with the need for IP protection in the developed world, but some question whether it is appropriate to extend its coverage to the developing world, which the TRIPS agreement is gradually doing. As I have said, IP protection is not the cause of the present lack of access to medicines in developing countries. At Doha last November, WTO members agreed to defer TRIPS implementation for the least developed countries until 2016. I do not believe that TRIPS will prevent other developing countries like Brazil and India from obtaining access to the medicines they need. On the other hand, I firmly believe that these countries have the capacity to nurture research-based pharmaceutical industries of their own, as well as other innovative industries, but this will only happen when they provide the IP protection that is enshrined in TRIPS. TRIPS needs to be recognised as an important industrial development tool for developing countries.”⁴

That said, we are also fully aware of the concerns expressed by, and on behalf of, developing countries about the impact that such rights may have in those countries, particularly on prices of pharmaceuticals. If prices are raised, this will fall especially hard upon poor people, particularly in the absence of widespread provision for public health as exists in most developed countries. Thus others from many developing countries, and the NGO community, have argued the opposite:

“Why do developing countries object so strongly to TRIPS? Its essential flaw is to oblige all countries, rich and poor, to grant at least 20 years' patent protection for new medicines, thereby delaying production of the inexpensive generic substitutes upon which developing-country health services and poor people depend. And there is no upside: the increased profits harvested by international drug firms from developing-world markets will not be ploughed back into extra research into poor people's diseases - a fact some companies will in private admit.”⁵

Our starting point in this analysis is that healthcare considerations must be the main objective in determining what IP regime should apply to healthcare products. IP rights are not conferred to deliver profits to industry except so that these can be used to deliver better healthcare in the long term. Such rights must therefore be closely monitored to ensure that they do actually promote healthcare objectives and, above all, are not responsible for preventing poor people in developing countries from obtaining healthcare.

Background

A spur to much of the recent debate has been the HIV/AIDS pandemic, although the issue of access to medicines in developing countries goes much wider. It is particularly important not to allow the debate in this area to be influenced unduly by the HIV/AIDS experience, dramatic though it is. Apart from HIV/AIDS, which is the biggest single cause of mortality in developing countries, TB and malaria claim almost as many lives. Together all three diseases claimed nearly six million lives last year, and led to debilitating illness for millions more.⁶ In addition, there are a number of less common diseases which are collectively important. These include, for instance, measles, sleeping sickness, leishmaniasis and Chagas disease.⁷

Each group of diseases presents different problems in respect of the development of cures and treatments, and the economics of the R&D process. For diseases prevalent in the developed world as well as developing countries, such as HIV/AIDS, cancer or diabetes, research in the private or public sector in the developed world may produce treatments that are also appropriate to the developing world. For these diseases, one would expect that the promise of strong IP protection in the developed world would act as a major incentive for investment in R&D. But it should be noted that some strains of HIV/AIDS in Africa, for example, are different from those in developed countries, so different treatments may need to be devised.

Where appropriate treatments already exist, access to them depends on affordability, and the availability of the health service infrastructure to support delivery. We regard the cost of pharmaceutical products as an important concern in developing countries because most poor people in developing countries pay for their own drugs, and state provision is normally selective and resource-constrained. This is generally not the case in the developed world where costs are

mainly met by the state or through insurance schemes. Even so the cost of drugs is a controversial political issue in developed countries, for governments and for patients not covered by effective state or insurance schemes.⁸ In developing countries, inadequacy of the infrastructure is an important problem, and may mean that even inexpensive medicines are not used, or that they may be misused and contribute to the emergence of drug resistant pathogens or a virus.

Again, HIV/AIDS provides a helpful illustration of the issues. The treatment of HIV with anti-retrovirals (ARVs), or drugs to treat opportunistic infections associated with the disease, raises the affordability issue acutely. The minimum annual costs of ARV therapies, even at deeply discounted or generic prices which do not cover R&D costs, far exceed the annual health expenditure per capita of most developing countries. Current per capita health expenditures in low income developing countries average \$23 per year, but the most inexpensive ARV triple therapies are now just over \$200 per year.⁹ Thus, without extra funding for medicines and health delivery services, treatment for all those requiring it will remain unaffordable even at the cheapest generic prices. The World Health Organisation (WHO) estimates that fewer than 5% of those who require treatment for HIV/AIDS are receiving ARVs. Only about 230,000 of the 6 million estimated to be in need of such treatment in the developing world actually receive it, and nearly half of these people live in Brazil.¹⁰

Similar questions about affordability arise for treatments of other diseases. For example, TB and malaria are for the most part prevalent in developing countries, although there is a resurgence of TB in the developed world. It also needs to be remembered that TB is the leading cause of death among HIV-infected people, and about one third of them are co-infected with TB.¹¹ For these diseases, and for diseases exclusive to the developing world, the issue is both how to mobilise resources for R&D from the private and public sectors for new medicines, and having developed them to ensure access for those that need them.

The latter point is one of the most crucial questions concerning healthcare in developing countries. How can the resources necessary to develop new drugs and vaccines for diseases that predominantly affect developing, rather than developed, countries be generated when the ability to pay for them is so limited? Even when there is a developed country market from which these resources can be recovered through high prices, how can the affordability of these drugs in developing countries be secured? How can conflicts between the two objectives – covering R&D costs and minimising consumer costs – be resolved? As with technological development more generally, does the IP system have a role to play in stimulating the capacity of developing countries themselves to develop and produce drugs that they or other developing countries need?

This is the context in which we need to consider the role that IPRs could play in helping to address these dilemmas. It is not for us to consider in any depth the wide range of factors that affect the health of poor people or the quality of health services in developing countries. These have been discussed at some length in the recent report of the WHO Commission on Macroeconomics and Health (CMH).¹² The CMH concluded that a large injection of additional public funds into health services, infrastructure and research was required to address the health needs of developing countries. It took the view that patent protection offered little incentive for research on developing country diseases, in the absence of a significant market.¹³ As regards access to medicines, it favoured coordinated action to establish a system of differential pricing¹⁴ in favour of developing countries backed up, if necessary, by the more extensive use of compulsory licensing.¹⁵

Those conclusions are relevant for our current task. It is our role to indicate in greater detail how changes in intellectual property rules and practices could contribute to better health for poor people, while being fully aware that such changes have to be complemented by the range of actions suggested by the CMH.

We do this by considering three main questions:

- How does the intellectual property system contribute to the development of drugs and vaccines that are needed by poor people?
- How does the intellectual property system affect the access of poor people to drugs and availability?
- What does this imply for intellectual property rules and practices?

RESEARCH AND DEVELOPMENT

Research Incentives

It is estimated that less than 5% of the money spent worldwide on pharmaceutical R&D is for diseases that predominantly affect developing countries.¹⁶ Pharmaceutical research by the private sector is driven by commercial considerations and if the effective demand in terms of market size is small, even for the most common diseases such as TB and malaria, it is often not commercially worthwhile to devote significant resources to addressing the needs. In 2002, the world drug market is valued at \$406 billion, of which the developing world accounts for 20%, and low income developing countries very much less.¹⁷ In many pharmaceutical companies, research objectives are set by reference to threshold returns. We were given to understand that the large pharmaceutical companies are unwilling to pursue a line of research unless the potential outcome is a product with annual sales of the order of \$1 billion. Given that private companies have to be primarily responsible to their shareholders, this necessarily leads to a research agenda led by the market demand in the markets of the developed world, rather than by the needs of poor people in the developing world, and thus a focus mainly on non-communicable disease.

Regardless of the intellectual property regime prevailing in developing countries, in reality there is little commercial incentive for the private sector to undertake research of specific relevance to the majority of poor people living in low income countries. Accordingly, little such work is done by the private sector. Total pharmaceutical R&D in the private sector has more than doubled in the last decade to an estimated \$44 billion in 2000.¹⁸ Exactly what proportion of this is directed to diseases afflicting mainly developing countries is difficult to determine. However it has been estimated that of 1393 drugs approved between 1975 and 1999, only 13 were specifically indicated for tropical diseases.¹⁹ Where diseases are common to both developed and developing countries, the picture is different. Thus, there is significant private sector R&D on HIV/AIDS. This contrasts with the limited work on tuberculosis and malaria, and virtually none on diseases such as sleeping sickness.²⁰ As regards HIV/AIDS, there are now 64 approved drugs in the US for treatment of the disease and opportunistic infections, and 103 in development.²¹

In the case of the public sector, such as the National Institutes of Health (NIH) in the US or Medical Research Councils (MRCs) in other developed countries, the situation is little different because their research priorities are principally determined by domestic considerations. Public sector spending on health research was estimated to be \$37 billion in 1998, of which \$2.5 billion was spent in low and middle income developing countries.²² In 2001 the US National Institutes of Health (NIH) alone accounted for over \$20 billion.²³ In addition, charitable foundations are estimated to have spent \$6 billion. The WHO's Special Programme for Research and Training in Tropical diseases (known as TDR) receives only about \$30 million annually. The exact proportion of public sector spending on diseases relevant to developing countries has not been authoritatively estimated, but seems unlikely to be higher than 10%.²⁴ This situation is now being addressed through the WHO, the Global Forum for Health Research, the initiative of Médecins Sans Frontières (MSF) on drugs for neglected diseases, additional funding by foundations and the development of several public-private partnerships to address specific diseases.²⁵ But the overall level of funding for these new efforts is still very modest in relation to the scale of the problem and global R&D expenditure of about \$75 billion, and the outcome uncertain.

So what role does IP protection play in stimulating R&D on diseases prevalent in developing countries? All the evidence we have examined suggests that it hardly plays any role at all, except for those diseases where there is a large market in the developed world (for example, diabetes or heart disease). There is some weak evidence related to an increase in indicators of research activity in malaria since TRIPS was agreed, but the relation between cause and effect is not at all clear.²⁶ The heart of the problem is the lack of market demand sufficient to induce the private sector to commit resources to R&D. Therefore, we believe that presence or absence of IP protection in developing countries is of at best secondary importance in generating incentives for research directed to diseases prevalent in developing countries.

Thus this research may be inadequate in quantity because of inadequate effective demand from developing countries where the disease is heavily concentrated. Moreover research, particularly on vaccines, may require tackling characteristics of diseases specific to developing countries, where the solution for the developed world may not address the problem in the developing world. For example, the majority of HIV vaccines are being developed for genetic profiles of subtype B, prevalent in developed countries, but most AIDS sufferers in developing countries are types A and C. Vaccine research for HIV is also particularly scientifically challenging because of the way the virus evades the body's natural immune responses, and the way it mutates.²⁷ Malaria vaccine research is also challenging, because of the size and diversity of the malaria parasite, and the complexity of its mutations.²⁸ Thus, for the private sector, vaccine research is a high risk/low return investment, particularly in relation to disease types prevalent in developing countries. The market tends to undervalue the social returns from vaccines, more than is the case for treatments.²⁹ In the case of malaria, the market demand is dominated by prophylaxis for travellers from developed countries, rather than vaccines which would be of greater relevance to sufferers in the developing world.

In respect of TB, where there are an estimated eight million people in developing countries that have the disease, no new class of anti-TB drug has been developed for over 30 years. Current treatments require drug courses of 6 months or more. A drug that produced the same effect in two months could have a dramatic impact in helping to control the disease globally. The scientific challenge of producing such a medicine is significant because of the characteristics of the disease.³⁰ A recent report by the Global Alliance for TB Drug Development has estimated that based on market demand (both private and public, including from developed countries) there might in fact be a respectable financial rate of return on the estimated cost of developing a new and improved drug. Nevertheless it is still not considered that IP protection, and favourable economics, will induce investment without considerable public sector involvement.³¹ The current business model of the research-based pharmaceutical companies is such that research expenditure and profit generation are dependent on the sales of a few "blockbuster" drugs (normally with sales in excess of \$1 billion per annum), which help finance the high percentage of failures in the R&D process.³² But these companies have the freedom to pursue promising avenues wherever they may lead (for example, treatment for a disease or condition not previously envisaged). The economics of research for a specific treatment for a particular disease have to be very favourable to induce significant research effort.

Some, such as Sir Richard Sykes above, have argued that providing IP protection in developing countries with significant scientific and technical skills will help to increase the amount of research devoted to developing country diseases. Evidence on this is lacking because most of the relevant countries have only just introduced TRIPS-compliant laws, or are yet to do so. But we see no reason why firms with research capability in developing countries should respond to global IP and market incentives significantly differently from those based in developed countries. There is some evidence for this behaviour from firms in countries such as India.³³ The reality is that private companies will devote resources to areas where an optimal return can be made. Moreover, widely supported moves to establish differential pricing would reduce margins to reward R&D in developing countries, further undermining any incentive for additional research on developing country diseases.

In short we do not think that the globalisation of IP protection will make a significant contribution to increasing R&D expenditure by the private sector relevant to the treatment of diseases that particularly affect developing countries. The only feasible way to do this is by increasing the quantity of international aid resources devoted to such R&D. The CMH recommended an additional \$3 billion annually to be spent on R&D through a new Global Health Research Fund, existing mechanisms and public-private partnerships.³⁴

How increased publicly funded research should be directed requires careful consideration. It should not act as a form of subsidy to the existing pharmaceutical industry, although the industry certainly has an important part to play. The opportunity should be taken to build up the capacity of developing countries themselves to undertake R&D on treatments for those diseases which particularly affect them. In the technologically more advanced developing countries, such research can be highly cost-effective. For instance, General Electric has established its second largest R&D Centre in the world in India, employing about 1000 PhDs and 27 other global firms set up R&D centres in India between 1997 and 1999.³⁵ Thus research could be conducted with the active participation of selected research institutions and companies in developing countries, taking advantage of the human resources available in such countries and lower R&D costs. The institutional structure of for such funding also needs thought. The CGIAR³⁶ network of agricultural research institutes (which we discuss in Chapter 3) is one model. More promising in this context might be a network of public-private partnerships in developing countries, taking advantage of the concentration of research resources in public sector institutions but also the opportunity to build research capacity in the private sector. In particular the arrangements for intellectual property arising from such research need to be such that access by the poor to the products of research is ensured as much as possible.

Public funding for research on health problems in developing countries should be increased. This additional funding should seek to exploit and develop existing capacities in developing countries for this kind of research, and promote new capacity, both in the public and private sectors.

Although IP may not have much to contribute in generating additional research relevant to poor people, it is clear to us that there are important issues about the impact of the patent system on the research process. While patent protection provides an incentive for R&D, the patenting of intermediate technologies (particularly gene-based ones) required in the research process may actually create disincentives for researchers in terms of accessing, or unwittingly infringing patents on, technologies they need.³⁷ This is an area where patent practices in the developed world can impinge directly on what research is done for people in the developing world, and there are implications for the type of patent regimes that developing countries adopt. The IP arrangements in public-private partnerships also give rise to important questions of managing IP to benefit poor people. We consider these questions in Chapter 6.

ACCESS TO MEDICINES FOR POOR PEOPLE

The purpose of patents, as we have noted, is to provide a temporary monopoly to rights holders as a stimulus to inventions and their commercialisation. However, it should also be noted that the monopoly right provided by a patent normally only excludes others from making, using or selling that particular invention. It does not prevent competition from other drugs, patented or not, that address the same medical conditions. Nevertheless, other things being equal there is a presumption that the producer of a patented product, through the ability to exclude copies, will attempt to earn a monopoly profit and charge higher prices than would otherwise be the case. That, indeed, is the basis of the system. The bargain with society is precisely that the benefits to society generated by the extra innovation induced (for example, a lifesaving drug which might not exist but for the patent system) should exceed the extra cost of the product.

Given that in developing countries most people are poor and that patent protection can increase prices, it is necessary to examine with particular care the arguments put forward by some that

patents in developing countries are not likely significantly to affect access to pharmaceuticals subject to patent protection. There are two grounds on which this argument is made. First, because patents are not always sought in some – especially smaller - developing countries, they cannot be a significant problem in accessing medicines. Secondly, even if they are sought, either this is not a determining factor in pricing or there are other overriding factors that prevent access to drugs by the poor.

Prevalence of Patenting

It is true that, although patent protection for pharmaceutical products is available in most developing countries, multinational companies have not patented their products in all of them. This is normally the case for countries with small markets and limited technological capacity. Companies may take the view that it is not worth the expense of obtaining and maintaining protection when the potential market is small, and the risk of infringement low. For instance, a recent study in 53 African countries found that the extent of patenting of 15 important antiretroviral drugs was 21.6% of the possible total.³⁸ In 13 countries there were no patents on these medicines at all. The conclusion was drawn that, because the patenting rate was so small, patents “generally do not appear to be a substantial barrier to...treatment in Africa today”, although it was recognised that there would be an issue when TRIPS came into force for all WTO members.³⁹

Although the overall prevalence of patents found in the study is relatively low in aggregate, it is perhaps surprising that it is not lower, given the very low treatment rates, small markets, and the fact that few countries are capable of producing generic copies. The prevalence of patents is very much higher in countries where there is a substantial market, and technological capacity. Thus in South Africa (which alone counts for over 17% of Africa’s HIV cases) 13 of the 15 drugs are patented. There are 6-8 patents for these drugs in Botswana, Gambia, Ghana, Kenya, Malawi, Sudan, Swaziland, Uganda, Zambia and Zimbabwe, which together account for another 31% of HIV cases in sub-Saharan Africa.⁴⁰

The industry points out that the prevalence of patenting is very much lower, or nil, for a wide range of drugs to treat other diseases. Until the latest revision this year, less than 5% of the drugs on the WHO Essential Drugs List were patented.⁴¹ An industry survey indicated that 94% of countries surveyed had no patents on TB and malaria drugs, and no country has patents on all the relevant drugs for these diseases.⁴² There were no patents at all on drugs for trypanosomiasis or diarrhoeal diseases. The argument advanced by industry is that even where there is no patent protection, the drugs are still not available.⁴³ For instance, even where vaccines are available for various common diseases and cheap (for example, less than \$1 for a polyvalent vaccine), WHO’s Expanded Programme of Immunisation (EPI), in spite of undoubted successes, still fails to reach many children who could benefit.

This is of course true, but it does not follow that the patent system has no adverse effects. Even if patents do not exist for particular products and countries, the patent system may still have an effect on access to medicines. Most low income developing countries have to rely on imports for their supplies. The existence of patents in potential supplier countries may allow the patentee to prevent supplies being exported to another country, particularly through controls on distribution channels. This is another reason why companies may selectively patent in countries such as South Africa because it is a potential supplier to its poorer neighbours in the rest of Southern Africa (or indeed elsewhere). At present, importing countries where there is no patent protection have the option of importing supplies from generic companies, principally in India, because India need not have pharmaceutical product protection until 2005. But thereafter, under TRIPS, new drugs and those for which patent applications were submitted after 1994 will be patentable, and the opportunity for these imports will diminish correspondingly over time. However, it should be noted that all existing drugs produced as generics in India or elsewhere will continue to be available for export provided, of course, they are not patented in the importing country. We return to this issue below in our discussion of policy options.

Patents and Prices

The importance of prices of medicines to poor consumers in developing countries is perhaps obvious. But it is worth emphasising that if a sick person has to pay more for a pharmaceutical product as a result of a patent, it means that he or she will have less to spend on other essentials of life such as food or shelter. Alternatively, foregoing the medicine because it is unavailable or unaffordable may result in long term ill health, or death. That is why it is essential to consider the impact of the introduction of an IP regime on prices, while recognising that prices are affected by many factors. These include purchasing power, competition and market structure, responsiveness of demand to price and government price controls and regulations.

It is particularly difficult to observe directly and isolate the impact of introducing patents in developing country markets. In part we have to rely on econometric models to simulate the impact of introducing patent protection, and in part the experience of developed countries where generic producers compete with research-based ones.

Developed Countries

There is extensive evidence from developed countries that prices fall quite steeply as soon as drugs go off patent, assuming there are generic competitors. The price fall seems to be greater the more generic competitors enter the market. Governments can encourage price reductions by facilitating the early entry of generic producers into the market. For instance, the 1984 Drug Price Competition and Patent Term Restoration Act in the US (known as the Hatch-Waxman Act) did precisely that, resulting in the share of generics in prescriptions dispensed rising from 19% in 1984 to 47% in 2000.⁴⁴ In other developed countries, such as the UK, the generic share of the market is often much higher. Pharmaceutical companies have also brought or defended expensive court actions to delay or prevent generic entry and to protect or extend a monopoly on a best selling drug.⁴⁵ Correspondingly, we must remember that generic producers are governed by market incentives just as the research-based industry, and that it is necessary to encourage competition within the generic industry if lower drug prices are to be achieved. A recent study in the US found that prices fall when generic competition enters the market but at least five generic competitors are necessary to push prices down to a minimum.⁴⁶ The number of competitors entering the market, and the speed with which they do so, will depend on the expected profits. A crucial finding is that the full benefits of competition will only be felt at quite large market sizes – in smaller markets fewer generic firms will consider the market worth entering and prices to consumers will be higher. This is very relevant to the position of developing countries, as discussed below.

Developing Countries

Developing countries can also limit the costs of the patent system for their population by facilitating generic entry and generic competition. But in most cases their options are severely limited by the small size of their markets and lack of indigenous technological, productive and regulatory capacity. It is this lack of capacity to create a competitive environment for both patented and generic products that makes the existence of patents more contentious than in developed markets with greater capacity to enforce a strongly pro-competitive regulatory environment.

International comparisons show that copies of drugs patented elsewhere are much cheaper in markets which do not offer patent protection. The Indian market, where there is no product protection, is the lowest priced in the world. One of our studies indicated that for 12 drugs covering a range of conditions US prices range from four to 56 times the price of equivalent formulations in India, and yet still a large number of people in India cannot obtain access to them.⁴⁷

However, studies of multinational company pricing policies (mainly for ARVs) indicate that until recently there was remarkably little correlation between the price of the same drug and a country's

per capita income. This correlation is expected on theoretical grounds because companies should be able to make more profits by charging low prices in low income markets and high prices in high income markets (known as differential pricing), than by charging a uniform global price. But prices have appeared to vary more or less randomly between countries. Some developing countries paid more than US prices and some less. At best there was a very weak relationship between wholesale drug prices and per capita income.⁴⁸ The actual price to the patient is complicated by import duties, local tariffs, taxes and wholesaler profits.⁴⁹

In the last two years this situation may have changed somewhat as some companies have drastically lowered prices offered in response to international pressure, principally from NGOs, and potential competition from generic manufacturers, particularly from India. For instance, between July 2000 and April 2002 the annual cost of a branded triple therapy ARV combination fell from over \$10000 to just over \$700 for selected groups of consumers. By then the lowest generic price for this combination had fallen to \$209.⁵⁰

But to estimate the impact of introducing patent regimes anew in developing countries, it is necessary to use econometric models. There is a small but growing literature, that relates almost entirely to lower and middle income developing countries which already have significant pharmaceutical industries. This literature demonstrates that the introduction of patent regimes into such developing countries has, or is predicted to have, the effect of raising prices. The estimates range widely depending on the drugs and countries being considered – from 12% to over 200%, but even the lower estimates imply very substantial costs for consumers.⁵¹ The range of estimates is indicative of the degree of uncertainty about the dynamic effect of introducing patents, and suggests that the outcome will be very much determined by market structure and demand, in particular the degree of competition.

There is also considerable evidence that consumption of medicines is sensitive to price. One study in Uganda estimated that reducing the price of an ARV triple therapy from \$6000 per annum to \$600 per annum would increase the demand for treatment from 1000 to 50000 patients if associated with relatively modest investments in treatment infrastructure (of \$4-6 million).⁵² Another study, also in Uganda, indicated that price cuts arising from discounts by brand name companies, further lowered by the import of generic equivalents, increased the number of patients being treated threefold between 2000 and 2001.⁵³ A global econometric study estimated that the effect of eliminating patents in a cross-section of developing countries would be to increase access to ARVs by 30%, albeit from the very low existing level.⁵⁴

The impact of introducing patent systems is likely to be most strongly felt in the group of countries that have developed strong generic industries, with a degree of competition that has kept prices low. There is evidence from some countries that the introduction of patents (for example in Italy in 1978) or strengthening the regime, as in Canada in the 1990s, by increasing the market power of foreign multinationals, will result in the consolidation and restructuring of the domestic industry. This may entail significant costs to the consumer by reducing the degree of competition in the market and increasing imports. Whether these costs may be offset by other benefits (for example, a boost to local research) is much debated. In Italy and Canada, two developed countries, the evidence is mixed.⁵⁵ In Italy multinational companies took over many local companies, exports of generic drugs declined and imports of patented drugs increased. There was little evidence of increased R&D. In Canada, there is evidence of a significant rise in R&D, partly as a result of a deal struck with the multinational manufacturers and tax credits allowed under the Income Tax Act (1987), but R&D is focused on preclinical and clinical trials and improvement of manufacturing processes rather than on the development of new molecules.⁵⁶ In both countries price controls were used to limit price increases on patented products.

In developing countries with strong generic industries, the outlook is also uncertain. On the one hand, manufacturers of mainly generic drugs are likely to be adversely affected by the introduction of patent protection, and also consumers and governments who will need to pay more for drugs

that receive patent protection. On the other hand, producers who are developing a research capability, or who may be able to obtain licences from multinational companies, may perceive benefits from patent protection. These conflicting impacts explain why the introduction of patent protection in India is so controversial. Sections of the Indian pharmaceutical industry support the introduction of patent protection, and are gearing up their research in anticipation of its introduction, while other sections strongly oppose it. And, of course, it is controversial with consumer groups and NGOs.

More generally, as the TRIPS agreement is implemented, the supply of generic copies of new drugs will be prevented. At present, the threat of international competition from generic suppliers of copies of patented drugs is a restraining factor on the prices that can be charged in countries with no patent regimes, and to a lesser extent in countries with patent regimes where there is a credible threat of compulsory licensing. When all producer countries have patent laws, generics will increasingly be limited to older off-patent drugs. This will be no different from the current situation in developed countries, but developing countries will still find it difficult to afford new on-patent medicines. Means will need to be found, within the patent system and outside it, to generate the competitive environment that will help to offset the adverse price effect of patents on developing country consumers. We consider below some of the measures that need to be considered to ensure that the patent system supports a country's right to protect human health and to promote access to medicines, in line with the Doha Declaration on TRIPS and Public Health (hereafter Doha Declaration – see Box 2.1).

Other Factors Affecting Access

It is argued, for instance by the pharmaceutical industry, that the most important constraints to access to medicines in developing countries, are not patent protection but the lack of spending on healthcare in developing countries, and the absence of a suitable health infrastructure to administer medicines safely and efficaciously. Improper administration may contribute to the development of drug resistance, apart from being ineffective. In the case of HIV, where the virus mutates readily, wide distribution of ARVs without the development of adequate infrastructure may contribute to the emergence of drug resistance.⁵⁷ It is also argued that generic versions of patented drugs may be of sub-standard quality, or even hazardous.⁵⁸

A report by the US pharmaceutical industry association says:

“Handicapped by limited financial resources, these nations’ ability to contain AIDS and address a host of other killer diseases is compromised by inadequate infrastructure, cultural barriers to care, and mismanaged health care systems. Some developing countries also are hampered by political leadership that lacks the will to confront or even acknowledge their nation’s health care needs.”⁵⁹

Other than patents, there are a number of factors that affect drug prices, such as tariffs and other forms of indirect taxation.⁶⁰ It can appear perverse to complain about the price impact of patents, while ignoring other policies under national control that have a similar effect. Thus it is important that national tax systems operate in a way that supports public health policies, just as the patent system should.

In order to help allay concerns about delivery mechanisms for AIDS drugs, the WHO has this year produced the first treatment guidelines for using ARVs in poor settings and issued a list of manufacturers and products (including eleven ARVs) which meet WHO quality standards as suppliers to UN agencies. The list currently includes both producers of patented products and a number of generic versions of these products including, so far, two Indian suppliers. In addition the WHO has included for the first time twelve ARVs for the treatment of AIDS (two were already there but for the treatment of mother-to-child transmission) on its Essential Drugs List.⁶¹

There is much debate about the comparative relevance of patents and other factors in determining access to medicines. We consider it important that all these factors are addressed. But we also do not consider that there is a real trade-off between improving IP arrangements to pursue the objectives of public health and addressing the issues of policy, infrastructure and resources for the same objectives. Both need to be pursued, and pursuing one has no bearing on one's ability to pursue the other. One of the participants at our conference said:

"...I would like to discourage the Commission from arriving at the conclusion in this debate {that it is all} about infrastructure and resources. If that is the conclusion, I think you will have what the title says: "People are Poor". So don't make recommendations that people are poor because we know that. We are trying to solve their problems, not to tell them that they are poor."⁶²

Countries need to adopt a range of policies to improve access to medicines. Additional resources to improve services, delivery mechanisms and infrastructure are critical. Other macroeconomic policies need to be in harmony with health policy objectives. But so also does the IP regime. Countries need to ensure that their IP protection regimes do not run counter to their public health policies and that they are consistent with and supportive of such policies.

POLICY IMPLICATIONS

National Policy Options

The Context

The context of our discussion of the policy implications is the Doha Declaration agreed at the WTO Ministerial Meeting in Doha in November 2001 (see Box 2.1). Ministers clarified that TRIPS should not prevent countries from taking measures to protect public health. They confirmed that, within the terms of the agreement, compulsory licences could be granted on grounds determined by member countries. Moreover, domestic demand could be supplied by parallel imports (governed in legal terms by what is known as the "exhaustion of rights" doctrine).⁶³ They recognised that a special problem existed for countries with insufficient manufacturing capacity in making use of compulsory licensing, and instructed the TRIPS Council to find a solution by the end of this year. Members also agreed to exempt least developed countries from implementing, applying or enforcing pharmaceutical product and test data protection⁶⁴ until 2016. The TRIPS Council confirmed this decision on 27 June 2002. The Council at the same time approved a waiver that would exempt LDCs from having to provide exclusive marketing rights for any new drugs in the period when they do not provide patent protection. The latter waiver, now approved by the General Council of WTO, has to be reviewed annually by the Ministerial Conference of WTO (or the General Council between Ministerial meetings) until it terminates.

The premise of our recommendations is that for most developing countries any benefits in terms of the development of new treatments for diseases that afflict them will be, at best, long term, while the costs of implementing a patent system are both real and immediate. Thus we concentrate on measures within the IP system that will reduce to a minimum the prices of drugs, while maintaining their availability. As noted above, we have not found evidence to suggest such measures will diminish the incentives for research on diseases specific to developing countries, because it is the lack of demand rather than the IP system which is the determining factor. But we recognise that, because we are entering uncharted waters, continuing research will be necessary to establish how much TRIPS implementation in practice affects both research incentives and access, particularly in the longer term.

Box 2.1 Doha WTO Ministerial Declaration on TRIPS and Public Health

Adopted on 14 November 2001

1. We recognize the gravity of the public health problems afflicting many developing and least-developed countries, especially those resulting from HIV/AIDS, TB, malaria and other epidemics.
2. We stress the need for the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) to be part of the wider national and international action to address these problems.
3. We recognize that intellectual property protection is important for the development of new medicines. We also recognize the concerns about its effects on prices.
4. We agree that the TRIPS Agreement does not and should not prevent Members from taking measures to protect public health. Accordingly, while reiterating our commitment to the TRIPS Agreement, we affirm that the Agreement can and should be interpreted and implemented in a manner supportive of WTO Members' right to protect public health and, in particular, to promote access to medicines for all.

In this connection, we reaffirm the right of WTO Members to use, to the full, the provisions in the TRIPS Agreement, which provide flexibility for this purpose.

5. Accordingly and in the light of paragraph 4 above, while maintaining our commitments in the TRIPS Agreement, we recognize that these flexibilities include:
 - a) In applying the customary rules of interpretation of public international law, each provision of the TRIPS Agreement shall be read in the light of the object and purpose of the Agreement as expressed, in particular, in its objectives and principles.
 - b) Each Member has the right to grant compulsory licences and the freedom to determine the grounds upon which such licences are granted.
 - c) Each Member has the right to determine what constitutes a national emergency or other circumstances of extreme urgency, it being understood that public health crises, including those relating to HIV/AIDS, TB, malaria and other epidemics, can represent a national emergency or other circumstances of extreme urgency.
 - d) The effect of the provisions in the TRIPS Agreement that are relevant to the exhaustion of intellectual property rights is to leave each Member free to establish its own regime for such exhaustion without challenge, subject to the MFN and national treatment provisions of Articles 3 and 4.
6. We recognize that WTO Members with insufficient or no manufacturing capacities in the pharmaceutical sector could face difficulties in making effective use of compulsory licensing under the TRIPS Agreement. We instruct the Council for TRIPS to find an expeditious solution to this problem and to report to the General Council before the end of 2002.
7. We reaffirm the commitment of developed-country Members to provide incentives to their enterprises and institutions to promote and encourage technology transfer to least-developed country Members pursuant to Article 66.2. We also agree that the least-developed country Members will not be obliged, with respect to pharmaceutical products, to implement or apply Sections 5 and 7 of Part II of the TRIPS Agreement or to enforce rights provided for under these Sections until 1 January 2016, without prejudice to the right of least-developed country Members to seek other extensions of the transition periods as provided for in Article 66.1 of the TRIPS Agreement. We instruct the Council for TRIPS to take the necessary action to give effect to this pursuant to Article 66.1 of the TRIPS Agreement.

Differential Pricing

As we have noted, differential pricing in principle should be an economically rational way for global companies to maximise their profits on products that are sold in both low and high income markets.⁶⁵ It should also be a way of ensuring that poorer people obtain less expensive products.

There are several initiatives aimed at facilitating a global system of differential pricing. As noted above, there are many other factors unrelated to IPRs that affect the prices and availability of medicines. In establishing a differential pricing system, which would allow low prices in developing countries to coexist with higher prices in developed countries, there are two important factors:

- Markets with different price levels must be segmented so that low priced medicines cannot enter higher priced markets. This means controlling exports and imports of relevant products.
- Pricing decisions in higher priced markets, where these are set or influenced by government policy, must not be made by reference to prices in the low priced markets.

The second factor does not involve IP considerations, but represents a political problem in many developed countries because of the existing variation in prices of pharmaceuticals, even between developed countries, and the pressure on the budgets of patients, insurance schemes and the state to meet ever rising bills for patented drugs.

But the tools of the IP system, including parallel imports and compulsory licensing, are likely to play an essential part in underpinning differential pricing and market segmentation. In order to ensure an effective operation of a differential pricing system, national laws in developing countries should retain the right for the government to admit parallel imports and to issue compulsory licences.

We are also aware of recent price reductions and of the number of special schemes operated by some companies, sometimes in cooperation with international agencies, to provide heavily discounted or free drugs and, in conjunction with local government and NGOs, supportive infrastructure to ensure delivery to the patient. These offers generally apply only to purchasers who are governments, NGOs, aid organisations or private sector employers, not commercial suppliers of medicines. These are all welcome contributions to improving access to medicines in developing countries.⁶⁶ But there is also the need to seek more broad-based solutions, which are also sustainable, to the serious public health problems that are being addressed. That is why continued efforts are required to make differential pricing effective.

Parallel Imports

In principle, it is undesirable for there to be restrictions upon the free movement of products once placed on the market by a manufacturer. But in practice, and strictly for the purpose of ensuring that lower priced products can be supplied to, and only to, those who need the lower prices, it may be necessary to derogate from that general principle. Therefore an important component in establishing a system of differential pricing is that markets need to be segmented to prevent low priced products undermining high priced markets. For that purpose, it is essential that developed countries put in place effective mechanisms that prevent parallel importing of medicines. This is already broadly the case for the US and the EU, but appears not to be so for Japan.⁶⁷

Developed countries should maintain and strengthen their legislative regimes to prevent imports of low priced pharmaceutical products originating from developing countries.

However, to secure the segmentation of markets, it would also be desirable for developing countries to act to prevent exports to developed countries of drugs that are part of a donation or differential pricing scheme. It is especially important to avoid product diversion from those patients for whom the medicine is intended. But, recognising limitations in their capacity for enforcement,

the primary burden of segmentation between developed and developing countries will realistically need to rest with developed countries.

Developing countries should not eliminate potential sources of low cost imports from other developing or developed countries. In order to be an effective pro-competitive measure in a scenario of full compliance with TRIPS, parallel imports should be allowed whenever the patentee's rights have been exhausted in the foreign country. Since TRIPS allows countries to design their own exhaustion of rights regimes (a point restated at Doha), developing countries should aim to facilitate parallel imports in their legislation.

Compulsory Licensing

As noted above, the result of implementing TRIPS will be to curtail the supply of generic copies of patented products. This will remove an important element in restraining and reducing the prices of patented products in developing countries. Providing effective legislation and procedures for compulsory licensing may have an important role to play in maintaining a pro-competitive IPR policy in the new environment. We do not regard compulsory licensing as a panacea, but rather as an essential insurance policy to prevent abuses of the IP system.

Although TRIPS allows compulsory licensing (as clarified in the Doha Declaration), subject to certain procedures and conditions, developing countries have yet to use it. Ironically, it is the developed countries that have been the most active users of compulsory licensing (not only in the pharmaceutical field) for a number of purposes, including importantly in anti-trust cases in the US. Canada used compulsory licensing extensively in the pharmaceutical field from 1969 until the late 1980s. This resulted in prices of licensed drugs being 47% lower than in the US in 1982.⁶⁸ The UK also used compulsory licensing until the 1970's, including for important drugs such as Librium and Valium. More recently in 2001, the US Secretary for Health and Human Services (HHS), publicly envisaged the possibility of procuring generic equivalents prior to his negotiations with Bayer (the patentee) on the purchase of the drug Cipro to deal with the consequences of anthrax attacks although, in the end, agreement was reached with Bayer.⁶⁹

Developing countries have not used the system for a number of reasons. First, it requires an administrative and legal infrastructure that is absent in many developing countries. Secondly, developing countries have feared that sanctions might be threatened, bilaterally or multilaterally. Thirdly, compulsory licensing has to be "predominantly for the domestic market". Fourthly, the word compulsory refers to the **legitimate** limitation of patent owner rights by a government. The actual producer of the licensed drug manufactures voluntarily and for profit (at least in the case of a private sector licensee). Thus the licensee must have the know-how to reverse engineer and manufacture the drug without the cooperation of the patent owner, and must also foresee a sufficiently large market to justify the costs of investment and manufacture and adequate remuneration to the patentee. If these conditions are not fulfilled, the threat of a compulsory licence will not be credible.

The threat of compulsory licensing has been successfully used by Brazil in the pursuit of its National STD/AIDS Programme (see Box 2.2). As a result of its research capability, and the development of public sector manufacturing capacity, Brazil has been able to use the threat of compulsory licensing in negotiations with pharmaceutical companies. This includes an ability to use estimates of its own production costs under compulsory licensing when negotiating prices with patentees. But there are relatively few developing countries which are in the same position as Brazil, so the threat will lack credibility in most developing countries unless they are able to rely on imports from countries with the requisite capacity.

Box 2.2 The Brazilian National STD/AIDS Programme (NSAP)

The primary mission of the Brazilian National STD/AIDS Programme (NSAP) is to make HIV/AIDS medications available free of charge to all citizens who need them through the national public health care system. NSAP was initiated in the early 1990s and the treatment of HIV/AIDS patients was made a legal obligation in 1996. With the assistance of HIV/AIDS NGOs, there has been a major reorganisation of the national public health services network for drug distribution, AIDS testing and care. There are now hundreds of Drugs Dispensing Units across the country.

NSAP now supplies anti-retroviral drugs to currently nearly 105,000 of Brazil's estimated 600,000 HIV/AIDS patients. It has now reduced the number of cases of HIV and mortality among AIDS victims to half what was predicted in the early 1990s. Hospital admissions have decreased by 80 percent since 1996. So, although the NSAP is expensive (the total annual cost is about US\$500m out of a total health budget of US\$10bn), the costs avoided due to reduced illness, hospitalisation and other impacts of HIV/AIDS are beginning to balance the budget. The Brazilian Ministry of Health estimates that in 2001, the final cost of NSAP, incorporating reduced morbidity expenditure, was negative (a net saving of US\$50m).⁷⁰

Of the total cost of the programme, \$300 million is spent on AIDS drugs. The cost of acquiring the antiretroviral drugs has reduced recently, as the Ministry of Health/NSAP develops local production in the public sector - establishing national laboratories, and tools to negotiate with multinational companies, including the threat of compulsory licensing. Far-Manguinhos (part of the Oswaldo Cruz Foundation - FIOCRUZ) is the main government drug producer, developing the technology that provides the country with low-cost anti-retroviral drugs. The institute already produces seven of the 15 medicines used in the antiretroviral cocktail offered in Brazil. None of these drugs are patented in Brazil. The prices of these drugs, when developed for local production, fell by an average of 72.5% between 1996 and 2000. In 1999, 47% of antiretrovirals were produced in Brazil but accounted for only 19% of total expenditures. Thus 81% of expenditure was on ARVs purchased from multi-national companies.

Because Far-Manguinhos has the technical capacity to reverse engineer patented drugs, and can estimate realistic production costs, the Health Ministry is in a strong bargaining position for negotiating price reductions with foreign producers, backed up by the credible threat of compulsory licensing. In 2001 the Health Minister used this approach with Roche and Merck for their drugs Nelfinavir and Efavirenz, eventually negotiating price reductions of 40 to 70%.

While Brazil's programme has been widely acclaimed as a possible model for other countries, it needs to be noted that the cost of the programme amounts to nearly \$5000 per annum per treated person, or \$800 for each HIV infected person, or \$3 for every person in Brazil. Thus Brazil has prioritised the treatment of HIV/AIDS. This is affordable for Brazil because it is a relatively affluent developing country, and because in proportionate terms it has a low rate of HIV infection. Moreover, its technical know-how allows the Ministry of Health to negotiate price reductions effectively. As noted above, it may be an investment that pays for itself in reduced mortality and morbidity. But the initial investment in this type of programme may not be affordable in poorer countries with much higher rates of HIV infection, without external assistance. For such nations, their weak technological capacity will also be a constraint in the absence of effective means of compulsory licensing as proposed in Doha.

National Arrangements for Compulsory Licensing

An important barrier to compulsory licensing in developing countries is the absence of straightforward legislative and administrative procedures to put it into effect. Because legal systems in most developing countries are overburdened, it would be most appropriate to legislate for a quasi-judicial and independent administrative system for implementation of compulsory licensing. The essential elements would include:

- straightforward, transparent and fast procedures
- procedures for appeals that do not suspend the execution of the licence
- legislation that fully exploits the flexibilities in TRIPS for determining the grounds for compulsory licensing, as well as for non-commercial use by government, including production for export (see below)
- clear, easy to apply, and transparent guidelines for setting royalty rates (which may vary).

There is much to be learnt from the experience of developed countries, particularly Canada, which seems to have had the most comprehensive programme. Canada set a more or less universal royalty rate of 4%, for which an early precedent was set in an important test case. US practice has varied considerably from very low rates to quite high, depending on court judgements. Developing countries will need to develop rules and procedures adapted to their own circumstances for setting royalty rates, but the implication of other countries' experience is that royalty rates need not be very high.

Developing countries also need to consider adopting in this context strong provisions on government and non-commercial use. This is different from compulsory licensing but has a similar effect in the public health sector. Again, many developed (and developing) countries have such provisions in their laws. In Commonwealth countries these derive from the British 1883 Act, which has been retained in current law.⁷¹ These powers are quite sweeping and do not specify closely particular circumstances in which they can be used. For instance, in New Zealand:

“...any Government Department ...may make, use, exercise and vend any patented invention for the services of the Crown and anything done by virtue of this subsection shall not amount to an infringement of the patent concerned.”⁷²

Developing countries should establish workable laws and procedures to give effect to compulsory licensing, and provide appropriate provisions for government use.

Compulsory Licensing for Countries with Insufficient Manufacturing Capacity

Paragraph six of the Doha Declaration directs the TRIPS Council to develop an expeditious solution to the problem faced by certain countries not having sufficient manufacturing capacity in the pharmaceutical sector. It defines the problem as the inability of these countries to use compulsory licensing to obtain needed pharmaceuticals from a producer located in their territory. A compulsory licence ordinarily could be used for this purpose - the country could authorise through a compulsory licence a domestic producer to produce the product within its territory, or an importer to procure from elsewhere. The countries identified as having this problem, however, cannot turn to a domestic producer for products under this approach, and would need to rely on a producer from another country.

We agree that it is important to get the interpretation or amendment of TRIPS right, bearing in mind the longer term scenario when patent protection will apply to countries that can currently produce and export generic copies of patented drugs. The ultimate need is to create a pro-competitive solution for the market in patented drugs in developing countries after TRIPS is fully in force which allows expeditious procurement of drugs in a sustainable manner at the lowest

possible cost. This applies whether we are considering the direct procurement of patented drugs where there are a range of therapeutic substitutes, or about procurement under compulsory licensing.

Compulsory licensing needs to be viewed as a means to an end. The end in this case is to help achieve the lowest possible cost of medicines in developing countries in order to facilitate access. The only point of compulsory licensing in this context is if it will help to achieve this. As noted above, aside from the legal and administrative aspects, compulsory licensing will only be effective if the compulsory licensee sees the possibility of a reasonable return from his investment while also supplying at a significantly lower price than the patentee (or his licensee).

While there are now several countries, particularly those with significant domestic markets, with the capacity to produce copies of drugs cheaply, this will become more difficult after 2005. There will be no incentive, as now, for manufacturers in these countries to reverse engineer newly patented drugs and take the other steps necessary for manufacture and sale (including obtaining regulatory approval), because the domestic market would be closed. Thus the ready supply of generic substitutes for patented drugs now available will gradually disappear. Potential compulsory licensees would therefore have to charge a price closer to full economic cost (including start-up and manufacturing costs) as compared to the possibility of providing off-the-shelf generics at prices where start-up costs have already been amortised to some extent on the domestic market. Moreover, if the necessary investment is only triggered by the availability of a compulsory licence, there will inevitably be long delays before the drug actually reaches the intended patients.⁷³ In addition, there is some evidence that reverse engineering of new medicines is intrinsically more difficult in biopharmaceuticals than in traditional process chemistry.

This suggests that, without special arrangements, the possibility of compulsory licensing being a vehicle for price reductions will be more limited than at present, even in the few technologically advanced developing countries. For most countries, the only feasible supplier may be the patentee (or his licensee).

We therefore see the problem identified at Doha as being as much economic as legal. A quasi-legal solution as may be identified in the TRIPS Council is necessary, but is by no means sufficient to solve the problem we have outlined. In particular the quasi-legal solution is less likely to be effective the more compulsory licensing is hedged around with restrictions. Such restrictions reduce the likelihood that such licensing can be an effective bargaining tool for developing countries negotiating prices with patentees – it can be effective only if the compulsory licensing alternative is a viable economic proposition.

Legal Aspects

In this section we consider and comment on the various proposals put forward by different countries and groups of countries to address the WTO resolution of the problem identified in paragraph 6 of the Doha Declaration. This revolves around the substance of Articles 28 (Rights Conferred), Article 30 (Exceptions to Rights Conferred) and Article 31(f) of TRIPS, where Article 31 deals with “Other Use Without Authorisation of the Right Holder”. Article 31(f) provides that a compulsory licence must be “predominantly for the supply of the domestic market of the Member authorising such use.”

Countries with no or insufficient manufacturing capacity cannot therefore issue a compulsory licence to a domestic manufacturer, or to one overseas because patents are territorial. At present they could issue a compulsory license to an importer, who could source the supply from a generic manufacturer in a country where the product is not patented. After 2005, this option will not be possible for drugs that are patented in the supplier country.

The practical effect of this provision is to render the compulsory licensing provisions practically worthless for the very countries which are likely to need it most – namely the poorest. With limited domestic manufacturing capacity, there is no one to invoke those provisions in those countries. This is plainly unsatisfactory and the Doha Declaration rightly recognised that a swift solution should be found to this problem.

There are a number of interpretative problems raised by the Doha Declaration, a few of which we note in passing. The Declaration notes that countries are free to determine the grounds on which compulsory licences are granted (paragraph 5b), and the right to determine what constitutes a “national emergency or other circumstances of extreme urgency” (paragraph 5c). The latter provision reflects the shortcut in procedures allowed in these circumstances in Article 31(b) of TRIPS. Thus paragraph six refers to procedures for compulsory licensing in the pharmaceutical sector needed to address “public health problems...especially those resulting from HIV/AIDS, tuberculosis, malaria and other epidemics” (paragraph 1).⁷⁴ It does not, as sometimes assumed, refer only to compulsory licensing in situations of emergency or urgency. Nor is it limited to a particular type of disease.

It also needs to be clarified which countries have no or insufficient manufacturing capacity. Again we think this requires an economic interpretation. If production of a needed medicine is technically possible but extremely costly, there is no point in issuing a domestic compulsory licence. If the objective is affordable access to medicines of appropriate quality and quantity, then the solution should allow production in the most economically viable manner, whether domestically or overseas. Developing countries generally favour an interpretation of “manufacturing capacity”, that takes account of economic criteria (for example, whether the capacity is such that economic production is possible in the envisaged circumstances), and place emphasis on a country’s ability to decide the criteria on a product by product basis. Developed countries, with one exception, suggest that criteria for defining this should be drawn up, without defining what these might be.⁷⁵

Since the Declaration also allows LDCs not to apply pharmaceutical patents until 2016, countries that take advantage of this provision will not be able to issue compulsory licences, nor will any country where a patent has not been taken out. At present, such countries may be able to import cheaper supplies from other countries without patents on the relevant products, but again this situation will change after 2005. Thus paragraph six, while referring specifically to compulsory licensing, is clearly intended to address this wider context of action to address the affordability and accessibility of medicines, particularly in developing and least developed countries.

The Declaration does not specify which countries may act as suppliers to the countries in question. In order to maximise competition, and achieve the lowest prices possible, applying no restriction on which WTO members may act as suppliers would seem to be the logical market-based solution. For the same reasons, countries seeking a licence should logically seek out the most competitive compulsory licensee, wherever they might be located. Developing countries favour having the ability to import from suppliers in any country. One developed country favours the possibility of import from developed countries, but the EU has no fixed views and the US favours supply from developing countries only, as does the research-based pharmaceutical industry.

Five main solutions have been proposed to the problem mentioned in paragraph six of the Declaration which we examine in turn.

The Amendment of Article 31 of TRIPS. Article 31(f) could be deleted. However this may be regarded as altering the sense of the Agreement for compulsory licensing other than in relation to public health problems. The alternative is an amendment which would make a clearly demarcated exception to the restriction imposed by Article 31(f) covering compulsory licensing needed to address public health problems envisaged in the Declaration. Such an amendment to TRIPS would be very time-consuming and require ratification by national governments. An interim or provisional solution, such as a declaration of intent, and temporary waiver or moratorium on dispute settlement, could be provided to cover the period until any amendment is ratified. But many

countries, both developed and developing may be reluctant to re-open TRIPS at all, because of the risk of other aspects of the agreement being opened up for renegotiation at the same time. Assuming a solution was found, it would then be necessary for a potential exporting country to delete the “predominantly” clause from its own legislation and to make sure that the grounds for compulsory licensing accorded with those envisaged in the Declaration. In the final stage compulsory licences would need to be invoked and paid for in both the importing and exporting countries, if there is a patent in both. The exporting country would need to be prepared, in any case, to issue a compulsory licence for the benefit of the importing country.

Developing countries have suggested a number of options for resolving the problem including the revision of Article 31 or deletion of Article 31(f), so as to ensure Article 31(f) would not apply to any laws, measures and administrative regulations including compulsory licences, adopted to protect public health and in particular to ensure affordable access to pharmaceutical products. Other developing countries note that under Article 31(f) there would be a need to issue compulsory licences in both the importing and exporting country which would be administratively burdensome. The EU favours the specific amendment to Article 31(f) described above. The US does not favour an amendment to 31(f), but a moratorium on dispute settlement proceedings to achieve the same effect.

Interpretation of Article 30. Article 30 provides for limited exemptions to patent rights that do not conflict with the normal exploitation of the patent. Under this proposed solution no amendment is required to TRIPS, nor a compulsory licence in the exporting country. One claimed advantage is that it would allow exports to countries where no patents exist on the relevant medicine. All that would seem to be required is an “authoritative interpretation” under Article IX of the WTO agreement, adopted by three quarters of WTO Members. This would clarify that an exception under patent rights to allow export in the circumstances envisaged in the Declaration is legitimate. National legislation in the exporting country would then need to be amended to ensure that the envisaged exception is incorporated. One issue with this proposed solution is whether the “Doha exception” would be compatible with the conditions of Article 30. An interpretation of this Article in a recent Disputes Settlement Panel⁶ suggested that the “limited exceptions” should be interpreted narrowly. This was in the context of justifying Canada’s provision of an exception for early working by potential competitors for the purposes of obtaining regulatory approval. There is a case to be made that an exception, as suggested here, is “limited” to particular circumstances as defined in the Declaration. It could also be said that it does not “unreasonably conflict” with the normal exploitation of the patent, being for export at low prices, provided the “legitimate interests” of the patentee are safeguarded (for example, preventing diversion to other markets). Moreover, the legitimate interests of third parties (people suffering from diseases in developing countries) would need to be weighed appropriately against those of the patentee. For the most part the very different circumstances applying here, as contrasted to those in the Canada case, means this WTO case law is of limited relevance.

Some developing countries particularly favour the Article 30 solution, noting that it solves the problem of double remuneration under Article 31, and removes the need for a compulsory licence in the exporting country. In terms of administrative procedures they feel it is the least burdensome option. It should also be noted that activist NGOs think the Article 30 option is preferable to other options.

Moratorium or Waiver. An alternative is the proposal for a moratorium or waiver for exports in the “Doha circumstances”. Advocates argue that a waiver is the most expeditious solution noting that it could provide legal security and still avoid the need for either amendment or authoritative interpretation of the TRIPS agreement. The conditions for a waiver could be set out in advance to define the circumstances in which they would apply. Obviously there would be a need to set these out very clearly and unambiguously to the satisfaction of all WTO members. This has not yet been attempted and clarity may inevitably be compromised in negotiations on the criteria.

The WTO Ministerial Council would have to agree the criteria under which Members may be exempted from complying with the provisions of the TRIPS Agreement. Both in the case of a

moratorium and a waiver, however, interested parties may only invoke protection under the Agreement if national legislation has been changed to implement the exemption to the 31(f) requirement.⁷⁷ If national legislation is not changed, a patentee may still make a case in national courts in spite of the fact that a WTO waiver or moratorium applies. It also needs to be remembered that a waiver requires regular review by the Ministerial Conference/General Council if granted for a period of more than one year.

The EU have suggested that a waiver (or moratorium) might be necessary while the amendment they propose to 31(f) is agreed. Some developing countries have suggested that that a waiver (or moratorium) would not amount to a sustainable and legally predictable solution. By contrast the US has suggested that a waiver or moratorium is more likely to achieve an expeditious, workable, transparent, sustainable and legally certain solution. We also understand that the pharmaceutical industry supports a proposal on these lines.

Non-Justiciability. The proposal for a non-justiciability option would achieve much of the Article 30 approach by a different means. It would operate in a similar manner to the position of TRIPS on the exhaustion of rights (paragraph six of TRIPS). By authoritative interpretation or amendment of the Agreement, it would be decided that settlement disputes under TRIPS would not be used in relation to exports undertaken as envisaged in the Declaration. However, it is unclear exactly how this proposal would be implemented.

Export by a Nation with a Compulsory Licence. A final option, which is not in the hands of the WTO, is that countries which have the capacity to reverse engineer and manufacture, and large local markets for the required medicines, may issue compulsory licences in accordance with their own legislation. In that case, a proportion of the supplies manufactured could be offered for export to countries in need (on the basis of a compulsory licence for import if necessary) in a manner that did not breach Article 31(f). A compulsory licence can also be granted to remedy anti-competitive practices (Article 31(k)), and in this case the restriction on exports would not apply. But this option depends on the supplying country having legitimate grounds for issuing a compulsory licence in the first place, on its having a large enough market that exports constitute less than half of total production, and on its willingness to export.

The choice between these options will be worked out politically, but we strongly emphasise our concern that whatever the legal solution adopted by the WTO is, it should proceed upon the following principles. First, it should be quickly and easily implementable with a view to a long term solution. Second, the solution should ensure that the needs of poor people in developing countries without manufacturing capacity are given priority. Third, it should seek to ensure that conditions are established to provide potential suppliers the necessary incentive to export medicines that are needed

Economic Aspects

Whatever means are utilised to achieve the objectives at Doha, developed countries will require safeguards to prevent leakage of product from the intended recipient to other markets, and to ensure that production is only for export to the affected country, not for domestic sale. They may also require actions through WTO to ensure all Members are fully informed of the nature of the transaction in a transparent manner. Whatever safeguards are finally agreed upon, the crucial issue is that the economics of supply to one particular country with a limited market may be insufficient to attract potential generic suppliers. Moreover, if prices offered under compulsory licensing are to be as low as possible, then there should be competition between more than one supplier at the point of ordering, if not for the actual supply. To allow therefore for economies of scale, and a degree of competition, it is important that small markets are grouped together as much as is possible.

An obvious solution is for groups of countries with the similar needs for essential drugs to group together. International institutions, such as WHO or the Global Fund to Fight AIDS, Tuberculosis and

Malaria (GFATM) may also have an essential role to play in facilitating and financing group purchases of medicines from both brand and generic manufacturers.

A way needs to be found to reconcile the nature of the solution adopted with the objective of providing medicines of the appropriate quality at the lowest possible cost. If that cannot be achieved, the legal solution will have little practical reality. Nor will the option of compulsory licensing be effective as a negotiating tool.

Developing Country Legislation

The main way that developing countries can use IPRs to address public health issues is to ensure that their legislation provides for appropriate standards and practices. What is appropriate will vary according to country circumstances and level of development. For instance, countries with well developed R&D capability, or with particular strengths in, say, biotechnology, may want to have “stronger” protection than countries that are almost entirely users of other countries’ technology.

Developing countries should not feel compelled, or indeed be compelled, to adopt developed country standards for IPR regimes. They might be overwhelmed if they did so. The number of new chemical entities approved for use by the US Food and Drug Administration (FDA) declined to 27 in 2000, compared to about 60 in 1985.⁷⁸ But the number of patents granted in the main patent class for new drug compositions (424) was 6730 in 2000.⁷⁹ The great majority of patents are granted not for new therapeutic compounds, but relate to variations in production processes, new formulations or crystalline forms, new combinations of known products, and new uses of known drugs. In the period 1989-2000, 153 of the 1035 new drug approvals by the FDA were reported to be for drugs that contained new active ingredients and offered significant clinical improvement. A further 472 drugs were classified as being modestly innovative.⁸⁰

The underlying principle should be to aim for strict standards of patentability and narrow scope of allowed claims, with the objective of:

- **limiting the scope of subject matter that can be patented**
- **applying standards such that only patents which meet strict requirements for patentability are granted and that the breadth of each patent is commensurate with the inventive contribution and the disclosure made**
- **facilitating competition by restricting the ability of the patentees to prohibit others from building on or designing around patented inventions**
- **providing extensive safeguards to ensure that patent rights are not exploited inappropriately.**

All this would help to ensure that patenting rules as far as possible limit the scope for patenting that serves more to protect markets, and exclude competition, than promote local R&D. Moreover loose patenting standards and practices, as noted above, can actually inhibit innovation by impeding research by others. Because, under TRIPS, it is not possible to discriminate between different fields of technology, we deal with the application of these principles in more detail in Chapter 6.

However, specific to pharmaceuticals, most developing countries should as a minimum take up the possibility allowed by TRIPS⁸¹ of excluding diagnostic, therapeutic and surgical methods for treatments of humans or animals from patentability, as well as new uses of known products (which, in essence, are equivalent to therapeutic methods). Since most developing countries are not in a position to develop such methods, they will have nothing to gain by not exploiting this flexibility. Of course, the few developing countries with research capabilities in these areas may wish to have such protection, but we should note that most developed countries also exclude these areas from patentability. We would also suggest that developing countries think very carefully about diluting this exception by relaxing the concept of novelty and allowing patent claims for essentially first or subsequent medical uses of known chemical compounds as has been done in a number of

developed and developing countries.⁸² Again, developed countries may consider that the incentive for research justifies allowing such claims, but for most developing countries with limited research capabilities we consider that the costs are likely to outweigh the benefits.

Most developing countries, particularly those without research capabilities, should strictly exclude diagnostic, therapeutic and surgical methods from patentability, including new uses of known products.

We also deal here with two issues which particularly affect the pharmaceutical sector, and the production of generic drugs.

Bolar Exception

In the US, the Drug Price Competition and Patent Term Restoration Act of 1984 overturned a landmark court decision (*Roche versus Bolar*, 1984) by introducing, inter alia, what is now known as the “Bolar Exception” (or “early working exception”). This makes it legal for a generic producer to import, manufacture and test a patented product prior to the expiry of the patent in order that it may fulfil the regulatory requirements imposed by particular countries as necessary for marketing as a generic. The WTO legality of this exception was confirmed in 2000 by the dispute settlement case brought by the EU against Canada.⁴³ For developing countries this is very important, particularly if they are actual or potential producers of generics, in order to ensure that lower priced generics can reach the market as soon as a patent expires. Even if they are not likely to be potential producers in the foreseeable future, it would be prudent to include the exception in their legislation. For instance, a foreign company may need to conduct trials for the purpose of gaining regulatory approval. Of 63 developing countries whose legislation we examined only eight specifically included a Bolar exception, although others may also allow “early working” under general exceptions to exclusive rights (covered by equivalent wording to Article 30 in TRIPS).⁸⁴

Developing countries should include an appropriate exception for “early working” to patent rights in their legislation, which will accelerate the introduction of generic substitutes on patent expiry.

Marketing Approval

Another important step in marketing a generic drug is the need to meet regulatory requirements for that purpose. TRIPS provides in Article 39.3 an obligation on countries to protect against unfair commercial use of confidential data (for example, trials data) on new chemical entities submitted by companies to obtain approval for marketing new drugs from the regulatory agency (such as the FDA in the US).

The rationale for this is the “considerable effort” invested in the compilation of this data. Pharmaceutical companies understandably argue that it is unfair if the product of possibly millions of dollars of clinical trials and other investigations is made available to competitors who thereby avoid the need for comparable expenditure in order to obtain marketing approval. Against this it is argued, from the public health point of view, that such data should be in the public domain because they contain important medical information not available elsewhere and that excessive secrecy has undesirable effects (for example, the data might be usefully reanalysed to understand side-effects only detected after marketing). Moreover, from a societal point of view, it makes no sense for a potential generic competitor to repeat very expensive tests if the biopharmaceutical equivalence of their version of the drug can be reliably demonstrated. Data exclusivity can be a barrier to generic entry irrespective of whether the drug was patented, or the patent period has expired.

TRIPS does not require the imposition of data exclusivity, as such, on these test data, only protection against unfair commercial use. The EU, however, has rules that confer exclusivity on such data for a period of six to ten years, and is considering moving to ten years. This means, inter alia, that the

health authorities cannot rely on such data to approve other applications without the originators' consent. In the US, similar protection is applicable for five years.

In the light of the above, we take the view that developing countries should protect test data against unfair commercial use in order to protect the legitimate interests of the originators of data and their "considerable effort." But TRIPS allows considerable freedom in how this may be done.

Countries may allow health authorities to approve equivalent generic substitutes by "relying on" the original data. Developing countries should implement data protection legislation that facilitates the entry of generic competitors, whilst providing appropriate protection for confidential data, which may be done in a variety of TRIPS-compatible ways. Developing countries need not enact legislation the effect of which is to create exclusive rights where no patent protection exists or to extend the effective period of the patent monopoly beyond its proper term.

Doha Extension for Least Developed Countries

The Doha Declaration (paragraph seven) instructed the TRIPS Council to allow least developed countries to defer introduction of patent protection for pharmaceutical products and protection of confidential test data until at least 2016. We applaud the intention behind this paragraph, but it also creates and highlights a number of anomalies.

At least 70% of the population in LDCs are in countries that provide pharmaceutical patent protection, and 27 of the 30 LDCs in Africa also provide it. These countries would need to amend their legislation to remove protection on pharmaceuticals to take advantage of this extension. It may well be in their interest to do so in view of the length of the extension granted. We presume, however, that amendments to legislation may not be retrospective and thus current patents would remain valid.

Further, certain countries will be constrained in amending their laws by bilateral or multilateral agreements. For instance the 12 LDC members of OAPI (three are not least developed) would need to agree on a revision to the Bangui Treaty which governs OAPI. Similarly, others may be bound by bilateral agreements which do not allow for this course of action.

For countries that have not yet implemented IP protection, we question whether it makes sense to implement the whole IP protection regime in 2006, except for pharmaceutical protection. Since pharmaceuticals account for a significant proportion of all patent applications (for example, 50 % of patents issued by ARIPO in 1994-1999 were related to pharmaceutical products),⁸⁵ it is even harder to justify the financial and human resources necessary for implementing an IP regime in these countries only for non-pharmaceutical sectors. Article 66.1 of TRIPS provides that the TRIPS Council may grant extensions to the transition period for LDCs taking account of their "special needs and requirements...their economic, financial and administrative constraints, and their need for flexibility to create a viable technological base". It is not therefore very logical to grant an extension for one sector on the grounds of public health to a specific future date, when the criteria under TRIPS for granting extensions are far more broadly based.

Those LDCs which already provide pharmaceutical protection should consider carefully how to amend their legislation to take advantage of the Doha Declaration. Consistent with our analysis elsewhere, the TRIPS Council should review the transitional arrangements for LDCs, including those applying to join the WTO, in all fields of technology.

- ¹ USTR launched investigations (under Section 301 of the Trade Act) into the failure of countries to provide adequate IP protection to pharmaceutical products in Brazil (1987), Argentina (1988) and Thailand (1991). Source: http://www.ustr.gov/html/act301.htm#301_52
- ² Ryan, M. (1998) *Knowledge Diplomacy: Global Competition and the Politics of Intellectual Property*, Brookings Institution, Washington DC, pp.67-72. Source: <http://brookings.nap.edu/books/0815776535/html/>
- ³ Review of the evidence in Scherer, F.M. (2001) "The Patent System and Innovation in Pharmaceuticals", *Revue Internationale de Droit Economique*, (Special Edition, "Pharmaceutical Patents, Innovations and Public Health"), pp.109-112
- ⁴ Presentation by Sir Richard Sykes at Royal Institute of International Affairs, London, 14 March 2002.
- ⁵ Oxfam (2001) *Priced Out of Reach*, Oxfam Briefing Paper No. 4, Oxfam International, Oxford. Source: <http://www.oxfam.org.uk/policy/papers/priced/priced.html>
- ⁶ WHO (2002) "Infectious Disease Report 2002", WHO, Geneva. Source: <http://www.who.int/infectious-disease-report/2002/framesintro.html>
- ⁷ Médecins sans Frontière (2001) *Fatal Imbalance: The Crisis in Research and Development for Drugs for Neglected Diseases*, MSF, Brussels. Source: <http://www.msf.org/source/access/2001/fatal/fatal.pdf>
- ⁸ See, for instance, "Courting Trouble" *The Economist*, 8 June 2002. Source: <http://www.economist.com/>
- ⁹ Commission on Macroeconomics and Health (2001) *Macroeconomics and Health: Investing in Health for Economic Development*, WHO, Geneva, p.56. Source: <http://www3.who.int/whosis/menu.cfm?path=whosis,cmh&language=english>; and Médecins sans Frontière (2002) *Untangling the Web of Price Reductions: A Pricing Guide for the Purchase of ARVs for Developing Countries*, MSF, Geneva. Source: <http://www.who.int/medicines/organization/par/edl/access-hivdrugs.shtml>
- ¹⁰ WHO Press Release (WHO/58), 9 July 2002. Source: www.who.int/inf/en/pr-2002-58.html
- ¹¹ See UNAIDS (2002) *Report on the Global HIV/AIDS Epidemic 2002*, UNAIDS, Geneva, p.151. Source: <http://www.unaids.org/barcelona/presskit/report.html>
- ¹² Commission on Macroeconomics and Health (2001)
- ¹³ Commission on Macroeconomics and Health (2001), p.77
- ¹⁴ See Glossary for definition.
- ¹⁵ Commission on Macroeconomics and Health (2001), pp.86-91
- ¹⁶ Commission on Macroeconomics and Health (2001), p.79, and footnote 103 for a discussion of various estimates.
- ¹⁷ MSF (2001), p. 16
- ¹⁸ Scrips Pharmaceutical R&D Compendium 2000. Source: www.inpharm.com/intelligence/largesize/cmr020801a.gif. But note estimates vary. The estimate from this source for 1998 is \$38 billion, while the Global Forum for Health Research estimates \$30.5 billion in 1998. Global Forum for Health Research (2002) *The 10/90 Report on Health Research 2001-2002* Global Forum for Health Research, Geneva, p. 107. Source: <http://www.globalforumhealth.org/pages/index.asp>
- ¹⁹ Trouiller, P. et al (2002) "Drug Development for Neglected Diseases: a Deficient Market and a Public Health Policy Failure" *The Lancet*, vol. 359, pp.2188 – 94. Source: <http://www.thelancet.com>
- ²⁰ MSF (2001), p. 12.
- ²¹ Pharmaceutical Research and Manufacturers of America (2001) *PhRMA Industry Profile 2001*, PhRMA, Washington DC, p.16.
- ²² Global Forum for Health Research (2002), p.107.
- ²³ Global Forum for Health Research (2002), p.107.
- ²⁴ MSF (2001), p. 21. It is unlikely that more than \$1.2 billion is spent on top of the \$2.5 billion recorded for low and middle income developing countries.
- ²⁵ These include the Medicines for Malaria Venture (MMV), the Global Alliance for TB Drug Development GATB, the International Aids Vaccine Initiative (IAVI) the proposed Medicines for Leishmaniasis and Trypanosomiasis Initiative (MLT), amongst others.
- ²⁶ Lanjou, J. & Cockburn, I. (2001) "New Pills for Poor People? Empirical Evidence after GATT", *World Development*, vol. 29:2, pp.265-289.
- ²⁷ See UNAIDS (2002), p.105.
- ²⁸ The Malaria Vaccine Initiative (MVI) is another public private partnership. The complexities of research are explained at: <http://www.malariavaccine.org/mal-vac2-challenge.htm>. See also Clark, A. (2002) "Population Genetics: Malaria Varorium" *Nature* 418, pp.283-285. Source: http://www.nature.com/cgitaf/Dynapage.taf?file=/nature/journal/v418/n6895/full/418283a_fs.html

- ²⁹ Kremer, M. & Snyder, C. (2002) *"The Revenue Consequences of Vaccines versus Drug Treatments"*, draft working paper, p.3. Source: http://www.iaen.org/files.cgi/6913_vaccines_snyder.pdf
- ³⁰ The bacillus can lie dormant and undetected in the body for several months or years.
- ³¹ The Global Alliance for TB Drug Development (2001) *"The Economics of TB Drug Development"*, The Global Alliance for TB Drug Development, New York. Source: http://www.tb Alliance.org/pdf/rpt_per.PDF
- ³² The industry points out that a successful new medicine can take 10-15 years to discover and develop and that perhaps only three out of ten new medicines make a good return. Each drug may cost \$500-800 million to develop. These figures, however, are contentious. For the industry view, see for instance: <http://www.phrma.org/publications/publications/primer01>
- ³³ Kettler, H. (2002) *"Using Innovative Action to Meet Global Health Needs through Existing Intellectual Property Regimes"*, Commission on Intellectual Property Rights Background Paper 1a, Commission on Intellectual Property Rights, London, pp.24-26. Source: <http://www.iprcommission.org>
- ³⁴ Commission on Macroeconomics and Health (2001), p.85
- ³⁵ Foreign pharmaceutical companies are reported to be reluctant to increase R&D because of the absence of product protection on pharmaceuticals. On the other hand there is evidence of increasing investment in recent years to take advantage of India's skilled researchers. For instance, AstraZeneca has recently set up a Research Centre in Bangalore to research TB, inter alia. See, for instance, Kumar, N. (2002) *"Intellectual Property Rights, Technology and Economic Development: Experiences of Asian Countries"*, Commission on Intellectual Property Rights Background Paper 1b, Commission on Intellectual Property Rights, London, p.35. Source: <http://www.iprcommission.org>. Also see *Express Pharma Pulse*, 2 May 2002. Source: <http://www.expresspharmapulse.com/20020502/story3.shtml>
- ³⁶ The Consultative Group on International Agricultural Research, coordinated by a Secretariat in the World Bank. Source: <http://www.cgiar.org/>
- ³⁷ See, for instance, Advisory Committee on Health Research (2002) *"Genomics and World Health"*, WHO, Geneva, p.138. Source: http://www3.who.int/whosis/genomics/genomics_report.cfm
- ³⁸ Attaran, A. & Gillespie-White, L. (2001) *"Do Patents for Antiretroviral Drugs Constrain Access to AIDS Treatment In Africa"*, *JAMA*, vol. 286:15. Source: <http://jama.ama-assn.org/issues/v286n15/ffull/jsc10222.html>
- ³⁹ Attaran, A. & Gillespie-White, L. (2001), p.1891.
- ⁴⁰ See UNAIDS (2002), pp.189-201.
- ⁴¹ IFPMA Press Release, Geneva, 20 December 2001. Source: www.ifpma.org/pdfifpma/CMH%20report-news%20release.pdf. Although patent status is not a consideration in selecting medicines for the list, the total cost of treatment and cost-effectiveness are criteria for inclusion so some therapeutically important patented medicines may be omitted on these grounds. The criteria are at: <http://www.who.int/medicines/organization/par/edl/procedures.shtml#4>
- ⁴² In large part the absence of patents also indicates the absence of recent research on these diseases. See Trouiller, P. et al (2002).
- ⁴³ Pharmaceutical Research and Manufacturers of America (2002) *"Health Care in the Developing World"*, PhRMA, Washington DC. Source: <http://world.phrma.org/ip.access.aids.drugs.html>
- ⁴⁴ Pharmaceutical Research and Manufacturers of America (2001), p.61.
- ⁴⁵ For instance, GSK is currently involved in litigation in the US to establish the validity of patents on its drug Augmentin which expire in 2017 and 2018. Generic producers are seeking to enter the market after the expiration of the first patents on the drug in 2002. The patent on its biggest selling drug, Paxil, was recently partially overturned in the High Court in London. See *"GSK Suffers from Paxil Patent Ruling"* *Financial Times*, 13 July 2002. Source: <http://www.ft.com>. For a roundup on patent litigation in the pharmaceutical industry, see *"Pharma Sector Loses its Defensive Edge"*, *Investors Chronicle*, 19 June 2002. Source: <http://investorschronicle.ft.com/IC/home>
- ⁴⁶ Reiffen, D. & Ward, M. (2002) *"Generic Drug Industry Dynamics"*, US Federal Trade Commission Working Paper 248. Source: <http://www.ftc.gov/be/workpapers/industrydynamicsreiffenwp.pdf>
- ⁴⁷ Kumar, N. (2002), p.28.
- ⁴⁸ Scherer, F. M. & Watal, J. (2001) *"Post-TRIPS Options for Access to Patented Medicines in Developing Countries"*, Commission on Macroeconomics and Health Background Paper, p.45. Source: <http://www.icrier.res.in/pdf/schrerwatal62.PDF>
- ⁴⁹ Scherer, F. M. & Watal, J. (2001), p.45.
- ⁵⁰ MSF (2002), p.6.
- ⁵¹ Fink, C. (2000) *"How Stronger Patent Protection in India Might Affect the Behaviour of Transnational Pharmaceutical Industries"*, World Bank Policy Research Paper No. 2352, World Bank, Washington DC. Source: [http://wbln0018.worldbank.org/research/workpapers.nsf/0/5d9b67dfa0777405852568e80065f3c4/\\$FILE](http://wbln0018.worldbank.org/research/workpapers.nsf/0/5d9b67dfa0777405852568e80065f3c4/$FILE)

- [E/wps2352.pdf](#); and Watal, J. (2000) "Pharmaceutical Patents, Prices and Welfare Losses: A Simulation Study of Policy Options for India under the WTO TRIPS Agreement", *The World Economy*, vol. 23:5, pp.733-752.
- ⁵² "Continent in Crisis", Report by McKinsey & Company on increasing access to ARVs in Uganda, 2000.
Source: <http://www.mckinsey.com/firm/people/feature/uganda/main/index.asp>
- ⁵³ Oxfam (2002) "*Generic Competition, Price and Access to Medicines*" Oxfam Briefing Paper No. 26, Oxfam, Oxford. Source: <http://www.oxfam.org.uk/policy/papers/26generic/26generic.html>
- ⁵⁴ Borrell, J-R. & Watal, J. (2002) "*Impact of Patents on Access to HIV/AIDS Drugs in Developing Countries*", CID Working Paper No. 92, Centre for International Development, Harvard University, Cambridge MA, p.5.
Source: <http://www2.cid.harvard.edu/cidwp/092.pdf>
- ⁵⁵ See Scherer, F.M. (2001), pp.116 -118 for a review of the experience in Canada and Italy.
- ⁵⁶ In Canada, 16.1% of total R&D in 2001 was directed towards basic research; 44.1% to clinical trials, 7.9% to improvement in manufacturing processes, 7.9% to preclinical studies, and 24% to drug regulation submissions, bioavailability studies and Phase IV clinical trials. Patented Medicines Prices Review Board (2002) "*Annual Report 2001*", PMPRB, Ottawa, p. 28.
Source: http://www.pmprb-cepmb.gc.ca/english/06_e/06ann01_e.htm
- ⁵⁷ Trachtenberg, J. & Sande M. (2002) "Emerging Resistance to Nucleoside Reverse Transcriptase Inhibitors: A Warning and a Challenge", *JAMA* 288:2, pp.239-241.
Source: <http://jama.ama-assn.org/issues/v288n2/ffull/jed20035.html>
- ⁵⁸ See, for instances "India's Plague: Cheaper drugs may help millions who have AIDS – but how many will they hurt?" *The New Yorker*, 17 December, 2001. Source: <http://www.newyorker.com/>
- ⁵⁹ Pharmaceutical Research and Manufacturers of America (2002).
- ⁶⁰ See, for instance, Report on the East African Access to Essential Medicines Conference "Improving Access to Essential Medicines in East Africa: Patents and Prices in a Global Economy", organised by Médecins Sans Frontières (MSF) and Health Action International (HAI), Nairobi, 15-16 June 2000.
Source: <http://www.haiweb.org/mtgs/nairobi200006.html>
- ⁶¹ See WHO Press Release No. 19, 20 March 2002 and No.28, 22 April 2002.
Source: <http://www.who.int/inf/en/index-pr-2002.html>
- ⁶² Presentation given by Sisule Musungu at the Session on Medicines, Commission on Intellectual Property Rights Conference, London, 21-22 February 2002. Source: <http://www.iprcommission.org>
- ⁶³ See Glossary for definition of the terms in this sentence.
- ⁶⁴ See discussion on protecting test data below for explanation.
- ⁶⁵ The theoretical case for this is more complex than indicated, being dependent on relative demand elasticities. There is a good discussion in Scherer and Watal (2001), pp.45-49.
- ⁶⁶ These are usefully documented for HIV/AIDS drugs in MSF (2002), pp.11-15.
- ⁶⁷ Maskus, K. (2000) "*Intellectual Property Rights in the Global Economy*", Institute for International Economics, Washington DC, p. 210.
- ⁶⁸ Scherer and Watal (2001), p. 28.
- ⁶⁹ The HHS told us: "The United States may procure items without first obtaining a license, so long as it pays 'reasonable and entire compensation.' There was no need for the Secretary to exercise this power. The Secretary was able to negotiate an historic agreement with Bayer that ensured an unprecedented production of Cipro. When negotiations with Bayer were pending, the Secretary did make it clear that if he needed authority to procure generics, he would ask Congress. Offering to work with Congress on a matter of such importance is hardly the same as 'threatening' a company. The Secretary acted properly and with deliberation in the matter of Bayer's Cipro patent." Personal communication from Dr Stuart Nightingale of HHS, 10 February 2002.
- ⁷⁰ UNAIDS (2002), p.145
- ⁷¹ Presentation by Christopher Garrison, Legal Advisor to MSF, at MSF, CPTech, OXFAM and HAI conference, "*Implementation of the Doha Declaration on the TRIPS Agreement and Public Health: Technical Assistance – How to Get it Right*", Geneva, 28 March 2002.
- ⁷² Section 55(1) of Patents Act. Source: <http://www.piperpat.co.nz/patlaw/crown.html#s55>
- ⁷³ This draws heavily on Engelberg, A. (2002) "*Implementing the Doha Declaration - A Potential Strategy for Dealing with Legal and Economic Barriers to Affordable Medicines*".
Source: <http://www.cptech.org/ip/health/pc/engelberg.html>
- ⁷⁴ This includes non-commercial governmental use, which is regulated in Article 31 of TRIPS with other compulsory licences.
- ⁷⁵ The views of countries/groups here and in the rest of this section are drawn from the WTO Secretariat note, 11 July 2002, summarising statements and papers submitted by members (WTO Document No. IP/CW/363). Source: <http://docsonline.wto.org/DDFDocuments/t/IP/CW363.doc>

- ⁷⁶ “Canada – Patent Protection Of Pharmaceutical Products”, WTO Document No. WT/DS114/R.
Source: <http://docsonline.wto.org/DDFDocuments/t/WT/DS/114R.DOC>
- ⁷⁷ In the case of a moratorium, moreover, another Member may not bring a case against the Member benefiting from it, but a patent owner could request a national court to apply the treaty obligation that the Member would still be obliged to comply with (unlike in the case of a waiver, where the obligation itself is suspended).
- ⁷⁸ “The Odyssey Continues: Charting a path towards Pharma 2010”, presentation given by Simon Hughes, PwC Consulting, at the DIA Euro Meeting, Barcelona, March 2001.
Source: <http://www.pwcconsulting.com/us/pwccons.nsf/viewwebpages/PharmalandTIndustry#Odyssey>
- ⁷⁹ USPTO website. Source: www.uspto.gov
- ⁸⁰ NIHCM (2002) “Changing Patterns of Pharmaceutical Innovation”, NIHCM, Washington DC.
Source: <http://www.nihcm.org/innovations.pdf>
- ⁸¹ TRIPS Article 27 3 (a). Source: http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm
- ⁸² Such first and further use type claims are accepted in the EU and a number of developing countries including those in ARIPO and OAPI. See for example ARIPO patent No. AP868 and OAPI patent No. OA09495.
- ⁸³ “Canada – Patent Protection Of Pharmaceutical Products”, WTO Document No. WT/DS114/R.
Source: <http://docsonline.wto.org/DDFDocuments/t/WT/DS/114R.DOC>
- ⁸⁴ Thorpe, P. (2002) “Implementation of the TRIPS agreement by Developing Countries”, Commission on Intellectual Property Rights Background Paper 7, Commission on Intellectual Property, London, p.20.
Source: <http://www.iprcommission.org>
- ⁸⁵ Thorpe (2002), p.8

