IGWG Briefing Paper on Patent Pools

Collective Management of Intellectual Property -- The use of Patent Pools to expand access to essential medical technologies
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Introduction

The collective management of intellectual property rights are systems of aggregating and managing intellectual property rights, such as copyrights or patents. By pooling together assets, the collective management systems can overcome market inefficiencies offering lower transaction costs, and ensuring a more effective access to multiple rights. These systems facilitate the legitimate use of works and features to their users, by granting licences and authorisations. Such arrangements can be done voluntarily or non-voluntarily, and involve a variety of different policy objectives, as well as legal and management regimes.

Patent pools are one example of the collective management of intellectual property rights (2). Patent pools are proposed as a mechanism to promote entry and generic competition for essential medicines.

What is a patent pool?

A patent pool is:
An agreement between two or more patent owners to aggregate (pool) their patents and to license them to one another or to third parties.
Pools usually offer standard licensing terms to licensees and allocate a portion of the licensing fees (royalties) to patent owners according to a pre-set formula or procedure (3).

Pools are created for a diversity of reasons by governments or the private sector and can take many forms. The pool may involve simple cross-licensing among two or more competitors, in order to share a handful of patents necessary for the manufacture and sale of a particular product (4), or it may involve a large industry-wide pool open to anyone, encompassing hundreds of manufacturers and thousands of patents, as well as other intellectual property, such as rights to use data, know-how or trademarks.

Patent Pools are not a new idea, and were widely used in the late 19th century for industries such as the sewing machine. In recent years, patent pools have solved both R&D (upstream) and access (downstream) problems within the manufacturing, metallurgical, paper, electrical, and chemical industries.

Today patent pools are frequently utilized in technology fields that require common standards, such as radio, DVD-video (5), DVD-ROM and MPEG_2 compression technology (6). Patent owners license patents to the pool, with an agreement that royalties for devices that use the patents in the pool be divided among patent owners on a pre-determined basis. These patent pools have been instrumental in promoting investment in and utilization of new innovations.

Recently there was a proposal to create an “upstream” pool to address R&D for a Severe Acute Respiratory Syndrome (SARS) vaccine. Following the outbreak of SARS many research institutes and private firms rushed to sequence the SARS genome and apply for patents. The WHO SARS Consultation Group and key SARS intellectual property owners created the “SARS IP Working Group” which found that R&D will be delayed and constricted by the multiplicity of patents and that this may adversely affect
the development of a vaccine. The group suggested that a patent pool should be developed to promote the development of a treatment or vaccine (7).

There are also precedents for Government intervention to create a Pool. In the U.S. for example, the Manufacturers Aircraft Association (MAA) pool was formed in 1917 against the backdrop of legislation threatening to compulsory licence the patents, in order to overcome barriers for the scaling up of aircraft manufacturing, as the US prepared to enter World War I (8). The US government also insisted that rights to license patents for radio technologies be consolidated, in order to promote the development of the modern radio industry.

**Patent Pool Advantages**

As the 1995 U.S. Department of Justice and the U.S. Federal Trade Commission Guidelines for licensing of intellectual property (9) recognized, Patent Pools have several benefits including: a) clearing of blocking patents (patents that would be infringed when practicing another patents); b) reduction of licensing transaction costs through “one stop” licensing rather than multiple agreements; c) management of multiple owners and stacking of royalties, d) facilitate professional management of the negotiation and administration of licensing arrangements; e) reduction of infringement litigation costs; f) the potential to encompass non patent technology and know-how; e) the potential to facilitate technology transfer and a sustainable scaling up of capacity and access in the developing world (10).

**Proposal: Patent Pool for Essential Medical Technologies**

The WHO’s 2006 Report of the Commission on Intellectual Property Rights, Innovation and Public Health (CIPIH) goes into detail about the potential patent barriers to access affordable essential medicines (11). Unless there is more clarity about how to overcome these patent barriers, prices will remain high, and it is unlikely that multiple generic medicine producers will enter the markets so access targets will not be met.

A patent pool could help establish such clarity and offer very practical ways to overcome the current patent barriers to access to essential medicines, enable a sustainable scale up of the production of essential medicines, expansion of access and creation of needed technologies developed for country specific conditions.

The rationale for creating a patent pool for essential medicines is as follows:

**Lower prices.** The high cost of patented medical and vaccines products, when marketed by a monopoly, is a barrier to providing access to medicines for all. Savings from using generic products can range from 50 to more than 95 percent (12).

**Innovation.** Patents on essential medical inventions may restrict innovation and adaptation of medicines and devices to fit the needs of patients such as different formulations, combinations, dosages and medicine forms. Innovation and adaptation is necessary to cope with the differing viral strains, changing immunities, related infectious diseases, local health system conditions and local patient customs, and to enhance patient compliance with treatment regimes.

**Enhanced capacity to manage legal issues.** The multitude of patents, potential claims of infringement, variance of national laws, complexity of international treaties and national patent laws, and complicated rules for the export of essential medical technologies under compulsory licenses present barriers for expanded use of generic medicines. The patent pool would have the expertise and capacity to manage these issues, on behalf of governments, donors, public health agencies, patent owners and generic manufacturers.
**Economies of scale.** A patent pool that licenses patents in several countries can ensure that generic manufacturers operate at efficient economies of scale.

**Global Norm setting.** Collective management will help to the establishment of global “best practices” norms for licensing on such issues as quality control, remuneration, open competition, etc.

**Leadership.** By focusing attention on the pool, individual countries or government agencies would face less external pressures on issues relating to licensing of patents to generic manufacturers.

The fundamental idea behind a patent pool for essential medical technologies is to facilitate competition by providing much more efficient and effective mechanisms for the voluntary or compulsory licensing of patents to generic suppliers.

There are a number of potential models for establishing a patent pool for access to essential medical technologies. One of the most developed is the proposal for a pool for essential medicines presented to WHO, UNAIDS and the Global Fund by Essential Inventions on 17th January, 2005 (13). Another one is a patent pool for HIV-AIDS medicines that is currently being discussed by the UNITAID Board. Another is the broader proposal for an Essential Medical Inventions Licensing Agency (EMILA)(14). All these proposals draw from the US experience in creating the Manufacturers Aircraft Association patent pool, which was created, in response to a crisis -- the US decision to enter World War I. The proposal for the creation of a patent pool for access to essential medical technologies is motivated by the crisis in access to essential treatments in developing countries.

**This is how it could work:**

1. The patent pool would be created. IGWG could explore whether existing organisations such as the WHO would be willing to host the Patent Pool or whether one or more new independent non-profit entities should be established.
2. Some strategic decisions will need to be taken. The pool could be global or regional, for all essential medicines or for specific drug or vaccine. However, the area covered would have to be sufficiently large to ensure generic manufacturers could benefit from economies of scale.
3. Professional staff skilled in the administration of patent pools would need to be hired, modelled on the many successful private sector patent pool administrators.
4. The Pool would identify the essential patents necessary to achieve the objectives of the Pool.
5. The Pool would simultaneously negotiate agreements with patent holders and national governments.
6. The pool would execute Memoranda of Understanding (MOU) with governments, purchasing agencies and donors in order to generate support for the patent pool model as well as to facilitate cooperation between the numerous interested parties.
7. Patent owners would be asked to voluntarily license patents to the Pool, for use in countries not designed as high income by the World Bank.
8. In cases where the Pool failed to obtain voluntary licenses, it would ask Governments under the terms of the MOU to seek compulsory licenses.
9. Reasonable and standardized patent license terms should be drafted and signed with brand-name and generic pharmaceutical companies. Licenses would follow “best practice” models, including:
   - Consistency with national patent laws and trade agreements on patents,
   - Non-discriminatory “open” licenses to any qualified party,
   - Rights to manufacture, export, import and sell,
   - Appropriate polices on a number of substantive issues, including remuneration, cross-licensing of improvements, conditions to ensure adequate product quality, distinctive packaging and labelling.
10. If other intellectual property issues, such as rights to use or rely upon health registration data, were a problem for access to affordable medical technologies, the patent pool should also offer reasonable and standard terms.
The Patent Pool would collect royalties from generic manufacturers and pay royalties to patent owners on a pre-determined transparent and predictable formula basis that takes into account the actual use of each patent in the manufacture of products by patent pool licensees.

There are a number of royalty bases that could be used that balance the need for reasonable payment to rights holders with the necessity of increasing access by ensuring affordability (15). For example, the “Tiered Royalty Method” (TRM) is a system of determining equitable remuneration for products based upon their relative therapeutic benefits, and on the affordability of royalties in countries based upon average incomes and rates of infection.

The benefits of the Patent Pool to various parties can be summarized as follows:

**Patients.** The Patent Pool would promote competition, lower prices, and enhanced access to follow-on innovations, such as new Fixed Dose Combinations or delivery mechanisms. Licenses would be tied to appropriate standards for product quality.

**National governments.** The Patent Pool would provide technical assistance, and a creditable and politically acceptable approach to the granting of compulsory licenses.

**Patent owners.** The Patent Pool would provide a predictable and fair system for remuneration, respecting national patent laws and trade agreements on patent rights, and provide for cross-licensing of new patents that involve improvements in licensed products.

**Donors.** The Patent Pool would ensure that the “solution” to the patent problem was focused on (a) the rule of law, (b) open competition, and (c) efficiency. The Patent Pool will ensure the lowest possible medicine costs, provide access to essential patents to facilitate production scale up, provided needed access to medicines at affordable costs and promote innovation.

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(1) This briefing paper was prepared by Judit Rius, Michelle Childs, Spring Gombe, and James Love with contributions from Manon Ress, Terry Gardiner and Jon Merz.
New funding mechanism is launched to expand access to artemisinin based combination drugs

Peter Moszynski LONDON

Fighting malaria is part of the United Nations’ sixth millennium development goal, yet a new generation of frontline drugs remains out of reach of most patients, so a new £150m (£170m; $220m) scheme has been developed to subsidise their cost.

Launched last week in Oslo, the Affordable Medicines Facility for Malaria is an innovative financing mechanism designed to expand access to artemisinin based combination drugs, the most effective treatment.

In 2006 about 250 million people developed malaria, of whom nearly a million died. Malaria parasites are becoming increasingly resistant to older drugs, such as chloroquine and pyrimethamine with sulfadoxine, which are still often used because they are relatively cheap.

“The age when the world had effective drugs against infectious diseases but let millions die each year because they couldn’t afford them is over,” said Norway’s foreign minister, Jonas Gahr Støre, at the launch.

He said, “Thanks to new commitments, collaboration, and finance built up over the last decade, we are making these deaths history. The results will go beyond saving lives: malaria is costing developing countries billions of dollars each year in lost economic output.

“By controlling malaria we can improve school attendance and productivity, open new areas to business and tourism, and reduce health costs.”

WHO delegates visit a farm in Tanzania where Artemisia annua plants are being grown

Patent pools: an idea whose time has come

As GlaxoSmithKline places 500 patents into a pool for use by other drug makers against the payment of royalties, Elizabeth Sukkar looks at further developments in patent sharing

Elizabeth Sukkar SCRIJ WORLD PHARMACEUTICAL NEWS

How do you persuade drug companies to invest in drugs for diseases that mainly affect poor people, whose purchasing power is negligible? One possible solution emerging within the industry is patent pools.

GlaxoSmithKline (GSK) has just set one up for neglected tropical diseases, and UNITAID, an international body that buys drugs for developing countries, is creating one for AIDS treatments.

Patent pools have been around for about 150 years, used successfully in other industries, such as information technology, but their move into the drug industry is a new development. Will they work in creating better treatments for neglected diseases in developing countries?

In July 2008 UNITAID’s executive board gave the go ahead to create a patent pool for AIDS treatments and started negotiating with drug companies. Then in February this year GSK’s chief executive, Andrew Witty, made the surprise announcement that his company would be setting one up, making it the first drug company to do so, and invited other firms to join (BMJ 2009;338:b686, 18 Feb).

A patent pool is when a number of patent rights held by different owners, including companies, governments, and academic bodies, are brought together by one organisation and made available on a non-exclusive basis to manufacturers and distributors of drugs against the payment of royalties.

One of the advantages of a patent pool is that it can act like a “one stop shop,” allowing other companies such as manufacturers of generic drugs to make use of the patents after paying a royalty, as the licensee does not have to seek the approval of each patent holder.

The UK’s Department for International Development, which has encouraged the drug industry to consider UNITAID’s pool, says it “will make a real difference to HIV patients, including children.” It hopes that GSK will participate in the UNITAID pool, although it welcomes the firm’s own scheme. “The onus is now on . . . pharmaceutical companies to demonstrate their readiness to adopt new approaches,” the department adds.

The UNITAID pool: stimulating development of fixed dose combinations for AIDS

The UNITAID patent pool, which will be voluntary, aims to stimulate the development of affordable fixed dose combinations of first line and second line AIDS treatments for adults and children in developing countries. Fixed dose combinations enhance patients’ adherence, improve health outcomes, and reduce resistance, say advocates of the scheme.

With a growing number of AIDS patients failing on first line drugs, there is an urgent need to find affordable second line treatments; and boosting the number of suppliers should increase competition and bring down drug prices.

One of the main difficulties for UNITAID, which is holding informal talks with drug firms, is getting the firms on board and deciding the licensing terms and royalty rates.

Another key area for discussion is determining which patents to include. The charity Médecins Sans Frontières (MSF) recommends the inclusion of a fixed dose combination of tenofovir, lamivudine, and either nevirapine or efavirenz, because it is the combination that WHO recommends as the first line antiretroviral treatment and is currently unavailable.
artemisinin based combination drugs

The facility is hosted by the Global Fund to Fight AIDS, Tuberculosis and Malaria, and key financial support comes from the United Kingdom and UNITAID (a French founded international funding mechanism that raises money for health care through a tax on air travel), as well as Norway.

The World Health Organization recommends artemisinin based combination drugs as the first line treatment for uncomplicated *Plasmodium falciparum* malaria (the deadliest form of the disease).

However, these drugs account for only a fifth of antimalarials being taken today. By increasing access to them and displacing artemisinin monotherapies from the market, the facility not only intends to reduce the impact of the disease but also to delay resistance to the active ingredient, artemisinin. There is concern that widespread use of artemisinin monotherapies could cause the emergence of resistance to the only cure for *P. falciparum* malaria.

The facility will be launched in 11 countries at first (Benin, Cambodia, Ghana, Kenya, Madagascar, Niger, Nigeria, Rwanda, Senegal, Tanzania, and Uganda). The two year trial is intended to assess the scheme’s effectiveness and to enable lessons to be learnt before expanding it to other countries where malaria is endemic.

“Every year nearly one million people living in developing countries die from malaria,” said the UK’s minister for international development, Ivan Lewis.

The UNITAID pool will eventually be run as a separate entity, which should help to gain the trust of the industry. UNITAID hopes the scheme will go live this year.

**GSK’s pool: promoting research into tropical diseases**

GSK’s patent pool, which came into effect in March, will promote research into 16 neglected tropical diseases, including malaria, tuberculosis, leprosy, and leishmaniasis.

The company has placed more than 500 granted patents on small molecules and more than 300 pending applications into the pool. It will not charge fees for the development of treatments for the world’s least developed countries; for other countries it may either grant a royalty bearing licence or sell any product itself on payment of royalties or a one-off fee to patent pool licensees.

The Drugs for Neglected Diseases initiative (DNDi), which develops treatments for neglected diseases and plans to use the GSK scheme, says it would like the firm to include a wider range of countries, noting that although India is not a least developed country it is the nation most affected by leishmaniasis. Furthermore, royalties should be no higher than 3%, it says.

DNDi would also like GSK to include Chagas’ disease on its list of neglected diseases, while MSF wants the inclusion of AIDS and the firm’s commitment to working with UNITAID.

But GSK does not believe AIDS to be a neglected tropical disease and says that the aims of UNITAID’s pool, which is to improve access to existing antiretrovirals, can be achieved in a “simpler manner” through GSK’s not-for-profit pricing and voluntary licensing schemes, for example.

UNITAID counters: “The benefit of the UNITAID pool is in the collaboration by all. Individual licensing does not bring the benefit of enabling the development of fixed dose combinations that are needed, nor will it bring the benefit of a one stop shop that truly increases the number of producers.”

**Improving the industry’s image**

For the drug industry patent pools have several advantages. Some charities that campaign for better access to drugs believe they may be one way for the industry to prevent governments from issuing compulsory licences to tackle public health emergencies, something the industry strongly dislikes.

Moreover they may improve the industry’s public image. GSK’s scheme has generally been given a good press, not the negative coverage that drug firms usually face over intellectual property conflicts. Thirdly, such pools may also give firms access to new markets.

If the patent pool idea fails, other ideas are on the table: the research and development treaty, whereby a committee would decide what money would go into research and development for each disease; and the medical prize fund, where a cash prize is given instead of a patent.

But the industry is not keen on changing the fundamentals of the patent system itself to redress the imbalance of research into neglected diseases. The patent pool keeps the patent system intact.

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**WHO policy on snakebite treatment may result in more deaths**

Roger Dobson ABERGAVENNY

Treatment of snakebites has not improved for 30 years, with no significant reductions in mortality or morbidity, a new report says.

The authors criticise the World Health Organization for recommending that countries move to better quality antivenoms, when many countries cannot afford to do so and when the side effects of much cheaper antivenoms can often be tackled by inexpensive drugs (*Wilderness and Environmental Medicine* 2009;20:43-56).

“The history of antivenom provision in the two key snakebite areas, Africa and Asia, comprises a record of 30 years of failure,” write the authors, from the Pakistan Medical Research Council and Stanford University Medical Center.

“The current World Health Organization approach to increase quality standards in an uncontrolled and economically uninformed way, with a subsequent increase in cost in countries without the resources to purchase current products, will be counterproductive and will ensure that either less antivenom is purchased and used or that the standards will be ignored.”

They say that no major work has been done to adequately quantify the incidence of adverse reactions, effects on morbidity and mortality, or the cost-benefit comparison between a cheaper antivenom supported by readily available and inexpensive drugs to treat the adverse reactions and a more expensive product with fewer reactions.

They write: “While some antivenoms produced in the developing world tend to generate a higher rate of adverse reactions than those produced in the developed world they can be readily handled with cheap drugs.

“The single most important factor in supply in the developing world is cost. Many under-developed countries or states within the more advanced developing countries simply cannot afford an increase in the cost.”

Cite this as: BMJ 2009;338:b1629
UNITAID is working to establish an international system to boost the availability of new and more patient-friendly medicines for people in developing countries. Through a collective management structure for medicines patents, known as a patent pool, UNITAID seeks to improve access to patents and foster the development and production of life-saving, more affordable, and more suitable medicines. Although such a ‘pool’ structure has shown its worth in many areas – agriculture and information technology, for example - the UNITAID initiative will lead to the first patent pool for medicines.

Why we need a medicines patent pool

The principle of a patent pool is to facilitate the availability of new technologies by making patents and other forms of intellectual property (IP) more readily available to entities other than the patent holder.

For health, the impact of such a mechanism could be considerable. A medicines patent pool could for instance facilitate the production of new essential medicines that combine several pharmaceutical compounds patented by different companies into a single pill. Known as fixed-dose combinations (FDCs), these medicines have shown their worth in AIDS treatment, where they have been proven to be more user friendly for children and adults, promote treatment compliance and boost treatment outcomes.

In addition, the patent pool could make newer medicines more affordable for populations in developing countries. While some older medicines for the treatment of AIDS have become increasingly affordable, newer, less toxic products are still too expensive.

For example, treating a patient for one year with the most affordable improved first-line regimen for HIV, as recommended by the World Health Organization (WHO), today costs between US$ 613 and US$ 1 033, using originator products. This represents at least an eightfold increase from the price of the older regimen, which stands at US$ 87.

With increasing numbers of AIDS patients failing on their first-line therapy, there is also an urgent need to find affordable second-line treatments. Additionally, children’s needs are still largely overlooked by pharmaceutical research – of the 22 antiretrovirals approved by the US FDA and currently available, six are not approved for paediatric use and seven are not available in paediatric formulations. Improving access to IP will thus both help improve access to medicines and boost innovation that responds to patients’ needs.

What the pool will look like

The Medicines Patent Pool will:

• Be a voluntary mechanism, meaning its success will largely depend on the willingness of pharmaceutical companies to participate and allow their intellectual property to be managed by the pool. Other entities, including generic producers, will be able to make use of the patents in exchange for the payment of royalties;
• Be a win-win deal. Pharmaceutical companies are rewarded for their investments into research and development; generic companies are able to access the intellectual property more easily and faster; patients in developing countries get access to better, more affordable treatments, faster;
• Have as its geographical target developing countries;
• Focus on HIV medicines initially, concentrating on those products that are needed but are not yet developed (such as second-line medicines and paediatric formulations) and on those existing products for which the number of suppliers is insufficient to create economies of scale. Once up and running, the pool could expand to serve other disease areas of need;
• Aim to ensure that producers that make use of the patents in the pool meet agreed quality standards.
How the Pool would work

• **Collective management of patents:**
The idea behind a patent pool is that patent holders - companies, researchers or universities - voluntarily offer, under certain conditions, the intellectual property related to their inventions to the Medicines Patent Pool. Any company that wants to use the intellectual property to produce or develop medicines can seek a license from the Pool against the payment of royalties to produce the medicines for use in developing countries.

• **Stimulus to innovation:**
Without a patent pool that facilitates access to patents, a company wishing to develop a fixed-dose combination for the treatment of HIV/AIDS might need to obtain licenses from at least three different patent holders to be able to develop, produce, export and sell the product. With a patent pool holding the relevant IP however, the license ‘user’ or licensee will only have to deal with the pool. The patent pool is in fact a one-stop-shop for all parties involved - it therefore facilitates legal and bureaucratic processes involved in obtaining licenses, it reduces expenses and increases access to intellectual property essential to make important medicines.

• **Making medicines more affordable, faster:**
The pool will help to speed up the availability of lower priced, newer medicines because there will be no need to wait out the patent term (usually about 20 years – time patients can ill-afford to lose). In exchange for the payment of royalties to the patent owners, any producer can manufacture the patented medicines and sell them in countries well before the expiration of the patent term. With licenses covering a wide geographical area – developing and emerging economies - the scope of the market would be attractively large, thereby encouraging multiple producers to come forward and access the patents. The greater the competition between producers, the more one can expect the price of medicines to fall.

**UNITAID’s role**

UNITAID was established in September 2006 to support existing efforts to tackle HIV/AIDS, malaria and tuberculosis. These diseases are responsible for approximately 4.4 million deaths annually and take a huge toll on families and communities. Yet the diagnostics and medicines required to test, treat and prevent them are inaccessible to most of the people who need them.

UNITAID’s specific contribution is to provide sustainable funding for the purchase and supply of needed diagnostics and medicines. UNITAID also seeks to have a lasting impact on markets - essentially, by reducing prices, increasing production and driving the development of new medicines and tests. The patent pool initiative will be a crucial tool in addressing this mandate.

UNITAID has so far spent US$ 407 million on the purchase of AIDS treatments. By acting as a catalyst for reductions in the price of such medicines, the patent pool will mean that for the same amount of money, UNITAID will be able to change the lives of many more people.

**UNITAID takes the plunge**

UNITAID was given the go-ahead to create a patent pool on 3 July 2008, when its Executive Board approved the plan in principle. The next steps undertaken by UNITAID will be to develop an operational plan for the creation of the patent pool.
Political activism needed for patent pools for HIV drugs

“Political activism is needed once more to ensure that the next generation of drugs is available to the world’s poorest”, according to a report from the UK All-Parliamentary Group on AIDS published last week. The Treatment Timebomb describes itself as an important wake-up call to those who think that successful delivery on the promise of universal access to HIV treatment can be achieved in the long term by just doing more of the same.

One of the report’s recommendations, supported by International Development Minister Mike Foster, is the implementation of a patent pool for HIV drugs. Pharmaceutical companies insist that patents are an important incentive for research and development into HIV medicines but, perversely, patents can also hinder such research. Patent pools could create a win-win situation. Under this system, patent holders would still be rewarded—the originator drug company would receive a proportion of the royalties—while enabling the generic production of newer HIV drugs and the development of new fixed-dose combinations.

The concept of patent pools is not new. The Intergovernmental Working Group on Public Health, Innovation and Intellectual Property (IGWG)—established at the World Health Assembly in 2006 to find innovative solutions to fund research and development in neglected diseases—has repeatedly called for a patent pool which would be managed by UNITAID. Drug companies have dismissed these calls preferring the status quo, so it is unsurprising that the UK drug firm GlaxoSmithKline has stated that it does not see the need for the patent pool proposed by the All-Parliamentary Group.

Although the voice of the All-Parliamentary Group is a welcome addition to the fight for improved access to essential medicines, unless there is political clout behind the rhetoric, drug companies will continue to resist potential solutions, such as patent pools. Who better to hold the UK Government to account on its commitment to universal access to HIV treatment and drive the political activism called for in the report than members of parliament themselves? ■ The Lancet

Maintaining momentum for malaria elimination

Political drive to eliminate malaria has been gathering pace over recent years and donor funding for malaria control has increased substantially from around US$18 million in 1998, to $1·5 billion in 2007. These commitments are seeing results. Seven countries in sub-Saharan Africa and an additional 22 countries worldwide reduced mortality from malaria by 50% between 2000 and 2007. But huge obstacles still need to be overcome to move towards elimination. Coverage of the key interventions to prevent and treat malaria—long-lasting insecticide-treated bednets, artemisinin-based combination therapies, and indoor residual spraying—is poor in Africa and Asia because of weak public health systems and infrastructure. And, as described in a Special Report in The Lancet today, resistance to artemisinin is emerging along the Thai/Cambodia border, which suggests that a frontline tool for elimination might not last.

Drug resistance has been a major barrier to controlling malaria in the past. From the 1970s to the 1990s, resistance rendered chloroquine and sulfadoxine–pyrimethamine ineffective treatments for falciparum malaria. But, as reported today, a huge effort, the first of its kind, is underway to contain and stop the global spread of resistance to artemisinin.

The project is logistically challenging and, as ever, money is a problem. A funding shortfall of around $20 million has yet to be filled. What is more, funding for malaria control overall remains fragile. A report by the European Alliance Against Malaria reveals that an average of $5·5 billion is needed yearly from 2009 until the end of 2020 if the elimination and eventual eradication of malaria is to become a reality. Yet the Global Fund to Fight AIDS, Tuberculosis and Malaria—which provides three-quarters of all international funding for malaria—is already facing a $5 billion funding gap for 2009 and 2010.

What some fear now is that, with the financial crisis and emerging reports of resistance to artemisinin, plans for elimination will slip off the agenda. But political leaders need to weather these storms and maintain their promises and commitments to control malaria. Too much has been gained so far to lose momentum for malaria elimination. ■ The Lancet
The Benefit of Patent Pools to Broaden ARV Distribution in Developing Nations

Presented by:
Helene Jay
Director Business Development Europe
Via Licensing Corporation
Agenda

- What is a patent pool?
- Role of a Patent Licensing Administrator
- Patent Pool Success Story
- Potential Benefits for UNITAID and ARVs Patent Owners
- Questions & Comments
Individual Licensing

- **Licensor Transaction Costs/Time**
- **Patent Owner**
- **Essential Patent**
- **Licensee Transaction Costs/Time**
- **Licensee**
- **Licensee**
- **Licensee**
Licensing of Patents Applying to Technical Standards

Standard or Technical Specification

- Patent Owner
  - Essential Patent
    - Licensee
      - Licensee Transaction Costs/Time
    - Licensee
      - Licensee Transaction Costs/Time
  - Essential Patent
    - Licensee
      - Licensee Transaction Costs/Time
  - Essential Patent
    - Licensee
      - Licensee Transaction Costs/Time

Countries represented:
- Japan
- USA
- France
- Germany
- China
- Israel
- UK
Patent Pool Licensing

Licensor A
Essential Patents

Licensor B
Essential Patents

Licensor C
Essential Patents

License Administrator

Pool License

Licensee
Role of Licensing Administrator

**Pre-patent pool phase**
Licensing Administrator invites licensors to participate

**Development phase**
Licensing Administrator facilitates agreement among all essential patent holders

**Operational phase**
Licensing Administrator can commercialize and enforce licenses
50+ Partners Work with Via to Manage Licensing Needs
Benefits of Patent Pools: A Real World Example

- AAC (Advanced Audio Coding)
  - Patent pool enabled this important international standard
  - Over 400 licensees worldwide
  - Level-playing field for a healthy competitive environment
  - Licensors and licensees can focus on their core business
  - Ubiquitous deployment of technology in many application areas
    - Japanese digital TV
    - Gaming hardware
    - 3G mobile phones
    - Portable media players
    - Digital radio
    - Internet media distribution
Benefits for UNITAID and ARVs Patents Owners

- Licensing administrator bring the following expertise:
  - Legal,
  - Financial
  - Compliance
  - Intellectual property
  - Anti-trust
  - Sales
- Allows UNITAID and Licensors to focus on their core activities
- Reduces the cost of licensing transactions
- Provides an efficient and simple access to essential ARVs patents
- Broaden ARVs availability in developing nations
PATENT POOLS: A SOLUTION TO THE PROBLEM OF ACCESS IN BIOTECHNOLOGY PATENTS?

by

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Stephen Kunin, Deputy Commissioner for Patent Examination Policy

United States Patent and Trademark Office

December 5, 2000
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I. SUMMARY

One of the biggest public concerns voiced against the granting of patents by the United States Patent Office (USPTO) to inventions in biotechnology, specifically inventions based on genetic information, is the potential lack of reasonable access to that technology for the research and development of commercial products and for further basic biological research. One possible solution lies in the formation of patent pools. Part II of this document briefly discusses public concerns about the granting of intellectual property rights to genomic inventions. Part III defines a patent pool and summarizes their history in the United States. Part IV sets forth the legal guidelines issued by the Department of Justice and the Federal Trade Commission concerning intellectual property licensing arrangements. Finally, Part V analyzes the potential benefits of forming patent pools in the biotechnology industry to both commercial entities and the public at large.

II. PUBLIC CONCERNS ABOUT THE GRANTING OF U.S. PATENTS TO GENOMIC INVENTIONS

In the mid-1980’s a debate raged within the scientific community regarding the investment of limited public research funds into the Human Genome Project. Advocates suggested that by elaborating the core information relating to our common genetic heritage, we would foster innovation that would accelerate research. Contrary opinions opined that the information would develop on its own as a natural consequence of research in other areas. While it may have taken longer, the information would have been “richer” since it would include not only raw data, but the understanding of what this data means. Still others suggested that obtaining the sequence of research organisms such as C. elegans and the mouse would serve the scientific community better since the data could be immediately adapted to developmental research. Despite this debate, it was decided to proceed with the Human Genome Project.

Over the past 15 years, technological advances have allowed for the rapid sequencing of genetic information from a variety of organisms. In June of 2000, scientists completed a draft sequence of the human genome. Also, a sequence of D. melanogaster was recently completed and other organisms, such as the mouse, should be completed by year’s end. The information from these projects has been obtained from both private and public research concerns, and the private entities, as well as some public entities such as universities, desire to profit from their investment. To this end, these entities use the patent system to protect their investment. However, this route of protection has sparked a public debate that will likely remain for some time.

Part of the public concern lies in the corporate utilization of information from several genome projects that have been placed in the public domain. Companies have used this information in their own proprietary research, thereby, capitalizing on publicly funded efforts and removing further developments of such efforts from the public domain. There is great consternation that
some private concerns are attempting to reap benefits from patented technologies that would not have been possible without publicly funded research, such as the Human Genome Project.

Of present concern to the public is the removal of valuable research resources from the public domain. The characterization of nucleic acid sequence information is only the first step in the utilization of genetic information. Significant and intensive research efforts, however, are required to glean the information from the nucleic acid sequences for use in, *inter alia*, the development of pharmaceutical agents for disease treatment, and in elucidating basic biological processes. Many feel that by allowing genetic information to be patented, researchers will no longer have free access to the information and materials necessary to perform biological research. This issue of access to research tools relates to the ability of a patent holder to exclude others from using the material. Further, if a single patent holder has a proprietary position on a large number of nucleic acids, they may be in a position to “hold hostage” future research and development efforts.

No single company or organization, however, has the resources to develop any significant fraction of the genetic information present in an organism. If proprietary information is not freely available or licensed in an affordable manner, researchers will be precluded from using these protected nucleic acids to develop new therapeutics and diagnostics. It would be, however, shortsighted of a patent holder to demand such a prohibitively expensive licensing agreement that would preclude anyone else from utilizing a patented invention. Rather, an owner of a patent is likely to make business decisions based upon profitability, and one element of such is the ability to obtain licensees. For example, two of the most profitable patents in the biotechnology area are those of Cohen and Boyer\(^1\), which are owned by Stanford University.\(^2\)

These patents cover the fundamental technology used throughout molecular biology, including recombinant DNA research.\(^3\) By minimizing licensing fees and extending non-exclusive licenses, potential infringers were inclined to obtain licenses and the technology was therefore broadly distributed.\(^4\) The dominance of these patents did not inhibit further development but instead spurred further innovation while providing profits to the patent owner.

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2. See NATIONAL RESEARCH COUNCIL, INTELLECTUAL PROPERTY RIGHTS AND RESEARCH TOOLS IN MOLECULAR BIOLOGY (1996), reprinted at [http://www.nap.edu/readingroom/books/property/5.html](http://www.nap.edu/readingroom/books/property/5.html) (a summary of a workshop held at the National Academy of Sciences on Feb. 15-16, 1996). As of early 1995, the royalty on the patents to Cohen and Boyer had increased exponentially to $139 million. See *id.*, ch. 5.
3. See *id*.
4. See *id*.
III. PATENT POOLS AND THEIR HISTORY

A “patent pool” is an agreement between two or more patent owners to license one or more of their patents to one another or third parties. Alternatively, a patent pool may also be defined as “the aggregation of intellectual property rights which are the subject of cross-licensing, whether they are transferred directly by patentee to licensee or through some medium, such as a joint venture, set up specifically to administer the patent pool.”

Over the last one hundred and fifty years, patent pools have played an important role in shaping both the industry and the law in the United States. In 1856, the Sewing Machine Combination formed one of the first patent pools consisting of sewing machine patents. In 1917, as a result of a recommendation of a committee formed by the Assistant Secretary of the Navy (The Honorable Franklin D. Roosevelt), an aircraft patent pool was privately formed encompassing almost all aircraft manufacturers in the United States. The creation of the Manufacturer’s Aircraft Association was crucial to the U.S. government because the two major patent holders, the Wright Company and the Curtiss Company, had effectively blocked the building of any new airplanes, which were desperately needed as the United States was entering World War I. In 1924, an organization first-named the Associated Radio Manufacturers, and later the Radio Corporation of America, merged the radio interests of American Marconi, General Electric, American Telephone and Telegraph (AT&T) and Westinghouse, leading to the establishment of standardization of radio parts, airway’s frequency locations and television transmission standards. A more recent patent pool was formed in 1997, by the Trustees of Columbia University, Fujitsu Limited, General Instrument Corp., Lucent Technologies Inc., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corp., Philips Electronics N.V. (Philips), Scientific Atlanta, Inc., and Sony Corp. (Sony) to jointly share royalties from patents that are essential to compliance with the MPEG_2 compression technology standard. In 1998, Sony, Philips and Pioneer formed a patent pool for inventions that are essential to comply with certain

The law regarding patent pools has changed dramatically over the last century and a half. A patent is a government-granted limited property right to exclude others from making, using or selling the patented invention. Antitrust laws, such as the Sherman Act, however, were designed to prevent the creation of monopolies and restraints on interstate commerce. Although these laws seem to be incompatible, both antitrust law and patent law are “aimed at encouraging innovation, industry and competition.” Nevertheless, antitrust laws and patents have often been conflict; especially where patent pooling or patent cross-licensing is concerned. In the early 1900’s, courts gave such sweeping deference to the licensing of patents that such activities were practically immune from the Sherman Act. Patent pools’ freedom from any scrutiny under the antitrust laws ended in 1912 with the Supreme Court’s decision in Standard Sanitary Manufacturing Co. v. United States, which dissolved a patent pool because of antitrust violations. In 1945, the Supreme Court dissolved one of the most notorious patent pools in Hartford-Empire Co. v. United States. This patent pool of major glass manufacturers covered ninety-four percent of all the glass made in the United States, which allowed its members to sustain glass prices at unreasonably high levels. By the 1960s, the Department of Justice closely evaluated all patent pools and created a list of nine patent licensing practices that were per se antitrust violations (known as the “Nine No-Nos”). Recently, the Department of Justice

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15 See Carlson, supra note 7 at 373.
18 See Carlson, supra note 7 at 373. The Supreme Court established the dominance of patent law over antitrust law in E. Bement & Sons v. National Harrow Co., 186 U.S. 70 (1902). See id. The Court did not find that a patent license that perpetuated the monopoly of the patent or fixed prices was a violation of the Sherman Act. See id.
19 226 U.S. 20 (1912). The Supreme Court dissolved a patent pool that fixed prices and locked out unlicensed manufacturers. See Carlson, supra note 7 at 374. Patent pooling, however, is not a per se violation of the Sherman Act. See Standard Oil Co. (Indiana) v. United States, 283 U.S. 163 (1931) (a settlement agreement between Standard Oil Co., the New Jersey Co., the Texas Co., and Gasoline Products Co. wherein patents were cross-licensed and the companies were thereby freed from litigation and allowed to concentrate instead on technical advancements, was ratified and found not be a restraint on trade).
20 323 U.S. 386 (1945). See also Carlson, supra note 7 at 374.
21 See id. at 375. Justice Hugo Black wrote in Hartford-Empire Co. v. United States: “This history of this country has perhaps never witnessed a more completely successful economic tyranny over any field of industry than that accomplished by the appellants. 323 U.S. 386, 436-37.
and the Federal Trade Commission (“FTC”) have recognized that patent pools can have significant procompetitive effects and may improve a business’ ability to survive this era of rapid technological innovation in a global economy.  

IV. LEGAL GUIDELINES FOR FORMING INTELLECTUAL PROPERTY POOLS

Since 1977, the Antitrust Division of the U.S. Department of Justice has had an official regulatory procedure for reviewing various types of business practices proposed by private firms. Since 1979, the FTC has had a similar procedure, in which businesses may seek FTC advisory opinions concerning proposed business practices. These procedures led to Justice Department and FTC policies in the intellectual property licensing area, and in 1995, these agencies issued Antitrust Guidelines for the Licensing of Intellectual Property (“IP Guidelines”), which sets forth their enforcement policies in this area. The IP Guidelines specifically address pooling arrangements involving intellectual property owners and their rights.

In particular, the IP Guidelines state that intellectual property pooling is procompetitive when it:

1. integrates complementary technologies,
2. reduces transaction costs,
3. clears blocking positions,
4. avoids costly infringement litigation, and
5. promotes the dissemination of technology.

The IP Guidelines also discuss that excluding firms from an intellectual property pool may be anticompetitive if:

1. the excluded firms cannot effectively compete in the relevant market for the good incorporating the licensed technologies,
2. the pool participants collectively possess market power in the relevant market, and
3. the limitations on participation are not reasonably related to the efficient development and exploitation of the pooled technologies.


23 See id. at 5-6.
24 See 28 C.F.R. § 50.6 ("Antitrust Division Business Review Procedure").
25 See 16 C.F.R. §§ 1.1-1.4 ("Advisory Opinions").
27 IP Guidelines, § 5.5.
28 See id.
29 See id.
Anticompetitive effects may also occur if the pooling arrangement deters or discourages participants from engaging in research and development which is more likely "when the arrangement includes a large fraction of the potential research and development in an innovation market."  

The Justice Department has applied these guidelines in considering and approving three proposed patent pools. Its first review set forth the following additional guidelines:

1. The patents in the pool must be valid and not expired,
2. No aggregation of competitive technologies and setting a single price for them,
3. An independent expert should be used to determine whether a patent is essential to complement technologies in the pool,
4. The pool agreement must not disadvantage competitors in downstream product markets, and
5. The pool participants must not collude on prices outside the scope of the pool, e.g., on downstream products.

Currently, the guidelines have been "collapsed" into the following two overarching questions: (1) "whether the proposed licensing program is likely to integrate complementary patent rights," and (2) "if so, whether the resulting competitive benefits are likely to be outweighed by competitive harm posed by other aspects of the program." In analyzing these issues, the Justice Department has focused on the patents to be licensed (i.e., an independent expert in the relevant technology determines that they are "essential" to complementing the central technology in the pool), the joint licensing arrangement (i.e., collusion is unlikely, access to technology is enhanced), and the positive effects on innovation (e.g., the pool participants are required to license to each other "essential" patents they obtain in the future, less of a chance for future "blocking" patents, newer patents weigh heavier in calculating royalties to patent owners).

Biotechnology patent pooling agreements being considered should follow the above guidelines, prior to being submitted to the Antitrust Division of the Justice Department for a proposed business practice review, pursuant to 28 C.F.R. § 50.6, and to the FTC for an advisory opinion, pursuant to 16 C.F.R. §§ 1.1-1.4.

30 See id.
31 See MPEG-LA Review Letter, supra note 12 (citing IP Guidelines, § 5.5) (affirming of the Motion Picture Experts Group pooling of video systems patents).
32 Toshiba Review Letter, supra note 14 (approving of proposed patent pool concerning patents essential to the manufacturing of digital versatile discs and players). See also Sony Review Letter, supra note 13 (approving of proposed patent pool for essential patents concerning digital versatile discs and players).
V. BENEFITS FROM THE POOLING OF BIOTECHNOLOGY PATENTS

The re-emergence of the formation of patent pools suggests that the social and economic benefits of such arrangements outweigh their costs. This section will discuss some of the significant benefits of patent pooling, as well as some of their costs.

A first benefit associated with the pooling of patents is the elimination of problems caused by “blocking” patents or “stacking” licenses. In biotechnology, the granting of patents to nucleic acids may create blocking patents or lead to stacking licenses. As demonstrated in the emerging airplane technology in the early 1900’s, corporations that hold patents on an industry’s basic building blocks can prevent each other, as well as others, from bringing commercial products to the market. By creating a patent pool of these basic patents, businesses can easily obtain all the necessary licenses required to practice that particular technology concurrently from a single entity. This, in turn, can facilitate rapid development of new technology since it opens the playing field to all members and licensees of the patent pool. For example, the recent patent pool encompassing MPEG-2 technology led to the rapid formation of a standardized protocol to protect copyrighted works on the Internet. Similarly, patent pools can eliminate the problems associated with blocking patents or stacking licenses in the field of biotechnology, while at the same time encouraging the cooperative efforts needed to realize the true economic and social benefits of genomic inventions. In addition, since each party in a patent pool would benefit from the work of others, the members may focus on their core competencies, thus spurring innovation at a faster rate.

A second benefit is that patent pools have the potential to significantly reduce several aspects of licensing transaction costs. First, patent pools can reduce or eliminate the need for litigation over patent rights because such disputes can be easily settled, or avoided, through the creation of a patent pool. A reduction in patent litigation would save businesses time and money, and also avoid the uncertainty of patent rights caused by litigation. In addition, small businesses, which

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34 See Carlson, supra note 7 at 379. A “blocking” patent is define as patents which have claims that overlap each other in a manner that the invention claimed in one patent cannot be practiced without infringing the claims of the other patent and vice versa. See Brunetti, supra note 22 at 2. Stacking” licenses give the owner of a patented invention used in upstream research rights in subsequent downstream innovations. See Michael A. Heller & Rebecca S. Eisenberg, Can Patents Deter Innovation? The Anticommons in Biomedical Research, 280 Science 698 (1998).
35 See Dykman, supra note 9 at 647.
36 See Merges, supra note 8 at 25.
37 See Carlson, supra note 7 at 379.
38 See id.
40 See Merges, supra note 8 at 17.
41 See Carlson, supra note 7 at 380-81. During litigation, a patented claim may be found to be invalid or unenforceable or may have its scope limited. See id.
cannot usually endure the costs of litigation, are more likely to survive and prosper if they are free from legal suits over patent rights in the future.  

Second, a patent pool creates an efficient mechanism for obtaining rights to a patented technology. Parties interested in a certain technology covered by a patent pool can, in one stop, license all the patents essential to a core technology. Without a patent pool, a company would have to obtain licenses separately from each holder of the essential patents. Not only does the process of individual licensing require more time, money and resources, but it also establishes a motivation for some patent owners to hold out on licensing their patent. For example, if a company knows that they own the last patent a consumer needs to practice a particular technology, they can demand a substantially higher royalty because they realize that the value of all the other licenses that the consumer already purchased depends on obtaining this last license. Patent pools address this anticompetitive “hold out” problem by providing a means in which most, if not all, necessary licenses are obtained at one time. In addition, patent pools often require a grantback license of any improvement patents on the core technology of the patent pool to reduce the risk of future lawsuits. A reduction in transaction costs is particularly important to biotechnology firms, where a significant portion of their research and development funds are being diverted to cover transaction costs, thus slowing down further innovation.

A third major benefit from patent pooling is the distribution of risks. Like an insurance policy, a patent pool can provide incentive for further innovation by enabling its members to share the risks associated with research and development. The pooling of patents can increase the likelihood that a company will recover some, if not all, of its costs of research and development efforts. Depending on the structure of the pool, all members may receive a set income based upon a percentage of the pool’s royalty regardless of the “economic” value of their individual patent. For example, under the MPEG LA patent pool, all essential patents are equal in value no matter the cost of the research and development required for their actualization. This arrangement evenly distributes the wealth of the pool to all its members. In addition, all members of a patent pool have equal access to the technology in the pool, which may enhance the commercial potential of the patented invention of an individual member. A mechanism that distributes risks and provides greater access to related technology should be extremely attractive to biotechnology businesses that have to fund the high research and development costs inherent in this area of innovation.

See id. at 382.
See Merges, supra note 8.
See id. at 25.
See Brunetti, supra note 22.
See id.
See Merges, supra note 8 at 35.
See Sung, supra note 39.
See Carlson, supra note 7 at 381-82.
See id.
See Sung, supra note 39.
See id.
Finally, a fourth benefit of patent pooling is an institutionalized exchange of technical information not covered by patents. A patent pool provides a mechanism for free sharing of technical information related to patented technology among its contributing members and its licensees. By fostering lines of communication between the members, trade secrets would become less prevalent. Instead, the members would have an incentive to avoid overlapping efforts, especially in the field of biotechnology. Competitive success in the market place depends upon access to information in order to use limited resources efficiently, and patent pools would provide greater access to information for its members. This is particularly important in biotechnology where the potential for commercial development is staggeringly high, especially if limited resources are used effectively and efficiently.

Critics have stated that patent pools have several anticompetitive effects. The first criticism is that patent pools inflate the costs of competitively priced goods. This argument is based on the assumption that while certain patents may be considered to be legally blocking, such patents actually cover competitive alternatives to a certain technology, and that the pooling of these patents will expand monopoly pricing. This criticism can be dismissed by careful evaluation of patent pool arrangement as to whether the patents are truly “blocking” as outlined in the IP Guidelines.

A second reason why critics feel patent pools should not be encouraged is that pools shield invalid patents. Companies who fear that their patents will be invalidated in court are eager to settle by creating a patent pool. This, in turn, will force the public to pay royalties on technology that would have become part of the public domain if the patents were actually litigated in court. While certainly a valid concern, patent pools can avoid this situation if the patents for the pool are selected and monitored by an independent expert to evaluate the patents. In addition, oversight of patent pools by the Department of Justice and the FTC provide further assurance that the pools are not shielding invalid patents. For example, recently, a FTC complaint against Summit and VISX charged the companies with unlawful price fixing involving their patent pool. In addition, the FTC challenged the patent pool because it was protecting an invalid patent. Thus, the formation of a patent pool does necessarily prevent the technology in an invalid patent from being returned to the public domain.

54 See Merges, supra note 8 at 22.
55 See id.
56 See Sung, supra note 39.
57 See Carlson, supra note 7 at 385-86.
58 See id.
60 See Carlson, supra note 7 at 386-87.
61 See id.
62 See Klein, supra note 5 at 7.
64 See Carlson, supra note 7 at 387.
A final criticism of patent pools is that such pools eliminate competition by encouraging collusion and price fixing. Careful evaluation of patent pools under the *IP Guidelines* should alleviate this important concern. One of the many factors that the *IP Guidelines* evaluate is the patents’ relationship to the industry and to each other. If the patent pool harms competition and reduces further innovation, then the members of that pool may face antitrust violations, which should discourage the formation of anticompetitive patent pools.

VI. CONCLUSION

The use of patent pools in the biotechnology field could serve the interests of both the public and private industry, a win-win situation. The public would be served by having ready access with streamlined licensing conditions to a greater amount of proprietary subject matter. Patent holders would be served by greater access to licenses of proprietary subject matter of other patent holders, the generation of affordable pre-packaged patent “stacks” that could be easily licensed, and an additional revenue source for inventions that might not otherwise be developed. The end result is that patent pools, especially in the biotechnology area, can provide for greater innovation, parallel research and development, removal of patent bottlenecks, and faster product development.

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65 See *id.* at 388-92.
66 See Klein, *supra* note 5 at 8.
67 See *IP Guidelines*, *supra* note 26 at 13.
Summary of the Structure of Recent Patent Pools

Common Attributes of Recent “Successful” Patent Pools

Recent patent pools, such as MPEG-2, DVD, and 1394 pools (discussed in further detail below) seem to have the follow common attributes:

1. All licensors of the patent pool grant non-exclusive licenses to the pool, e.g., the licensors are free to license their patent(s) outside of the patent pool;
2. An independent patent expert evaluates which patents are deemed essential in the formation of the patent pool. There is also some mechanism for future review of the current patents in the pool as well as evaluation of any desired additions to the patent pool;
3. The pool is licensed to any interested party in the technology in a non-discriminatory manner;
4. All royalty rates are reasonable and distributed based on an agreed upon formula; and
5. All grant back provisions are limited to essential patents and require non-exclusive licenses with fair and reasonable terms. These provisions must be reasonable so as not to discourage further innovation.

Summary of Three Recent, “Approved” Patent Pools

The Department of Justice conducts a business review of proposed and established patent pools, using the IP guidelines outlined in the attached paper. The pooling arrangements discussed in three recent business reviews will be discussed below. In all three reviews, the Department of Justice stated that it is not presently inclined to initiate antitrust enforcement actions.

**MPEG-2 Standard (1997)**

MPEG-2 includes the fundamental technology for the efficient transmission, storage and display of digitized moving images and sound tracks on which high definition television (HDTV), Digital Video Broadcasting (DVB), direct broadcast by satellite (DBS), digital cable television systems, multichannel-multipoint distribution services (MMDS), personal computer video, digital versatile discs (DVD), interactive media and other forms of digital video delivery, storage, transport and display are based. The technology in MPEG-2 compresses digital information by reducing spatial and temporal redundancies in the binary data streams, thereby conserving transmission resources and storage spaces.

The MPEG-2 patent pool was created in July of 1997 when the Trustees of Columbia University, Fujitsu Limited, General Instrument Corp., Lucent Technologies Inc., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corp., Philips Electronics N.V. (Philips), Scientific Atlanta, Inc., and Sony Corp. (Sony) licensed 27 patents to the patent pool that were all considered essential to the making or using of the video and systems parts MPEG-2 standard into a single portfolio managed by a common license administrator (MPEG-LA). Currently, the
MPEG-2 patent pool has grown to include additional patents from France Telecom, Hitachi, JVC, KDDI and NTT and comprises about 230 patents total. As of November 20, 2000, the patent pool had 256 licensees.

During the MPEG-2 patent pool’s formation, a patent was considered essential to compliance with the MPEG-2 standard if there was no technical alternative to the patent. The expert reviewed approximately 8,000 U.S. patent abstracts and over 800 patents owned by over 100 different patentees. No submission was denied review. The license is worldwide and MPEG-LA is required to grant a license to any potential licensee, without discrimination, at the same reasonable royalty rate. MPEG-LA also enforces the portfolio, collect royalties and distribute them among the licensors pursuant to a pro-rata allocation based on each licensor’s proportionate share of the total number of patents in the portfolio. The agreement has a grant back provision which requires the licensee to grant to the licensor a nonexclusive grant back any essential patent that it has a right to license or sublicense on fair and reasonable terms and conditions. The portfolio license imposes no obligation on the licensee to use only the licensed patents and explicitly leaves the licensee free to develop competitive products outside of the MPEG-2 standard.

The MPEG-2 patent pooling arrangement was created by four different agreements: (1) an Agreement among Licensors, in which the licensors commit to license their MPEG-2 essential patents jointly through a common license administrator and agree to basic terms of the portfolio, such as authorized field of use, the amount and allocation of royalties and the procedures for adding or deleting patents from the portfolio; (2) a Licensing Administration Agreement between the licensors and MPEG-LA; (3) a license from each licensor to MPEG-LA for the purpose of granting a portfolio license; and (4) the portfolio license.

**DVD-ROM and DVD-Video Formats I (1998)**

Under this patent pooling arrangement, Sony Corporation of Japan (Sony) and Pioneer Electronic Corporation of Japan (Pioneer) agreed to nonexclusively license all essential patents necessary for compliance with DVD Standard Specification to Koninklijke Philips Electronics, N.V. (Philips). Philips, in turn, agreed to grant licenses of the essential patents to “all interested parties ... to manufacture, have made, have manufactured components of, use and sell or otherwise dispose of” discs and players that conform to the Standard Specification. All three licensors can license their essential patents independently of the portfolio. The licensors retained a patent expert to review the designated patents and to make an independent judgement as to what patents are essential. The portfolio royalty rate is set at 3.5% of the net selling price for each player sold and $0.05 for each disc sold. In addition, the portfolio license requires an initial payment of $10,000, half of which is creditable against the per unit royalties. The allocation of the royalties is determined on a per-unit sold basis and not on the number of patents contributed to the pool. The portfolio license does require that the licensee must grant the licensors and fellow licensees a nondiscriminatory and reasonable license of any essential patents that they own or control to either the disc or player manufacture in conformity with the Standard Specification.

The DVD patent pooling arrangement was created by two agreements:
(1) two separate but substantially identical licenses to Philips from Sony and Pioneer of the essential patents to enable Philips to grant a portfolio license to all interested third-parties without discrimination; and
(2) the portfolio license.

**DVD-ROM and DVD-Video Formats II (1999)**

In this patent pool, Hitachi, Ltd., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corporation, Time Warner, Inc., and Victor Company of Japan, Ltd., agreed to license their present and future essential patents for compliance with the DVD-ROM and DVD-Video formats to Toshiba Corporation (Toshiba). Toshiba agreed to assemble the essential patents, including its own, in a portfolio and to license the portfolio to all makers of DVD products and to distribute the royalties from the licensing to the other licensors. All the companies are free to license their essential patents outside of the pool. Once a licensor has designated a patent as essential, an expert individual or panel will evaluate the patent to see if the patent is indeed essential. The expert will perform a comprehensive review of all patents in the pool every four years. In addition, a mechanism is in place for the expert to review any patent whose essentiality comes into question. The patent pool agreement states that the expert’s determinations are conclusive and nonappealable. The patent pool is also open to any owner of an essential patent willing to license on the portfolio’s terms and conditions. The royalty rate is 4% of the net sales price for each DVD player and $0.075 for each DVD disc sold. The agreed upon formula for the allocation of the royalties from the portfolio considers (1) how often a licensor’s essential patents are infringed, (2) the age of the patent, and (3) for patents essential to the disc standards, whether the patents related to optional or mandatory features of the standard. The licensees are required to grant back to the licensors, their affiliates and all other licensees of the portfolio all essential patents on “fair, reasonable and non-discriminatory terms.” Disputes between the licensors and the licensees are subject to arbitration.

This DVD patent pool is formed by four agreements as follows:
(1) a license from each of the companies to Toshiba to enable Toshiba to license to parties who use the Standard Specification for DVDs, DVD players and DVD decoders;
(2) a sublicense from Toshiba to makers of DVD products involving the patents in the portfolio;
(3) an agreement among the licensors concerning the retention and authority of experts to select and evaluate patents for the pool; and
(4) the “Ground Rules for Royalty Allocation,” which provides the formula to determine how the royalties from the patent pool will be distributed among the licensors.

**Summary of the 1394 Standard Patent Pool**

The 1394 Standard (IEEE 1394-1995, IEEE P1394a, IEC 61883-1 and IEEE P1394b) is a new, very fast external bus standard that supports data transfer rates of up to 400 Mbps (400 million bits per second). Products supporting the 1394 standard go under different names, depending on the company. Apple, which originally developed the technology, uses the trademarked name FireWire. Other companies use other names, such as i.link and Lynx, to describe their 1394 products. A single 1394 port can be used to connect up 63 external devices.
In addition to its high speed, 1394 also supports isochronous data, e.g., delivering data at a guaranteed rate. This makes it ideal for devices that need to transfer high levels of data in real-time, such as video devices.

In the Fall of 1999, Apple Computer Inc., Compaq Computer Corp., Matsushita Electric Industrial Co. Ltd. (Panasonic), Royal Philips Electronics, Sony Corp., STMicroelectronics and Toshiba Corp. formed a patent pool of the essential patents for the IEEE 1394 digital interface standard. Currently, Canon, Inc. and Hitachi have also joined the patent pool, which now comprises 34 patents and is licensed to 56 licensees. In as far as can be determined, a business review of this patent pool has not been submitted to the Department of Justice.

A patent is essential to the 1394 standard if one or more of its claims is infringed by compliance or implementation of the standard. An independent patent expert evaluates whether a patent is considered essential to the 1394 standard. Therefore, any company that makes or uses 1394 products requires a license from the patent pool. The patent pool is administered by a company called 1394la, subsidiary of the MPEG-LA licensing group. The license from the 1394 patent pool is worldwide, nonexclusive and nontransferable, but a licensee can extend coverage of the 1394 Patent Portfolio License to its affiliates. Licensors are obligated to include all of their 1394 essential patents wherever they issue and cannot withdraw coverage of patents to licensees that already have signed up during a period when a particular licensor and/or patent(s) was in the patent pool. Evaluation of patents for inclusion in the patent pool is ongoing. The royalty is $0.25 upon the sale or manufacture of each system that implements, or is compliant with, the 1394 standard, regardless of the number of 1394 ports per system.

**Summary of the VISX and Summit Technology Patent Pool**

In contrast to the four above-mentioned patent pools, the patent pool created by VISX and Summit Technology (Summit), the only two FDA-approved manufacturers of lasers used in photo refractive keratectomy (PRK), was basis for a Federal Trade Commission (FTC) complaint alleging a violation of Section 5 of the FTC Act, as amended, 15 U.S.C. § 45. The complaint charged that both VISX and Summit had the intellectual property and the other asserts to enter the market as independent competitors. The companies, however, chose to form a patent pool as a tool to fix prices. One of the terms of the patent pool was a $250 licensing fee each time laser eye surgery was performed using equipment covered by either company’s patents. The royalties were divided between VISX and Summit according to a set formula. As a result, the prices for laser eye surgery were higher than if VISX and Summit remain competitors. It is estimated that the consumers paid over 30 million in 1997 to cover the licensing fee of the patent pool. According to the complaint, the patent pool eliminated horizontal competition between VISX and Summit. The FTC accepted a proposed consent order from VISX and Summit, in which all the patents in the patent pool are available to cross-license on a royalty-free and non-exclusive basis to third parties.
The Treatment Timebomb

into long-term access to HIV medicines in the developing world.

July 2009
“Reducing the costs of drugs could enable savings that could fund access to life-saving treatment for an additional one million people every year, even without new resources.”

DFID ‘Achieving Universal Access’
Foreword

"This report from The All Party Parliamentary Group on AIDS reminds us that we not only need to stay focussed on achieving the Millennium Development Goals on AIDS, but also on sustaining them. AIDS is with us for the long-term. The millions of people living with HIV need a lifetime of treatment, care and support. In laying bare the cost of a life-time of medicines the report is also a stark reminder of the importance of prevention.

Real political commitment to HIV means looking ahead and addressing problems before they become crises. ‘The Treatment Timebomb’ is an important wake-up call to those who think we can deliver on Universal Access in the long-term by just doing more of the same. Today’s low-cost HIV regimens will not be effective for everyone for a life-time and we have a responsibility to ensure that when they do stop working, people with HIV are not left to die.

The unprecedented challenge of HIV calls on us to be creative and bring together the best of what Governments, charities and the private sector can offer in terms of innovation, and push and pull incentives described in the report.

I congratulate the All Party Parliamentary Group on AIDS on this important report and hope you will join them in building the political momentum we need to deliver on our commitments to people living with HIV well beyond 2015."

"This report is the culmination of an Inquiry by The All Party Parliamentary Group on AIDS. We have gathered information from as wide a number of sources as possible to ensure that our report presents a balanced picture and comes up with realistic recommendations.

An invitation to submit written evidence to the Inquiry was sent to all our supporter contacts, including hundreds of charities, businesses and individuals, in February 2009. This was followed by a parliamentary round-table event in March with experts and representatives of key institutions. Finally a cross-party section of the APPG made a short fact-finding visit to Geneva in April to interview the relevant UN institutions and the Global Fund for AIDS, TB and Malaria.

I would like to give our thanks to all of the organisations that contributed to the inquiry – they are listed on the back cover – and the many individuals who took the time to meet us. I would also like to thank the Ambassador of the UK Mission to the UN, Peter Gooderham, and his staff who helped organise our meetings in Geneva."

Special thanks also to: Evan Harris MP, Neil Gerrard MP and Lord Norman Fowler.
The final report was compiled by Veronica Oakeshott, Policy Adviser the APPG.
If you would like any further copies of the report, please contact oakeshottv@parliament.uk
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### A note about The All Party Parliamentary Group on AIDS

The All-Party Parliamentary Group on AIDS is a backbench cross-Party Group of MPs and Peers in the UK Parliament at Westminster.

Members of APPG on AIDS believe that HIV/AIDS is one of the most serious threats facing the world in the 21st century and that as Parliamentarians we should play our part in addressing the epidemic. At home in the UK, where around 77,000 people are infected with HIV, we believe that careful policy, respectful of human rights, is critical to tackling the disease and the serious social exclusion that can go along with it. Abroad, where HIV infection rates run as high as 26% and people die every day, we believe we have a responsibility to help.

There are over 200 members of the APPG on AIDS and the views presented in this report are not necessarily shared by every member.
The Treatment Timebomb


Introduction

The UK Government, along with other signatories to the Millennium Development Goals, has signed up to achieving Universal Access to HIV prevention, treatment, care and support by 2010. This is a staging post for the longer term Millennium Development Goal to ‘halt and reverse the spread of HIV/AIDS by 2015’.

We are not on track for either target. With less than a year to go before 2010, only a third of those who need HIV treatment have access to it. That is in itself a cause for urgent action. However, in our drive to achieve these targets, we must not forget that they do not represent the end of the HIV story. All those millions of people who do get on treatment will need to continue being treated, cared for and supported for many decades to come. The prevention programmes must also continue, because treating ever-growing numbers is unsustainable and only prevention can ensure the spread of HIV is reversed once and for all.

The need for a long-term vision has generated this inquiry which focuses on treatment. The APPG chose to address treatment because it is one of the areas that we in the north can influence and that those in the south have least control over. Northern companies and scientists develop the drugs, northern institutions regulate and approve them for human use, northern dominated trade rules affect who can access them and at what price, and – crucially - these rules determine whether or not a competitive market can develop. We have a responsibility to make the global rules, which we have created and continue to control, work in the interests of the poor.

This inquiry shows that we are sitting on a treatment timebomb. We can predict many of the changing treatment needs of people living with HIV in the coming decade and they are not compatible with treatments and prices available today. Maintaining HIV treatment to keep people alive will cripple developing economies, or place unbearable strains on richer countries trying to support them. Action is needed now, to avert crisis later.

The format of this report

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Section One

The numbers of people needing treatment will rise dramatically beyond 2015

The numbers of people who need treatment for HIV is rising and will continue to rise for many years ahead. The reasons for this are given below.

Epidemiological projections beyond 2015 are being developed by UNAIDS, but early stage research into long-term Antiretroviral Therapy (ART) needs in Zimbabwe, for example, showed that even if all who need treatment have access to it by 2010, the numbers in need will be six times greater by 2030.1 A crude scale up to a global level would indicate the global numbers in need of treatment will be in the region of 55 million people by 2030. Today we are treating less than four million; by any calculation the task ahead is enormous.

A consortium of partners called AIDS 2031, is currently working on a model that should be able to project a more precise figure for ART needs by 2031, by the end of this year. What is already clear is that in just a few years there will be several tens of millions of people who need HIV treatment.

Reason 1: Unmet need

Some of the projected rise reflects current unmet need – only one third of adults who need treatment are currently getting it.

The unmet treatment need amongst children is even worse with barely 10% of children in need currently accessing treatment, according to the UNAIDS 2008 Report on the Global AIDS Epidemic.2 There will be increased demand for paediatric drugs – anti-retrovirals (ARVs) and Cotrimoxazole Preventive Therapy especially when better medicines and formulations for children become available. The higher rates of children accessing treatment in some countries, such as those that the Clinton Foundation and PEPFAR work in, demonstrates that this scale up is possible with adequate resources and political will.

Figure 1


1 ‘Estimating the Resources Required in the Roll-Out of Universal Access to Antiretroviral Therapy in Zimbabwe’ TB Hallett, S Gregson, S Dube1, ES Mapfeka, O Muguringi & GP Garnett
The use of ARVs to prevent mother-to-child transmission also needs to be scaled up, with the latest figures showing only one third of mothers with HIV having access to the appropriate treatment.\(^3\)

With no interventions, around one in three babies born to HIV positive mothers will be HIV positive.\(^4\)

Some of these children are infected at birth and some through breast-feeding. Preventing mother to child transmission is relatively simple and must be a priority if we are to slow the HIV epidemic.

Finally, the majority of people in the world who are HIV positive don’t know their HIV status. The roll-out of testing programmes and money invested in strengthening health systems should help identify these adults and children. In this case the extra demand for ART is a reflection of success.

In addition to the rise in number of people in need of ART, there will be an increase in demand for treatments for common co-infections. If left untreated, serious infections such as TB can accelerate the impact of HIV, leading to premature death. Any investment in ART therefore should go hand-in-hand with an investment in common serious co-infections or opportunistic infections.

**Reason 2: People staying alive and needing treatment for longer**

The total number of people living with HIV will rise, as people stay alive. They will all continue to need treatment. Again, this is a reflection of success. As health systems improve and the quality of care and support given to those living with HIV improves, lives will be extended.

**Reason 3: People should be starting treatment earlier**

The size of the rise in demand and expenditure on HIV treatment will reflect policy decisions and the availability of CD4 testing.

A key policy decision will be at what stage in their infection people should start receiving treatment. A CD4 count measures the strength of a person’s immune system, with 800-1500 cells per cubic millimetre of blood being a normal healthy count; and below 200 being a typical count for someone with AIDS symptoms. In developed countries, such as the UK, guidance is that when a patient’s CD4 count drops to 350 they need to start treatment.\(^5\)

The WHO international guidelines however, are that ART should start at 200, in the absence of specific symptoms. Many argue that this is leaving treatment too late and there is pressure on the WHO to update its guidelines. Recent research shows that initiating treatment at a CD4 count under 350 increases the risk of death by 69%.\(^6\)

However, most developing countries are not even treating people at the WHO recommended level; the average starting point for anti-retroviral therapy in low income settings is even lower, at just above a CD4 count of 100.\(^7\) This is partly because the judgement about when to initiate therapy is being taken on the basis of symptoms rather than by a CD4 test result. Symptoms often do not start appearing until the CD4 count drops below 200, so it is not surprising that people diagnosed symptomatically are diagnosed late.

\(^3\) UNICEF Children and AIDS Third Stocktaking report 2008

\(^4\) UNAIDS ‘Rates of Mother-to-Child Transmissions and the Impact of Different PMTCT Regimens’ 2005
http://www.epidem.org/Publications/PMTCT%20report.pdf

\(^5\) British HIV Association (BHIVA) guidelines


CD4 test machines are expensive and require trained personnel to use them. There is no accurate data on the extent of the use of CD4 test machines in the developing world; although we know they are not the norm. A cheap, easy to use CD4 test is currently being developed by the CD4 Initiative, a public private partnership, which aims to have the test available in 2011.

Research has shown that whether anti-retroviral therapy is initiated on the basis of a symptomatic or CD4 diagnosis is one of the most significant factors in determining the long term need for ART, not only because people start treatment sooner but also because of the impact of early diagnosis on survival.8 Projections based on this research estimate that, while improving the effectiveness of treatment, moving to CD4-based rather than symptoms-based ART initiation could almost double ART needs over the period 2010 to 2030.

If national or WHO policies on eligibility for treatment change, or if CD4 tests rather than symptomatic diagnosis methods become the norm, a new cohort of people living with HIV, who otherwise would not have been considered eligible for treatment, will need to be treated.

**Reason 4: Public Health Policy**

The other policy decision that may have an impact is the use of HIV treatment as prevention.9 Successful HIV treatment lowers the level of virus in a person’s body and makes them significantly less infectious. Some countries may decide to get as many infected people on treatment immediately, rather than waiting for a specific CD4 count or for symptoms to appear, in an attempt to reduce new infections. This of course, if successful, would reduce need for treatment later. However, such a policy has not been tried yet and might be difficult to implement in the case of those who are infected but have no HIV-related symptoms, because of the unpleasant side-effects of treatment.

**Reason 5: New Infections**

At the same time, there will continue to be new infections, although if our prevention efforts are successful, these should be at a reducing rate. Nonetheless, these people will need to be treated. It is crucial that new infections are minimised. Currently for every two people on treatment, five are newly infected.10

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8 Estimating the Resources Required in the Roll-Out of Universal Access to Antiretroviral Therapy in Zimbabwe’ TB Hallett, S Gregson, S Dube1, E.S. Mapfeka, O Muguringi & GP Garnett
Summary

Reasons One to Four, reflect positive scenarios, where people live longer, are able to access the treatment they need and start treatment early enough to optimise their long-term health. They point to the need for long-term investment in treatment and in the care and support that needs to go with it.

The long term commitment that each new HIV infection calls for is a reminder of the importance of prevention. The cost of treating someone with HIV for life means it makes financial as well as ethical sense to minimise new infections. There is particular potential to do this by preventing mother-to-child transmission, where currently opportunities are being missed.

Universal Access to treatment is only possible in a context where there are health systems with appropriately trained staff, and so the implications of these projections go far beyond the simple cost of medicines. Nonetheless, given the numbers involved, it is important that the unit cost of medicines is kept as low as possible and that competitive markets and economies of scale are used to effect. An increasing medicines bill will place undue burden on the health service and risks detracting money from other areas. However, as the next section shows, the cost of treating people is likely to rise.

Recommendations

1. HIV needs to be understood as both an emergency for those without treatment and as chronic condition for those with it. Developed and developing country governments and donors therefore need to make long term plans, beyond 2015 for funding and deploying an adequate response.

2. Key organisations purchasing HIV medicines, such as the Global Fund, UNITAID and PEPFAR, require assurances from donors that financial commitments will be secured for the longer term.

3. Advocates of universal access to HIV treatment, care and support need to agree on a common message to drive and maintain progress beyond 2015.

4. Treatment is needed to save lives, but prevention is the only way to manage the epidemic in the long term. Each infection averted saves years of treatment costs. Developing country governments, international NGOs, donors and others should work together urgently to develop best practice recommendations on prevention:treatment spending ratios.

5. UNAIDS should collect data on the extent of the use of CD4 tests, and donors should stand ready to fund the roll-out of a cheap, easy to use CD4 test as it becomes available. This could dramatically improve survival rates for people with HIV.
Section 2:

The drugs that people need are changing; and they’re more expensive

The number of people needing HIV treatment will rise over the next two decades and so will the cost of treatment. This is because better, more effective treatments have come on the market and should be offered to patients, and also because, over time, more people will move from first to second (and later) line regimens, which are more expensive. These factors are explained below.

Factor 1: High price of tolerable first line HIV medicines

The majority of people living with HIV in the developing world are treated with a combination of three drugs: Lamivudine (3TC), Stavudine (d4T) and Nevirapine (NVP). \(^{11}\) Stavudine has a common side effect of lipodystrophy – the effects of which include changes in weight, with fat loss in the limbs and face and fat gain around the stomach, shoulders and neck – these effects are shown in the photo below. The symptoms can remain long after its use has ended. In addition to this, it is highly toxic and can cause life threatening lactic acidosis and so is rarely used in high income countries. Whilst some people are able to tolerate it, others react badly, and this can also have an affect on adherence. In one of Medecins Sans Frontieres’ AIDS projects in Rwanda, almost one in every six people on Stavudine had to change their regimen due to toxicity. \(^{12}\)

In 2006, the WHO recommended that treatment providers move to less-toxic regimens, based on either Zidovudine (AZT) or Tenofovir (TDF). The Clinton HIV/AIDS Initiative projects that first line antiretroviral (ARV) demand will continue to shift progressively away from Stavudine-based regimens towards these clinically superior but more expensive regimens. \(^{13}\)

However the price of these superior drugs has meant progress has been slow. Currently the Tenofovir-based combination costs at best $210 \(^{14}\) per patient per year compared to $87 \(^{15}\) per patient per year for the basic Stavudine combination. In countries where the originator companies have patents, the Tenofovir combination is even more expensive at up to eleven times the price of the Stavudine-based combination. \(^{16}\)

The girl in this photo is eight years old. She lives in South Africa. She has severe lipodystrophy, having been on a Stavudine-based (d4T) based regimen. The symptoms have persisted since ending the Stavudine-based treatment 4 years ago. Printed with permission from www.righttocare.org

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\(^{11}\) WHO ‘Towards Universal Access – Scaling up priority HIV/AIDS interventions in the health sector’ 2008. WHO/UNAIDS/UNICEF, June 2008 shows 51% of patients in 30 low and middle income countries are on this combination. The next most popular combination is used by just 14%


\(^{13}\) ChAI written evidence to the APPG on AIDS

\(^{14}\) As reported, Reuters UK ‘Generic Deal Cuts Cost of AIDS Drugs Further’ April 17th 2009 http://uk.reuters.com/article/healthNews/idUKTRE53G0020090417?rpc=401&


\(^{16}\) MSF ‘UTW: Interview with Campaign Pharmacist’ http://www.msfaccess.org/main/hiv-aids/utw-interview-with-campaign-pharmacist/
Factor 2: Better drugs are needed for preventing mother-to-child transmission

In 2007, 49% of women living with HIV in low and middle income countries received a single dose of Nevirapine during pregnancy to prevent transmission of HIV to their babies during birth.17 Nevirapine is cheap at around five US cents per dose and simple to use, however there are serious drawbacks to this option for both mother and child. The drug is not as effective as alternatives; assuming a mother breastfeeds for only six months, it reduces the chance of transmission by about half to 16%, but does not eliminate it 18. Where mothers are breast-feeding for longer, even more children are likely to be infected. Single dose Nevirapine may also cause resistance to subsequent treatment involving Nevirapine and Efavirenz, reducing a mother’s subsequent treatment options and those of her child, and creating the need for them to use more expensive treatment regimens.

According to WHO guidelines, the regimen currently recommended for preventing mother-to-child transmission in resource-limited settings uses a combination of Zidovudine from six months gestation, a single dose of Nevirapine at birth and a week of Zidovudine and Lamivudine after delivery. This approach is more difficult to administer than single dose of Nevirapine, but it is also significantly more effective, with ten percent of babies infected at six months, assuming they too are breastfed.19 This combination is also less likely to lead to drug resistance.20

The difference in cost of the two options is significant, with single dose Nevirapine costing only less than a dollar and involving little medical time compared to around $24 for the Zidovudine option, which involves medicines taken twice daily for 12 weeks.

Putting HIV mothers on full anti-retroviral therapy is more expensive and involves a more sophisticated diagnostic work-up, but is the most effective method for transmission prevention. Given that HIV positive mothers will in any case need treatment for their own health either immediately or when their CD4 count has dropped further; saving money by delaying their treatment for a few months, whilst risking the health of their baby, does not seem a sensible choice.

In the developed world triple combination therapy, combined with the use of caesarean section and a ‘no breastfeeding policy’ is achieving transmission rates of under 1% but the costs of this comprehensive approach are prohibitive in the developing world.

A note on breastfeeding

The transmission figures cited above assume breastfeeding because of the high number of women in least developed countries who do not have access to clean water and/or cannot afford to buy infant formula milk. Mixing formula with dirty water is very dangerous for a baby, particularly if they have not had the benefit from protective anti-bodies in their mother’s milk. However, breastfeeding by an HIV positive mother for six months increases risk of transmission to the child by a further 10% of the original risk.21 So women are faced with very difficult decisions. Clearly therefore clear breastfeeding policies, availability of clean water and affordability of formula milk could also significantly improve mother-to-child transmission rates.

Photo: This little Zambian girl has been orphaned by AIDS. Her mother didn’t get the treatment she needed to keep her alive, or the treatment she needed to prevent her passing on the infection to her daughter, who is now very ill. She is being looked after by her grandmother, who is pictured here.

17 UNICEF Children and AIDS Third Stocktaking report 2008
18 ibid
19 ibid
Factor 3: The high price of second line and subsequent medicines

As a virus, HIV constantly mutates in the human body and becomes resistant to the medication taken. The development of resistance is likely to happen to everybody over time, but the process is accelerated when patients fail to adhere to their regimen, which happens more frequently in resource poor settings often due to treatment stock outs. Once the first set of medicines (first line) stop working, moving on to second line medicines is a matter of life or death.

The cheapest price for a second line regimen is $590 per patient per year; this makes it seven times more expensive than the cheapest first line drugs. Furthermore, where the same drugs are patented by originator companies and generic purchase is not possible, prices are up to seventeen times the price of first line drugs.

Most second line medicines are more complex than first line ones. The protease inhibitors used in second line regimens are typically bigger and more complex than first line drugs at a molecular level. A number of second line drugs are also dosed at higher levels, requiring more active ingredient per day of treatment. This means that they may never be quite as cheap as the first line medicines; however there are some opportunities for price reductions.

Currently only 3% of those receiving ARVs are being treated with second line drugs in developing countries but this is projected to rise to 5% by 2011, to a total of around 260,000 people. Several international organisations have developed their own calculations for second line migration; the Global Fund to Fight AIDS, TB and Malaria, for example, works on the basis of 5% migration from first to second line medicines per year. In Medecins Sans Frontiers’ longest-running AIDS project in Khayelitsha, South Africa, approximately 22% of patients on treatment for five years needed to be switched to a second line drug combination.

Ultimately there will also be a need for third and fourth line drugs for people who have already been on treatment a long time and developed resistance. These are even more expensive, and not readily available.

When to switch?

In high income countries, decisions about when to move a patient from first to second line treatment or subsequent treatments are usually taken on the basis of a viral load test. This shows how successfully a treatment regime is in suppressing the virus in the body. However, these are expensive and require trained staff and therefore are not commonly used in developing countries. As a result, it is likely that demand for second line drugs will be slower than is clinically called for. This not only damages the individual’s health, it creates a risk that he or she will transmit a resistant strain of the virus to other people.

The current price of viral load tests means that their use is probably a less effective use of resources than extending ART to new people who need it. Nonetheless, investment in the prevention of resistance to first line drugs will generate savings in the medium term and therefore the development of cheaper, and ideally point-of-care, viral load tests should be one of the research and development (R&D) outcomes HIV research funders seek to achieve.

22 As reported, Reuters UK ‘Generic Deal Cuts Costs of AIDS Drugs Further’ April 17th 2009 http://uk.reuters.com/article/healthNews/idUKTRE53G00O20090417?rpc=401 & This price already reflects the work of UNITAID and Clinton Foundation to buy in bulk.


24 Figures from Clinton Foundations ARV Market Update January 2009 for the number of people on 2nd line treatment in ‘generic accessible’ markets.

25 Verbal evidence from the GFATM, APPG visit to Geneva.


Efforts to prevent resistance by supporting patients to adhere to their regimens are an important way of delaying the need for second line treatment. Fixed dose combinations - which are several medicines in one pill - would also help patients to comply with treatment, as would better labelling. The need for new fixed dose combinations is considered later in this report. Counterfeit medicines (medicines that have not been approved by a regulatory authority and are produced illegally) are also likely to contribute to resistance and developing countries need support to tackle criminals involved in supplying them. Investment in such measures should deliver long-term savings as resistance and the need for second line and subsequent regimens is reduced.

**Factor 4: Price of related medicines and diagnostics**

When considering the cost of treating a patient with HIV, it makes sense also to consider the cost of treating any likely symptoms. There is a need to address the price of drugs and diagnostics to diagnose and treat opportunistic infections associated with HIV, such as TB diagnostics, second line TB drugs, Hepatitis C medicines, antibiotics for infections such as pneumonia, and treatments for many other conditions. A full analysis of the costs of these treatments and opportunities for cost reductions cannot be done here but would be a useful piece of research.

**Summary**

Many ARVs have adverse effects, and affordable, improved first line drugs are needed urgently. There must also be a move towards more affordable effective regimens for preventing mother-to-child transmission and this should be a priority. The price of second line and subsequent treatments must also be reduced before large numbers of people need them.

**Recommendations**

1. Donors and developing countries should invest in the use of more effective PMTCT (prevention of mother-to-child transmission) drugs, as this will save money in future and lives.
2. Urgent action needs to be taken to reduce the cost of the WHO recommended first line alternative to the basic d4T+3TC+NVP combination, to enable the treatment of those who cannot tolerate Stavudine.
3. Urgent action needs to be taken to reduce the cost of second line medicines, which are a matter of life and death to those who need them.
4. There is a need for research into the costs of treating common opportunistic infections so that realistic financial allocations can be made when planning HIV programmes.
Section 3:

Drivers of anti-retroviral medicine price reductions in the past

The most basic HIV drugs are now sold to low income countries at less than one percent of their original cost. In its inquiry, the APPG gathered evidence about how these price cuts were achieved and whether these factors would be applicable to the newer, more expensive drugs.

In May 2000 it cost just over USD $10,000 to treat someone with HIV on the most basic first line combination, Lamivudine (3TC), Stavudine (d4T) and Nevirapine (NVP), for a year. This was the lowest world price. Today, the same drugs can be bought in low income countries for just USD $87. The vast majority of that fall happened in just three months (see Figure 2). It is commonly agreed that these drugs, which are today’s most widely used combination of ARVs, are almost at the lowest achievable level.

As the graph suggests, the most important factor in reducing prices has been generic production. When generic companies entered the market in 2000 offering much lower prices, the branded companies had to follow. Generic production was possible because patents were never granted or were invalid in the country of manufacture (India and Brazil) and there were no patent barriers in the importing country. This enabled multiple generic manufacturers to produce and sell the drugs, as well as the innovator companies. Competition increases incentives for suppliers to find ways of driving cost reductions. Figure Two shows the dramatic price effect of the entry of generic suppliers into the ARV market.

*Figure 2: The impact of generic competition on the price of basic triple combination therapy: d4T (stavudine) + 3TC (lamivudine) + NVP (nevirapine).*

Figure 2 shows the lowest world price per patient per year at each time point. It is reprinted with permission from Avert: www.avert.org. Since August 2001 lowest prices for this combination have dropped still further to $87 USD.
Other factors affecting price

The majority of the price difference between today’s triple combination and the same combination in May 2000 occurred before 2002 with the entry of new generic manufacturers onto the market. However, there have been other developments that have reduced prices. These are:

Volume and predictability

The volume of HIV medicines purchased by the Global Fund for AIDS, TB and Malaria and PEPFAR have massively increased the market for these drugs in the last five years and this has helped achieve economies of scale. For medicines that have already come down a great deal in price, such as the basic Lamivudine (3TC), Stavudine (d4T) and Nevirapine (NVP) combination, increased volume has been an important factor bringing prices to their lowest yet. As the Clinton HIV/AIDS Initiative said in their evidence:

“Perhaps the single biggest driver in manufacturing costs is volume, which enables manufacturers to achieve efficiencies of scale, spread fixed costs, and negotiate volume discounts on raw materials. Consequently, any intervention to scale up treatment programs is also inherently an intervention to lower manufacturing costs and prices.”

UNITAID has played an important role in facilitating price reductions for HIV/AIDS drugs through bulk purchase agreements. It has also helped to coordinate more predictable ARV market demand, although there is room for improvement on this. Both Gilead and GlaxoSmithKline raised the need for improved demand forecasting in their evidence to the APPG.

UNITAID

UNITAID was founded in 2006 by Brazil, Chile, France, Norway and the United Kingdom; since then membership has grown to 27 States, including many developing countries. Its mission is to “contribute to the scale up of access to treatment for HIV/AIDS, malaria and tuberculosis in low and middle income countries by leveraging quality drugs and diagnostics price reductions and accelerating the pace at which they are made available.”

Hosted by the WHO in Geneva, UNITAID does not have its own programmes for the distribution of medicines but supports programmes by its partner organisations such as The Global Fund and the Clinton Foundation. It has already had considerable success in lowering the price of medicines through negotiated bulk purchases and by other means. It is currently working on developing a patent pool (described later in this document). The APPG visited UNITAID as part of its inquiry.

Pharmaceutical company access programmes

All the major originator companies have some sort of programme to improve access to their HIV medicines in the developing world. UNAIDS has been responsible for persuading many companies to establish such schemes. Different companies take different approaches. Whilst some (such as Abbott) provide their own medicines via a tiered pricing system for developed, middle income and developing countries, others (such as Gilead) grant generic companies voluntary licences to produce their medicines. Schemes are established drug by drug, so also differ within companies.

Of the models, voluntary licences when issued to a significant number of generic manufacturers seem to be best at reducing prices. However, there has been no independent thorough analysis comparing the relative costs and benefits of the many models available in terms of their impact on access, the time taken to reach developing country markets, and the cost to the originator company. An independent analysis would provide useful knowledge to improve access programmes.

A common problem with tiered pricing is that the medicines are not registered for use in many developing countries, so while in principle a price may be available, in practice neither the price, nor the medicine itself is available. This is often because the lengthy and cumbersome process of registering a drug in every country makes companies reluctant to register new drugs in developing countries, especially where there is a limited commercial market. In other cases the registration process has started but is taking months or years to complete. Support for developing countries to improve their registration process would help make tiered pricing a more effective approach. DFID should be encouraged to continue its work on this.

Evidence from the Treatment Action Campaign in South Africa, called for better monitoring of access programmes to ensure that promises of cut-price medicines in tiered pricing systems were actually delivered. They argued that there was currently minimal accountability to the countries and patient groups for whom such medicines are intended. If companies were willing to regularly open up their access programmes to an independent auditor, and publish the results, this might increase the confidence of some of the grass-roots organisations in them. It would also benefit the image of pharmaceutical companies more broadly, including in developed countries, and a successful audit could be a badge of Corporate Social Responsibility quality.

**Summary**

In conclusion, generic competition has been central in reducing the price of ARVs, but other factors that have helped reduce prices have been volume, a predictable and organised market that can pay its suppliers promptly, and pharmaceutical access programmes. The next section will consider whether these same factors can be used to reduce the price of the newer HIV medicines that will become increasingly important in the years to come.

**Recommendations**

1. There should be an independent analysis of the relative costs and benefits of different types of pharmaceutical access programmes. DFID would be well-placed to conduct this.

2. Pharmaceutical companies should open up their access programmes to independent audit to increase confidence in them.

3. Buyers of ARVs should continue to work together, with the support of the WHO, to provide reliable forecasts to the pharmaceutical industry of the volumes they intend to procure.
Section 4: Opportunities for reducing the cost of new HIV medicines

DFID indicated in its AIDS strategy, launched in 2008, that it believes there is scope for £50 million of efficiency savings in the purchase of ARVs and pointed to the important impact this could have on access to medicines saying “Reducing the costs of drugs could enable savings that could fund access to life-saving treatment for an additional one million people every year, even without new resources. The UK will work with others to help make this happen.”

Since in the past generic competition appears to have been the most significant factor in reducing the prices charged for HIV drugs, this section, Part A, considers it separately, with its own recommendations before considering other factors which might reduce prices in Part B.

Part A: Generic production

Most of the newer expensive drugs are currently being produced under patent, which prevents wide generic manufacture and keeps prices high. The status of the patents on specific drugs varies from country to country.

The legal environment surrounding patents has tightened since the most commonly-used and cheapest ARVs were first produced by generic manufacturers. This is as a result of the implementation of World Trade Organisation (WTO) rules adopted as part of the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement. There is a full explanation of TRIPS on page 21.

India, where the vast majority of generics are developed and produced, made its patent law compliant with the TRIPS agreement in 2005. Prior to this, it was much easier for companies to manufacture generic versions of HIV medicines. For example before TRIPS were introduced, the law did not allow products to be patented, only processes. If a generic company could invent an alternative process for manufacturing a particular product there was no patent infringement. This process, known as ‘reverse engineering’, was pioneered and perfected by Indian companies during the 1970s and 1980s.

However more recently, in preparation for 2005 and subsequently, patent laws have tightened and companies have had to change their behaviour. This is particularly significant for drugs invented after 2005, as product patents prohibit the entry of generic manufacturers into the market for the newer drugs. The drugs affected include important first line therapies recommended by the WHO.

Least developed countries (India does not fit into this category), have until 2016 to implement TRIPS.

Over-riding patents for public health purposes

Countries are legally allowed to overcome patent barriers for public health purposes by using TRIPS flexibilities (described in the TRIPS text box on page 21) in order to either produce their own generic versions of HIV drugs or import them. However these flexibilities have proved very difficult to make use of in practice. Respondents to the APPG inquiry described the lack of capacity and legal know-how of developing countries to exercise the flexibilities; and the impenetrable paperwork required. Heavy political pressure from companies and foreign governments (including the UK in its role in the EC) not to use the flexibilities was also cited as a common problem.

Despite all the barriers to their use, some countries have been able to issue the ‘compulsory licences’ which enable the generic manufacture of drugs under patent. Thailand for example issued a compulsory licence in January 2007 for the important drug Ritonavir, reducing its price significantly.

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30 As reported, Reuters UK ‘Generic Deal Cuts Costs of AIDS Drugs Further’ 2009 http://uk.reuters.com/article/healthNews/idUKTRE53G00O20090417
Unsurprisingly, the evidence to the APPG on the issue of use of TRIPS flexibilities differed widely between the pharmaceutical companies, who were in favour of a very restrictive use, and charities, who were in favour of more frequent use. The Doha Declaration which clarifies TRIPS does make it clear that “Each Member [country] has the right to grant compulsory licences and the freedom to determine the grounds upon which such licences are granted.”

Medecins Sans Frontieres argues in its 2008 report ‘Untangling the Web of Anti-retroviral Price Reductions’ that “Tomorrow’s battle for access to affordable ARVs will need to be fought in a different way. It will require routine use of public health safeguards in patent laws, and of flexibilities in the World Trade Organization’s TRIPS Agreement, such as compulsory licensing. Increased global patenting through TRIPS is systematically reducing possibilities of producing generics, thereby changing the rules of the game and keeping prices high for the newer medicines people need. This puts a serious strain on, and threatens the sustainability of, national AIDS treatment programmes that are already struggling to implement and scale-up treatment.”

**Helping countries to make the most of their patent flexibilities**

Developing countries can get technical assistance with using TRIPS flexibilities from the World Intellectual Property Organisation (WIPO). However, WIPO is mainly funded by industry and it has been criticised for providing assistance which takes insufficient account of the role TRIPS flexibilities could play in promoting access to medicines. This may change because, following pressure from member states WIPO has started to work on a development agenda. WIPO proposals in 2007 included:

> “WIPO technical assistance shall be, inter alia, development-oriented, demand-driven and transparent, taking into account the priorities and the special needs of developing countries, especially Least Developed Countries…”

In practice, it may take some time to embed this development agenda within the organisation. Other sources of technical support do exist and Germany in particular is driving forward this agenda, but funding for this is limited. These sources of support include United Nations Conference on Trade and Development (UNCTAD), InWEnt (a German organisation providing training courses on TRIPS flexibilities) and GTZ among others. The WHO also has a key role in providing assistance and monitoring the effect of new laws on access to medicines.

Regional cooperation is also useful in negotiating the use of TRIPS flexibilities. The International Community of Women Living with HIV (ICW) drew attention to the potential of regional cooperation to form bargaining blocks on intellectual property issues in its evidence. ICW cited examples of this being done successfully in Latin America with ten countries getting together to reduce the price of ARVs and HIV diagnostic tests with agreements from both originator and generic manufacturers.

**New challenges to use of patent flexibilities**

As described in the TRIPS text box (page 21) some countries are being put under pressure to go beyond the patent protection required in TRIPS, this is known as TRIPS+. TRIPS+ measures are often agreed as part of wider economic negotiations. Some countries, for example, have traded in their right to patent flexibilities in return for other economic benefits. The EC has been an important instigator of such negotiations.

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32 Adopted 14th Nov 2001, Clause 5b, Declaration On The Trips Agreement And Public Health, WTO.
33 MSF ‘Untangling the Web of Anti-retroviral Price Reductions’, July 2008
34 Verbal evidence from the International Centre for Trade and Sustainable Development (ICTSD), APPG visit to Geneva
36 Verbal evidence to the inquiry from the ICTSD
37 The WHA Resolution 61.1 adopted at the WHA 2008, which covers the Global strategy and a part of the plan of action on Public Health, Innovation and Intellectual Property, requests WHO to provide technical support, upon request, to Member States intending to make use of TRIPS flexibilities to promote access to medicines
Current negotiations between Costa Rica and Andean nations and the EC include provisions for ‘test data protection’ for a period of 10 years after drug approval. ‘Test data protection’ means that any generic company wanting to produce a medicine has to provide their own data showing its safety and efficacy. Without this measure, all that is required is proof of bio-equivalency to the original drug, which is a much cheaper and more simple process.

A second worrying development is the repeated detention of medicines, including HIV medicines, in European ports as they are in transit from a manufacturing country to a developing country. The medicines are being detained on the basis that they violate European patent laws in a bid to combat the trade in patent-infringing goods; however they are not intended for the European market, but for countries where there is no such patent. The ability of generic manufacturers to transport their goods is central to delivering medicines to millions of people with HIV in the developing world. Even temporary detentions/impoundments can be very serious, as they can lead to medicine stock-outs, leading to treatment interruptions, potentially causing people living with HIV to develop resistance to their medicines.

**Least developed countries’ TRIPS grace period**

Least developed countries do not have to be TRIPS compliant until 2016. Many respondents (including Oxfam and HAI Africa) to the APPG inquiry cited the importance of the use of this period to establish production of generic medicines. This is already happening to some extent with interesting partnerships being created to share knowledge and develop the capacity of least developed countries to manufacture their own medicines.

Cipla, the Indian generic manufacturer, has entered into a partnership with a Ugandan firm to set up a factory making HIV and malaria drugs in Uganda. Cipla supplies the expertise and is training Ugandan technicians. The Ugandan government has pledged to procure ARVs worth $45 million per year for seven years. The factory started producing in February 2009. They predict they will be producing ARVs at a cost of $9 per month per patient and that they will be manufacturing two million tablets per day, these are only intended for the Ugandan national market. It is hoped that this will help Uganda’s long-term ability to respond to its own HIV crisis.

**Voluntary Licensing, Patent Waivers and Patent Pools**

A final method of reducing the impact of patents on price is for the originator company to choose to waive them by issuing voluntary licences or non-assert declarations to certain manufacturers. The pharmaceutical companies Gilead and Boehringer are examples of companies that have done this for some of their medicines. Originator companies can also charge a royalty on the production of their medicines through a voluntary licence, which makes the scheme more sustainable for them. Voluntary licences on fair terms can also represent an effective way to avoid expensive and damaging legal battles over compulsory licensing.

The impact of these voluntary partnerships on price depends on the scope of the licence – where very few generic manufacturers are allowed to produce a medicine, the impact will be limited because competition is limited. Some licences also include conditions such as the requirement to buy the active ingredients from the originator company, which also limits their potential to reduce prices.\(^3^8\)

Gilead’s Tenofovir is a good example of a voluntary licence that is having a positive impact on prices; this is because licences have been granted to eleven different generic manufacturers (all in India) who are competing with each other to supply the medicine at the cheapest rate. UNITAID are now purchasing generic versions of Tenofovir produced in this way. However Tenofovir, an important new first line drug, remains significantly more expensive than its older alternatives.

A broader form of voluntary licensing that is currently being proposed by UNITAID is a patent pool, where originator companies voluntarily put their patents (in this case ARV patents) into a single pool in return for a royalty. Manufacturers or researchers who wish to use the relevant patents are then able to do so for a fee. This has the advantage of creating a much larger field of competition, coming closer to a free-market whilst still preserving benefits for originator companies. The patent pool is discussed in greater depth in the research and development section of this document because it is also designed to facilitate the development of medicines better adapted for use in the developing world.

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\(^{38}\) MSF ‘Untangling the Web of Anti-retroviral Price Reductions’, July 2008
Summary (Part A)

Patent laws in India, the key generic ARV manufacturing country, have changed. The dramatic price reductions that were achieved around the year 2000 through generic competition are unlikely to be possible with the newer drugs. As more people become resistant to (or unable to tolerate) the cheapest older drugs, we are facing a treatment timebomb.

In the short term there is scope for generic production in some of the least developed countries such as Uganda. By 2016 all member countries of the WTO will be TRIPS-compliant and the manufacture of generic versions of new drugs will be almost impossible. Before then, the international community must find new ways to improve competition in the ARV market that are palatable to pharmaceutical companies, because twenty-year global monopolies on the manufacture of life-saving drugs are not compatible with public health in the developing world.

Recommendations on enabling generic production:

1. WIPO should be held accountable to its development agenda, and asked to demonstrate examples of supporting developing countries to use their TRIPS flexibilities to protect public health.

2. DFID should consider supporting developing countries in their use of TRIPS flexibilities, both by funding technical advice and at a diplomatic and advocacy level, by encouraging cooperation from pharmaceutical companies.

3. Private partnerships between originator companies and generics can be profitable for all involved and improve access. Gilead’s partnerships in India are an example of this. This approach should be encouraged.

4. Regional entities such as the East African Community (EAC), and its southern African equivalent the Southern African Development Community (SADC), that allow for cooperation among a group of countries, should work together to negotiate flexibilities and share lessons.

5. The UK Government should use its influence at the EC, particularly given the EC Trade Commissioner post is held by the British, to halt the adoption of TRIPS+ clauses in trade agreements that limit the ability of developing country governments to protect public health.

6. Customs authorities in EU states should desist from detaining life-saving drugs in their ports when these shipments are destined for third countries where no patent is infringed.

7. The UK Government should use its influence at the EU, to require a review of EU customs regulations that allow such detentions, and assess their impact on access to medicines.
What is TRIPS?

The Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement aims to lay down minimum standards for the way Intellectual Property is protected around the world. The World Trade Organization (WTO) administers TRIPS through the TRIPS Council, which consists of all WTO members. Disputes between countries concerning adherence to TRIPS may be taken to the WTO system for settlement. Developed, developing and least developed countries were given 1, 5 and 11 years respectively to comply with TRIPS.

What are the implications of TRIPS?

TRIPS set out a minimum level of patent protection of 20 years, during which generic companies are prevented from entering the pharmaceutical market and selling medicines more cheaply. The majority of the ARVs used in the developing world are manufactured by generic companies based in India, like Cipla. But India was obliged under TRIPS to introduce a TRIPS-compliant patent law by 2005. India’s new patent law still restricts patentability of pharmaceuticals more rigorously than in developed countries. Nevertheless, the changes since 2005 seriously threaten its ability to produce generic versions of new medicines for use in the developing world.

TRIPS Flexibilities

The Doha Declaration in 2001 confirmed the legality of important flexibilities in TRIPS that allow countries to manufacture or import generic drugs. Where there is a public health imperative, countries can issue a compulsory licence to a generic manufacturer, on payment of a royalty to the owner of the patent. However, many of the countries with a high HIV burden are the least able technologically to set up their own manufacturing capacity, and meet the stringent regulatory requirement to produce high quality drugs. However, the Declaration also led to an amendment to TRIPS which permits countries without manufacturing capacity to import under a compulsory licence from another country which has that capacity. Although yet to be ratified, the amendment has been in force since 2003 under a waiver to TRIPS. Even so, only one country (Rwanda) has utilised this facility.

Some respondents to the APPG inquiry cited heavy political pressure by pharmaceutical companies and developed country governments as an important barrier to the use of TRIPS flexibilities (Oxfam and Stop AIDS Campaign).

“"We agree that the TRIPS Agreement does not and should not prevent Members from taking measures to protect public health.....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.” Paragraph 4 of the WTO Doha Declaration

TRIPS+

Some developing and middle income country governments are giving up some of the flexibilities they have and even agreeing to more stringent patent protection rules (known as TRIPS+) in bilateral trade agreements. The TRIPS+ measure that, according to the Centre for International Trade and Sustainable Development (ICTSD), has the worst impact and represents about 90% of the medicine cost increases predicted, is the introduction of data exclusivity for pharmaceutical products. This means that companies seeking to produce generic versions cannot rely on clinical test data generated by the originator for a period of up to ten years, and would have to repeat such studies at considerable expense to bring a product to market. In its absence, they would only have to do relatively cheap tests for bioequivalence to demonstrate that their product has essentially the same bio-pharmaceutical properties as the original. This can delay the entry of generic manufacturers into the market by many years. In Costa Rica for example, ICTSD predict that TRIPS+ in the US-Central American Free Trade Agreement could lead to a price increase in absolute terms of 17% to 31% for all drugs over the covered active ingredients by 2030.

Part B: Other potential levers for reducing the price of HIV medicines

Volume and inclusion on Government procurement lists

Developing countries and pharmaceutical companies are in a ‘chicken and egg’ scenario, whereby countries do not feel able to put more expensive WHO recommended drugs, like a Tenofovir based first line therapy, on their list of drugs for governmental procurement and the companies therefore cannot manufacture them at sufficient volume to bring the price down. However, if this deadlock is broken there is significant opportunity for economies of scale, especially in the cost of active ingredients.

Consolidation around WHO recommended regimens

If countries were to consolidate their purchasing to a smaller number of standard regimens, for example those recommended by the WHO, this could increase the volume of key HIV medicine bought, facilitating economies of scale.

Barriers to such consolidation identified by respondents to the APPG inquiry were not only the price of the WHO preferred medicines (the chicken and egg scenario), but also poor communication about the benefits of new regimens. At the international level WHO needs to do more to publicise their guidelines and at a national level governments need to disseminate that knowledge not just to their capitals but to rural health centres. Faith-based organisations and local NGOs can help by stimulating grassroots demand for better drugs.

However, respondents were keen to point out that WHO recommendations should not be followed blindly. For example, both Boehringer and the Clinton HIV/AIDS Initiative said that WHO needed to update its guidelines more frequently in relation to children’s HIV medicines.40

The lack of relevant clinical data about the effectiveness of new regimens for developing country populations, and sub-groups, such as pregnant women, is also a barrier to the adoption of new regimens. At the APPG Roundtable, Professor Diana Gibb from the Medical Research Council highlighted the importance of local clinical trials to determine what is best for a particular country context.41 There is an urgent need for funding for such trials, which could make the WHO recommendations more relevant.

Professor Gibb also suggested that along with improved clinical data an equivalent of the UK’s National Institute for Clinical Excellence (NICE) would be useful for developing countries to gather evidence to make public health decisions about the costs and benefits of providing certain medicines. The WHO was supportive of this idea in interviews with the APPG.

Streamlining drug registration

Applying for drug registration in developing countries can be a slow process that adds to the cost of bringing a drug to market and therefore indirectly, to its price. It can also be a barrier to global consolidation around a smaller number of regimens, and most importantly to access to new and better medicines, since the necessary medicines are not always registered. The pharmaceutical company Abbott, for example, cited ‘broad registration’ as one of its measures to ensure access to medicines in developing countries.

Streamlining drug registration in developing countries could help reduce this barrier to access. Boehringer Ingelheim and GlaxoSmithKline (GSK) both cited regional registration as a way of ensuring that the newer drug reach developing markets more quickly. GSK made the point that many of the drugs waiting for national approval have already been approved by the world’s most stringent regulatory authorities, such as the FDA or the WHO and there could be significant savings by not repeating such an exercise nationally. However national registration is often seen as a matter of sovereignty.

39 Written evidence by CAFOD
40 Written evidence by CHAI and Boehringer, with specific reference to paediatric recommendations.
41 Written evidence by the charity Ace-Africa.
A less controversial option currently being explored by DFID, WHO, Gates, Clinton and NEPAD (The New Partnership for Africa's Development) is the harmonisation of drug registration templates which would mean that companies could provide the same data in the same format to all countries, which would speed up the process. Funding for technical support for individual countries whose registration system is particularly inefficient would also be useful. Such work would need to be done in communication with the pharmaceutical companies who have direct experience of dealing with the registration process.

Fast track registration is being used in Nigeria, according to evidence from CHAN Medi-Pharm Ltd., to expedite the entry of new medicines to market. However this is not yet being used for HIV, which CHAN believe is a missed opportunity in Nigeria and a system that could be used elsewhere in the world.

Another registration issue pushing up the price of medicines and slowing down access is PEPFAR’s rule that it will only buy medicines that are FDA approved, as well as WHO approved. The other major drugs purchasers only require WHO approval. Some of the generic versions of ARVs are approved by the WHO but are still pending FDA approval. In these cases, PEPFAR buys the more expensive originator company versions, if available, or otherwise waits for FDA approval.42

**Process or Dosage Optimisation**

The Clinton HIV/AIDS Initiative has been working with generic manufacturers to bring the cost of manufacturing key HIV medicines down. Dosage optimisation ensures the active ingredient, which is the most expensive part of the pill, is delivered in just the right quantity and no more. Drug dosage can be reduced in one of two ways – either by conducting clinical trials to demonstrate that lower doses produce the same efficacy with equal or reduced toxicity, or by developing more efficient drug formulations to deliver the same amount of active ingredient to the active site in the body while loading less active ingredient in the pill.

Another piece of important research has looked into improving process chemistry. This can dramatically lower the cost of production, especially for chemically complex drugs such as Tenofovir and the protease inhibitors. The section on research and development in this report highlights the need for funding for this important type of research.

**Improved Market predictability – another means of reducing risk and therefore prices**

Some drug companies raised market predictability as an opportunity for reducing costs in their evidence to the APPG. Evidence from DFID is that accuracy of demand forecasting and predictability of payment can be as important to suppliers as volume in setting prices.43 Many countries procure haphazardly (often driven by unpredictable donor funds) and don’t procure forecasted volumes. The pharmaceutical company, Gilead, said in its evidence:

“The current state of forecasting demand for HIV drugs poses a significant challenge to delivering medicines and encouraging sustainable programs. A crucial planning element is donor coordination between the Global Fund, PEPFAR, UNITAID, the Clinton Foundation and other relevant partners. Of note, the competitive tender process often required can have a strain on forecasting depending on how it’s implemented. For instance, there is a high level of uncertainty surrounding tender issuance and volumes quoted may not be ultimately procured. Lead times are variable, making supply chain planning and execution difficult. The opportunity we see in this arena is to establish support for an accurate, global demand forecast plan to be utilized by manufacturers to ensure consistent product availability for patients most in need.”44

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42 There is an interesting statement from the Ecumenical Pharmaceutical Network (EPN) on this issue at http://www.healthgap.org/press_releases/04/100704_EPN_PEPFAR_statement.doc

43 Discussions with Saul Walker, Senior Access to medicines Policy Adviser, DFID, June 2009.

44 Written evidence to the APPG
Summary (Part B)

Higher volumes achieved by consolidation around WHO-recommended regimens and streamlined drug registration are an opportunity for achieving economies of scale. However, countries cannot be expected to include regimens that are not suitable for their citizens or appropriate to their resources on their ‘Essential Medicines Lists’. A combination of more funding for relevant clinical trials and support to analyse the economic and public health costs and benefits of various treatment options are needed. Other opportunities for cost reduction are process or dosage optimisation and improved market predictability.

Recommendations:

1. UNITAID, and the big funders of drugs purchasing, such as the Global Fund for AIDS, TB and Malaria, have a good chance of breaking the ‘chicken and egg’ volume/price deadlock, if they indicate they are willing to fund the more expensive drugs, such as Tenofovir.

2. The WHO also has an important role to play in ending the dead-lock by promoting its recommendations more clearly and updating them regularly.

3. Developing countries will be more willing to change their preferred drugs if they can be shown to be appropriate to them. Funding for clinical trials is needed to produce data showing the relative efficacy of various treatment options in a resource-limited context and where there is a shortage of health care workers to help deliver them.

4. Donors could consider setting up an international facility based on the UK’s National Institute for Clinical Excellence (NICE). The International Institute of Clinical Excellence would help countries to decide which drugs should be prioritised to meet their national health goals.

5. Efforts to harmonise the regulation of drugs will improve access but must be negotiated with sensitivity, to ensure willingness to participate. It would be helpful if such efforts were championed by a developing country or regional organisation. This could speed up the delivery of newer, better drugs to market and save money.

6. PEPFAR should end its policy of requiring FDA approval as well as WHO approval of the medicines it supplies.

7. Key donors such as the Global Fund, PEPFAR and UNITAID should continue to work to clarify and coordinate their tender processes and lead times and engage with all the relevant companies that comprise the pharmaceutical industry to provide improved global demand forecasting.
Section 5:

HIV-related Research and Development needs and the impact of patents

For drugs with a commercial market, income from patents is the incentive to invest in research and development. Thanks to this incentive, millions of pounds of investment by originator companies have resulted in the development of life-saving HIV drugs that otherwise might not exist. This point is commonly made by originator companies that are unhappy about the use of patent flexibilities discussed earlier in this report. Patents from such drugs are earning revenue from the developed country market.

Drugs for developed country markets can be refined into drugs better suited to the developing world. However, thus far the patent incentive alone has not delivered the necessary adaptations of medicines or new medicines for a developing country market. There are a number of areas where new diagnostics, completely new medicines or new formulations of medicine are urgently needed. These are outlined below. Since the simple patent system is not addressing these research needs, this report considers alternative or additional incentives to drive R&D investment. In particular it considers whether, in the context of diseases of poverty, the cost burden of R&D can be borne by someone other than the purchaser who pays through the price of the drug.

There is a need for the following new medicines:

- More single tablet, fixed-dose versions of the WHO recommended first line ARV combinations are needed. Fixed dose combinations are important because they are easier to take than taking several pills, separately in different quantities, and at different times of day. They therefore improve adherence and are also easier and cheaper to ship and store.

- More paediatric HIV drugs are needed. There is a lack of investment into medicines that are appropriate for children, because of the very limited commercial, developed country market for them. Children's HIV medicines do exist, but of the 22 antiretrovirals approved by the US FDA and currently available, six are not approved for paediatric use and seven are not available in paediatric formulations. There is an urgent need for new formulations of HIV medicines for children and for drugs that are easier to use such as small tablets.

- Diagnostics are the third area where new developments are needed. A simple CD4 based diagnostic that is cheap and easy for staff to use with minimal training would enable people living with HIV to be diagnosed and treated earlier and more successfully.

- A simple point of care viral load test would enable medical staff to assess the effectiveness of a given HIV treatment on an individual so that treatment can be changed when it stops working (the shift from first to second line treatment). Currently treatment failure is being diagnosed late, this is not only bad for an individual’s health; there is also an increased risk of transmission of resistant forms of HIV.

- Existing diagnostics for children under 18 months are also inadequate. The normal anti-body tests cannot be used on these children and under the current system a blood test is taken and then sent off to a laboratory for analysis. It can take up to eight weeks to get a response, and many children are never brought back by their carers for a result, thus many children are left untreated. Early treatment is key to their survival rates. Without treatment, half of the children with HIV/AIDS will not survive beyond the age of two.

- Similar research and development needs exist for tuberculosis, a disease which kills 23% of people who die with AIDS. Better TB diagnostics are required, because the currently-used sputum test is unreliable, time consuming and requires trained clinicians. HIV can mask the TB in a sputum test and so many people with HIV who take the test get a negative result for TB, even if they are in fact infected. TB and malaria R&D are particularly neglected because relevant medicines have an even lower commercial market than for HIV.


Research and development needs are not limited to treatment and diagnostics; HIV prevention technologies have the potential to transform the global epidemic in a way that treatment does not. The International AIDS Vaccine Initiative (IAVI) and the International Partnership for Microbicides (IPM) are examples of important public/private partnerships which need long-term investment. The UK Government has committed to increasing its investment in research for AIDS vaccines and microbicides by 50% between 2008 and 2013, which is to be welcomed.

For a full list of missing HIV medicines see the WHO report of the 17th Expert Committee on the Selection and Use of Essential Medicines.47

Missing data

As well as missing medicines and diagnostics there is missing data about the suitability of some of the existing medicines for a developing country context. Clinical trials are often designed with a view to registration in the developed world, to capture maximum commercial benefits. There are few studies supporting appropriate use of drugs for children. Information on whether the drug is safe for use by people with common co-infections in developing countries, such as TB, or for people who are taking anti-malarials is also missing. For example the HIV drug Efavirenz needs to be studied urgently in children below three years old so that TB/HIV co-infected infants can use it without drug interaction problems while taking TB drugs.

The lack of capacity to run clinical trials in developing country settings is holding back the development of new medicines specifically designed for such environments.

GlaxoSmithKline said in its evidence to the APPG, “An area of increasing concern in the broader regulatory context is the capacity in developing countries to conduct clinical research. Clinical trials require suitable sites with trained personnel, sufficient resources & infrastructure, and appropriate regulatory & ethical oversight. As the pipeline of the product development partnerships mature, the capacity of the few suitable clinical facilities, especially in Africa, will be dangerously over-stretched. The Government should work with the Medical Research Council, developing countries, and other stakeholders, including the industry, to identify ways to help address this major concern.”

This concern was also raised directly with us by Professor Diana Gibb from the Medical Research Council and is reflected in the George Institute’s G-Finder report.48 There is also a need for post-registration research, to identify any new problems with a medicine that is already being used that may be particular to a developing country, or a population sub-group.

What is the impact of patents on research?

Most of the fixed dose combinations used in developing countries have in fact been developed by generic manufacturers in response to market demand, not patent incentives. The most important example of this is Trimune which is the generic fixed dose version of the basic combination that has been referred to frequently in this document – Lamivudine, Stavudine and Nevirapine. This was developed by the Indian company, Cipla, who then partnered with the Medical Research Council to make the fist fixed dose combination for infants, Baby Trimune. These medicines have not been patented and have demonstrated that this type of research and development can be viable, and indeed profitable, without patents.

Patents can also create barriers to the development of new fixed-dose and co-packaged therapies, because of the cost and complexity of dealing with three different patent holders. Overly-broad patent rights may also result in so-called “patent thickets”, which are dense webs of patents on one product that may be owned by a multitude of different parties.49 Companies seeking to use technology for the development of new and superior products have to pay considerable licensing fees or challenge blocking patents in costly and lengthy litigation.50

This looks likely to be a serious problem for Indian generic manufacturers who developed the fixed dose combinations referred to above, but since becoming TRIPS-compliant in 2005 now face stricter patent laws which will limit their ability to develop new combinations.

What incentives can there be for research other than patents?

Research and development is an expensive business and if it is not to be funded through patents, and ultimately the consumer, the funding will need to be found elsewhere. Suggested models of encouraging innovation in HIV and neglected diseases can broadly be divided into ‘push’ and ‘pull’ mechanisms.

Push mechanisms reduce the risks and costs of investment in R&D. They include direct funding of research, and tax credits, both of which have been used by the UK government.

Many of those who responded to the APPG inquiry felt that public-private partnerships whereby governments or philanthropic organisations could help fund private companies to undertake research would be useful. DFID already gives important sums to the Medical Research Council however this money is spent on early academic university-based research or final stage research such as field trials. In the case of HIV medicines and diagnostics there is no DFID funding for the expensive but important middle stages of treatment development - these are usually done in the private sector. The Global Fund for AIDS, TB and Malaria does not invest in research into the development of medicines at all. The Bill and Melinda Gates Foundation is the exception, as it invests in HIV research and development.

Missed opportunities for cost-savings

The Clinton HIV/AIDS Initiative (CHAI) felt that the type of research they are facilitating on optimising manufacturing processes or levels of active ingredient in a medicine is under funded. This type of research was mentioned in Section 4 B as a way of reducing the cost of medicines. In written evidence to the APPG, they said:

“Incentives and funding for the optimization of existing ARVs for developing world purposes—what can be thought of as ‘downstream’ or post-marketing R&D—is a major gap in today’s HIV/AIDS funding landscape…..there are virtually no donors prepared to fund the optimization of existing drugs. Opportunities such as dose optimization, reformulation, and packaging innovations must be pursued at-risk by suppliers or others seeking to create value in these ways.

Increased funding for such R&D would create potentially tremendous value. CHAI has identified a range of opportunities for future impact through this kind of product optimization, but has been largely unable to find funders to connect with potential implementers. Financial support could come in the form of ‘push’ funding—ie, grants for R&D projects—or ‘pull’ funding such as advance market commitments or prizes. New philanthropic ventures and novel financing mechanisms such as UNITAID offer the best hope for an influx of funding in this sphere.” (CHAI)

The main drawback to ‘push’ mechanisms, such as direct funding, is that they require funders to make a judgement about which research bodies are most likely to achieve the needed results, and sometimes the recipients of funding do not deliver.

‘Pull’ mechanisms in contrast, create an extra incentive to achieve the result (such as a new medicine) with the benefit only delivered on achievement. Examples of such mechanisms include prizes for the first researchers to come up with a specified innovation, advanced market commitments or tax credits on sale of a certain product which is yet to be developed.

Prize funds are one of the mechanisms attracting the most interest from those seeking to catalyse new research in HIV and were cited as a solution to R&D needs by respondents to the APPG inquiry.51 Prizes have been used for hundreds of years to spur innovation, and history shows that prizes often generate total R&D investments greater than the value of the prize. However, they do not always work and the sums offered

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49 A single vaccine for example could include patents on: the antigen needed to produce the proper immune response, including its DNA sequence and particular expression; the adjuvant, which is used to facilitate a person’s response to an antigen, the excipient, which is the substance and antigen and adjuvant are stored in; the vaccine itself; and finally, its method of delivery. http://www.ip-watch.org/weblog/2008/04/22/experts-debate-policy-on-patent-landscapes-for-life-sciences

need to be substantial. The Rockefeller Foundation for example offered a $1 million prize in 1994 to develop a simple point of care diagnosis for STIs, which was never claimed, possibly because it simply was not large enough to act as an incentive to conduct expensive research.52

The need to offer substantial funding has led some to propose that prizes should be offered on the basis of donations from multi-national sources, coordinated perhaps by the WHO. Oxfam has called for a Global Fund for Research and Development.53 However, prizes tend to favour companies that can commit significant financial resources upfront, rather than smaller companies, that may have the necessary skills but lack sufficient cash flow to put them into practice.

There is also a precedent in the use of ‘Advanced Market Commitments’, another form of pull mechanism. The pharmaceutical company, Boehringer, suggested these should be used in HIV in its evidence to the APPG inquiry. An Advanced Market Commitment has been developed under the auspices of GAVI, the Global Alliance for Vaccines and Immunisation, to encourage the development of a vaccine for pneumococcal disease. It is too early to tell how successful such investments will be.

Less formal ways of indicating a solid market for a potential new medicine can also be effective. There has already been some progress in this area, with UNITAID acting as a major buyer and stating the medicines it feels need to be developed and that it would like to buy. The Global Fund’s purchasing power is also creating a credible market for HIV medicines.

**Patent Pools**

A new mechanism, called a ‘patent pool’ is being proposed by UNITAID as a method of catalysing the development of some of the missing medicines identified at the beginning of this section. Patent owners put their patents in a ‘pool’ and allow others who need access to those patents to use them in exchange for a royalty payment. Patent pools have already been used to drive forward innovation in different fields of technology, for example MP3 players, but their use in pharmaceuticals is a new development.

The pool is designed to make it easier for researchers who want to develop combination therapies because they can access permission to use the component drugs from a single place, rather than having to negotiate company by company. Those using the patents still pay a royalty to the patent holder, administered by the pool. It is also designed to reduce prices of existing medicines by allowing generic manufacturers to produce drugs on payment of a royalty. As discussed in Section 4A, it is hoped the pool will mimic the situation in India before the country brought in a TRIPS patent regime in 2005, so that affordable second line drugs can be produced.

**Who supports the idea of the Pool?**

The development of this proposal by UNITAID is being encouraged by the UK Government 54 and WHO 55 and supported by all the major international development charities in the UK. However its success depends entirely on the willingness of patent owners to put their patents into the pool. The All Party Parliamentary Group invited organisations, including pharmaceutical companies to give their views on the feasibility of the pool.

GlaxoSmithKline is in favour of the concept of a patent pool for neglected diseases and has set up its own version covering TB and malaria and other diseases prevalent in the developing world. Its new Chief Executive put on record his support for the concept in the Guardian, saying “I think it’s the first time anybody’s really come out and said we’re prepared to start talking to people about pooling our patents to try to facilitate innovation in areas where, so far, there hasn’t been much progress.”56 However as yet, GSK has not agreed publicly to put any of its HIV patents in to its own pool or the UNITAID patent pool.

Their written evidence to the APPG inquiry said: “For HIV, we believe that extensive research is already underway, and thus it is not a neglected disease. Millions of dollars are ploughed into research into HIV every year by the pharmaceutical industry. To improve access, we already have an extensive voluntary licensing

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52 ibid
54 Hansard, 25/3/09, DFID PQs Ivan Lewis MP, DFID
55 Verbal evidence to the APPG, Jos Perriens, Coordinator Systems Strengthening and HIV(SSH) Unit, WHO
programme for HIV across Sub Saharan Africa, involving eight licensees. These licensees are free to develop FDCs and paediatric versions and we believe this is a much simpler approach than the creation of a patent pool. All our ARVs are also available at not-for-profit prices in all Least Developed Countries and Sub Saharan Africa. We therefore do not see the need to include our HIV patents in any pool.”

However these voluntary licensing schemes have been in place for several years and there are still significant research gaps. Furthermore, where fixed dose combinations (FDCs) include medicines from a number of different patent holders, a scheme by a single company, or even two companies, is still more difficult to use than a ‘one stop shop’ solution.

There is strong political pressure for companies to participate in the pool, with over 100 UK MPs signing an Early Day Motion (a parliamentary petition) on the subject and a public campaign supported by over 22,000 signatories. The UK Government has also publicly called for “pharmaceutical companies to respond positively to this initiative [the patent pool] and join forces so that we can make the contribution to driving down prices and improving access to HIV/AIDS drugs.”

Summary

Patents are an important incentive for R&D in developed country markets, but do not generally drive investment into HIV medicines specifically needed by developing countries. Indeed, they can sometimes hinder such research.

R&D is expensive and if it is not to be funded by patent income, incentives must be found elsewhere. Public private partnerships and direct research funding are possible sources, as are prize funds, tax credits or advanced market commitments.

A patent pool is another option that rewards the patent holder whilst reducing barriers to further R&D by researchers who wish to refine a product for a developing country market. It would also enable the type of generic production which has made HIV medicines available to three million people and which generated the first ever fixed dose combinations, to continue.

Recommendations on encouraging R&D

1. The private sector has excellent skills and experience in translating early academic stage research into usable products. They are more likely to engage in this expensive, risky process, if there are incentives for them to do so. Proposals to stimulate R&D need to ensure adequate financial incentives.

2. There is an urgent need for improved capacity for clinical trials in developing countries. Donors not currently funding such work should consider doing so, in collaboration with organisations such as the Medical Research Council, academic institutions and private companies.

3. Pharmaceutical companies and other patent holders should sign up to the UNITAID patent pool to enable new fixed dose combinations (FDCs) and paediatric versions of HIV drugs, in return for a fair royalty on their patents.

4. HIV funders should consider investing money in late stage research, a process that the Clinton HIV/AIDS Initiative has begun to facilitate, on the basis that such research has already proved its worth and that there is scope for further gains.

5. DFID, in communication with its counterparts from other donor countries and with UNITAID, should look into the workability of a prize fund for key missing medicines and diagnostics.

6. In a global economic downturn there will be a temptation to divest from ambitious research projects such as an AIDS Vaccine, but this should be resisted because long-term stability is essential to make gains from investments thus far, and because new prevention technologies have the potential to revolutionise our response to HIV and minimise the epidemic.


57 GSK and Pfizer are now working together on ARVs

58 22,696 people have signed up to ‘Join the Push for the Pool’ part of The Stop AIDS Campaign.

59 Hansard, 25/3/09, DFID PQs Ivan Lewis MP, DFID
Section 6: Conclusion

It took political activism almost a decade ago to make life-saving drugs available to the poor in developing countries. People with HIV took to the streets and to the court room to fight for the right to treatment and were supported by international NGOs all over the world. The work they started is not over. Only a third of those who need it are on treatment and this treatment will not work for them forever. Political activism is needed once more to ensure that the next generation of drugs is available to the world’s poorest in future. We must not sleep walk into a situation where treating even a small proportion of those with HIV is unaffordable.

Prevention activities take time to feed through into lower rates of infection and therefore the high numbers of people in need of treatment predicted in this report are almost inevitable. What need not be inevitable are spiralling treatment costs. All actors must be involved in preventing this, including the UK government, NGOs, international organisations, the private sector and developing country governments.

Pharmaceutical companies have a particularly important role to play. Generic production has single-handedly driven a huge reduction in the price of life-saving medicines enabling millions of poor people to access treatment. The extent to which generic companies are allowed to produce new HIV medicines in the future is critical, and it will depend on the willingness of originator companies to cooperate. So originator pharmaceutical companies must rise to meet the challenge of the public’s expectations by allowing their drugs to be made more cheaply for use by developing countries, and signing up to important mechanisms, such as the UNITAID patent pool.

However, casting originator pharmaceutical companies as the enemy in the access to medicines debate takes no account of the essential role they have played in developing the treatments that so many rely on today. They will and must play a continuing part in responding to HIV as it mutates and throws up new challenges in the years to come.

We must also recognise that whilst it is right that companies should invest some of their profits in research and development to improve their medicines for the developing world market; if they are to address some of the biggest challenges, it may take additional or different incentives. DFID, its counterparts and the major international funders need to sustain (and in some cases where there is no current R&D spend, establish) research and development funding, particularly for clinical trials, and make full use of incentives with a positive track record, such as prize funds.

HIV is with us for the long-term and calls for significant financial commitments. As the UK Government’s AIDS strategy acknowledges: “No Low-Income Country with a hyper-endemic or generalised epidemic has yet come close to achieving self-sufficiency in delivering an effective AIDS response, even in the medium term. The conclusion is stark – Universal Access cannot be achieved in these countries without sustained donor assistance. The international community must therefore maintain its commitment to supporting AIDS responses in the long term.”

Donor fatigue is a serious risk with such a long-term project. Governments, charities and international organisations such as UNAIDS, therefore need to work quickly on a shared message to take the access to HIV medicines work beyond 2015.

This report focuses on treatment, but in highlighting the complexities and expense of a lifetime on medicines, the conclusion that prevention must be key to any long term response is inescapable. Nonetheless there are clear milestones to be achieved to diffuse the treatment timebomb; affordable, quality, first and second line medicines; access to related products for co-infections; more paediatric treatment options; affordable diagnostics to ensure adults and children are diagnosed in time to prevent permanent damage to their immune systems; and affordable, effective, prevention of mother-to-child medicines. We should waste no time in achieving them.

Organisations that contributed to the APPG inquiry

**Developing country based charities**
- ACE Africa
- Christian Health Association Malawi
- Chan Medi-Pharm Ltd
- Treatment Action South Africa
- Nairobi Network of Post Test Clubs
- HAI Africa
- Living Hope Organisation

**UK based charities**
- CAFOD
- Oxfam
- Advantage Africa
- ICW
- Stop AIDS Campaign
- International AIDS Alliance
- World Vision
- Children’s Investment Fund Foundation
- NAM
- Medecins Sans Frontieres

**Private Sector**
- SAB Miller
- GSK
- Gilead
- Boehringer Ingelheim GmbH
- Johnson and Johnson
- Abbott

**Other**
- Clinton HIV/AIDS Initiative
- Global Fund for AIDS, TB and Malaria
- Medical Research Council (MRC)
- London School of Hygiene and Tropical Medicine
- GAVI
- University College London
- Imperial College London

**Government/ International Governmental Organisations**
- DFID
- International Centre for Trade and Sustainable Development
- South Centre
- World Health Organisation
- UNAIDS
- UNITAID
- World Trade Organisation
- UK Mission to the UN in Geneva
- UNICEF
- UNCTAD

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