Can PPPs in Health cope with social needs?[1]

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Introduction

The turn of the millennium reveals an apparent paradox: the intensification of the globalization process, which, according to spokesmen from the World Bank, the World Trade Organization, and the World Health Organization, constitutes a sure path for poor countries to overcome their historical socio-economic deprivation, and the resurgence of several infectious diseases, which place many countries in a catastrophic situation characterized by declining populations and medieval life expectancy levels.

World public health authorities have called for a new policy to deal with this threat: The Public-Private Partnerships. But several concerns arise on its viability to cope with the problem.

The mistaken hypothesis of the "epidemiological transition" and the market oriented production of medicine

In the last fifty years, life expectancy in less developed countries has increased from 44 to 64 years. However, due to pandemics such as AIDS, tuberculosis, and other infectious diseases, this gain may be reversed in a few years in many countries. In sub-Saharan Africa, life expectancy is expected to fall from 62 to 43 years during the next decade (Geffen, 2001). In Mozambique, life expectancy will be, by 2010, about 36 years (GFRH, 2002). During the last decade, humanity has seen the rapid growth of the world economy, but also of infectious diseases. Some of these diseases are new, or "emergent", such as SARS, HIV/AIDS or the Brazilian purple fever; other diseases have been described for years, such as Hantavirus, malaria, dengue, and Ebola fever; but recently identified. Finally, still others result from changes in the microbes such as multi-drug resistant tuberculosis (Department of Health, 2002; Farmer, 1996).

During the second half of the twentieth century, the developed countries experienced the so-called "epidemiological transition", where infectious diseases stopped being the most important causes of death, and cardiovascular diseases and cancer became the main concerns.[3] Accompanying this process, biomedical research within developed countries has concentrated on cancer, circulatory diseases, skin problems, and other diseases associated with high living standards (Lewontin and Levins, 1996). By 2001, for instance and according to the National Institutes of Health, 10% of R&D expenditures were for cancer, 1.1 % for all vaccines, and 5% for AIDS (only 0.6% for AIDS vaccines) (Kettler & Towse, 2001).

Several challenges lie in the assumption that developed countries have already gone beyond the infectious diseases phase and poor countries are following the same path: changes in the ecosystems, increase in global travel and trade, the impact of new technologies, microbial adaptation, changes in human behaviour, impaired immune systems, etc. But, the most important is the relationship between poverty and diseases. It is well known that diseases are strongly associated with poverty; and it is not certain that the economic growth of the last decades brought a greater equality in the distribution of income. Although the World Bank reports that poverty levels remained stable in absolute terms in the last ten years, and that this would be the favorable result of globalization, other studies show that the methodology used by the World Bank, based in averages by countries, hides the inequality generated within the countries, and argue that, as a whole, inequality grew, instead of diminishing (Milanovic, 2003; Wade, 2001). In any case, the urbanization process in the Third World during the last 20 years concentrated people in cities with lack of drinking water service, scarce drainage systems and garbage disposal access, creating conditions for the spread of infectious diseases.

Several studies, on the relation between poverty, social status, and diseases show a complex, but constant correlation among them. Evans, *et. al.* (1994) show that not only is poverty associated with disease but that equality in income distribution is correlated with a healthy population, and this is more significant than a high income. These studies also show that a spir-

it of progress, derived from a period of economic development and an improved society in relation to other countries is important to improve its population's life expectancy. Evans, *et. al.* (1994) also elaborate that under conditions of poverty a disease can fill the space of another previously eradicated disease, a phenomenon which may undermine the efficacy of unilateral policies against some diseases without accounting for the socioeconomic context. Even in the United States, Auerbach and Krimgold (2001), show that a correlation between poverty and disease exists. The persistence, or even growth of poverty and inequality in the world, combined with the expansion of several epidemic diseases, does not bode well for the Third World's populations. But, it is not only a problem of Third World countries. Inequality in the first world is also present. While in the neighborhood of Morningside Hights, in Central Harlem in New York, a newborn has 1 in 50 chance of dying before reaching the first birthday, in the close neighborhood of Upper East Side in New York the chance is 1 in 600 (Daniloff, s/d).

It is also indicative of the correlation between poverty, inequality and diseases that, in many cases, an increase in living standard significantly reduces the presence of diseases even in the absence of specific health policies. The historical research on diseases in the eighteenth and nineteenth centuries by McKeown shows that the incidence of the main infectious diseases in Europe and the United States were declining several decades before the introduction of vaccines and antibiotics, as a result of the increase on the living standard (Tesh, 1996). Tuberculosis, for example, being the main cause of death among young adults, declined considerably in the industrialized countries even before the streptomycin treatment was discovered in 1943. This was a possible consequence of general improvement in the population's living standard. In the case of the malaria epidemic within the United States in the nineteenth century, diminishment of the prevalence of the epidemic in the following century was not a result of specific health policies, but of changes in economic structure and land use (Farmer, 1996).

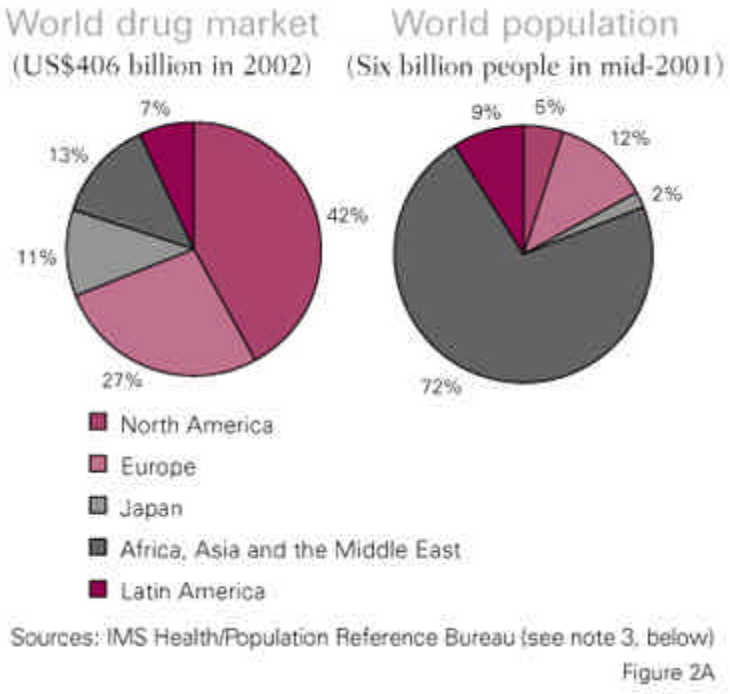
S&T policy in health should address and analyze the historical tendencies and changes in order to orient research and development (R&D) towards social needs. But the present structure of R&D in the production of medicine is not oriented in this direction. Figure 1 shows how the pharmaceutical market is heavily concentrated in the richest countries. North America, Japan and Europe, which have 23% of the world's population account for 80% of the drug market, leaving most of the low income countries very lightly represented in the demand structure for medicines.

The implications of this imbalance are conspicuously reflected in what is known as the "10/90 gap" (Global Forum for Health Research). Sources have estimated that only 10 percent of the resources are directed to research in diseases responsible for 90% of the world's burden of disease.[4]

It is estimated that 18 million people died in 2001 of communicable diseases because of lack of money to buy medicine or because of lack of appropriate medicines for particular diseases. The pharmaceutical companies produce medicine for diseases of rich people with purchasing capacity. A leader of the International Federation of Pharmaceutical Manufacturers (IFPMA) said to the **Economist** magazine on April 28, 2001, that "even with the lowest prices the world's poorest will not have access to treatments for malaria, TB and other diseases". He uncovered a harsh reality: without money access to medicine could not be possible under market-oriented production. He also showed he could not imagine any different way (as the tax system and public health works in many countries) for patients with no resources to access medicine.

An indicator of the existence of neglected diseases is the result of R&D in drugs. According to a report from Doctors without Borders, between 1972 and 1997, nearly 1450 new drugs (New Chemical Entities -NCE) were commercialized. But only 13 of them responded to communicable and tropical diseases, and are considered essential drugs according to the World Health Organization. Two of those 13 drugs were updated versions of pre-existing ones; two

Figure 1
Distribution of the pharmaceutical market and the world population



Source: MSF/DND, 2001

came out of military research, five from veterinary research, and one from the Chinese pharmacopoeias. So, only three drugs can be considered as genuine products of R&D from the western pharmaceutical companies (Trouiller, *et al.*, 1999). Facing this contradiction between R&D and the disease reality, the United Nations called for a new policy: Public-Private Partnerships.

The rise of a new policy: The Public-Private Partnerships (PPPs) on Health

The Forty Sixth World Health Assembly of the World Health Organization, the organization (1993) decided to call for support on partnerships with the private sector and NGOs (Buse & Waxman, 2001). By the beginning of 2003, the data bank of the Initiative on Public-Private Partnerships for Health (IPPPH) had registered 82 PPPs; ¾ of them created after 1995. PPPs are non-profit organizations that aim to integrate pharmaceutical companies, charitable foundations, national and international public institutions, NGOs, and members of the civil society like academics. It is a mechanism of coordination and R&D, as well as for funding purposes. The goal is to reduce health inequality, stimulate research in the less lucrative areas, and facilitate the access for vaccines and medicine for people without the purchasing capacity. PPPs also aim to administer public funds from countries, WHO, UNICEF, World Bank and other organizations. At first glance they are humanitarian alternatives based on mutual confidence between the three main actors: pharmaceutical corporations, charitable foundations and public institutions. There are a wide variety of PPPs, with different management and administrative procedures. Nevertheless, the most important ones in terms of capital and public profile (e.g. GAVI, IAVI, RBM) share core values and mechanisms.

The International AIDS Vaccine Initiative (IAVI), founded in 1996, is a PPP that tries to accelerate the development of a vaccine against HIV/AIDS. Roll Back Malaria (RBM) started in

1998 with the commitment to reduce to a half by 2010 the burden of malaria. The Global Alliance for Vaccines and Immunization (GAVI), founded in 1999, has the commitment to facilitate the immunization of children from poor countries, as well as to stimulate the pharmaceutical industry to produce vaccines for neglected diseases. Another example is the Medicine for Malaria Venture (MMV), also founded in 1999, as a result of conversations between the World Health Organization and the Federation of International Associations of Pharmaceutical Manufacturers (IFPMA) to develop vaccines against malaria (part of RBM).

There are several concerns on the effectiveness of PPPs (Richter, 2003; Horton, 2002; Yamey, 2002; Hardon, 2001; Hancock, 1998). Nevertheless, the main question that underlines those concerns is if world public health institutions and large pharmaceutical corporations have similar interests that can make them work together.

All PPPs are presented as win-win proposals. Everybody wins: patients, institutions, and pharmaceutical industries. But, this view hides important differences between the actors. The interest of the pharmaceutical industry is profit. This is obtained by producing medicine for ill people. Ill people with purchasing capacity are, for profit purposes, better than healthy people. It is also more profitable to produce medicine for long term treatments than vaccines that are applied once or a few times in the life of a person. This is why the vaccine market does not represent more than 1% of the pharmaceutical companies' sales. As a leader of a pharmaceutical company declared: "the great thing about AIDS drugs is you have to keep taking them" (Gellman, 2000). The interest of public health institutions, on the other hand, is to have healthy people, who are less likely to become ill, need less medicine, and less medical attention. Besides, the history of the pharmaceutical corporations is not free of examples of behaviour against public interests. The following table is only an example.

These examples could be easily expanded, as there is not a single month where the main world newspapers do not bring new examples of anti ethical pharmaceutical behaviour, and the lawsuits filed on behalf of the patients who have taken drugs is growing steadily (Berenson, 2003).

But, what are the concerns about PPPs? The table that follows abstracts the main concerns on the viability of public institutions working with pharmaceutical corporations.

PPPs extend the reductionist approach to public health that the pharmaceutical industry

Corporations influencing world public health institutions or acting against public interests

Case	Reference
Independent setting of standards on hypertension jeopardized by influence of pharmaceutical corporations	Woodman, 1999
Independent setting of standards on breastfeeding “censorship” by influence of pharmaceutical and food corporations	Ferriman, 2000
Derailed commitment to equity in relation to the goal of universal vaccination with traditional vaccines, as it joins partner in GAVI, bringing new vaccines as to the less hard to reach	Hardon, 2001
Concentrate on drug donations and development instead of the more difficult challenges of capacity development for service delivery and research in low-income countries	Buse & Walt, 2002; Hardon, 2001
Un-sustainability of donations damaging WHO image	Shretta, *et al*, 2000
Pressing to reduce breastfeeding time. Undue influences exerted on food policies dealing with dietary guidelines, pesticide use, additives and trans-fatty acids and sugar	Richter, 2003
Applying funds on public universities to have decisive decision in R&D and gain right for licenses	Press & Washburn, 2000
Bankrolling academic studies that downplay their interests	Montaner *et al*, 2001; Press & Washburn, 2000
Monopolistic policies and corruption	Federal Trade Commission, 2001

represents. A reductionist approach to health is one that seeks to cure a disease without considering the individual context (behaviour patterns) and the ecological context (changes in the ecosystem and social relations). The reductionist approach believes that by understanding the mechanisms of normal and abnormal metabolism, disease treatments and cures will be found. Nobody can doubt that this approach has benefited millions of people over the past 50 years. Nevertheless, the spread of old infectious diseases for which vaccines exist, and the spread of new infectious diseases show that a reductionist approach is not enough.

A well known proposal that corresponds to the reductionist approach argues that diseases could be considered a cause for the lack of development (Gallup & Sachs, 1998). In the case of Sub-Saharan countries, for instance, epidemics such as AIDS or malaria are considered an impediment for development. This view supposes that once diseases are treated and market forces are re-established, these countries would develop. The argument is consistent with the PPPs philosophy, and may indeed be behind them. It rests on the linear causal relation between disease and poverty, so the cure of the disease will also overcome poverty. But, the idea of a linear relation between disease and development does not consider that when property relations maintain most of the population in poverty, the eradication of a disease does not necessarily lead to development. The anthropologist Peter Brown tested the hypothesis that malaria is a barrier for development in Sardinia Island. After World War II, the Rockefeller Foundation implemented a successful campaign to eradicate the mosquito vector of malaria. But the expected economic development did not come. Brown calculated that malaria consumes 4.6 % of the victim's calories while macro parasitism of the landowners consumes, in the form of rent, 62 % of the calories. With this he shows that the productive relations, and not the disease, are the determinants of poverty. And he adds: "When I first arrived ... in western Sardinia in 1976, I explained to some peasant farmers all about the "malaria Blocks Development" hypothesis and how I wanted to study about the positive economic effects of malaria eradication.... [M]ost [of the peasants] openly laughed at the argument. To them, the island's economic problems,...were to be traced to problems of land ownership...From their perspective, malaria had been a consequence and not a cause of their poverty"..."discussions of the social and economic benefits of disease control fail to ask the question 'development for whom?' "... [For example] the answer to this question in British Ceylon was clearly the owners of large tea plantations...[E]ven in the wake of World War II...the social and economic benefits of malaria control continued to serve the needs of [large private entrepreneurs]...with only limited advantages for impoverished rural farmers..."(Brown, quoted in Muraskin, 2001:107-108). It is economic development that has normally led to increases in health level and the disappearance of infectious diseases, even without health policies, as has been the case with tuberculosis and malaria in the United States and Europe (Farmer, 1996; Tesh, 1996). As explained earlier, important evidence exist that shows that in situations of extreme poverty and malnutrition one disease supplants another. This is particularly significant in the case of vector born diseases like malaria, yellow fever, or dengue. It is possible that other diseases take the place of the eradicated one, with similar consequences on health, economics and demographics (Evans, *et al*, 1994).

Against the reductionist approach, an ecological approach considers that any change in the physical or social surroundings affect the pattern of exposure to a health threat, as well as the vulnerability to it (Levins, quoted by Lefkowitz, s/d); so, in some cases, changes in the socio-physical environment as well as preventive health policies could deal with diseases better than a medicine or vaccine. Not being the interest of the pharmaceutical corporations, this wider view of health could not be a goal of PPPs where large corporations participate. For image concerns, PPPs prefer poor countries and diseases where an immediate and tangible improvement can be reached. Publicity and social recognition play a fundamental role in PPPs' interests. They raise the public image of pharmaceutical corporations, as well as of donors who will eventually use it as a platform to lobby other interests.

There is also a matter of technological path. For the pharmaceutical companies, there is

Concerns on PPPs in world public health

Item	Argument in favor of PPPs on health	Concerns	Authors
Health path	PPPs aim to attack neglected or main infectious diseases in less developed countries	This policy switches the way to understand the relation between infectious diseases and development; from a ecological approach that sees development as the way to improve health, to a reductionist and individual approach that sees the eradication of diseases as a way to development	Ecological approach: Farmer, 1996 Evans *et al*, 1991 Levins, n/d Reductionist approach: Gallup & Sachs, 1998
R&D orientation	PPPs could deal with neglected diseases for less developed countries. It will be more costly and inefficient for public sector to develop skills on R&D that pharmaceutical corporations (pharma) already have.	Pharma will only participate on new drugs or vaccines that could be patented, so old infectious diseases whose vaccine do not enjoy patents could re-emerge. Benefits will only reach less developed countries with no market. Pharma will not permit low prices to reach large countries with important markets such as India, Brazil, or China. Poor people from developed countries will also not be considered. Public R&D had historically shown capable of producing vaccines and new drugs (polio, cancer), or replicate others (AIDS).	Evans, T, 2001 Hardon, 2001 Orbinski, 2001 Hancock, 1998
Reducing risk and increasing financial resources	R&D on drugs is very risky. PPPs could lower the risk. UN institutions need to increase their budget. PPPs is a way to raise money.	Still push & pull mechanisms will be needed. Nobody is accountable for PPPs outcomes. Shareholders do not participate in decisions. Some studies show an increase in costs. There are other ways than charity, as taxation, public production and distribution	Pollock *et al*, 2002 Kettler & Towse, 2001 Lob-Levyt, 2001 Orbinski, 2001 Walt, 2000 Hancock, 1998
Sustainability	PPPs raise funds for short term (2-5 years). Could this last?	R&D on drugs and vaccines need a long term budget. It is doubtful if PPPs could be sustained by charity means. Experience shows the opposite. Working with different PPPs, WHO splits world health policies in several institutions which raises doubts about efficiency	Muraskin, 2002 Yamey, 2001, 2002 Kettler & Towse, 2001
Mutual confidence between UN and corporations	PPPs establish a new relation UN—corporations (The Global Compact). UN pretends to promote corporate responsibility.	History shows corporations using UN for private interests. There is no way for UN to monitor corporative responsibility There is a hidden agenda for corporations: Gain political influence, set the global public agenda, enhanced legitimacy and authority, promote image, market penetration, etc.	Boseley, 2003 Ollila, 2003 Richter, 2003 Dukes, 2002 Yamey, 2002 Buse & Waxman, 2001 Hancock, 1998
Is there an alternative for PPPs?	PPPs represent the way to address global health problems	PPPs will only deal with diseases of pharma interest (1/4 of all are for AIDS) and for less developed countries. Will never have a wide long-term public health approach. Some (Richter, 2003) have called for a moratoria to new PPPs for health involving UN institutions	Ollila, 2003 Richter, 2003 Muraskin, 2002 Vakhovskiy, 2001 Hancock, 1998

no other technological alternative to treating diseases than the one they are currently researching on, namely western drugs. Nevertheless, there are many other health treatments that are not main market cures, which could potentially be useful in some diseases and in countries with a different health tradition, as is the case of natural cure, homeopathy, acupuncture, and others with popular acceptance in many Third World Countries.

Large pharmaceutical companies are interested in treatment, not in prevention (Schulz-Asche, 2000). It is not accidental that several PPPs (22%) have, as a goal, the treatment of HIV/AIDS. Although it is the most terrible pandemic of our days, it has the great advantage, for the corporate pharmaceutical industry, that the patents of many of their drugs are still effective and patients must take them for life, and that epidemic also exists in rich countries. This does not mean that PPPs are not interested in vaccines. Pharmaceutical corporations do participate in PPPs on new vaccines, as is the case of GAVI, or the PPPs on dengue, to which Aventis-Pasteur has a patent. But corporations are not willing to subsidize old infectious diseases without a patent. This creates the possibility of a country being immunized against a disease on which a new vaccine has been developed and not immunized from old diseases where vaccines have existed for a long time (Hardon, 2001). In 1990, UNICEF declared that 80% of the world's children were immunized against the six main childhood diseases (diphtheria, tetanus, whooping cough, polio, measles and tuberculosis). One decade later, the coverage fell to 75%, and in 19 African countries there was a drop of 50%. In Nigeria, for example, the general coverage fell from 80% (1990) to 27% (1998); in Togo, it dropped from 100% to 54% during the same period of time. As a consequence, there were a million additional deaths per year caused by diseases for which there were existing vaccines (Hardon, 2001). The case of GAVI is a good example. Its 2002 report shows that the bulk of its resources (63%) were committed to the development of new vaccines, downsizing the strengthening of health services and of distribution of old vaccines.

PPPs are supposed to reduce the risk of R&D on neglected diseases. But the same PPPs argue that their financial resources are not enough and other kind of market instruments will be needed for the vaccines or medicines to reach poor people. RBM is an example of the parsimony of donors and the difficulty to meet their goals (Yamey, 2001). Pharmaceutical corporations are interested in PPPs working in selected countries, while the high prices of medicine in developed countries and developing countries with large markets as Brazil, Mexico or India are guaranteed. Prices of medicine in some selected African counties will diminish, advertising will promote the brand name but, meanwhile, millions of patients in other countries, including poor people of developed countries will be abandoned. Many drugs do not produce any profit in poor countries, so there is no profit risk for a large pharmaceutical company to participate in a PPP that sells cheap in poor countries while maintaining high prices in developed countries. In fact, this could be an advantage, as in the case of Pharmacia licensing, at the beginning of 2003, the drug rescriptor to a non-profit association will imply that several industries will start producing generics and paying 5% royalties to Pharmacia, where otherwise they would not receive anything (Hensley, 2003).

The spread of PPPs implies, for public institutions, a breaking up of health policies into several strategies, which lead to the duplication of efforts or abandonment of old health policies. This will also lead to negotiations between corporations with different interests. Thus, while Boehringen Ingelheim through a PPP donates nevirapine to reduce the risks of mother-child HIV transmission, a food producer company, Nestlé presses WHO to lower the norms for the maternal breast-feeding period, arguing the possibility of HIV transmission, but increasing their milk sales. In a seminar on PPPs someone said, "while 1.7 million babies might have contracted HIV through breast milk in the last twenty years, almost certainly 30 million will have died from the replacement of breastfeeding by artificial feeding in the same time" (Rundall, 2000; Schulz-Asche, 2000). These conflicting interests between corporations and public institutions makes it difficult for the World Health Organization and for the PPPs who participate to

have a long term strategy.

In terms of financial resources, PPPs do not show signs of sustainability either. In all cases, the donations have fixed times: 2, 3, 5 years. This raises doubts as to who will finance them once the donor retires (Yamey, 2001).

Although there is a wide diversity of structures, and some PPPs could be "controlled" by the public sector, what large pharmaceutical companies try to do is to take control themselves. There is extensive information on the way public institutions and even NGOs self-censor so as not to alienate business interests (Richter, 2003; Horton, 2002; Yamey, 2002). In other areas of public-private interaction where the powerful pharmaceutical industry participates, such as regulation of drugs, registry or maintenance of patents, publication of articles in well known journals, and international negotiations, and corporate positions almost always win over the public ones (Dukes, 2002; Henry & Lexchin, 2002; Montaner, et al., 2001; Barret, 2001; Galeria, 2001; Angell, 2000). Pharmaceutical and food corporations have also positioned their experts and expertises at FAO/WHO conferences and committees, publish in their journals, and generally seek to influence WHO and FAO food and health policies (Boseley, 2003; Richter, 2003). The large pharmaceutical corporations also do a lot of lobbying of governments to defend their interests (CRP, 2003). The participation in TRIPS (International treaty for property rights) is well known (Deacon, et al, 2003). Based on the historical experience of International Baby Food Network (IBFAN) on food corporations, Richter (2003) concludes that there is no evidence for WHO or UNICEF to trust corporative behaviour, which is ironically the sine qua non of effective partnership.

All this is due to the fact that PPPs are agreements of stakeholders with enormous differences in power. The large pharmaceutical corporations have budgets equal to more than a hundred of the less developed countries. Donors also have relevant power. Consider that while theWHO has an annual budget of approximately 1.7 billion dollars, the Bill and Melinda Gates Foundation donated more than 1 billion dollars for PPPs that take care of infectious diseases in the last three years (Gates Foundation). There are PPPs, like GAVI, that have a budget only slightly less than that of WHO. Thus, public institutions are forced to participate in PPPs. It is evident that these PPPs do not have the same accountability as a government, nor can they be questioned in the same form. Many of their decisions are internal. There is no transparency. Who will establish audit mechanisms to evaluate the relation between goals and outcomes? The beneficiaries rarely participate in the Board of Directors of the PPPs, discuss their agenda, nor have the possibility of auditing finances (Yamey, 2001; Hayes, 2000; Walt, 2000).

History also matters. Pharmaceutical corporations are well known for their "double face" policy. On one hand, they make agreements that appear in newspapers as examples of their humanitarian interest. On the other hand, they continue pressing governments of developed countries to impose penalties on countries that grant compulsory licenses or produce generic medicine to treat epidemics. A report by Oxfam (2002) illustrates and quantifies this type of action on the part of the pharmaceutical companies so that the trade representative of the United States includes their demands in the agreements of the World Trade Organization or establishes bilateral sanctions with the accused countries. A letter signed on November 25, 2002, by twenty pharmaceutical companies and sent to the commercial representative of the United States is indicative of this type of threat: "An open-ended or unclear exception to the standards for patent protection would seriously undermine our interest and set back the long-term public objectives Doha was designed to achieve. We urge you to negotiate a solution that is specifically limited to the diseases that were the focus of the Doha Declaration, namely HIV/AIDS, TB and malaria and other epidemics of similar scale. In addition, it should be clear that only truly disadvantaged countries in sub-Saharan Africa be the recipient of the changed rules" (Loff, 2002).

Some could think that there is no other way than PPPs to deal with the main world health problems. This is not true. When popular mobilizations have pressured governments for

less market-oriented ways to take care of health threats, the result came faster, as in the production of generics against HIV/AIDS in Brazil, India, Thailand, China and other countries. Brazil is an example. The first case of AIDS was identified in Brazil in 1980. By the second half of the decade several Non Governmental Organizations started fighting for patients' rights. These movements became articulated with an ongoing movement of sanitary reform (Galvao, 2002). Before 1996, medical inventions could not be patented in Brazil. In 1996, under the pressure of the United States and as a result of the World Trade Organization Agreement, the Brazilian government approved the law of patents for pharmaceutical products. But, in 2001 Brazil withdrew from the international agreement and released the production of competitive generic medicine for the treatment of HIV/AIDS (Donnelly, 2001; Harrington, 2000). Brazil started producing generics by 1998. By 2001 was able to produce all of the components of the drug cocktail. As a result, multiple consequences were seen. Brazil developed a national capacity to produce drugs previously imported, with a reduction of its technological dependency. There was also a significant reduction in prices, as much because generic ones are cheap (up to 5 or 6 times less) but also because transnationals such as Merck decided, as a consequence, to lower the price of its medicine up to 65% and 59% (indinavir and efavirenz respectively). From 1996 to 2001, the cost of AIDS treatment dropped 73%, according to the Ministry of Health (Vakhovskiy, 2001). National production implied a reduction of the necessary budget (low prices) and an economy of international currency. In addition, a reduction in prices can expand the medical attention to more patients. Finally, Brazil can begin to sell its own medicine to other countries that do not have patent laws or compulsory licenses. Exactly the opposite of what the defenders of free market maintain occurred in Brazil. Instead of the regime of patents attracting capital to develop the industrial capacity to lower the price of products and to take a better care of the population, these were a consequence of abandoning the patent rules and starting generic medicine production (Bermudez, et. al, 2002). This success must be compared with the suffering of South Africa that went through negotiation with the pharmaceutical transnational companies (Treatment Action Campaign).

Of course, it is not the same to replicate a medicine than to develop a new one. But neither are PPPs the only alternative. Public institutions have a long experience in R&D on medicine and vaccines, and several Third World Countries such as Brazil, China, India, have extensive health research that can be directed to satisfy social needs. Collaboration between less developed countries is a fruitful alternative. But no fundamental change will be reached without a fast and widened reduction of world inequalities. The rising of living standards is a health policy too.

Conclusions

During the last years, humanity has undergone turmoil in world public health. Millions of patients, especially in the un- and underdeveloped countries, do not have access to medicine, either because they do not have the necessary purchasing capacity or because medicine for neglected diseases does not exist and, in many cases, both reasons prevail.

The role of S&T is crucial in this struggle. All conflicting points of view recognize that either there is not enough research of the right kind, or it does not culminate in available medicine. This is a demonstration that S&T in the area of medicine production is not equipped to solve the most urgent needs of the patients in the world, but instead focus on the problems of the rich. Furthermore, globalization has deepened world's inequalities; or, at least, created changes in the ecosystems and the human environment that fuelled the spread of infectious diseases. R&D on medicines and vaccines will never solve economic inequalities and the existence of poor people and this is the structural cause of most of the burden of disease problem.

The alternative adopted by main world public institutions such as World Bank, World Health Organization, and UNICEF is the creation of Public-Private Partnerships, where these

institutions work together with large pharmaceutical corporations and also important world charitable foundations. The question rises on whether profit driven firms that make profit out of the world's burden of disease could have the same interest than public institutions. During the last 8 years a large number of PPPs on Health were founded. Some of them extinguished after a short life, or transformed in other, as in the case of CVI (Children's Vaccine Initiative) and its substitution for GAVI. Concern exists on the sustainability of these PPPs, and also on the question of whether their orientation reflects the interests of the have not, or the ones of the charitable donors and pharmaceutical corporations. Lastly, the R&D path that PPPs promotes may lay on the interests of the industry instead of on the countries independence and public social needs.

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[3]The concept of epidemiological transition hides the fact that within those developed countries poor people continue suffering from other type of diseases (Farmer, 1996), or experiencing new diseases poorly investigated, like obesity in the United States (Townsend, M., et al., 2002).

[4]The burden of disease is measured by the DALY. "The DALY is a health gap measure, which combines information on the impact of premature death and of disability and other non-fatal health outcomes. One DALY can be thought of as one lost year of 'healthy' life, and the burden of disease as a measurement of the gap between current health status and an ideal situation where everyone lives into old age free of disease and disability. For a review of the development of DALYs and recent advances in the measurement of burden of disease" (WHO, 2003).