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# The Financing of Public Health

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Additional information is available at the end of the chapter

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## 1. Introduction

The provision of public health depends on the availability of adequate resources. In most nations, financing is composed of a combination of public and private funding that provides direct support to the public health system and indirect support through the healthcare delivery system. How much and in what ways funding is provided affects the types and effectiveness of public health activities.

This chapter considers private and public financing of public health and the various mechanisms used to foster both from an economics perspective. This then leads to a brief description of the way in which public policies can be used to affect change in financing public health and subsequently in the services provided.

Public health is “the science and art of preventing disease, prolonging life, and promoting health through the organized efforts of society.” [1] The health system should be thought of as a broad construct that includes the political and institutional framework of each country. More formally, the healthcare system is “the ensemble of all public and private organizations, institutions and resources mandated to improve or restore health. Health systems encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health.” [2] Although in some developing nations the public health and healthcare delivery systems are difficult to differentiate, in most countries the public health and healthcare delivery systems are distinct. Yet, what happens is one affects the other. For the purposes of this chapter, public health encompasses the activities described by the World Health Organization (WHO) in its essential Public Health Services Framework (Table 1).

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1. Surveillance of diseases and assessment of the population’s health and well-being
  2. Identification of priority health problems and health hazards in the community
  3. Preparedness for and planning for public health emergencies
  4. Health protection operations (environment, occupational, food safety and others)
  5. Disease prevention
  6. Health promotion
  7. Assuring a competent public health and personal health care workforce
  8. Core governance, financing and quality assurance for public health
  9. Core communication for public health
  10. Health-related research.

Source: World Health Organization, [www.who.org](http://www.who.org)

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**Table 1.** Ten essential public health operations (EPHOs)

This chapter conceptualizes public health financing using two economic theories: supply and demand and resource/health optimization. The supply/demand theory maintains that as the price of health services declines the consumption of that service will increase. The converse is also true. If the price of a good increases the consumption of services will decrease. Resource/health optimization refers to the idea that there is a point where the private and public benefits (both monetary and non-monetary) from the consumption of services are exactly offset by private and public costs (both monetary and non-monetary). Movement away from this point means that the public health services are not worth the cost or countries would benefit from spending more on health.

The financing of both public health and healthcare activities is essential, complex, and subject to substantial variation. In 2010, spending data on public health expenditures alone are not available for multi-national comparisons. By using the broad WHO definition of public health, the data on total health expenditures can be employed as an indication of public health expenditures, as it encompasses both public health activities and direct health services. Spending ranged from lows of \$16 (US\$) per person per year in the African nations of Ethiopia and the Congo to over \$8,000 (US\$) per person per year in Luxemburg and the United States of America. [3, 4] Figure 1 shows the substantial variations in per capita health expenditures by region in 2010. The role that the public sector adopts in financing health-related activities is also highly uneven. For example, in 2010, government expenditures as a percentage of the overall spending ranged from just over 11% in Afghanistan to more than 90% in Cuba, Micronesia, and Tuvalu. [3, 4]

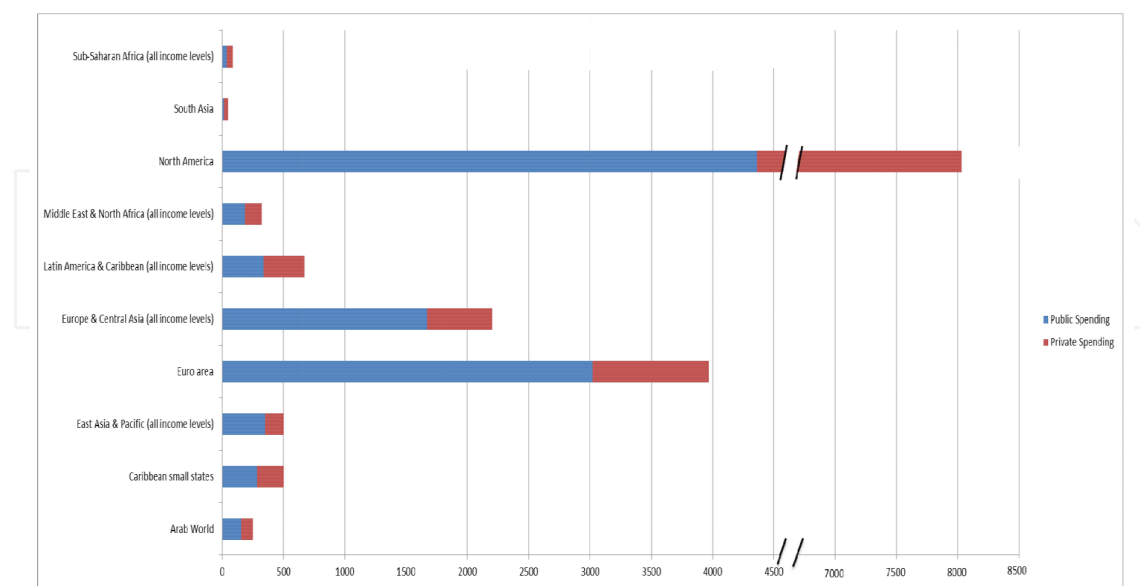
Not surprisingly, the substantial variations in health financing reflect the history, culture, income, and political will of the respective countries. [5] Some opt for active participation of the government in the organization, planning, and financing of health activities, while others look to maximize market forces. [6] Most countries lie somewhere between the two ends of the spectrum, where some activities like physician education or disease surveillance are managed by the government, while others, like drug development or insurance, are left to individual market players.

Regardless of position on the market maximization/minimization spectrum, both overall and government support of public health are related to the wealth of the respective countries, as shown in Figure 2. Wealthier countries spend more on health than poorer countries. Early estimates indicate that for every 10 percent increase in per capita gross domestic product (GDP) health related spending increases by approximately 13 percent. [7] Similar results are demonstrated in Figure 2, although not to the same magnitude.

## 2. Mechanisms for financing

In general, health expenditures can be financed through five mechanisms- general tax revenues, social insurance, voluntary insurance, charitable donations (also referred to as financial aid), and individual out-of-pocket expenses. Figure 3 shows the 2007 world health financing mechanisms by category.

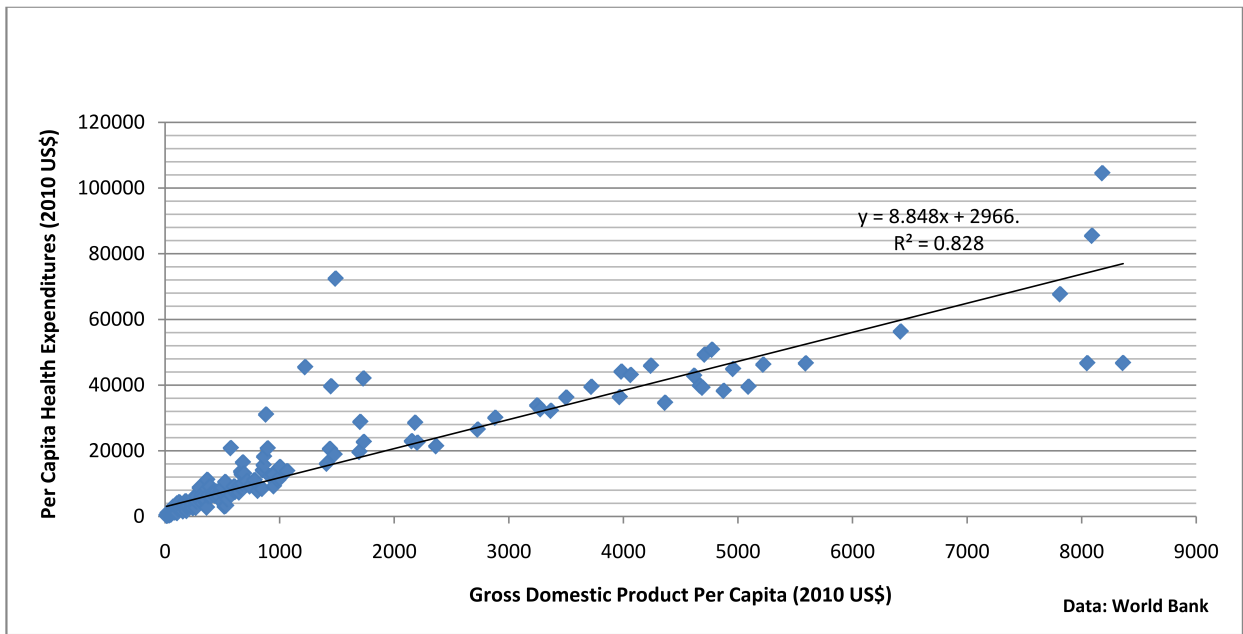
Financing public health with **general tax revenues** is most common in more affluent, Western countries with substantial stability. [5] In more developed countries, productivity and income allow financing with tax revenues to occur that may exclude important educational or infrastructure financing in less developed countries. The tax revenues generated in poor countries are smaller and must be spread over other, important public goods. As a result, public health efforts might be lower priority than activities pertaining to education, infrastructure, and economic development. Moreover, the tax base and consistency required for developing, administering, and sustaining public health efforts often excludes very poor or transitional economies from financing public health activities with general tax revenues.



Data source: WHO Global Health Data Repository, 2011)

**Figure 1.** Total Health Expenditures per Capita in 2010 (Public & Private Expenditures)

When used to pay for public health activities, the taxes themselves are considered *direct*, *indirect*, or *excise taxes*. **Direct taxes** are paid by individuals to governments and cannot be avoided by behavioral or consumption decisions. By virtue of citizenship or ownership of property, individuals must pay direct taxes. **Indirect taxes** are taxes on transactions that occur within a government’s purview. Indirect taxes can be considered a tax on consumption. At the point of sale or service the seller collects the tax from the consumer and later delivers the tax revenue to the government. Sales taxes, value added taxes (VAT), and goods and services taxes (GST) are examples of common indirect taxes. While indirect taxes apply to all goods or services, excise taxes are much more specific. **Excise taxes** are taxes that are placed on the production or sale of certain goods or services. They can be used by governments to change the population’s consumption behavior by increasing the cost of a particular good or service. For example, an excise tax on cigarettes increases the price to consumers and can be used to generate additional tax revenue.

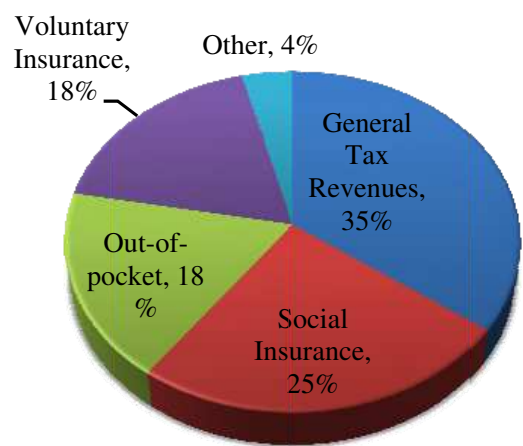


**Figure 2.** World Health Expenditures \$5.3 Trillion (US\$)

The tax revenue generated from direct, indirect, and excise taxes can then be designated to a general (*discretionary*) fund where spending is left to legislators and leaders, or it can be earmarked as having a very specific purpose. Spending from *earmarked* or specific funds is not left to the discretion of political leaders. Both designations have implications for public health. In instances where legislators are periodically replaced, the priorities for government spending also change. When incumbents who favored funding public health from discretionary funds are replaced by challengers who do not favor those initiatives, the resulting instability in public health financing may create substantial barriers to long-term success. Financing with earmarked funds avoids the disruption caused by periodic changes to government leadership but can be subject to substantial variations in the revenue generated by taxes. For example, anti-

smoking initiatives that are financed by an excise tax on high-sugar drinks may experience decreased funding if public consumption of sugary drinks declines. Finally, when economies are healthy, government programs, including public health programs, have a tendency to expand in both scope and scale. However, given the cyclical nature of economies, tax revenues often decline in periods of less robust growth or recession. Unless governments clearly place public health high in the importance queue, then in periods of slower growth and reduced tax revenues, public health initiatives may be crowded-out in favor of other activities.

**Social insurance** programs are mandatory insurance systems that are contributed to by employers and employees. Rather than using primarily general tax revenues to finance health, many developed countries have established social insurance systems for this purpose



Source: World Health Organization, 2007 Expenditures

**Figure 3.** Relationship Between National Health Expenditures and National Gross Domestic Product

Often cited as a classical example of a social insurance system, Germany has developed a minimum level of economic protection for its citizens in the form of a comprehensive system of health, retirement, long-term care, and unemployment insurance. Financed jointly by employers and employees, Germany’s social health insurance plays an important role in the public health system through the advancement of disease prevention, health promotion, resource and capital planning, and the participation in and management of disease registries, all of which are components of the essential health operations as determined by the World Health Organization (see Table 1). [8]

**Voluntary insurance** occurs when employers and/or individuals opt to purchase insurance from private firms to mitigate a potential loss of income associated with illness or the costs of healthcare consumption. In some countries, voluntary insurance systems are used instead of social insurance systems to finance the health needs of large shares of the population. In the United States, for example, voluntary insurance covers about two-thirds of the non-elderly working population, but the exact percentage varies at any given time and tends to decrease during periods of slow economic growth.



Both social and voluntary insurance financing mechanisms are more associated with the delivery of acute healthcare services than the essential operations of public health. However, in addition to the disease management and health promotion functions mentioned in association with social insurance, insurance (social or voluntary) provides other contributions such as health education and the potential for public/private partnerships. For example, AIDS/HIV prevention and treatment require close collaboration of health care providers and public health. Without the support from private insurers that pay private practitioners to treat those who are ill, the tax revenue designated to AIDS/HIV alone would be insufficient to manage this condition at the individual patient level.

**Charitable donations, financial aid,** and the work of **non-profit organizations** in the development and financing of public health cannot be understated. All countries, regardless of wealth, history, or where they reside on the market maximization vs. market minimization spectrum, rely at least to some extent on charity and non-profit organizations. Some non-profit organizations provide the same or similar services as for-profit organizations or the government, while others are the sole provider of services targeting needs inadequately addressed by for-profit organizations and government. For example, the American Diabetes Association promotes health, educates the population and serves as a catalyst for additional research. Similar roles are filled by the European CanCer Organization or the Heart and Stroke Foundation of Canada. These organizations meet a need in generating awareness of diseases and providing education and resources beyond that which local and national government entities are able to provide. Without the financial and expertise assistance provided by these non-profit organizations, the burden placed on governments to meet domestic needs would increase substantially on the very countries that can least afford to designate substantial government funds to public health.

Also important, in particular for developing countries, are international financial assistance and charity work. The funding of the international charitable work comes in three forms: *non-governmental organizations* (NGOs), *bilateral assistance*, and *multilateral assistance*. NGOs are specifically organized to be independent of government agencies and can provide everything from acute care to financial aid and technical assistance for a particular health need or community outreach project. Project Hope, for instance, an international NGO founded in 1958, spent \$205M (US\$) in 2011 to provide health education and humanitarian assistance throughout the world. [9] The largest of the health-related NGOs, Oxfam, is an international organization that spent €991M in 2010-2011 to remedy injustice and address the concerns of the poor, including many public health projects. Over €660M was spent directly on program implementation, development, and maintenance throughout the world with the highest percentage of expenditures (12.8%) focused on Central America, Mexico, and the Caribbean followed by South Asia (11.9%) and East Asia (9.2%). [10]

*Bilateral assistance* comes directly from a government agency within a single country. The largest source of bilateral aid comes from the United States Aid for International Development (USAID), which spent over \$8.6B in 2011. [11] However, the United States is not alone in providing aid. Most developed countries have agencies that provide technical assistance or financial support. Today, many of those bilateral aid relationships are prod-

ucts of historical associations that resulted from the colonialism of the 19<sup>th</sup> and 20<sup>th</sup> century. Japan continues to support its former East Asian colonies, while England and France provide aid to countries in Africa. Although it has not been borne out in recent years, [12] it is thought that continued pressure on global economic markets may force government agencies to revisit expenditure levels moving forward. Austerity measures coupled with slower economic growth may compel developed countries to balance global public health needs with immediate and local demands.

When health financing is contributed to by multiple countries, the financial support transitions from being a bilateral relationship to a *multilateral relationship*. Examples of institutions implementing multilateral aid include the World, Asian and African Banks; UNICEF; and the foremost international public health body, the World Health Organization (WHO). In 2012-13, the WHO is projected to spend US\$3.9B on public health initiatives ranging from reducing HIV/AIDS and malaria in Africa, to education for leaders and technicians needed to achieve the Millennium Development Goals and improved public health throughout Asia and South America. [13] Initiatives in Africa, the Eastern Mediterranean, and Southeast Asia account for the majority of WHO expenditures, with Europe, the Americas and the Western Pacific receiving substantially less aid.

Despite the considerable amount of money contributed bilaterally, multilaterally, or via NGOs, it is estimated that the contributions from developed countries account for less than 5% of the total funding sources for health in developing countries. [11] Nonetheless, their importance and impact cannot be overstated. In low-income countries (Gross National Income < \$1,025 per capita), general tax revenue covers less than 40% of healthcare costs. [3] The balance of costs in these low-income countries is made up by charitable donations, NGOs, and financial assistance. Considering that there are no voluntary or mandatory social insurance programs in many developing countries, external funding contributes over 50% of the total health financing in some countries. In Sub-Saharan Africa, for example, 54% of healthcare is provided by NGOs, multinational health efforts, or individual government development agencies. [3]

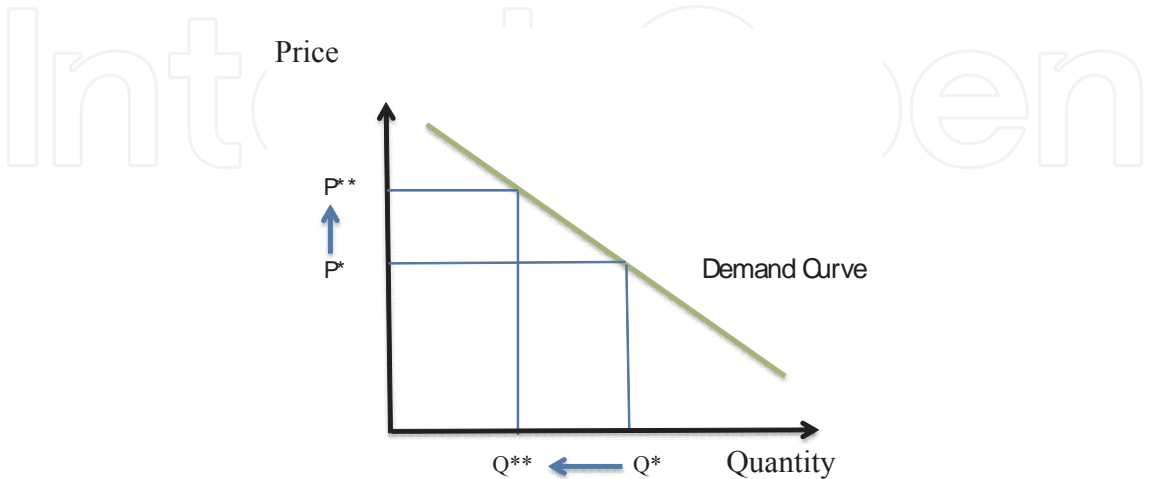
Finally, even in developed countries with universal or near universal health coverage, **individual or out-of-pocket payments** represent an important mechanism of health financing. These payments can take the form of payment-in-full for a particular service, or they can be related to cost sharing instituted by insurance or government plans (in the form of deductibles, copayments, and coinsurance). The economic theory of supply and demand mentioned earlier applies here. By instituting or increasing out-of-pocket payments for health, individuals will consume fewer services. Moreover, and more problematic for consumers, out-of-pocket payments require consumers to weigh the potential benefits of a good or service with the costs in an uncertain environment where there are multiple, competing priorities. Consumption may make the individual healthy or it may not. Figure 4 shows how the price paid by individuals shifts from  $P^*$  to  $P^{**}$  as individuals face a higher price. The higher price intersects the demand curve at a point closer to the vertical axis. This point is associated with fewer services being consumed and a decrease in the total healthcare expenditures. The desire to hold down health costs must be balanced with providing access if the health service being offered is a normal, **private good**. When the good is considered private, the consumption of the good



reduces the availability to others and can even exclude individuals who do not have the ability to pay. For example, in a country where markets are used to disperse healthcare, an individual who injures his or her knee and requires an x-ray is consuming a private good. By using the x-ray machine and spending time with the doctor, the availability of the doctor and x-ray to screen other patients becomes more limited. Direct out-of-pocket payments further limit (or exclude) those who are unable to pay for services or those who place greater weight on other priorities. As a result, direct, out-of-pocket payments for healthcare services can be a substantial barrier to obtaining services and improving health. Research indicates that out-of-pocket payment can become a substantial barrier when they exceed 20% of total health expenditures.

	Excludable	Non-excludable
Rivalrous	Private Goods (Example: Acute care where individuals are responsible for a portion of the cost of care)	Common Goods (Example: Clean water campaign where the demand for clean water is greater than the supply)
	Desirable Financing: Tax, Social Insurance, Voluntary Insurance, Financial Aid (Charity), and Out-of-Pocket (limited)	Desirable Financing: Tax, Social Insurance, Financial Aid (Charity)
Non-Rivalrous	Club Goods (Example: Healthy eating campaign that specifically targets breast feeding mothers)	Public Goods (Example: Radio campaign increasing the awareness of the dangers associated with smoking)
	Desirable Financing: Tax, Social Insurance, Voluntary Insurance, Financial Aid (Charity), and Out-of-Pocket (limited)	Desirable Financing: Tax, Social Insurance, Financial Aid (Charity)

**Table 2.** Classification of healthcare goods



**Figure 4.** Impact of Rising Prices on Consumption of Public Health Goods

Financing public health initiatives with out-of-pocket payments may not lead to the most desirable outcomes. First, many public health enterprises look to maximize consumption (disease management programs, health promotion efforts, or other such activities) by removing the very barriers to participation that out-of-pocket payments present. Second, financing health with out-of-pocket payments indicates what individuals are willing to pay for a service and the consumption at that given price. It does not, however, necessarily optimize the health of the total population served. In fact, there may be no relationship between the level of services consumed and the health outcomes of either an individual or a population. Third, there are public health efforts to improve air quality, disseminate knowledge, protect parks and open spaces that are not normal, private goods but **public goods**. These goods are *non-exclusive* and *non-rivalrous*, which means that all individuals have access to the good and the use of a good by an individual does not reduce the availability for others to consume the same good. Charging individuals for consumption of these public health goods is logistically difficult and doing so would transition the good into having all the respective disincentives to consumption that private goods carry.

The traditional spheres of public health include *common goods* and *club goods* in addition to public and private goods. Table 2 shows how these concepts apply to public health. **Common goods** or services are those to which everyone has access but of which there is a limited supply. The challenge when allocating and financing common goods is to find a mechanism that is equitable or maximizes the utility of the program, or, ideally, both.

Allocating common goods based on what individuals are willing to pay for out-of-pocket carries with it all of the same disincentives discussed earlier. As a result, common and public goods should be financed with tax revenue or some charitable/financial aid.

Public health goods that are considered **club goods** are inversely related to common goods. There is sufficient supply to meet the need but access may be limited. While the limitation may be a result of willingness to pay, the more common scenarios are those where a targeted or vulnerable population would disproportionately benefit from the public health intervention. Rather than canvas an entire population, attempts are made to maximize the effectiveness of efforts by limiting the population to those who derive the greatest benefit. Club goods can and have been financed with out-of-pocket payments (if the perceived benefit clearly outweighs the cost), but participation and program penetration are improved with tax financing, social insurance, and financial aid that does not carry disincentives to participation.

### 3. Policy implications

If the promises of WHO's *Millennium Development Goals*<sup>1</sup> and improved public health are to be realized, then substantial changes must be made in how countries finance both public health

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<sup>1</sup> Millennium Development Goals include eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality and empowering women, reducing child mortality rates, improving maternal health, combating HIV/AIDS, malaria, and other diseases, ensuring environmental sustainability, and developing a global partnership for development (<http://www.un.org/millenniumgoals/bkgd.shtml>).

and the larger health system. Complicating the change are the sometimes conflicting ideas of “protect [ing] people from the financial consequences of ill-health and paying for health services” while simultaneously “encourage [ing] the optimum use of available resources.” [14] This is particularly challenging when one considers that to achieve these goals, developing and developed countries alike must extend healthcare and public health services to populations that are currently not covered. They must also expand the services that are being offered, and cost sharing and fees must be reduced to increase both access and affordability, at least for services where this is desirable (see discussion above). Expansion of covered populations and services in tandem with a reduction in out-of-pocket expenses creates additional pressures on governments, insurance systems, and charitable organizations to increase the resources devoted to public health and healthcare systems. To alleviate the pressure, the WHO has proposed a number of initiatives that target increasing revenue, removing barriers, and increasing efficiencies: [14]

1. *Increase the efficiency of revenue collection.* Tax avoidance and tax minimization plague both developed and developing countries. Similar problems have emerged with the collection of insurance premiums. Moreover, substantial informal, black or grey markets make taxation difficult. Strengthening tax infrastructure and movement away from black and grey markets to a more stable environment where tax avoidance is minimized will increase the financial resources available to governments and thus to financing public health.
2. *Reprioritize government budgets.* When faced with multiple priorities, governments often opt to pursue non-health concerns. An additional \$15B (US\$) could be raised if 41 of the low-income countries increased health expenditures up to 15% of their government budget. [15] Making public health a top priority would be substantially aided by additional research that explicitly ties improved population health and health infrastructure to improved economic growth and social wellbeing.
3. *Innovative Financing.* Innovative financing for public health could come in the form of new taxes such as an international excise tax on everything from air travel to fees placed on international monetary exchanges. At the national level, additional financing could be derived from an increase of sumptuary taxes (a specific type of excise tax that is also known as a “sin tax”). These taxes target goods or services that may have detrimental effects on individuals or the general population. The increase in sumptuary taxes would have the dual effect of increasing revenues for health while also decreasing the consumption of a good or service that society deems undesirable. This could be an additional tax on tobacco, alcohol, excessively sugary drinks or foods high in saturated fat.
4. *Development assistance.* Even with reprioritized government budgets and an increase in tax revenues, the WHO estimates that 41 of the 49 poorest countries would not be able to meet the health needs of their populations. The result is continued dependence upon charitable organizations to fill the funding gap between the public health that the country is able to provide and the public health need of a country. Charitable organizations and international aid must maintain their current levels of funding and consider increasing future aid.

5. *Promoting efficiency and eliminating waste.* An estimated 20-40% of health expenditures are wasted. [14] Less expensive treatments are bypassed in favor of more expensive therapies, drugs and antibiotics are overused, multiple and different administrative structures create a lack of standardization and decrease interoperability. Moreover, insufficient investment in public health exacerbates the prevalence and severity of disease burdens that could be avoided. Reducing waste and inappropriate use as well as, focusing on prevention rather than acute episodic care have the potential to dramatically improve the effectiveness of healthcare expenditures and thus reduce the need for additional financing.
6. *Improving access equality.* Public health has the responsibility to focus on population-based disease prevention and health promotion. Unfortunately, large scale population initiatives that reduce barriers for all in a given country may not be the most efficient use of resources. Meeting the needs of remote or rural locations can require substantial resources that are being used by relatively few individuals. Those funds may generate more benefit by being concentrated in dense population pockets where more individuals can take advantage of the resources. Clarity of priorities will allow resources to be distributed according to predetermined goals.
7. *Reduction in direct payments.* Direct, out-of-pocket payment for services continues to be a substantial barrier to improving health. Individuals do not seek needed care, and in countries that have little to no existing public health infrastructure, the option to purchase may be prohibitive or not even available. Increased tax revenues and improved efficiencies will enable governments to reduce direct payments for services and should likely be pursued before or concurrently with the reduction of direct payments.

In addition to the WHO proposals there are substantial opportunities to partner with private businesses to increase the funding available for public health activities. These opportunities must balance private sector interests with the goals of improving public health. In general, this will include balancing the costs of public health services provided by the private sector with the benefits derived from these activities. Examples of private-sector actors that may contribute to public health include healthcare systems, health insurance companies, larger employers, foundations, associations, and non-profit community-oriented organizations, as well as individual volunteers. An exhaustive discussion is beyond the scope of this chapter; however, examples of private contributions to the public health system are exemplified by large employers and healthcare systems.

Large employers, for instance, can be important partners for governments when it comes to improving public health. Large employers can easily reach their employees and their employees' families and are thus in an ideal position to implement public health initiatives. Many large employers, for instance, have begun to develop corporate wellness programs. These programs may include health screenings, vaccinations, exercise classes and subsidized fitness clubs, healthy eating options, and smoking cessation support groups, to name but a few. While corporate wellness programs started in the United States and Europe, many multinational companies are now expanding them globally. Employers often have a financial incentive to engage in employee wellness programs as these programs can reduce absenteeism and

promote job satisfaction, thus improving efficiency and reducing costly employee turnover. Employers who are self-insured can also experience a decrease in direct healthcare costs.

Another important partner in improving public health are traditional providers of health care services, such as hospitals and health systems. Hospitals and health systems may be well positioned to take over certain public health activities, such as health education, health screenings, immunizations, and community support groups. Since many of these services are not adequately reimbursed and thus money-losing activities, for-profit organizations generally do not have sufficient financial incentives to provide them. Not-for-profit organizations, on the other hand, may consider public health services part of their mission and be able to dedicate financial resources to such activities. [16]

## 4. Conclusion

The resources needed for an effective public health system depend on private, as well as public, financing. As has been summarized in this chapter, a variety of mechanisms can be used to achieve a combination of public and private contributions. Which mechanisms are used and what the expected effects are drawn from economic theory. It is thus essential that those making policies have a solid understanding of the principles of economics and how local factors influence the behavior of individuals and organizations, including government and private entities. Variations in policies across nations are to be expected, but this then poses a challenge to global efforts to promote population health and support individual countries, as well as world-wide, public health initiatives. Finally, moving forward, an evidence-based approach to resourcing public health would benefit greatly from more refined data on health systems outcomes, which would contribute to choosing between options, as well as data on expenditures that differentiate public health services for populations from healthcare delivery to individuals, which would then permit more sophisticated analysis of supply, demand, and the impact of potential economic policies.

## Author details

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