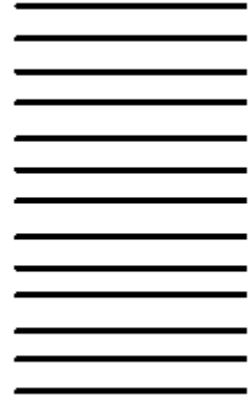
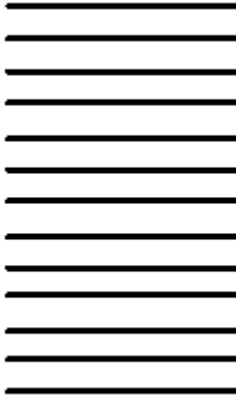


**INDES – EUROPEAN UNION
JOINT PROGRAM
WORKING PAPERS**



**National Health Accounts
in Latin America and
Caribbean**

**Concept, Results and
Policy Uses**

Alessandro Magnoli



Integration and Regional Programs Department
Inter-American Institute for Social Development



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Alessandro Magnoli¹

Harvard University

IADB/INDES - Joint Program INDES/EU

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September 2001

The views expressed are those of the author and do not necessarily represent those of the institutions of affiliation. The author takes full responsibility for any error or inaccuracy contained in this paper. This is a Working Paper and the author would welcome any comments on the present text. E-mail address: Alessandro Magnoli: amagnoli@hsph.harvard.edu

¹ Research Associate, Department of Population and International Health, Harvard School of Public Health (HSPH), Boston, MA, USA.

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ABSTRACT

This paper presents the National Health Accounts (NHA) methodology and its relevance in policy making in the Latin American and Caribbean (LAC) region. After presenting the concept of NHA and highlighting recent results of LAC data collection activities, the paper will focus on policy applications of NHA and its usefulness in supporting the financial dimension of health reforms. Lastly, it will analyze problems and drawbacks in the use of this tool. In short, the paper attempts to answer the following questions: What is NHA? How is it used? Why is it not used? How can and should it be put to use in LAC?

Despite the serious drawbacks that exist in the NHA practice (e.g., methodological problems, understanding by policy makers, and institutionalization), the main message of this paper is a normative one: NHA should become the Management Information System for health policies, in particular when the health reform process is in progress.

NHA IN LATIN-AMERICA AND CARIBBEAN

Throughout Latin America and the Caribbean, from Mexico to the southern tip of *Tierra del Fuego*, a large majority of countries has recently gone - is going, or will go - through a health sector reform.

Reforms need information. Of course, in order to effect reforms, one thing is essential: to know what it is that is being reformed. Thus, many questions need to be answered well before starting the restructuring process. Here are a few: How much does the country spend in health? Who pays, to whom, and for what? Who are the main actors in the health sector and, consequently, the main stakeholders in the reform process? Who is benefiting from change? How will the reform modify the financial patterns?

Questions generate more questions. Compelled to think about these issues, nations are increasingly aware of the importance of the financial component of their health care systems. Needless to say, answering the above questions creates new perplexities, hence a need for more information. Can the state achieve efficiency, equity, and health objectives primarily through interventions on state financing and provision? Or is regulation of those aspects in the non-government sector the main thrust?

Analyzing and forecasting. The influence of public sector spending on the health care system can be measured not only from the composition of total spending, but also from a more detailed breakdown of providers and services funded from public financing intermediaries. Taking the example of preventive care as a case in point, health finance data inform policy makers not only of the total resources available for prevention, but also which institutions manage those funds, and how they are used to achieve policy objectives. To judge the allocative efficiency of public sector preventive programs, a country must have a clear picture of its spending on specific inputs such as infrastructure, personnel salaries and drugs. Furthermore, before reforming, decision-makers should know the relative weight of both public and private sectors. And before introducing cost-recovery mechanisms, policy makers should know what percentage of the population attends public health facilities in order to forecast future cash inflows. Likewise, to forecast the impact on health and welfare, they should be aware whether health spending by households is increasing, how is the burden distributed amongst income quintiles, and whether the benefits of every quintile are commensurate with costs.

Understanding before changing. Obviously, a sound knowledge of the existing situation is a precondition for any change. A clear picture is necessary to understand what parts of the health systems need to be re-thought or fine-tuned. This is what NHA can offer. LAC countries need to be able to track health spending over time, and the role of NHA is to make available quality information on health financing.

What is NHA?

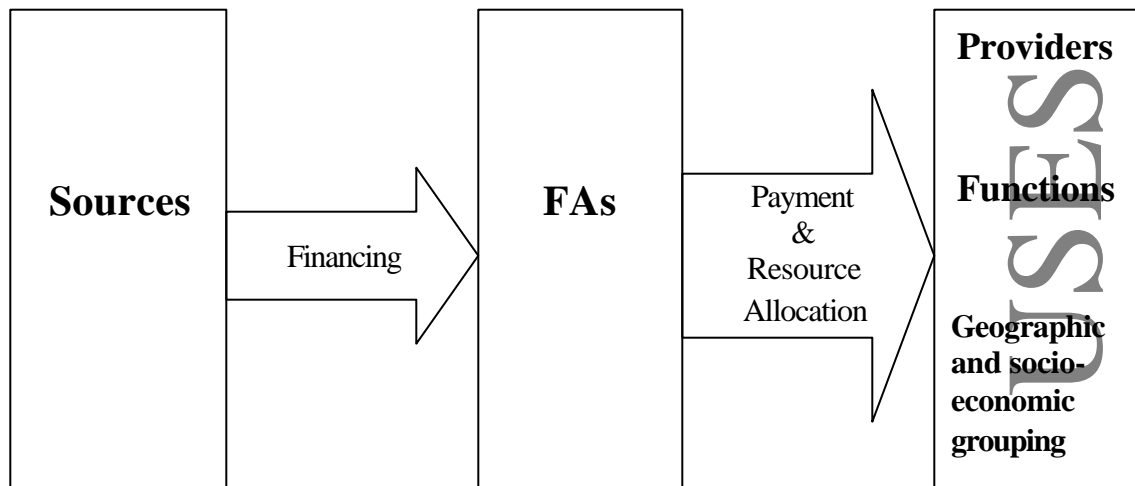
National Health Accounts (NHA) is an internationally established² method that, in a country and over a defined period of time:

- 1) provides a clear overview of the financial functioning of the health care system;
- 2) identifies its main agents (sources, financing intermediaries, and providers);
- 3) pinpoints financial flows from where, how and where the money goes;
- 4) breaks down the expenditures – total and main components - on health;
- 5) detects behavior of providers and consumers; and
- 6) maps resource allocation.

When conducted regularly, NHA can be used to measure changes resulting from reform policies in a country's health financing.

Analytical framework. Health expenditures are analyzed with a flow of funds framework (see Figure 1, and, in more detail, Figure 2) and presented in the form of matrices linking the sources of expenditure and financing agents or intermediaries (see Table 1) and the financing agents with a variety of breakdowns of the uses of expenditure (see, as examples, Table 2 and Table 4) (Berman, 1997).

Figure 1. NHA Analytical Framework



The matrix approach. The core of the NHA method is the calculation and presentation of national estimates through a “sources and uses” matrix. The matrix approach permits disaggregated analysis of expenditure, and provides an understanding of the flow of funds through the health care system. Every financial flow (represented by an arrow in Figure 2 and

² See OECD, 2000. OECD Web Site, 2001. PHR Web Site, 2001. Harvard IHSG Web Site, 2001.

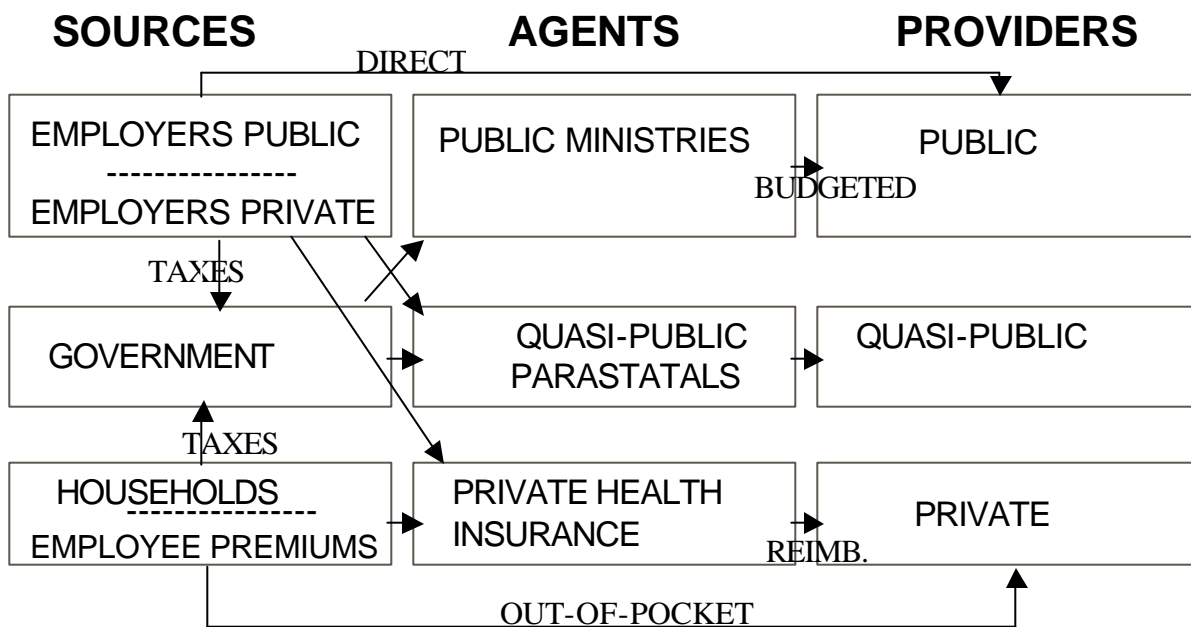
Figure 3) is quantified (concretely represented by a number in a cell). In an integrated way, it systematizes who pays, how much, and for what.

Sources. The sources of spending are disaggregated beyond the general categories of “public” and “private”. The main ones are: Government (MOF), Households, Donors, Public Employers, and Private Employers.

Financing agents. NHA matrices include an intermediate category, “financing agents,” that defines the institutions that have both an intermediary role and the function of risk assessments and decisions on coverage³. These agents receive the money from the sources and spend it (or allocate it) into uses. Main examples are: Government (MOH, MOE and other Ministries), Social insurance, Private Health Insurance, Public Employers, Private Employers, Households, and NGOs.

Uses. Uses are defined according to mutually exclusive classifications including: a) providers (e.g. for profit and non-profit public and private hospitals, clinics, individual private providers, pharmacies, traditional medicine, etc.); b) functions or types of health care (administration, curative health care, preventive, equipment, etc.); c) inputs (drugs, salaries, infrastructure, medical services, etc.); and d) geographic and socio-economic groupings of beneficiaries.

Figure 2. The NHA Schema (simplified for clarification)



The matrix approach requires that all funds from each source be allocated to specific uses. For example, all spending by government facilities must be traceable to specific sources through

³ In the World Health Report 2000 (WHO, 2000), financing agents are called “pooling agents”, while in the health economics literature they correspond to the insurance function.

financing intermediaries. The totals and subtotals must add up and be consistent. Examples shown here are from Guatemala, NHA 1998 (Government of Guatemala, MOH, 2000).

Table 1. Guatemala 1998. Sources to Financing Agents

To: Financing Agents	From: Sources							Total
	Households	Private Employers	MOF	Donors	Public Employers	MOH	Municipalities	
Development Councils ⁴	755.13		5,774.74				2,203.70	8733.57
Social Investment Fund ⁵	3,253.53			27,348.12				30601.65
Pro Peace National Fund ⁶			1,507.34	91,941.13				93448.47
Other GO's ⁷	1.67		64,609.11					64610.78
Social Security Institute ⁸		1,328,866.76	63,253.23		24,018.99			1416138.98
MOH			921,803.89	27,600.00				949403.89
<i>Sub-total Public</i>	4010.33	1328866.76	1056948.31	146889.3	24018.99		2203.7	2562937.34
NGO's ⁹	24,246.02	11,829.93		20,584.96		8,082.68		64743.59
Households	2,490,477.62							2490477.62
Private Health Insurance	127,322.00							127322
<i>Sub-total Private</i>	2,642,045.64	11,829.93		20,584.96		8,082.68		2682543.21
Total	2646055.97	1340696.69	1056948.31	167474.21	24018.99	8082.68	2203.7	5245480.55

Source: Government of Guatemala, MOH. PHR NHA Study, 2000. In thousands of Quetzales.

The “financing agents to providers” matrix shows the flow of funds to hospitals, clinics, individual practitioners, etc., portraying how resources are allocated across the providers of health care (see Table 2).

Important disclaimer. The same actor can play dual roles. In the first place, it can be both source and financing agent. For example, in the case of Government, the MOF is source while the MOH is financing agent. Less intuitively, this is also the case with households, which usually play the roles of source and intermediary of health care financing. Secondly, the same actor can play both roles of financing agent and provider. For instance, NGO's can play both an intermediary role, offering risk assessments and coverage (as financing agents) and provide services (as providers). To resolve this problem in accounting and to clarify the flows of funds, Tables 1 and 2 identify both roles through separate entries - i.e. each having two entries for Government (MOF and MOH) and Households [Table 1] and NGO's [Table 2].

⁴ Consejos de Desarrollo.

⁵ Fondo Inversión Social (FIS).

⁶ Fondo Nacional Para la Paz (FONAPAZ).

⁷ Otras Organizaciones Gubernamentales.

⁸ Instituto Guatemalteco de Seguridad Social (IGSS).

⁹ Organizaciones No Gubernamentales de Servicio de Salud.

Table 2. Guatemala 1998. Financing Agents to Providers

To: Providers	From: Financing Agents							Total
	Households	Social Security Institute	MOH	Social Funds ¹⁰	Private Health Insurance	NGO's	Other NGO's	
MOH			793529.03					
Social Security Institute		1090690.14					45572.85	
<i>Sub-total Public</i>		1,090,690.14	793,592.03				45,572.85	1,929,855.02
Private Clinics	785528.43				92940			
Private E.M.Q.	97870							
Pharmacies	1521533.81	325448.84	100426.81			35775.53		
Private Employers				132783.7		28968.06	19027.92	
NGO's providing health services	85545.38		55,385.05					
Others					34382		10	
<i>Sub-total Private</i>	2,490,477.62	325,448.84	155,811.86	132,783.70	127,322.00	64,743.59	19,037.92	3315625.53
Total	2,490,477.62	1,416,138.98	949,403.89	132,783.70	127,322.00	64,743.59	64,610.77	5245480.55

Source: Government of Guatemala, MOH. PHR NHA Study, 2000. In thousands of Quetzales.

Through the “financing agents to functions” matrix (see, as an example, Table 3), it is possible to depict the resource allocation by the main health care functions, classified as general administration, personal health services for in-patient and ambulatory illness treatment, infrastructure and equipment, preventive public health services, and other (includes medical education and training, research, and other unallocable costs).

Table 3. Guatemala 1998. Financing Agents to Functions

To: Functions	From: Financing Agents							Total
	Households	Social Security Institute	MOH	Social Funds	Private Health Insurance	NGO's	Other GO's	
General administration		385,163.28	175,809.44					560972.72
In-patient	2,307,062.24	1,030,975.70	460564.85		92940		45572.85	3937115.64
Infrastructure and equipment	97,870.00		1454.24	132783.70			19,027.92	251135.86
Preventive Programs	85,545.38		311575.36			64,743.59		461864.33
Other					34,382		10.00	34392.00
Total	2,490,477.62	1,416,138.98	949,403.89	132,783.70	127,322	64,743.59	64,610.77	5245480.55

Source: Government of Guatemala, MOH. PHR NHA Study, 2000. In thousands of Quetzales.

Another way to look at the resource allocation is through the “financing agents to inputs” matrix (see Table 4). It shows the flow of funds from the financing intermediaries to the main inputs of the health care production function: equipment, administration, infrastructure, drugs, medical services, salaries, etc.

¹⁰ Consejos de Desarrollo + Fondo Inversión Social (FIS) + Fondo Nacional Para la Paz (FONAPAZ).

Table 4. Guatemala 1998. Financing Agents to Inputs

To: Inputs	From: Financing Agents									
	Households	Social Security Institute	MOH	Development Councils	Social Invest. Fund	Pro Peace National Fund	Private Health Insurance	NGO's	Other GO's	Total
Equipm.	104,661.48					2,461.53		845.36		107968.37
Admin.	18,696.28	415,687.52	385,685.05			1,962.77		10,852.40	19,027.92	851911.94
Infrastr.		34,082.38		8,733.57	30,601.65	87,560.40		983.57		161961.57
Drugs	1,521,533.81	325,448.84	100,426.81					35,775.53		1983184.99
Medical services	829,811.97	298,463.02					92,940.00		45,572.85	1266787.84
Salaries	8,314.75	342,457.22	463,292.03			1,463.78		11,536.19		827063.97
Other ¹¹	7,459.33						34,382.00	4,750.54	10	46601.87
Total	2490477.62	1416138.98	949403.89	8733.57	30601.65	93448.48	127322	64743.59	64610.77	5245480.55

Source: Government of Guatemala, MOH. PHR NHA Study, 2000. In thousands of Quetzales.

The Boundaries of Health

The base of NHA is the definition of the boundaries of the health care sector. Defining “what health is” - is not an easy task and, at the same time, is the core of the problem. Is medical training part of the health expenditure of a country? What about water and sanitation (especially in countries where it has a direct impact on output indicators such as child mortality and life expectancy)? What about water fluoridation? And school breakfast?

Table 5. Honduras 1998. Sources to Financing Agents (including water)

To: Financing Agents	From: Sources							Total
	Central government	Local government	Households	Private Employers	NGOs	Donors	Others ¹²	
MOL ¹³	7,026,400					81,400		7,107,800
Social Security Institute ¹⁴	15,000,000	2,644,800	94,763,050	215,421,400				327,829,250
Local government		35,564,233						35,564,233
Social Investment Fund ¹⁵	26,339,100					526,783,100		553,122,200
Private Health Insurance	1,889,750		45,979,940	89,169,246				137,038,936
IHNFA	7,431,962						600,000	8,031,962
NGO's					6,815,800	68,653,900		75,469,700
Teletón							8,096,996	8,096,996
UNAH	11,868,349							11,868,349
IHADFA	3,151,100	963,100					400,000	4,514,200
SANAA ¹⁶	49,820,500					19,164,900		68,985,400
MOH	1,269,357,900					328,171,900		1,597,529,800
Private Employers				63,985,300				63,985,300
Households			1,616,650,639					1,616,650,639
Total	1,391,885,061	39,172,133	1,757,393,629	368,575,946	6,815,800	942,855,200	9,096,996	4,515,794,765

Source: PHR NHA Study, 1999. Model year US dollars.

¹¹ No classified.

¹² PANI, Teletón, etc.

¹³ Secretaría de Trabajo

¹⁴ Instituto Hondureño de Seguridad Social (IHSS).

¹⁵ Fondo Hondureño de Inversión Social (FHIS).

¹⁶ Servicio Autonomo Nacional de Acueductos y Alcantarillados.

Different concepts. The classifications of health-related goods and entities vary as much as the definition of what is (and is not) part of the health sector. For example, in Social Security schemes health services are difficult to differentiate with clarity from others like pension and unemployment insurance.¹⁷ Delineating the boundaries of health expenditure is controversial because there are different national views on what the health sector is and, consequently, what elements should be included or excluded from spending estimates. Of course, there are common grounds. For instance, most LACNHA studies include all expenditures made at established healthcare service providers (e.g. hospitals, pharmacies, individual practitioners, etc.). However, there are some disagreements as to how to account for supporting health activities such as training and research, as well as public health programs such as potable water, sanitation, and nutrition. Some countries included these items, while others did not.

National vs. international classifications. To compare health sectors internationally, national figures must be adjusted. For example, in Honduras 1998 the NHA team developed two sets of accounts: The first one for national use, including water and sanitation (see Table 5); the second one for international comparisons, without the expenditures in water and sanitation (see Table 7).¹⁸ Of course, these adjustments - often rough estimates - cannot replace national statistics developed by common definitions and commonly accepted accounting standards.

Comparing no-NHA and NHA Data

NHA data present some advantages over the non-NHA data. The most significant differences are schematically presented below.

Typical problems with non-NHA data. Normally, non-NHA data from previous expenditure reviews are characterized by the following problems:

1. Data may come from secondary sources;
2. National and international statistics are assembled by small groups of external analysts working for the agencies sponsoring the reviews;
3. The estimates of national health expenditures by international organizations rely on internationally published data, which may be several years old;
4. Data may not have been developed for the purpose of estimating national health spending;
5. Lack of clear definition of “health expenditure”. Hence, data are incomplete or include elements that go beyond the definition of health expenditure. For example, if government spending is taken from the International Monetary Fund (IMF) statistics on central government expenditure, the figure doesn’t include spending by state and local governments, but might include expenditures on non-health items.
6. Attribution of spending to the public and private sector is not clearly defined;

¹⁷ Usually there is a cross subsidy in favor of health to the detriment of pensions.

¹⁸ The difference is the total spending in water and sanitation: 1999 US\$ 562,878,758. In particular, the Central Government spent 1999 US\$ 73,339,226 (of which 23,518,726 were allocated to the Social Investment Fund and 49,820,500 to the SANAA), while Donors spent 1999 US\$ 489,539,532 (of which 470,374,632 went to the Social Investment Fund and 19,164,900 to the SANAA).

7. The data collection framework is not always comprehensive or steady. Consequently, data have issues with internal consistency and double counting.
8. Different studies may have used different sources of data, thus precluding comparability.
9. Use of regressions based on different years. Data may have been taken from different years and been used to estimate – through regressions – spending in the study year. Of course, making reliable projections based on data from earlier years depends on stable and predictable economic conditions and on the degree to which these apply to the health sector.
10. Use of regressions based on different countries. Data may have been taken from different countries (with a similar health structure) and been used to estimate – through regressions – spending in the study country.

Advantages of the NHA methodology. Although NHA data present some of the same problems shown with the use of non-NHA data (in particular, items 3, 7 and 8 from the previous list), the NHA methodology also presents quite a few improvements:

1. Data are – as much as possible – from primary sources;
2. The LACNHA data were collected by a team in each country;
3. Data are based on a comprehensive and consistent framework of national health spending, adopted by all the countries in the group. For more detail on the content and advantages of this approach see Berman (1997) and also Berman *et al.* (1999). Boundaries can be defined, and missing or inadequate information may be identified. Specific spending estimates are entered into a “sources and uses” matrix framework that helps to ensure consistency and avoid double counting.
4. The NHA methodology includes a common and clear definition of what “health expenditure” should be.¹⁹
5. Estimates may be reviewed and discussed by different institutions in each country, which helps to identify problems.
6. Detailed examination of health budgets and government accounts may be realized and recent national data on health spending, including data from household surveys may be accessed.
7. Spending attributed to the public and private sector may be clearly defined in terms of sources and financing intermediaries.
8. The composition of health expenditure classifications may be estimated in terms of several important uses.

The Flow of Funds

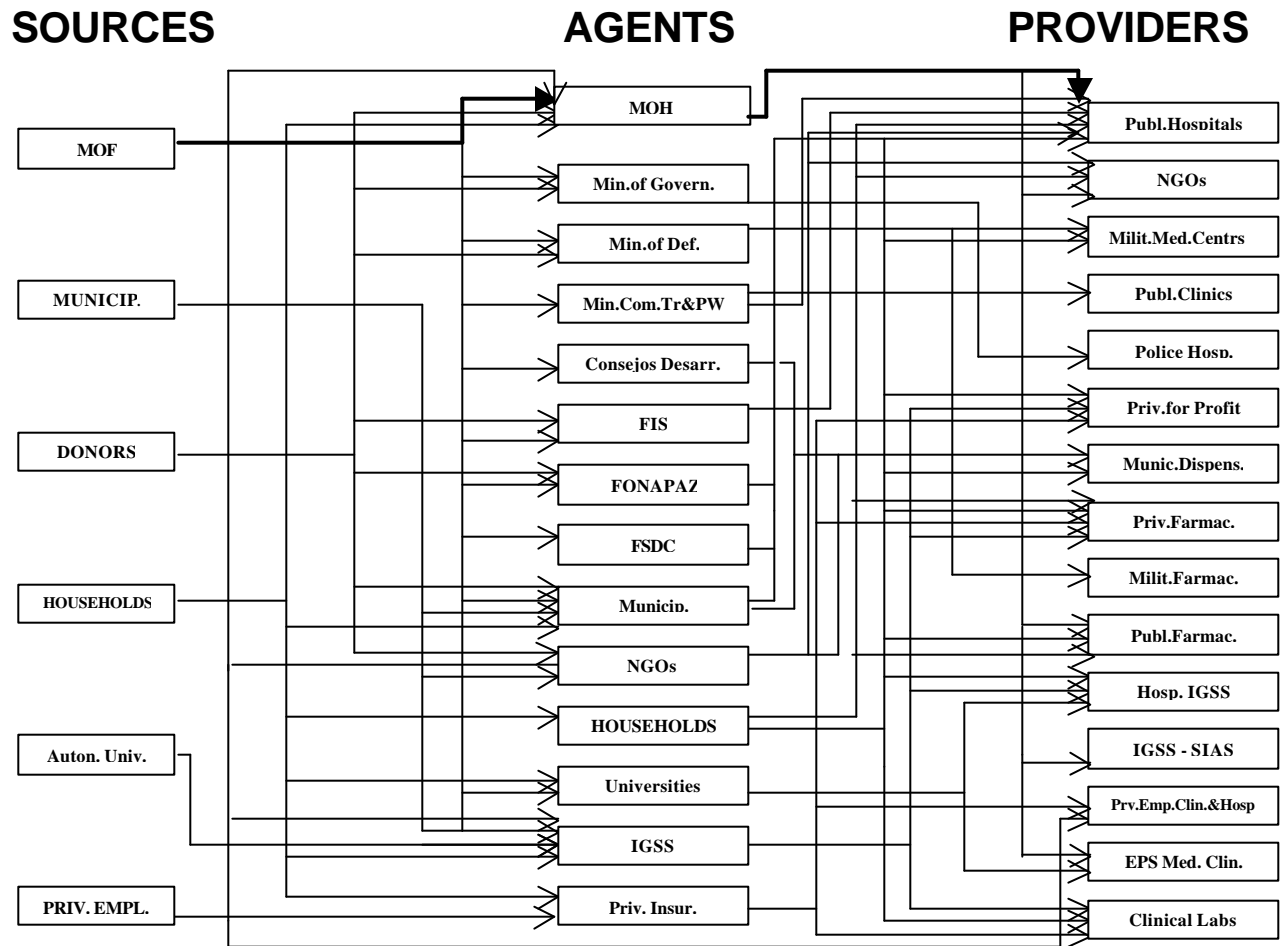
In financing a health system, funds may have different ways to flow from sources to financing agents to uses. For example, one dollar can go - see thicker lines in Figure 3 - from the “Ministry

¹⁹ For example, let us see the differences in the definition of health care in Guatemala. The team argues that activities related to water and sanitation were included as preventive expenditures in previous estimates. In Guatemala, the PAHO study used IMF government finance data for central government health expenditures. Since water and sanitation should be included under Section 7 of the classification system, it seems unlikely that this should be the case. This is one area where further examination may need to be done.

In Nicaragua, the detailed examination of public expenditures, the inclusion of Ministry of Defense and Ministry of Governance figures, point to higher levels of expenditures than were previously suggested.

of Finance (MOF)” (source) through the “Ministry of Health (MOH)” (financing agent) to a public hospital (use, provider). But it can also flow from “Donors” through an “NGO” to a health center; or it can go from “Households” through “Private Health Insurance” to a “Private Clinic”.

Figure 3. Guatemala 2000. Financial Flows from Sources through Financing Agents to Providers



There are many paths. The aim of NHA is to depict a sufficiently clear and real picture of these flows, in order to provide the overall view needed when reforming. See, as an example, the case of Guatemala in Figure 3.

NHA: Historical Perspective and the State of the Art

International classifications of government health care expenditures are based on definitions taken from the standard United Nations classification systems. Also, the IMF regularly produces fiscal data on government health expenditures (annual yearbook on Government Finance

Statistics). However, these data do not provide a sufficiently clear picture of the functioning of a health system.

International settings. International organizations, such as the Organization for Economic Cooperation and Development (OECD) and the World Health Organization (WHO) have supported transnational collaboration to develop NHA standardized definitions and methods, and comparative research and analysis. Through these efforts, NHA is rapidly becoming an essential data base tool for health care system analysis worldwide.

Text Box 1. The historical development of NHA methodology

International comparative studies of health expenditure started at the beginning of this century and have been increasingly performed over the last 30 years. The UN methodology for National Accounts (NA) - approaching health expenditure through a subset of NA, the satellite accounts - was not answering some of the important questions for the health sector. The International Labor Organization (ILO) and WHO in the 50's and 60's led the movement to create standardized, comparable national health expenditure estimates (Abel-Smith, 1963).

Organization of Economic Cooperation and Development (OECD). The OECD - recognizing the important role of health care financing in comparative health system analysis - has systematically developed and applied a common format, called the System of Health Accounts (SHA) for reporting national health expenditures. Today, the OECD annually compiles comparable health expenditure statistics for its member countries; for most countries data cover over 30 years (OECD, 1998).

United States. In 1964 the United States adopted the NHA approach, which mainly added to the SHA method a more disaggregated "sources and uses" matrix. Because of its comprehensiveness and high level of detail, the NHA approach is considered by many to be the gold standard for estimating health expenditures, particularly in countries with highly pluralistic health financing structures.

NHA today. The current NHA approach, confluence of approaches mentioned above, depicts source and destination of financial flows. Economist with a macro interest should not confuse NHA with NA.

In-country debates. National authorities in many countries have fostered the development of NHA as a basic tool and information source on health care financing in their sectoral reforms.

Industrialized countries. For the industrialized countries, primarily OECD members, comparing the level, composition, and trends in national health spending with other countries is often a starting place for national debates on health sector policies and reform (Hurst, 1992).

LAC countries. In the last few years many developing countries and transitional economies have developed NHA with little effort.²⁰ In LAC collecting and estimating health sector expenditures has been a concern during the last 30 years (for further information see next section). Still, there is widespread recognition of the need for reliable and comparable health finance statistics. Private sector spending is an object of particular concern.

²⁰ A small national team can carry out NHA, with first round estimates available within 6-12 months (Berman *et al.*, 1999).

In 1997, in Latin America and Caribbean, under the Partnership for Health Reform (PHR) project, a regional network of collaborating national groups - the Latin American and Caribbean Health Accounts Network (LACNHA)²¹ - has been utilized as a first step in expanding the use of this method and gaining both national and cross-national comparative benefits. Starting in 2000, the IADB, the World Bank and PAHO have adopted a shared agenda, one element of which is joint progress on NHA.

Text Box 2. The experience of collecting health financing data in developing countries

Historically, developing countries have collected very little financial information on their health sector. Thus, analysis of health expenditures - often depending on out-of-date and aggregate data from only the government and social insurance sectors - has not been systematic.

First benchmark comparisons. In the early 90's, a few studies covering the 80's provided a first benchmark comparison of how much poorer countries were spending on health care and how those funds were organized in terms of public and private payers. Constrained by coverage and data problems, regional comparative studies were produced by McGreevey (1990) for Latin America, Griffin (1992) for Asia, Vogel (1993) for Africa, and Soares *et al.* (1995) for Latin America. In general, these studies gathered latest-single-year data from available international statistics and country reports, and provided cross-national comparisons. They estimated total and per capita national health spending and the composition of total spending in terms of public and private financing intermediaries. Estimates of the uses of funds were sometimes possible showing, for example, public spending in terms of providers (hospital and non-hospital services). In 1993, the World Bank (WB) and WHO published the first truly global estimate of health spending with estimates for 140 countries including total spending and public and private shares (World Bank, 1993; Murray *et al.*, 1994). These studies suffered from serious data limitations. No estimates of the composition of health spending in terms of different uses (functions, geographic groups, income quintiles, etc.) were carried out. For a significant number of countries, private health spending data was not available and had to be estimated based on a regression between national income and health spending in comparable countries with available data.

Need for a common framework. The development of comparable NHA methods for lower income countries (Berman, 1997), such as those now available for the LACNHA network countries, is an important step in providing a common framework to organize and categorize the information. NHA recently has been successfully applied in over 30 low and middle-income countries, many of which are undertaking major health system reforms.

Results of NHA Studies in LAC

Previous expenditure reviews. Since the 1960's, countries in the LAC region have participated in efforts to estimate national health expenditures (see, for example, Abel-Smith, 1963). More recently, international organizations, such as PAHO, the WB and USAID, have assembled available information to permit cross-country comparisons of the level and composition of health expenditure (Zschock, 1986; McGreevey, 1990; PAHO, 1994).

²¹ PHR has supported the establishment of NHA in LAC through a networking approach to enable collaboration among countries. A similar approach has been adopted in the Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA) (PHR Website, 2001). In general, NHA have been performed at the regional or sub-regional level, where countries share common languages and institutional structures. See further (footnote 23) for details on the LACNHA Initiative.

1980's versus 90's: growing expenditures. In general, even if LAC countries display considerable variations in central government expenditures as a percentage of GDP and in *per capita* health spending, we can say that health expenditures recovered substantially during the 1990's (IADB, 1998; PAHO, 1998).

Caveat: economic differences between the 80's and the 90's. However, when comparing health spending from the late 1980's to the mid 1990's, it is important to recognize the significant economic changes taking place in the region²².

1990's estimates. In the 1990's, several region-wide estimates were developed. These include: a careful set of estimates made in 1988 by PAHO (Suarez *et al.*, 1995), estimates for 1990 assembled in the WB's 1993 World Development Report and then revised (Govindaraj *et al.*, 1997), and a 1995 re-estimate by PAHO (PAHO, 1998) (see Table 6 for a comparative prospect).

The NHA network experience. The LACNHA network²³ supported the development of consistent and comparable NHA estimates for 1995 in the eight participating countries (for a comparison of the findings, see Berman *et al.*, 1999). In terms of total health expenditure, estimates by the NHA are reporting higher levels of spending than previously measured and indicating that for some LAC countries health spending is at a high level relative to income (Berman *et al.*, 1999). Much of this higher total spending is related to higher private health spending, especially out-of-pocket spending by households. There are several examples of this in the 1995 LACNHA results (see Table 6).

Differences between recent estimates. Not surprisingly, there are large differences across countries and across the distinct estimates in the level of health spending and in its composition.

²² At the end of the 1970's, most LAC countries were affected by economic crisis, which led to structural adjustment programs, which - in turn - had a heavy impact on budgets allocated by national governments. Quality and coverage of health services seriously deteriorated (in many countries the situation is not yet overcome). Additionally, in 1982 the external debt burden made evident the economies' vulnerability to world market fluctuations. The crisis led to a decline in living conditions and the impoverishment of broad sectors of the population. These phenomena have all had a profound impact on levels of national health expenditures and on the financing of the health sector, with declines in real health spending likely during the 1980's (IADB, 1998; PAHO, 1998). Also, there were significant changes in the organization and role of the central governments, characterized in many cases by administrative decentralization and the privatization of public services.

²³ The LACNHA Initiative was launched in 1997 and completed its first round of studies in September 1998. It is a collaborative project involving eight multi-institutional NHA teams, the United States Agency for International Development (USAID), the Pan American Health Organization (PAHO), and the Partnerships for Health Reform Project (PHR). The network, which was sponsored by the USAID Latin America Regional Bureau, PAHO and PHR, included eight countries from the region: Bolivia, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua and Peru. Honduras joined the initiative in 1999. PHR and PAHO oversaw the implementation of the initiative and provided the technical assistance to the countries. The data reported here are the results of using a common methodology (see Berman *et al.*, 1999). The network emphasized capacity building in the countries. In each country, NHA teams were formed of specialists with different areas of expertise in health system and expenditure analysis, representing different governmental and non-governmental institutions. Typically, these included the Ministry of Health, the Ministry of Finance, the Central Bank, national statistical authorities, and research or policy institutes. The network provided training and technical assistance (Berman *et al.*, 1998). See Berman *et al.* (1999) for comparative analysis of the LACNHA results.

The figures displayed in Table 6 compare PAHO 1988, WB 1990, PAHO 1995, and NHA 1995, which represent the most recent comprehensive estimates for health care expenditures in the LAC region. For example, the estimates for the Dominican Republic vary significantly depending on the data sources. As far as the health expenditure as a percentage of GDP is concerned, the estimates yield very different values: 4.8% (PAHO 1988), 3.6% (WB 1990), 5.3% (PAHO 1995), or 7.3% (NHA 1996). Even the recent per capita health expenditure estimates differ significantly: US\$77 (PAHO 1995) and US\$164 (NHA 1996). The same is true for El Salvador, Mexico and Peru. About the expenditure on health as a percentage of GDP, El Salvador exhibits 6.8% (PAHO 1995) or 7.4% (NHA 1996); Mexico displays 4.8% (PAHO 1995) or 5.5% (NHA 1995); and Peru 5.5% (PAHO 1995) or 4.2% (NHA 1995). With regard to the per capita health expenditure estimates, El Salvador exhibits US\$158 (PAHO 1995) and US\$135 (NHA 1996); Mexico US\$160 (PAHO 1995) and US\$168 (NHA 1995); and Peru US\$128 (PAHO 1995) and US\$112 (NHA 1996). Because Nicaragua has a problem with GDP estimates²⁴, the expenditures on health as a percentage of GDP show very different values: 5% (PAHO 1988), 7.9% (WB 1990), 9.2% (PAHO 1995) or 12.9% (NHA 1995). Also in Nicaragua there is a difference in the per capita health expenditure estimates for 1995: US\$35 (PAHO 1995) and US\$54 (NHA 1995).

²⁴ Of the eight network countries, Nicaragua has the lowest GDP per capita and has experienced severe hyperinflation in the past decade (World Bank, 1997). With a GDP deflator for 1985-1995 of 961.6%, it is extremely difficult to accurately interpret survey results and budgets and convert to dollars. In the PAHO and NHA estimates different values are used for GDP and population sizes. The NHA team reported a GDP per capita of \$448.5 for 1995, while PAHO, using IMF data, reported one of \$431. The estimation of GDP is fairly recent in Nicaragua and not yet sound. Additionally, remittances from abroad (money sent by emigrants) distort the health expenditure/GDP ratio. In fact, some of these financial flows are used to pay for health care in Nicaragua, but do not come from GDP. In NHA, 1995 remittances were included. It is open to debate whether it would be more appropriate to calculate the ratio using GNP rather than GDP as denominator.

Table 6. Comparison of Recent Total Health Expenditure Estimates in the LAC Region

Data Source	% GDP				Total per capita health expenditure (US\$)				Public (in % of Total Health Expenditure)				% Private (in % of Total Health Expenditure)			
	PAHO 1988 ¹	WB 1990 ²	PAHO 1995 ³	NHA 1995 ⁴	PAHO 1988	WB 1990	PAHO 1995	NHA 1995	PAHO 1990	WB 1990	PAHO 1995	NHA 1995	PAHO 1990	WB 1990	PAHO 1995	NHA 1995
Bolivia	4.5	5.5	6	4.45	39	34	48	39	32	29	55	65	68	56	45	35
Dominican Republic	4.8	3.6	5.3	7.3*	32	59	77	164*	31	34	38	21	69	63	62	78
Ecuador	6.3	3.7	5.1	4.6	79	39	71	71.2	40	63	32	46	60	30	68	46
El Salvador	5	5.9	6.8	7.4*	53	58	158	135*	26	30	27	46	74	56	73	53
Guatemala	3.3	5.0	4.2	2.2	30	37	56	35	52	33	45	60	48	58	55	40
Mexico	3.8	5.5	4.8	5.5	86	155	160	168	38	56	47	43	62	43	53	57
Nicaragua	5	7.9	9.2	12.9	27	31	35	54	74	62	63	68	26	16	37	32
Peru	3.1	3.1	5.5	4.2	41	59	128	112	35	34	51	66	65	64	49	34

Source: Berman *et al.*, 1999. *Estimates are for the year 1996.

¹ Suares *et al.*, 1995.

² Govindaraj *et al.*, 1997.

³ PAHO, 1998.

⁴ NHA Reports, 1998; Berman *et al.*, 1999.

Why are there differences? In the case of Nicaragua, differences may arise from distinct macroeconomic data (see footnote 23). For instance, GDP figures are often adjusted in later years as more information is obtained. Likewise, the choice of exchange rates to use (year-average or end-of-year rate) and population estimates also affect some of these comparative figures. Dissimilarities may also be due to external remittances, a major financial flow in El Salvador and Nicaragua but also in Ecuador and Dominican Republic. Differences in estimates also result from differences in approach, in particular from different views on what is counted as a health care expenditure (see The Boundaries of Health section).

Methodological differences. The process of collecting and analyzing national health spending data in the PAHO and WB efforts was quite different from that used in the LACNHA network, so differences in the results should not be surprising. In estimating government health expenditures, PAHO and WB have drawn information from the IMF Government Finance Statistics as well as from a broad range of official government documents, country studies, and reports. These sources report the governments' data and assume consistent application of classifications and definitions.

The more comprehensive NHA approach. The NHA country teams performed a detailed analysis of expenditures by scrutinizing budgets of the MOH and other ministries and departments, and determined which expenditures were directly related to health care. Estimates and definitions of health may differ from the PAHO to the WB approaches. For example, according to the NHA methodology, expenditures in health incurred by big agricultural producers (e.g. coffee, banana) in their hospitals, clinics and health centers are counted as health expenditures, while according to the National Accounts methodology these might be considered industrial production. Another example is that local government expenditure in health is not considered as a health expenditure under the National Accounts methodology.

Current versus projected expenditures. Using (possibly recent) surveys, the NHA methodology is able to estimate current expenditures on health rather than project expenditures from other sources. For example, the Dominican Republic, Guatemala and Honduras recently implemented a household survey that was not available to previous studies.

Private expenditure. Differences between estimates are often due to the computation of out-of-pocket expenditures, which by definition are based on surveys with all their associated difficulties. In the Dominican Republic¹ and in Guatemala,² the difference between PAHO and

¹ In the Dominican Republic PAHO figures are based on a CIECA report (Hatton, 1996) that uses Central Bank data on health final private consumption. These figures do not include expenditures incurred through private insurance, which is a small but growing sector in the Dominican Republic. The CIECA report quotes a private expenditure of approximately 4% of GDP for 1994. Since 1994 was the most recent year, PAHO estimated 1995 data using the income elasticity for health. The NHA team was able to utilize the ENDESA household survey implemented in 1996 to determine private sector expenditures. This survey showed a private sector expenditure on health care of approximately 6% of GDP. This difference alone explains the 2% variance in GDP reported by the two sources.

NHA estimates lies almost entirely in the use of different private expenditures data sources. In Bolivia, while PAHO and NHA teams projected their estimates from the same household survey implemented in 1990, the NHA team supplemented that information with data collected in the survey of 1992.³

POLICY APPLICATIONS AND USEFULNESS IN HEALTH REFORMS

Although many specific issues depend on the country's level of economic development (low or middle-income), health care financing has become a relevant area of policy for LAC countries. Indeed, reformers are increasingly considering it not solely as raising funds for the health sector, but also as an important factor in determining the behavior of providers and consumers and as a key element in the resource allocation process.

Higher pluralism requires more information. Health care finance and provision are becoming more pluralistic due to segmentation (e.g. nine active Public Social Security schemes in Bolivia), fragmentation (caused mainly by the rising role of the private sector), and – in general - national health care reform strategies. The phenomenon, source of inefficiencies because of duplication of functions, increases the value of a detailed and comprehensive approach such as NHA. The NHA capability of linking sources and uses through financing agents provides a rich and clear picture, useful for the analysis of health care financing policies.

Policy relevance of NHA. NHA estimates can be used for analyzing the health system, designing a policy, monitoring implementation, and evaluating a reform. NHA can influence policies because they provide decision makers with a holistic picture of the health sector, highlighting the concentration of spending makes evident uses and roles of different payers. They also provide a consistent framework for modeling reforms, and for monitoring the effects of changes in health financing and service provision. Lastly, NHA allow policy makers to evaluate policies in detail. Many countries in the region can use NHA for the following key reasons:

- a) *Analysis of the existing situation.* NHA can help to understand many health care financing issues in LAC countries by making possible international comparisons (comparative cross-section and time series analyses) of the levels and the composition of spending. NHA results can also be the basis for an analysis of the linkages between health expenditures and health outcomes. NHA provides not only estimates of the current levels of aggregate financing for health care but also disaggregates data to permit a comprehensive view;
- b) *Identification and analysis of stakeholders.* NHA can facilitate the assessment of the financial importance of key players in the health care system, which may be a guide to the political development of reform strategies;

² In Guatemala, PAHO estimates are based on a 1981 household survey, the only survey available at the time. The NHA team was able to utilize a household survey implemented by National Statistical Institute in 1997. The NHA team was also able to capture foreign aid in the private sector, with approximately 4% of total health expenditure occurring in NGO's.

³ The Bolivian team calibrated their household health expenditure estimates by using data from the consumer price index and made an additional adjustment on out-of-pocket spending.

- c) *Modeling change.* Nearly all decisions by policy makers about the national health system should be based on the quantitative aspects of the options available and the potential impacts of any decision. NHA can provide a useful basis for health financing projection models. Such simulations assess consequences and impacts of policy interventions (e.g., estimating the prospects for increasing or decreasing funding for the health sector, estimating the effects of a cost-recovery policy or a finance decentralization).
- d) *Monitoring and evaluation.* NHA can help estimating, monitoring and evaluating the allocation of spending trends within countries vis-a-vis priority health programs (such as HIV/AIDS, immunization, etc.) and population groups (such as indigenous populations). NHA can become the health sector's Management Information System, producing routine data for the elaboration of policies during the definition and conciliation of objectives and during the daily management of the reform.

Analysis of the existing situation

Data-rooted analyzing and understanding. In LAC countries, NHA produced a comprehensive national health finance review. Data can be used as a reference framework to support the health sector reform and to unveil potential problems.

Dominican Republic. For example, in the Dominican Republic⁴ NHA was the first formal study to synthesize and classify national health expenditures in both the public and private sector. By putting together the relevant information on the health sector that was dispersed in the national health system, NHA created a fruitful discussion (focused on analysis and evaluation) among all actors in the health reform. Because of these reasons, politicians and planners are now using NHA as a base from which to orient policies on health expenditure.

Guatemala. In Guatemala, NHA made possible the discovery of problems in the financing of social security. It was detected that actual contributions by both the Government of Guatemala (GOG) and private firms to the Guatemalan Institute of Social Security (IGSS) represent a mere fraction of what contributions should have been. Non-payment is a serious problem that has crippled the IGSS's ability to respond to its constituency. The magnitude of the problem is sizeable: the accumulated debt of the IGSS due to non-compliance by GOG and firms corresponds to 78% of total health expenditures in Guatemala in 1998. Also, there was great interest in the NHA estimates to help develop new resource allocation strategies as part of the national peace agreement. The reconciliation government had made explicit promises to increase and redistribute social spending. NHA was used to monitor the peace agreements. According to these, in 1998 public health expenditures should equal 1.09 of GDP. According to NHA, health expenditures by the MOH equal 0.76% of GDP. This figure caused some concern because, at a glance, it may be interpreted as a failure by the GOG to meet the Peace Accord target⁵.

⁴ NHA estimates were produced for the first time in 1996 by the Central Bank of the Dominican Republic and comprised data from the major health financing institutions including the central and local governments, public employers, households and private employers.

⁵ The 0.76% figure, however, refers to expenditures by the MOH only. In order to evaluate whether the target has been met, health spending by other public entities, such as the IGSS, FIS and FONAPAZ, would need to be included.

Increased health spending. Much as in the OECD countries, the trend in LAC is a rising share of national income being devoted to health care. The reasons are well known: longer life expectancy, a more complex epidemiological profile, rising private spending (partially due to the crisis of public delivery), and others. However, there are different rates in expenditure growth across countries with similar levels of health and health insurance coverage, and differences in the way that money is spent on different types of health care services. Data from the LACNHA studies provide a base to better explain why these differences occur.

Higher private expenditure. A large share or in many cases the majority, of health financing comes from private sources such as employers, non-governmental organizations, and households. In particular, data show rising household expenditures. For instance, in the Dominican Republic (where according to NHA (1996) the total health expenditures amounted to 7.3 % of GDP), 78 % of health spending was made by the private sector, and 62 % from households. These results are comparable to those found in the other LAC countries. In Guatemala, the 1998 NHA estimate found that household expenditures on health increased significantly, from 2.3% to 4.3% of GDP between 1997 and 1998. This together with the growth of expenditures by firms and a virtually unchanged MOH budget (as a percentage of GDP) explains the rising share of the private sector (76% of total health expenditures in 1998, up from 64% in 1997)⁶. In Honduras, 1998 data show that households' contributions as a source of financing is 44.4% of the total (see Table 7).

⁶ Care must be taken in interpreting these results. First, household expenditures for 1997 were imputed whereas figures for 1998 were derived from actual data (a survey of households was conducted that year by the National Institute of Statistics). Hence, some of the increase in household expenditures may be due to improved data capturing. Second, the 22% of total health expenditures attributed to firms are mostly coming from mandatory contributions to the Guatemalan Institute of Social Security (IGSS). Whether these expenditures are categorized as private or public depends on whether the classification applies to the source of funding or to the financing agents that controls its spending.

Table 7. Honduras 1998: Sources to Financing Agents

To: Financing Agents	From: Sources							Total
	Central government	Local government	Households	Private Employers	NGOs	Donors	Others ⁷	
MOL ⁸	7,026,400					81,400		7,107,800
Social Security Institute ⁹	15,000,000	2,644,800	94,763,050	215,421,400				327,829,250
Local government		35,564,233						35,564,233
Social Investment Fund ¹⁰	2,820,374					56,408,468		59,228,842
Private Health Insurance	1,889,750		45,979,940	89,169,246				137,038,936
IHNFA ¹¹	7,431,962						600,000	8,031,962
NGO's					6,815,800	68,653,900		75,469,700
Teletón							8,096,996	8,096,996
UNAH ¹²	11,868,349							11,868,349
IHADFA ¹³	3,151,100	963,100					400,000	4,514,200
MOH	1,269,357,900					328,171,900		1,597,529,800
Private Employers				63,985,300				63,985,300
Households			1,616,650,639					1,616,650,639
Total	1,318,545,835	39,172,133	1,757,393,629	368,575,946	6,815,800	453,315,668	9,096,996	3,952,916,007

Source: PHR NHA Study, 1999. Model year US dollars.

In Mexico, in 1995, households contributed 64% of health financing, spending 4% of their total income on medical services. Household expenditures concentrated on ambulatory care and drugs, and, in a lower proportion, on hospital care.¹⁴ One exception is Nicaragua, in which households were responsible for only 38% of total health care financing, probably because the public sector is the dominant financier of health services (Rathe, 1998).

Important caveat. Because NHA estimates tend to be more complete, they often result in higher estimates of total spending. Of course, a more detailed data collection may provide even higher estimates. This is the case when some originally poorly collected data (for example, firms direct spending) are improved. For Dominican Republic and El Salvador, these higher estimates were felt to have quite significant policy implications.

Vertically-organized financing and provision. As observed in earlier studies, health care financing in the LAC region is characterized by a high level of “verticality”, that is, each type of financing intermediary — government, social insurance, private insurance, firms and households — relates almost exclusively to same-sector health care providers. Indeed, government departments finance government-owned hospitals and clinics; social insurance agencies largely fund providers owned by social-insurance; and private payers purchase health care from private providers. The phenomenon is especially true in the public sector. Public sector payers — specifically the budget-financed government ministries and social security institutes — compartmentalize financing and provision. In general, in LACNHA countries private insurance

⁷ PANI, Teletón, etc.

⁸ Secretaría de Trabajo

⁹ Instituto Hondureño de Seguridad Social (IHSS).

¹⁰ Fondo Hondureño de Inversión Social (FHIS).

¹¹ Instituto Hondureño de la Niñez y la Familia.

¹² Universidad Autónoma de Honduras.

¹³ Instituto Hondureño de Alcoholismo, Drogadicción y Farmacodependencia.

¹⁴ According to Ramírez *et al.* (1999), the high level of Mexican household health expenditures could have consequences on the stability of the country's economy.

is very small. Household direct payments are the most diverse type of financing, although they still support mainly private providers. The “financing agents to providers” matrices clearly show the phenomenon (see, for example, Table 2 or Table 10) Households direct payments are the main source of pluralism, with the flow of funds from financing intermediaries cutting across sectors in terms of providers. In the results reported by the LACNHA countries, household out-of-pocket payments to government and social insurance-owned facilities, usually in the form of user charges or co-payments, are typically not a large share of total expenditure or a large contribution to government or to social insurance-owned providers. Expenditure from private sector financing intermediaries - sometimes a large share of total spending - is mainly directed towards private providers.

Public vs. private: different responsibilities in financing. Who pays for different types of services? Are government, social insurance and private payers financing a similar mix of services? Roughly, financing agents in LACNHA countries show the following pattern: public sector payers (government and social insurance) provide a larger share of financing for prevention and promotion, hospitals, and in-patient services, whereas private sector payers - predominantly direct payments from households - finance individual physicians, private clinics and out-patient¹⁵ treatment of illness. For example, in El Salvador, 70% of expenditures on in-patient curative services go to government and social security hospitals, while 91% of expenditures on out-patient curative services go to private providers. The 78% of preventive services expenditures go to government-owned providers and almost 20% to those owned by social insurance (Berman *et al.*, 1999). Of course, the degree may differ depending on the country’s specificity (see Table 8).

Table 8. Public and Private Financing¹⁶ for Main Types of Health Care Services

	Bolivia	Dominican Republic	Ecuador	El Salvador	Guatemala	Mexico	Nicaragua	Peru
Public Health Services								
Prevention and Promotion	almost all public	largely private	all public	almost all public	majority public	majority private	almost all public	all public
Personal Health Services								
In-patient Care	largely public	largely private	largely public	majority public	largely public	majority public	largely public	majority public
Ambulatory Care	largely public	NA	majority public	largely private	majority private	majority private	majority public	NA

Source: Author’s elaboration on Berman *et al.* (1999). Scale in order of prevalence: all public; almost all public; largely public; majority public. The same scale applies to private financing.

Linking NHA with other indicators. The estimate of total health expenditure in a nation that emerges from a comprehensive NHA study can be linked to a variety of other important national-level variables such as national income (total and per capita) and life expectancy. It is also instructive to explore how large health care system-level factors, such as the level of health insurance coverage in a country, may be associated with health spending.

¹⁵ Out-patient illness care includes many priority health interventions addressing common and serious child and adult diseases.

¹⁶ Financing Agents.

Efficiency analysis

NHA can be used to understand the actual resource allocation and monitor the discrepancy from the expected one. Three are the main levels of analysis: by providers, by functions, and by inputs.

a) Resource Allocation by Health Care Providers

When NHA estimates the distribution of total expenditures to different types of health care providers, the matrix depicts the resource allocation of health sector funds across type of provider. If the data permit, providers can be classified according to ownership and types of facilities.

Ownership. The breakdown by ownership categories highlights the relative financial importance of the different sectors in delivering health care. The analysis displays the flow of funds from the different financing intermediaries to the different types of providers classified by ownership: government-owned facilities, social health insurance organizations, private-for-profit and not-for-profit owned facilities.

The situation in LAC. Several of the LACNHA countries were able to estimate how total expenditures were allocated to the providers according to type of ownership. Table 9 shows the allocation of expenditure across the major categories of providers classified by ownership. With the exceptions of Nicaragua¹⁷ and Peru, government-owned providers accounted for less than 29% of total spending in six of eight countries. For hospitals and clinics owned and operated by the social insurance institutions, these ranged from 5.6 % in Dominican Republic up to 38.2 % in Bolivia of total spending. Private providers ranged from 33.2 % in Bolivia up to 79.5 % in Dominican Republic of total spending.

Table 9. Funding Flows to Types of Providers (% of Total Expenditures)

	Bolivia	Dominican Republic	Ecuador	El Salvador	Guatemala	Mexico	Nicaragua	Peru
Providers by Ownership (%)								
Total Public	66.8	20.5	49.7	45.6	59.3	42.7	62.6	65.8
Government	28.6	14.9	28.8	25.1	28.8	9.5	62.6	41.2
Social Insur.	38.2	5.6	20.9	20.5	30.5	33.2	<i>not reported</i>	24.6
Total Private	33.2	79.5	41.3	54.3	36.0	57.4	37.4	34.1
Unspecified			8.7		4.6			
Total	100	100	99.7	99.9	99.9	100.1	100	99.9

Source: Author's elaboration on Berman *et al.* (1999).

Facilities. The analysis according to provider types also displays the flow of funds by level of provider: hospitals, health centers and clinics, individual private practitioners, pharmacies, etc. The allocation across facility types, such as hospitals, clinics, and individual practitioners, shows where financial resources are consumed in the delivery system¹⁸.

¹⁷ In Nicaragua, no social health insurance provider sector was reported, so that government facilities account for 62.6% of total spending.

¹⁸ Since facilities often provide a number of different types of services, the results may be different from the "resource allocation by functions" breakdowns.

Table 10. Honduras 1998. Financing Agents to Providers

To: Providers	From: Financing Agents												
	Private Employers	FHIS	Local government	Households	IHADFA	IHNFA	IHSS	NGO's	MOH	MOL	Private Health Insurance	Teletón	UNAH
Public Health Centers		59,228,842	4,994,820		4,238,004	8,031,962			575,021,257				
IHSS Clinics							62,287,558						
Pharmacies				467,602,292									
Local government			26,619,126										
Military hospitals				9,514,243									
IHSS hospitals				14,205,581			265,541,692						
Public hospitals				186,710,289	276,196				1,022,508,543				
Med. Laboratories				18,649,867									
Natural Medicine				909,865									
NGO's			310,717	3,407,603				75,469,700					
Private providers	63,985,300		3,639,570	913,486,902							137,038,936	8,096,996	
Equip. providers				2,163,997									
Occupational health services										7,107,800			
University services													11,868,349

Source: PHR NHA Study, 1999. Model year US dollars.

The financing agents to provider matrix provides a useful example, as shown in the case of Honduras (see Table 10).

b) Resource Allocation by Health Care Functions

Traditionally in many LAC countries, government spending on primary level services has always been lower than on hospital services despite official policy to give priority to primary care. Table 11 shows the case of Honduras 1998.

Table 11. Honduras 1998. Financing Agents to Functions

To: Functions	From: Financing Agents												
	Private Employers	FHIS	Local government	Households	IHADFA	IHNFA	IHSS	NGO's	MOH	MOL	Private Health Insurance	Teletón	UNAH
Administration	1,687,572				2,626,700		32,782,865	3,773,488	303,337,712		27,407,787.20	1,342,995	6,200,500
Curative In-patient	56,406,128			557,748,245	276,200		274,065,338		883,138,500		32,889,344.64		
Curative Ambulatory			9,743,485	1,004,759,604	648,200	7,371,962	17,375,068	11,471,403	169,477,300		76,741,804.16		3,683,800
Preventive care				52,111,560				54,489,166	106,982,608	7,026,400		146,916	
Training and education						60,000			35,811,300				
Infrastructure		59,228,842											
Equipment	5,891,600			2,031,230			1,311,232		6,557,400			258,659	570,800
Research													1,124,300
Other								5,735,643					288,949
Health Promotion			9,212,237		963,100				15,559,700	81,400			
Rehabilitation						600,000	2,294,747		4,371,600			6,348,426	
Sanitation			16,608,511						72,293,680				

Source: PHR NHA Study, 1999. Model year US dollars.

The situation in LAC. In the LACNHA countries, administration costs, which mainly include those of government and social health insurance, ranged from 6.1 % (Nicaragua) to around 30 % (Bolivia, Dominican Republic, Ecuador) of total spending. In the Dominican Republic and Peru, it was not possible to separate in-patient and ambulatory treatment services. Preventive care and health promotion did not exceed 15.9 % (Nicaragua), with a lower average in the other countries. The results are shown in Table 6.

Table 12. Allocation to Functions (% Total Expenditures)

	Bolivia ^{a b}	Dominican Republic ^a	Ecuador ^{a b}	El Salvador	Guatemala	Mexico	Nicaragua	Peru ^a
Administration	33.2	25.5	34.3	21.2	15.2	11.8	6.1	11.6
Curative care	61.4	67	63.4	73.2	80.3	79.2	78	76
<i>In-patient</i>	30	na	42.6	42.1	47	28.5	35.4	na
<i>Ambulatory</i>	31.4	na	20.8	31.1	33.3	50.7	42.6	na
Preventive care and health promotion	2.9	7.4	2.3	5.5	4.5	9	15.9	12.3
Total	97.5	99.9	100	99.9	100	100	100	99.9

Source: Author's elaboration on Berman *et al.* (1999). a. Data not fully available. b. Administration could not be adequately identified; it might include other expenditures.

This is an important area for future work on national health expenditures. The LACNHA country analysts generally reported difficulty with this type of functional breakdown of expenditures, especially with data from the public sector. Government departments, especially the Ministries of Health, tend to report expenditures according to budget categories. Often, a directorate of curative services will fund both hospitals and clinics, and a significant share of publicly provided ambulatory care will be given by hospitals. In contrast, preventive and promotive public health services may be financed through budgets defined as such, although this may not include the fixed costs of personnel and facilities supporting these services. Social health insurance organizations may also be directly financing their own providers with only limited purchasing of services from private or government providers.

c) Resource Allocation by Health Care Inputs

The allocation of funds to different types of health care inputs can be used to analyze efficiency and quality. Indeed, in making cross-countries comparisons, an unbalanced allocation to a specific type of input - for example salaries (as a share of total expenditure) - can make efficiency problems evident, while large differences in spending in drugs and supplies can highlight service delivery problems. Some of these comparisons are possible with the LACNHA data. Table 13 presents for the LACNHA countries the share of total expenditure by two types of financing agents: MOH and the national social security organization (Soc. Ins.). Expenditures are disaggregated by three main inputs: personnel (mainly salaries), drugs and supplies, and "all other" expenditures lumped together (for details, see Berman *et al.*, 1999).

Table 13. Allocation to Main Inputs (% Total Expenditures)

(%)	Bolivia		Dominican Republic		Ecuador		El Salvador		Guatemala		Mexico		Nicaragua		Peru	
	MOH	Soc. Ins.	MOH	Soc. Ins.	MOH	Soc. Ins.	MOH	Soc. Ins.	MOH	Soc. Ins.	MOH	Soc. Ins.	MOH	Soc. Ins.	MOH	Soc. Ins.
Salary	58.3	44.7	66.9	71.3	72.2	50.3	47.3	51.3	52.0	50.0	47.9	74.4	37.7	35.7	11.1	28.0
Drugs & Supplies	8.8	21.2	16.6	16.5	4.7	29.3	11.5	20.6	21.1	30.9	12.3	9.0	23.5	50.2	8.2	9.4
All Other	32.9	34.1	16.5	12.2	23.1	20.4	41.2	28.1	26.9	19.1	39.8	16.6	38.8	14.1	80.7	62.6

Source: Author's elaboration on Berman *et al.* (1999).

Salaries or drugs/supplies? Although definitions used in the different LACNHA countries are not perfectly comparable,¹⁹ a generalization seems possible. In all countries, with the exception of Peru, the MOH appears to allocate much bigger shares of total spending to salaries (as compared to drugs/supplies) than to Social Security payers. Governments should assess whether in public facilities they may be systematically under-spending on drugs/supplies which may then have a negative impact on quality.

Data analysis suggests resource allocation problems. In almost all the countries (with the exception of Mexico and the Dominican Republic), the share of expenditures of social health insurance organizations to expenditures on drugs and supplies is higher than that of MOH. Of total spending on drugs and supplies, Ministries range from 4.7% (Ecuador) to 23.5% (Nicaragua), while social health insurance agencies range from 9% (Mexico) to 50.2% (Nicaragua). The same holds for personnel costs.²⁰ Berman *et al.* (1999) assume that health insurance organizations are more likely to ensure adequate drug supplies in their facilities and to be more responsive to consumer perceptions of quality. The case of Honduras is reported in Table 14.

Table 14. Honduras 1998. Financing Agents to Inputs

To: Inputs	From: Financing Agents												
	Private Employers	FHIS	Local government	Households	IHADFA	IHNFA	IHSS	NGO's	MOH	MOL	Private Health Insurance	Teletón	UNAH
Food					800		17,047,121		47,924,635	1,100,000			
Fuel					163,700		1,311,317		11,843,246	19,459			
Buildings		59,228,842			48,500		655,658		11,260,189	126,978		90,594	
Equipment				2,163,997	159,300	600,000	4,917,439		275,448,221			258,659	570,747
Drugs				669,230,521	2,200	2,815,000	56,386,631		189,994,900	78,298			470,400
Other expenditures	63,985,300		35,564,233	945,256,121	597,200		86,219,093	75,469,700	85,103,296	162,921	137,038,936	281,939	
Other supplies					439,300				180,716,012	81,374		1,455,848	4,220,402
Salaries					3,103,200	4,616,962	161,291,991		795,239,301	5,539,770		6,009,956	6,606,800

Source: PHR NHA Study, 1999. Model year US dollars.

¹⁹ Personnel expenditure may or may not include different types of contract personnel. Drugs and supplies - even if classifications of capital purchases were excluded from this category - may include certain types of equipment purchases.

²⁰ Other factors such as the mix of facilities, programs, and patients may account for such differences.

Equity analysis

In LAC countries, equity in access to health facilities and in the use of services is a common goal for policy makers. Often, the focus of public health spending is the alleviation of inequity by means of redistribution of financial resources. However, few assessments have been made of the extent to which these goals are achieved. In this section we try to sum up the little information that has been found on the subject and to outline what steps should be taken.

Lack of relevant information. In this field, very much remains to be done in all LAC countries. Detailed data on financial flows to regions, gender, indigenous population, and socioeconomic groups are missing and need to be collected. Even if it only uses country aggregates, NHA could help bridging the information gap. Indeed, NHA in combination with detailed household income and expenditure surveys can provide information to measure the current status of health services distribution and to monitor the progress of reallocation policies.

Regressive spending. Although seldom used to analyze distributional issues, NHA have shown that out-of-pocket expenditures are bigger than generally believed, especially in poorer countries. Across LACNHA countries, spending on personal illness care services ranged from 61.4% of total spending (Bolivia) to 80.3% (Guatemala). Preventive care and health promotion services ranged from 2.3% of total spending (Ecuador) to 15.9% (Nicaragua), accounting for less than 9% in six of eight countries (see Table 12 and Berman *et al.*, 1999). These expenditures - as a proportion of disposable income - have a highly regressive nature.

Reduced access and related distortions. The poor are affected the most by this situation. For example, scarce financial resources affect the quality of care. Indeed, high level of out-of-pocket expenditures in drugs might not only be related to their cost, but also to self-medication, in order to avoid paying private doctors or receiving poor services in second-rate public infrastructures. This phenomenon is both an equity issue and a problem of allocative efficiency: it is well known that the poor because of opportunity costs tend to avoid seeking medical attention until it is absolutely needed (usually at a higher cost), do not go to the hospital and try to minimize inpatient treatments. Also, since hospitals are normally located in urban areas, travel cost might prevent their use by the rural poor. As a result, emergency rooms get overloaded for non-emergency matters. Consequently, the overall resource allocation is affected by equity.

Monitoring equity: effects on policy. NHA can help government efforts to increase funding for basic health care and to reorient priorities toward cost-effective programs. In Mexico, NHA have raised awareness of regional and socio-economic disparities in health spending. This has stimulated the reform in two health policy areas: the social health insurance, which covers the majority of the population, and the expanded government efforts to reach under-served regions and populations. In the Dominican Republic, NHA are used to assess the distribution of health care resources to different socio-economic classes in that country. Guatemala, Honduras and Nicaragua are planning to do the same, and are presently orienting their NHA data collection for the 1999 estimation in the same direction.

Dominican Republic. By analyzing patterns of consumption and expenses according to income, residence, age and gender, Rathe (1999) assessed the financial equity of the Dominican health care system. Data from 1996²¹ showed that the Dominican Republic suffers from health inequities and public health expenditures which are not totally redistributive. By estimating the subsidy received from government funds by each income quintile and its proportion on total family expenditures, Rathe found that if central government financing of health is progressive (it benefits more the poor), the publicly funded social insurance program benefits more heavily the wealthy. Compared to the other LACNHA countries, in the Dominican Republic a much larger share of household expenditures goes to health. The phenomenon is due to both the direct consumption of health²² (payments made to private providers) and the high user fees at public health facilities. The phenomenon is potentially regressive. It would be important to take advantage of these findings to inform the health sector reform, with the aim of increasing the health system equity.

Gender analysis. Whether judged by cost-effectiveness or public finance criteria, many women's health services merit greater investment and resource reallocation (Magnoli, 2000). In the LAC region, however, some key services, such as obstetric care and related emergencies, remain unsubsidized for the poor. Additionally, there is very little data on the outcomes of gender-oriented financial policies. Given public resource constraints, there has been surprisingly little attention given to private sources and uses of funds in women's health (Henderson *et al.*, 1999). NHA could help, because analysis of private spending and its effectiveness may allow policy-makers to better assess public financing needs in women's health and to suggest alternative strategies for resource mobilization and better targeting of investment in health services.

Indigenous population. Estimates of the distribution of benefits of public and private spending on indigenous people health are not available and must be researched. Household expenditure surveys should be used to comprehensively assess current levels of private spending on health services by indigenous people and, where possible, on specific health services. NHA indigenous-specific data collection can address these issues. Analyses should contrast health spending at different levels of care, areas of residence and type of provider and examine illness perceptions, service utilization and reasons for non-use. Last but not least, NHA data should be crossed with perception and use data, to analyze the gaps among illness perception, need, use, and expenditure.

Identification and analysis of stakeholders

Before any attempts at reforming, it is important to understand stakeholders, their views, interests, and power. Understanding the dimensions of the public and private sectors is essential, and monitoring the evolution of their role is key for any reform policy. For example, before reorganizing health delivery it is important to take into account that in many LAC countries private sector financing intermediaries comprise a large share of total health spending, and that

²¹ 1996 NHA and 1996 household information on health care consumption.

²² Indeed, because of low insurance coverage, many Dominicans purchase directly health services, ending up by paying more in aggregate.

government funds mainly finance hospitals and public health services, while ambulatory treatment services are primarily supported by private sector funds.

The role of the private sector in health care financing

The NHA methodology provides two distinct breakdowns of the public-private mix in health care financing.

Sources of financing breakdown. The first of these breakdowns identifies public and private sources of financing, as defined in the NHA framework where sources refers to entities who provide funds to those who are the final payers or purchasers of health care.

Intermediaries breakdown. The second breakdown relates to the public-private composition of expenditure by financing agents, the entities who receive funds from sources and use them to purchase or pay for health care services.²³

Table 15. Public-Private Mix: Different Calculations (% of Total Expenditures)

	Sources				Financing Agents			
	% Public	% Private	% Ext Aid	Total	% Public	% Private	% Ext Aid	Total
Bolivia	56	34	10	100	65	35	0	100
Dominican Republic	14	84	2	100	21	78	1	100
Ecuador	35	56	9	100	46	46	9	101
El Salvador	22	72	5	99	46	53	0	99
Guatemala	27	65	8	100	60	40	0	100
Mexico	36	64	0	100	43	57	0	100
Nicaragua	42	41	18	101	68	32	0	100
Peru	38	62	1	101	66	34	0	100

Source: Berman *et al.* (1999).

Differences. The two breakdowns differ significantly. This is because the NHA methodology identifies firms and households contributions to different financing intermediaries, including mandatory and voluntary insurance contributions and other payments, such as user charges. Indeed, in many countries, social health insurance is largely financed by payments of private firms and workers through mandatory contributions.²⁴ The sources breakdown includes three categories: public (including departments of government and state-owned enterprises), private (including private firms and households), and external aid (foreign sources of funds). The

²³ This approach differs from the usual presentation of the public-private mix in financing, which generally is drawn from analysis of financing intermediaries. For example, following the practice of the health expenditure information reported by the Organization for Economic Cooperation and Development (OECD), public finance typically includes departments of government and social health insurance institutions, while private finance includes private health insurance, non-governmental organizations, direct payments for health care by private firms, and out-of-pocket payments by households.

²⁴ It is debatable whether social health insurance contributions should be called taxes or premia as they have some characteristics of both. But clearly they are different from general tax revenue collected by the state and not earmarked for health. Of course, if one considers who pays the taxes, ultimately all health care financing is derived from “private” sources. The NHA methodology does not disaggregate sources of government financing according to who ultimately bears the burden (Berman, 1997).

financing intermediaries breakdown comprises public (including departments of government, state-owned firms, and social health insurance), and private (private insurance, non-governmental organizations, private firms, and households). External aid (mainly NGO's) have a minor significance. Table 15 compares the public-private mix in terms of sources of financing with that of financing intermediaries.

The importance of social health insurance. In all eight LACNHA countries, the public share of spending is significantly higher for financing agents than for sources. The difference in shares largely represents the importance of social health insurance and user fees in total expenditure, as public sector “payers” capture a larger share of total spending. It is important to remark, however, that in some of the countries mentioned Social Security covers a very small share of the population. Hence, doubts on the efficiency of these schemes appear to be legitimate.

Table 16. Major Types of Payers or Financing Intermediaries (% of Total Expenditures)

	Bolivia	Dominican Republic	Ecuador	El Salvador	Guatemala	Mexico	Nicaragua	Peru
Health expenditure per capita (US \$)	39	164	71.2	135	35	168	54	112
Type of payer/ Intermediary								
<i>Central govt. depts.</i>	23.9	16.1	23.5	23.0	31.3	9.1	57.5	31.6
<i>Other govt. depts.</i>	1.4	na	9.6	2.2	na	na	na	9.6
<i>State-owned firms</i>	2	0.3	na	na	0.2	na	na	NA
<i>Social health insurance</i>	37.7	4.8	21.5	20.5	27.8	34.3	10.5	24.6
Total Public	65.0	21.2	54.6	45.7	59.3	43.4	68.0	65.8
<i>Private health insurance</i>	2.5	7.5	10.3	1.1	3.9	1.4	na	3.1
<i>Non-govt. organizations</i>	4.0	1.9	1.3	0.2	4.0	na	na	0.8
<i>Private firms' direct payments</i>	na	42.7	0.7	na	na	na	na	1.9
<i>Households' direct payments</i>	28.5	26.62	33.1	53.0	32.8	55.2	32.0	28.4
Total Private	35.0	78.7	45.4	54.3	40.7	56.6	32.0	34.2
Total	100	99.9	100	100	100	100	100	100

Source: Berman *et al.* (1999). Note: All data from 1995 except Dominican Republic (1996).

The relevance of household expenditure. Table 16 presents in detail the shares of total health expenditure held by different types of financing intermediaries, with the totals for public and private corresponding to those in Table 15 (right column, financing agents). Direct government financing ranges from 9% to 33% of total expenditure in most of the countries, with Nicaragua at 68% of total spending. The LACNHA countries were not drawn from the wealthiest nations in the region, so that the levels of social insurance financing are relatively low. Private health insurance was generally below 5% of total expenditure, whereas households direct spending accounted for a third of the total in five countries and over one half in two countries.

Modeling change

In any reform it is critical to analyze projections of the impact of alternative policy initiatives. In order to do so, a systematic description of the current health system and a quantitative model to forecast on that basis are required. In all LAC countries, the ability to quantitatively describe health systems as well as to create a range of “what if” scenarios is increasingly important to better respond to the queries of policy makers.

Simulation and projection models. Running simulations of how the expenditure influences the health output should become the daily job at the MOH planning department. In the region, it is overwhelmingly necessary to create a methodology of analysis through modeling. The objective is to build simulations on detailed NHA data and relate expenditure with well-defined health indicators. NHA can help modeling: by building on simple and straightforward information – the financing provision of the existing scheme – NHA can provide the bases for more complex analyses regarding possible future scenarios. For example, an NHA-based projection model would help to calculate - in the event of an increase of doctor's fees by x - how much the aggregate cost would increase. Also, it would become possible - supposing an increase in co-payments by an amount y - to project how much would the MOH save. Finally, it would be clearer to understand whether the Government, employers and employees can afford introducing a national insurance scheme. For example, Peru and the Dominican Republic are planning to launch health care financing reform programs. NHA can provide them with a comprehensive framework for organizing their health financing information and with a basis for estimating the costs and financial impacts of the reform strategies.

Monitoring and evaluation

NHA can play an important role in monitoring and evaluating both policies and reforms.

Monitoring size and actors of the health sector. In almost all LACNHA countries NHA has highlighted higher estimates of total spending than earlier studies, and a significant private sector share of total spending, especially households direct spending.

Ecuador. For several years, Ecuador has been exploring significant health sector reform options. However, these efforts have often been delayed because of political changes. In 2000, reform was once again on the agenda and NHA have contributed to the elaboration of its design, providing the most recent available picture of health financing.

Mexico. In Mexico, NHA have been carried out three times since 1990. The results have raised awareness of the significant size of the health sector in Mexico's economy and of the major role played by private health care providers in Mexico's health care system.

Monitoring reforms. Many countries that have developed NHA have a few problems in using data for monitoring and evaluation.

Dominican Republic. In the Dominican Republic NHA were used as an instrument of analysis, monitoring and evaluation of the health reform process. However, it is still far from being a part of the MOH management information system. Also, it is far from being used - jointly to indicators of health outcomes, epidemiological pattern, fixed capital, etc. – for cost-effectiveness analysis and for evaluating the efficiency and performance of the health sector.

Peru. In 2000, Peruvian authorities at the MOH expressed their intention on using NHA to identify the critical points in the health sector, monitor policies and evaluate changes. Also, NHA provided the occasion for a discussion on criteria and methods for systematizing information.

Monitoring decentralization. In Bolivia, NHA are providing a baseline estimate of national health spending preceding a major decentralization of health spending authority to local governments. Subsequent studies are planned to show how decentralization of financing is affecting total spending and the allocation of spending to different types of service, providers, and inputs. NHA-type analysis has been expanded in Mexico to the state level, making possible analysis of the impact of health system fiscal decentralization.

State Reform. By providing relevant information, NHA can help the state reform. For example, NHA can provide relevant data in order to measure the degree of achievement of a MOH-shift from the role of mere service provider to that of regulator and intermediary agent in health financing. NHA can also aid the health policy design and the evaluation of reform programs. In 1999 in Bolivia, for instance, during a workshop to initiate the dialog on the Health Law,²⁵ the president of “Physicians at the House of Representatives”²⁶ - responsible to champion the law in the congress – requested a presentation of NHA results with the participation of the health authorities. In Ecuador, NHA – by structuring the expenditure by sectors (public sector, institutions, and households) – were useful in the design of institutional changes and to discover the amount spent by households in pharmaceuticals. Indeed, relevant actors in the health sector and leaders in the National Council of Health²⁷ used NHA information to promote a constitutional reform: for the first time in Ecuador’s history, a chapter on “Health” was included in the Constitution. This chapter makes basic insurance coverage a constitutional right and promotes the integration of the health sector actors, with the aim of constructing an integrated health system.

PROBLEMS IN IMPLEMENTING AND USING NHA

Methodological problems

For many of the LACNHA countries this is the first experience in collecting and developing a comprehensive set of national health expenditure. Understandably, many problems surfaced. In general, comparable expenditure classifications are lacking; there are differences in categories across countries, even when the same terminology is used.²⁸ Additionally, it is often impossible to treat existing data under the classification required by the NHA scheme. There are many gray areas, in which there is not a clear classification and definition of health expenditures. Also, final NHA frequently show gaps in the availability of data. Even though the amount for which little or no data are available tends not to be a major component of total health spending (e.g., direct expenditures by employers for employees or expenditures by non-profit organizations), it is still important to consider the issue. Some of these problems are common and could be addressed more systematically.

²⁵ Ley de la Salud.

²⁶ Médicos Parlamentarios.

²⁷ Consejo Nacional de Salud.

²⁸ The same phenomenon happened and still happens in the OECD countries when collecting health expenditure information.

The importance of a standard. To strengthen comparability of findings, LAC countries should work together to develop standardized definitions and to apply them in budgeting and in classifying health care expenditures. For instance, in LACHNA, budget and expenditure information from ministries and social insurance are difficult to allocate according to functions. Most of these agencies do not have systematic program budgeting and do not differentiate by types of health care services, while the organizational structure of budgets (e.g., by directorates of curative or preventive care) is a poor representation of functional breakdowns. As a result, two important matrices (financing intermediaries to providers as well as financing intermediaries to functions) are difficult to identify, unless they keep their expenditure data in a more disaggregated format. For example, if the MOH has a hospital's directorate that administers expenditures for public hospitals, it will be difficult to separate out the in-patient and out-patient shares of hospital expenditure. In the Dominican Republic, the methodology was not strictly defined and the lack of correspondence to the National Accounts System²⁹ was prejudicial to the rigor in carrying out estimates. Although the results were consistent and reliable, they did not adequately reveal the new structure of the public health system which at the time (1996) was undergoing a reform process focused on decentralization and on the pursuit of efficiency. In Ecuador, NHA suffered the absence of a functional orientation of expenditures. Indeed, a classification by functions, as defined by the NHA framework, was not available in the budget (e.g. primary, secondary, and tertiary care). Also, the practice revealed the exclusion from the overall country's health expenditure of the expenditures by provinces and regions, and the need to clearly identify relevant items (e.g. pharmaceuticals). In Nicaragua, the information is heterogeneously classified among different institutions. During the NHA data collection, there was a lack of a precise definition of what lies inside the health sector and what lies outside. This lack of definition made more difficult the estimation of household expenditure and private sector. Additionally, the NHA data processing suffered from unclear methods of extrapolating data from both the private sector and household surveys. Major limitations were data aggregation which impeded better and deeper analysis of the results, and a poor accessibility to the information in the NGO and private sectors.

Omissions in coverage. The absence of routine estimations in several LACNHA countries may inhibit efforts to improve the quality of estimation methods and corresponding results by underemphasizing the extent of uncertainty in the data and by failing to identify areas where efforts should be strengthened to improve data sources. Omission of data leads to downward estimates and these gaps may become significant for some sub-categories of health spending. Therefore, it is probably best to guesstimate the amount within an acceptable range utilizing a confidence interval (Rannan-Eliya, Somanathan, 1999).

Estimating private expenditures. Facility survey data should be the main source of information for estimating private health expenditures. However, accurate data sets on revenues or expenditures are hardly ever available, and only occasionally some institutional providers, such as private hospitals or employers, collect data and make them accessible. Then, if the total size of the provider population is known, NHA can rely on sample surveys to provide an estimate of total revenues in that population. To increase accuracy, revenue data obtained from the sample survey can be compared with statistics on inputs (e.g. number of beds) and outputs (e.g.

²⁹ Sistema de Cuentas Nacionales – SCN 93.

discharges), which private facilities often must report to government agencies gathering health statistics. If there is a strong relationship between some of these other characteristics and total revenues, then it might be useful to utilize this approach on a national scale, particularly if the sample size is large.

Pharmaceutical products. When estimating expenditures on pharmaceutical products, data should be crosschecked with total pharmaceutical production and purchases. When this was done in LACNHA, it was found that household surveys underestimated out-of-pocket purchases of medication. In these cases it is necessary an upward adjustment, according to the consumption of drugs and pharmaceutical products.

Household expenditures. In LAC countries, out-of-pocket household spending is one of the largest components of health spending. Nevertheless, most of these expenditures are not reported from provider statistics or other data sources. Therefore, NHA must rely on nationally representative household sample surveys, recording health care utilization, expenditures and general consumption patterns. However, estimating household health expenditures accurately from household survey data is a challenging task. A brief example may clarify the issue. Survey data on household health expenditures typically comprise two types of variables: volume (rate of utilization of providers) and price. The total expenditure is the product of both variables. However, these can be underreported due to recall bias and the level of under reporting may not be the same for each.³⁰ In LACNHA countries, where household survey data were used to estimate private spending, the quality of final data varied significantly because: a) sometimes there were multiple and conflicting sources of data; and b) sampling and non-sampling errors were common³¹ while recall bias engendered under reporting.³²

Modification required in present data collection. A few developments are necessary to improved NHA.

Identify investments. Given that most public expenditures tend to be devoted to salaries and basic inputs for health, investments are generally low, and – as opposed to current expenditures – are not easy to spot in the current version of NHA. However, investments' low relative weight and the difficulty in classifying them should not be reasons to prevent an effort to unequivocally identify the total capital endowment. Information should be available both on where the

³⁰ Research suggests that underreporting generally affects more the rate of utilization and less so the price of episodes. Utilization data is often independently verifiable using alternate data sources.

³¹ Sampling errors are well understood and it is relatively easy to adjust for any deficiencies in the sampling frame. Non-sampling errors are more difficult to treat as they are based on the quality of reporting made by survey respondents (for details, see Rannan-Eliya, Somanathan, 1999).

³² The main problem is the definition of the length of recall periods. The extent of recall bias varies within the same data set. Normally, for a given recall period, reports of ambulatory expenditures suffer from greater recall loss than in-patient expenditures. Similarly, recall data on the purchase of goods are typically better reported than that of services. Under reporting has been found to be positively associated with longer recall periods and with chronic versus acute illness (i.e. under reporting is greater for ambulatory care than for in-patient care). Moreover, under reporting occurs more frequently when health incidents are considered embarrassing or taboo (e.g. mental illness, sexually-transmitted diseases, abortion, and traditional healing). Research suggests that a period of one to two weeks is best for ambulatory visits, and a recall period of six to 12 months for hospitalization (Rannan-Eliya, Somanathan, 1999).

investment is made (e.g., hospitals vs. primary care) and where new resources should be invested (e.g., does the reform to increase primary care has the necessary infrastructure available?). Indeed, knowing the stock of capital available before the NHA data collection - and the amount of capital marginally added during that year, will orient investment in the sector, and such information will complement the Health Investment Master Plans and other available tools.

Better surveys. To improve data quality, it is suggested to develop better national consumption surveys, standardizing their design and adding health-care-specific expenditure sections. It is also important to expand methods of validating estimates (e.g., by comparison with pharmaceutical market information and other sources). In the Dominican Republic, health data need to be collected in a more disaggregated way, compatible with the NHA definitions and classifications. There is evidence of some progress: The estimation of private expenditure information has been improved by incorporating a health module, compatible with NHA, in the National Households Survey of Income and Expenditure.³³ In the same way, public sector data should become easily adjustable to the NHA format. In Nicaragua, NHA can help providing a more precise estimate of households' expenditures. It is necessary to analyze the impact of households' expenditures on health sector financing, on specific programs, and by level of care (primary, secondary and tertiary). Also, it is important to develop a qualitative and quantitative analysis on the patterns and behaviors of the financial flows in private sector.

Understanding by policy makers

While technocrats and academics tend to believe that decisions should be based on evidence, experience shows that the health sector has survived without it. "Irrational" decision-making is not always due to lack of information but is more often politically determined. In the rare occasions when health authorities believe they need information, they ask for it. In LAC, one of the main limitations for the proper use of NHA results is the lack of interest by policymakers. Indeed, in the majority of LACNHA countries, NHA were not implemented in response to a specific national policy agenda but rather as a general tool for health system analysis. As a consequence, there is not an explicit connection made between the health sector reform and NHA; sometimes decision makers are not even aware of the NHA practice, and, when they are, find troublesome the use of its results.

Lack of policy applications. Thus far, even when NHA data were relevant for health policy and reform and were potentially useful in decision-making, health sector policy-makers have not taken them into account. Because LACNHA policy makers have not used NHA as the health sector management information system, NHA results have had minimum influence on decisions. For instance, in Ecuador, the little interest by policy makers was due to poor communication: They ignored what kind of information had been collected through the NHA process. In Nicaragua, MOH authorities and the WB used NHA as a diagnostic tool of the financial flows in the health sector and for future monitoring. However, there was (and there is) not a clear interest by the policy makers in the results for the design of policies. A training program to improve the understanding of the NHA utility is needed.

³³ Encuesta Nacional de Ingresos y Gastos.

Lack of political will. For NHA to become operational, a higher-level mandate, accompanied by a budgetary line item, must exist within the institution leading the effort to complete the estimation. In Nicaragua, for instance, because the MOH did not show a strong commitment, team members offered very limited availability of time. If we define political will by changes in policies, resource allocation, and institutional settings, we must say that in LACNHA countries the willingness to use NHA to help in such decisions is not evident. So far, NHA results have been used more to integrate reports than to make decisions. In Bolivia, the topic of health sector financing has created keen interest in the MOH and in Cooperation Agencies, and the results obtained through the NHA process were incorporated into a World Bank "Public Expenditure" review, which was revised by the highest authorities in the country and presented in June of 1999 to the Consultative Group³⁴. In Nicaragua, NHA results have been used only occasionally as reference in different works and reports of international organizations and in the MOH health data. Presently, the Minister uses the results (especially data on government and donors expenditures) in his presentations and this is a key channel to disseminate the results. In the Dominican Republic, policy makers showed interest, and the Presidential Committee for Health Sector Reform adopted NHA as its analysis tool for decision-making. To make public services statistics compatible with the NHA requirements, a feedback channel was added to the modular/provincial information system. However, NHA policy application is not yet a standard practice. In Peru, because of low interest by policy makers, NHA potentially conflictive results did not constitute a problem. In Ecuador and Guatemala, national authorities have now launched specific new efforts to repeat NHA and to sustain NHA capacity for future work.

What to do to increase interest of policy makers? NHA should be demand-driven. Policymakers should request the kind of financial indicators generated by NHA. This demand is more likely to exist when results of the estimation are pertinent to the current health policy debate, and credible.

Pertinent, timely and reliable information. To encourage the MOH to have a decision-making process routed in NHA is needed disaggregated, customized and agenda-oriented information. NHA should include an itemized and less aggregated analysis by programs and regions, and a deeper scrutiny of household surveys and social security. Information on private sector and NGO's is still insufficient and incomplete. For example, in Nicaragua, the lack of adequate estimation of household expenditures - as well as the difficulties in obtaining some concrete private sector information (providers) - hampered the use of NHA results as a vital tool for the management of health sector reforms. In short, NHA should get into more detail, showing more detailed information on the financial flows of the health sector and measuring the efficiency and equity of the expenditure utilizing gender, socio-economic and ethnic groups, and geographical regions. Timeliness is also critical. For instance, in Ecuador, a problem that limited the policy implications of NHA has been the delay in publishing the information (data from 1995 were published in April 1999). Decision-makers judged this a very late delivery. In order for results to be policy-relevant, the NHA team should be multi-disciplinary, including financing as well as health systems specialists that are at the same time technically proficient and aware of the broader implications of their work. Credibility requires that the estimation be transparent and participatory, inclusive of other institutions operating in the health sector besides the MOH. The data must also be of solid quality, which needs continuous improvement of record keeping

³⁴ Grupo Consultivo.

methods as well as the periodic undertaking of surveys. In Ecuador, loose estimates, the levels of aggregation, the absence of rural data and the lack of private sector information are the main limitations in the use of NHA. Additionally, the Ministry of Defense³⁵ did not provide any information (1995 was a year of war with Peru, and any expenditure information would show it).

Dissemination of main findings. It is necessary to improve presentation of data to achieve a more complete dissemination and understanding of NHA results, not only by health authorities, but also by other key institutions (Congress, MOF, etc.). In Ecuador, the dissemination of results was inadequate. The use of the information was circumscribed to a small group of technicians, which used only a part of the data. In Nicaragua, the team is presently working on cleaning and treating the data, and improving the NHA results and analysis, to obtain very detailed information by sector and useful input for strategic decisions. In Peru, NHA results have barely been disseminated and have yet to become an explicit instrument for decision-making. The information has been used more for academic purposes or for restricted discussion.

Resistance to accept results. In theory NHA results should: a) support policy design, b) facilitate decision-making, c) shed light on health sector strategies, and d) substantiate monitoring of changes. In practice this whole process can be questioned because of potentially unpopular outcomes and the fear of their political consequences. Indeed, problematic findings can create some refusal to accept NHA results. A smaller-than-expected public sector role in health delivery, high private expenditures, and inequitable benefits across income groups, races and genders are findings that normally reduce enthusiasm about NHA, especially during elections years. For example, in Dominican Republic, the little participation of public sector in the national expenditure became a concern for MOH central authorities. In Guatemala, in 1999 (an electoral year), the MOH had difficulties at the moment of disseminating sensitive results. In Nicaragua, where the expenditure reflects levels of developed countries - even if the phenomenon might be due to an over-valuation of the private sector, particularly households, and to a miscalculation of the GDP - results puzzled local authorities and did not correspond to the expectations of the policy makers. To incent policy makers to make use of NHA information, it would probably be useful to analyze and correlate NHA with the information on health status indicators and population.

Institutionalization

Institutionalization of NHA is one of the most significant challenges to overcome. In LAC countries the objective is the development of a long-term capability to implement NHA on a systematic basis. Three things are needed to achieve this: 1) assets in the broadest sense: human, political and financial resources; 2) a well-defined organizational setting; and 3) policy makers to use - and consequently to call for - NHA data.

Resources. In order to establish a permanent process of data collection, analysis, and delivery multiple factors are needed: skilled labor, political will and support, and a budget, assigned to staff salaries, data collection and elaboration costs. Needless to say, deficient resources can cause many difficulties and inconveniences. In Nicaragua, decision-makers and health sector

³⁵ Fuerzas Armadas.

authorities are aware of the NHA use and importance, and its institutionalization has been proposed in an official way. In practice, however, the lack of technical staff, resources, materials and support by policy makers has been hampering the NHA process. In fact, the MOH was unable to appoint a national team coordinator, with sufficient technical capability, a stable post, and a salary. As a result, the team had five coordinators, and its members had to continuously orient and update the new coordinator on the developments of the project. Because of the non-existence of an office where to meet and the lack of necessary resources, the NHA team needed to constantly improvise finding a workplace and sufficient materials and technical resources.

Creating a staff unit. A NHA unit should be established and hosted at the MOH or at the Institute of Statistics as a permanent part of the organizational structure. The unit, headed by a coordinator reporting to the MOH planning director, should be responsible of producing timely and reliable NHA. None of the LACNHA countries has yet achieved such stage. In the Dominican Republic, the absence of such a unit troubled the NHA institutionalization and had a negative impact on the information flow to the health sector's main actors. In Peru, NHA suffered from institutional disorder: Initially, the NHA elaboration was carried out within the framework of the IADB financed "Program for Strengthening Health Services"³⁶ by an inter-institutional committee, composed by representatives from the MOH General Office of Planning,³⁷ PAHO, MOF, Central Bank and Social Security. However, because of a loss of interest by the political authorities, the committee was later dismissed. In Nicaragua, it was necessary to contract an international consulting firm to carry out the NHA operative activities. The personal relationship of this consulting firm with high-level military officials made possible the inclusion of the Ministry of Defense in the technical team.

Demand-driven NHA. NHA should be a demand-induced innovation (Poullier, 1999). Policy makers should consider NHA as data for decision-making, and request them at the moment when policies are being designed. Consequently, medium and high level officials must be trained. Otherwise, the importance of NHA will be recognized more in words than in practice. In Nicaragua, a draft of a Presidential Decree³⁸ proposing a political inter-institutional committee for NHA still needs the approval by the Office of the President before its promulgation. However, the MOH created an NHA working group in the General Superintendence of Information Systems.³⁹

NHA dissemination. The outcome from NHA results can be seen from different points of view. For that reason, NHA reporting, presentation and dissemination can be a slippery task and can harm the institutionalization process. Guidance is needed on how to present and disseminate NHA results.

³⁶ Proyecto Programa de Fortalecimiento de Servicios de Salud.

³⁷ Oficina General de Planificación.

³⁸ Decreto Presidencial.

³⁹ Dirección General de Sistemas de Información.

CONCLUSIONS

NHA are the main approach used to estimate national health expenditures in the OECD countries and in a growing number of developing nations. They are a set of comprehensive accounts that describe and monitor the totality of health expenditure flows in both government and non-government sectors, explicitly indicating the source of all funds and – through financing agents - their destination and uses. LAC countries that traditionally have been lacking reliable and timely data on health spending can bridge this gap with the creation and use of NHA.

The importance of quality information. Health care financing is an indicator of both status and change of a health care system and, for this reason, it is playing an increasingly larger role in the policy-making agenda of organizations that provide and support health care services. The availability of quality information on health sector financing is essential to understand the functioning of health systems; it is a prerequisite to realize the need for reforms; and it is required to measure the impact of restructuring policies.

Problems with non-NHA data. Existing data collection methods in LAC countries present more than a few problems: They lack comprehensiveness because they overlook the holistic approach to resources devoted to health; they also ignore private expenditures and concentrate on cost of specific programs and interventions. Moreover, because they lack standardization, most published studies are not comparable (e.g., data sources and methodology are not the same, survey bias lack adjustments when comparing private and public expenditure data). Indeed, their ad-hoc nature makes non-NHA data unsuitable for routine monitoring.

Advantages of NHA. The NHA approach is comprehensive. In a health system, it accounts for all expenditures (general public and private services); support costs and direct programs. It also provides the possibility of standardization: homogeneous health accounting frameworks and definitions (OECD, 2000) are the springboard for systematic classification of expenditures by function.⁴⁰ Also, NHA provide the basis for more robust and reliable measures of private spending, allowing better comparisons across countries. The validity and usefulness of comparative analyses depend greatly on assuring that like is being compared with like across countries and that expenditures are measured with acceptable levels of completeness and accuracy. For these reasons, NHA can help design, monitor, and evaluate policies, both in terms of who receives funds and what they produce as a result. Also, NHA can help to understand the effects of policies on health care sponsors (sources), intermediaries (financing agents) and

⁴⁰ The draft handbook of System of Health Accounts (SHA) developed by the OECD is a recommended starting point (OECD, 2000). The principles of OECD International Classification for Health Accounts, which underlie the OECD Secretariat's annual data collection OECD Health Data, have served in the past as a reference system and over time have become an informal quasi-standard for uniform reporting on medical care systems in many countries. Over the years, a step-wise harmonization of concepts and definitions and enhanced cross-national comparability of health accounts went hand in hand with this annual data collection. The step-wise development of OECD Health Accounts in the past has inspired the construction of NHA or has influenced the revision of NHA in several countries (within and outside the OECD area) (Huber, 1999). To further its work on standardized health accounts, the OECD Secretariat has drafted a manual of the System of Health Accounts (SHA), which provides a framework for a family of interrelated tables of standard reporting on health expenditures and related non-monetary data, such as employment and other resource statistics.

resource allocation (uses). The “sources and uses” matrixes organize data needed for such analysis. All these characteristics make NHA more suitable than other accounting systems for routine measurement and monitoring.

NHA in LAC. Recent experiences in LAC indicate that NHA can be very useful in analyzing the existing situation, identifying the main stakeholders, and monitoring and evaluating the activities and impacts of health reforms. Although NHA are highly dependent on a country’s conditions, the inter-sectoral dialogue, and the willingness to produce the data, they are becoming the main basis of cross-national comparisons of health expenditures. In LAC we briefly can say that: 1) the number of countries collecting NHA is expanding; 2) the methodology is converging; 3) new approaches are arising (disease-specific NHA, e.g. HIV/AIDS); and 4) the policy application of NHA is growing. However, the future of NHA in LAC countries is uncertain, because policy makers do not use these data for decision-making, and because the mechanisms and incentives necessary to institutionalize this practice and to assure its sustainability beyond its current dependence on donor support remain to be addressed.

Next steps. The monitoring of health systems evolution in Latin America would require repeated implementation of NHA using a standard framework. The LACNHA network has taken the first steps in this direction. Much remains to be done, especially in measuring efficiency and equity. Additionally, the interpretation of health outcome indicators should receive sufficient attention and be cross-related with NHA data.

Methodological problems. This paper discussed only the main problems in NHA data collection, processing and aggregation. An interesting dichotomy is the following: While it is clear the importance of a common standard, it is also important to tailor data collection to issues relevant to local health policies. For important approximate estimates (e.g. total national health expenditure, and total public and private expenditures), NHA studies should report a confidence interval for final total numbers. This would not only help users to judge the appropriateness of any conclusions based on the data, but it would also assist in identifying areas where future efforts should be concentrated in order to improve the quality of estimations. Collaboration, exchange, and dissemination of country teams’ experiences gleaned from their production of NHA estimates can all be useful to countries that may be conducting NHA exercises for the first time as well as to countries interested in testing alternative approaches in data gathering, analysis, or use of results.

Policy applications. More attention to useful application of NHA is needed. Merely providing NHA information is not going to change the decision-making process in the health sector. NHA will become an excellent tool only after proving its usefulness for evidence-based decisions. Also, the likelihood that NHA will become an institutional element in health policy making depends upon the level of its usefulness to the policy-making process. Therefore, it is essential that countries that produce NHA estimates document their experiences, disseminate results to counterparts both domestically and abroad, and train their policy-makers in the use of data.

Public/private fine-tuning. While additional resources are needed, they also need to be well spent. NHA may very well help in that direction: Using NHA information, governments should

be better able to realize trends and consider their roles as regulators and financiers in order to improve the efficiency and equity in those services which are predominantly financed and delivered by the private sector.

GLOSSARY OF ACRONYMS

CIECA	Centro de Investigación Económica para el Caribe
IADB	Inter-American Development Bank
ILO	International Labor Organization
IMF	International Monetary Fund
LAC	Latin America and Caribbean
LACNHA	Latin America and Caribbean National Health Accounts Network
MOE	Ministry of Education
MOF	Ministry of Finance
MOH	Ministry of Health
NA	National Accounts
NHA	National Health Accounts
OECD	Organization for Economic Cooperation and Development
PAHO	Pan-American Health Organization
PHR	Partnership for Health Reform
USAID	The United States Agency for International Development
WB	The World Bank
WHO	World Health Organization

BIBLIOGRAPHY

- Abel-Smith, B. 1963. *Paying for health services: A study of the costs and sources of finance in six countries*. Public Health Paper #17. Washington, D.C.: World Health Organization.
- Berman, P. 2000. What can the U.S. learn from national health accounting efforts elsewhere? *Health Care Financing Review*. April 2000.
- Berman, P., L. Arellanes, and P. Henderson *et al.* 1998. *Developing a regional national health accounts network: The Latin America and Caribbean experience*. Bethesda, MD: Partnerships for Health Reform Project, Abt Associates. Draft.
- Berman, P., L. Arellanes, P. Henderson *et al.* 1999. *Health Care Financing in Eight Latin American and Caribbean Nations: the First Regional NHA Network*. PHR-LAC-HSR Paper N. 16. April 1999.
- Berman, P. 1997. NHA in Developing Countries: Appropriate Methods and Recent Applications. *Health Economics* Vol. 6:11-30, 1997.
- Bolivia. Ministerio de Salud y Previsión Social. 1998. Estudio sobre cuentas nacionales de financiamiento y gasto en salud. Bolivia: Unidad de Reforma de Salud. Unpublished.
- CEPAR-USAID. 1998. Cuentas nacionales de gastos en salud: Ecuador 1995, informe final. Ecuador: Proyecto Analisis y Promocion de Politicas de Salud. Unpublished.
- Fundación Mexicana para la Salud. 1998. Cuentas nacionales de salud. Unpublished.
- Getzen, Thomas E. (Department of Risk, Insurance and Health Management, Temple University and Director, iHEA). "Multi-level Analysis of Health Care Costs". Paper presented at the NHA Symposium in Rotterdam, June 1999.
- Govindaraj R., *et al.* 1997. Health expenditures in Latin America and the Caribbean. *Social Science and Medicine* 44:157-169.
- Griffin, C.C. 1992. *Health care in Asia: A comparative study of cost and financing*. World Bank Regional and Sectoral Studies. Washington, D.C.: The World Bank.
- Guatemala. Ministerio de Salud Pública. 2000. Cuentas Nacionales de Salud, 1998. Guatemala, Unidad de Planificación Estratégica/Unidad Financiera. MOH. PHR NHA Study, Mayo 2000.
- Hatton, M. 1996. *El Financiamiento Público al Sistema de Salud en la República Dominicana*. Centro de Investigación Económica para el Caribe (CIECA). Versión preliminar e incompleta.
- Henderson, P., J.L. Montes, A. Glassman *et al.* 1999. *Private Sector Spending on Women's Health in Seven Latin American Countries: Lessons for Health Sector Reform*. Paper presented at the NHA Symposium in Rotterdam in June 1999.
- Huber, M. 1999. *The OECD International Classification for Health Accounts*. Paper presented at the NHA Symposium in Rotterdam in June 1999.
- Hurst, J. 1992. *The reform of health care: a comparative analysis of seven OECD countries*. Paris: OECD.
- IADB, Department of Statistics. 1998. <http://www.iadb.org/int/sta/English/StaWeb/>.
- Magnoli, A. 2000. *Bridging the Gender Gap in Developing Regions*. INDES Working Papers 1-14, May 2000, Washington D.C.: Inter-American Development Bank.

- McGreevey, W. 1990. *Social security in Latin America: Issues and options for the World Bank*. World Bank Discussion Papers. Washington, D.C.: The World Bank.
- Molina, R., M. Pinto, E. González *et al.* 1999. *Some Issues on NHA Methodology in Latin American Countries*. Paper presented at the NHA Symposium in Rotterdam in June 1999.
- Murray, C.J.L., R. Govindaraj, and P. Musgrove. 1994. National health expenditures: A global analysis. In *Global comparative assessments in the health sector: Disease burden, expenditures, and intervention packages*, eds. C.J.L. Murray and A.D. Lopez. Geneva: World Health Organization.
- OECD. 2000. *A System of Health Accounts*. Manual, Version 1.0.
- OECD. 1998. OECD health data 98. Software.
- PAHO, 1998. *Preliminary Estimates on Health Expenditures in Latin America and the Caribbean*. Washington, D.C.: PAHO, Public Policy and Health Program, Division of Health and Human Development for Health in the Americas 1998.
- PAHO. 1994. *Health conditions in the Americas, Volume I*. Washington, D.C.: PAHO, World Health Organization.
- Ramírez, T., B. Zurita, P. Hernández *et al.* 1999. *Household Expenditure in Health: Who Pays for What?*. Paper presented at the NHA Symposium in Rotterdam in June 1999.
- Rannan-Eliya, Ravi P., and A. Somanathan. 1999. *Error in NHA Estimates: Causes and Estimation of Impact on Variance*. Paper presented at the NHA Symposium in Rotterdam, June 1999.
- Rathe, Magdalena. 1999. *Health and Equity: A Look at Health Financing in the Dominican Republic*. Paper presented at the NHA Symposium in Rotterdam in June 1999.
- República de Guatemala, Ministerio de Salud Pública y Asistencia Social. 1997. Informe final: Cuentas nacionales de salud, 1995-1997. Guatemala: Unidad Sectorial de Planificación de la Salud.
- Soares, R., P. Henderson, E. Barillas *et al.* 1995. *National health expenditure and financing in Latin America and the Caribbean: Challenges for the 1990's*. PAHO Health Development Series No. 3. Washington, D.C.: Pan American Health Organization, WHO. Gasto en Salud y Financiamiento: América Latina y El Caribe. Desafíos para la Década de los Noventa. OPS/OMS.
- The World Bank. 1997. *World Development Report 1997*. Washington, D.C.: The World Bank.
- The World Bank. 1993. *Investing in health. World Development Report*. Washington, D.C.: The World Bank.
- Vogel, R.J. 1993. *Financing health care in sub-Saharan Africa*. Westport, CT: Greenwood Press.
- WHO, 2000. *The World Health Report 2000. Health Systems: Improving Performance*. WHO Geneva, 2000. Web site: <http://www.who.int/whr/>
- Zschock, 1986. Medical care under social insurance in Latin America. *Latin American Research Review* 21(1):99-122.

WEB RESOURCES

- Harvard University, School of Public Health, International Health Systems Group (IHSG), 2001. Web site: <http://www.hsph.harvard.edu/ihs/ihs.html>
- OECD, 2001. Health Care and Policy. Web Site: <http://www.oecd.org/els/health/>
- Partnerships for Health Reform (PHR), 2001. Web Site: <http://www.phrproject.com/> - On NHA: <http://www.phrproject.com/global/nha.htm>
- Latin America and Caribbean Regional Health Sector Reform Initiative (LACHSR), 2001. Web Site: <http://www.americas.health-sector-reform.org/english/index.htm>
- The World Bank, 2001. NHA Home Page. Web site: <http://wbln0018.worldbank.org/HDNet/HDdocs.nsf/c840b59b6982d2498525670c004def60/c99e8a2c3187f6c85256a42006b944e?OpenDocument>