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**Health Accounts, National Health Accounts and the System of National Accounts: Approaches, Indicators and Policy Issues<sup>1</sup>**

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## HEALTH ACCOUNTS, NATIONAL HEALTH ACCOUNTS AND THE SYSTEM OF NATIONAL ACCOUNTS: APPROACHES, INDICATORS AND POLICY ISSUES

### Background

For most countries and regions of the world, large variations of estimates on national health expenditures in health (NHE) as percentage of the gross domestic product (GDP) are very common. In the mid-nineties, estimates of average 1990 NHE for countries in Latin America and the Caribbean varied from 3.9% of GDP (WHO), to 4.1 % (World Bank), to 5.7% (PAHO). Later revisions of these estimates resulted in an up-ward adjustment. The World Bank estimate for 1990 increased to 6.1 % and the PAHO estimate increased to 6.9 %<sup>2</sup>. The range of the latest NHE/GDP estimates for the LAC region has been narrowed down substantially. Current estimates for countries in the region are around 7 to 8 % of GDP<sup>3</sup>.

However, substantial differences in the country estimates reported by international organization remain. Similarly, discrepancies between estimates reported by international organizations and those derived from national studies are non-negligible. For Argentina, for 1990, the estimates on NHE/GDP fluctuated between 4.2% (World Bank and WHO's estimates), to 9.6% of GDP (PAHO estimates). National studies from government institutions and national research institutions reported estimates of around 8 % of GDP<sup>4</sup>. Currently, for 1999/2000, the range of estimates has been narrowed, but they still vary from 7.2% (national studies), to around 9.2 % (PAHO and WHO) and more than 11% (World Bank's estimates). In the US, for 1998-99, the estimates of national health care expenditures as percentage of GDP vary from around 10.2 %, (BEA), to 13.5% (HCFA and OECD Health Data).

What explains the large variations in the NHE/GDP estimates? How have the different estimates been derived? What NHE/GDP ratio should be used for international comparisons of health care expenditures? What do the different NHE/GDP estimates measure and what policy issues do they address? These are some of the questions to be addressed along this paper, based upon the conceptual framework of the System of National Accounts 1993.

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<sup>2</sup> These estimates from PAHO, World Bank and WHO appeared in institutional publications published around 1993-95; See WHO (1993); World Bank (1994); PAHO (1994). PAHO and World Bank up-ward revisions were presented in Suarez, R. et al (1995); Govindarah et al (1996) respectively.

<sup>3</sup> Most recent regional estimates for the period 1998-2000 are reported in the World Bank's World Development Report 2001; WHO's World Health Report 2001; and PAHO Health in the Americas 2002. (forthcoming).

<sup>4</sup> National estimates of 5.6% to 8% were reported in Flood, Cristina ( ) and Gonzales, G. ( ), respectively.

## Introduction

This paper summarizes and discusses conceptual, methodological and policy issues related to different approaches for developing Health Accounts (HA)/National Health Accounts (NHA). It covers a wide variety of approaches and methodologies for collecting internationally comparable data on national health care expenditure and financing as well as approaches for estimating standard national account economic indicators: production and consumption of health related goods and services.

The main message of this paper is that a rigorous assessment of the efficiency and equity of national health systems should be conducted by using standard national accounts indicators of *production* and *final consumption expenditures* rather than the now widely used administrative based *national health care expenditure* monetary estimates. Development of NHA methodologies, based on the System of National Accounts framework (SNA 1993), will ensure methodological consistency and a better understanding of the analytical and policy issues related to efficiency in the production and consumption of health care services. It will enhance our understanding of the links between economic and financial variables and improve our ability to design, implement and assess the impact of welfare oriented public policies for the health sector. In addition, development of health sector economic and financial indicators within the framework of a country's SNA will contribute to the strengthening of national information systems and will avoid the duplication of efforts and consequent waste of resources.

The paper is organized in four sections. In section I, I present a summary of the analytical framework of the System of National Accounts (SNA) and related accounting systems and discuss the role of different types of information commonly used in deriving NHA's economic and financial indicators (administrative, government finances and national account systems).

Section II presents a summary of approaches for developing national health accounts (NHA). It includes a summary of conventional SNA-based approaches for estimating sector specific economic and financial indicators (NHA) as well as conventional and non-conventional (non-SNA) approaches for estimating national health care expenditure and financing accounts (NHEA). In section III the SNA framework is used to discuss concepts, definitions, classifications and accounting procedures of different approaches. Many of these issues are discussed with reference to the framework of the OECD's System of Health Accounts proposal (OECD, 2000). A matrix of uses of commodities (commodities used by industries and final uses) is used as a framework to discuss several methodological and analytical issues related to the consistency and use of NHA and NHEA indicators. Methodological issues discussed in this section include concepts, definitions, classifications and accounting procedures for the estimation of NHA and NHEA indicators. Observations discussed in this section also apply to both the consistency of national estimates over time, and to the development of cross country comparison of national health expenditure estimates. In Section IV I provide some comments and practical suggestion for advancing in the development of international comparable NHA and NHEA indicators.

## **I. National Health Accounts and the System of National Accounts: An Analytical Framework**

### *The System of National Accounts: An analytical framework*

The System of National Accounts (SNA) consists of a coherent, consistent and integrated set of macroeconomic accounts, balance sheets and tables based on a set of internationally agreed concepts, definitions, classifications and accounting rules (SNA, 1993, United Nations). The SNA is the system used for reporting national accounts data that conform to standard, internationally accepted concepts, definitions and classifications to international or supranational organizations. It is a multi-purpose system designed for economic analysis, decision taking and policy-making, regardless the industrial structure or stage of economic development reached by a country. The concepts and definitions of the SNA are based on economic reasoning and principles, which should be universally valid and invariant to the particular economic circumstances in which they are applied. Similarly, the classifications and accounting rules are meant to be universally applicable.

A SNA approach to the estimation of NHA or NHEA indicators will allow for a full use of the analytical issues imbedded in the SNA framework. The internal consistency of the SNA provides a comprehensive framework for developing internationally comparable national health accounts (NHA) economic indicators (indicators of production and uses of health care related goods and services) as well as of national health expenditure accounts (NHEA) indicators (national health care expenditures according to sources of funding).

The income side the SNA framework may provide detailed information on the level and composition of final consumption expenditures in health care related goods and services. The production side of the standard SNA indicators provides indicators for value added, productivity, input-output relations as well as direct and indirect inter-sectors linkages of the production of health care services.

Analytical consistency in the estimation of the NHE/GDP ratio requires that the concepts, definitions, classifications and accounting rules used in estimating national health care expenditures should be the same as those used for estimating GDP. As I will show here, few of the approaches for estimating NHE are based on concepts, definitions, classifications and accounting rules similar to the ones used in the estimation of GDP. I use the SNA framework and family of classifications to present differences in the approaches and policy issues from NHE estimates derived from administrative data, government/public finances statistics and national accounts systems. The SNA framework is used to present the limitations of international comparability of national health expenditures currently produced by international organizations (OECD, World Bank, World Health Organization and the Pan American Health Organization). Finally, I use this framework to discuss some of the unresolved methodological issues of the

definitions and classification of economic agents and health care activities contained in A System of Health Accounts proposed by the OECD (OECD-SHA; 2000)<sup>5</sup>.

### *Satellite Accounts and Social Accounting Matrices*

Special constructs to address particular policy issues and that are semi-integrated with the central SNA framework, are called satellite accounts. In some cases the SNA framework is not sufficient to address particular issues of interest to policy makers. In many cases the analysis of social protection, education, health or environment issues may be better grasped by building a framework to accommodate elements that are explicitly or implicitly included in the central accounts and complementary elements (either in monetary terms or in physical quantities). For some other types of analysis the production boundary may be changed, generally by enlarging it. For example, the analysis of health care services or health enhancing activities implies a different definition of the boundaries of consumption. The final consumption of educational or health care services may be used to measure the accumulation of human capital. Those special constructs, which are semi-integrated with the central SNA framework, are called satellite accounts. Although they may include alternative concepts and presentations, their links with the central framework are made explicit.

Social Accounting Matrices are extensions of the basic SNA that are specially designed to address specific social concerns. Traditionally, Social Accounting Matrices – SAM - have been applied to the analysis of causes and consequences of various aspects of inequality among household groups and to address issues related to the level and composition of (unemployment) among other issues. A system of economic and social accounting matrices and extensions becomes important if one wants to obtain a more general insight into the state of human development without giving up the system's approach. Key features in a SAM system include the integration of all kinds of related monetary and non-monetary phenomena, which are expressed in different measurement units into a comprehensive set of concepts, classifications and numerical linkages.

In many cases, the reconciliation of SAM-figures with related data that are available from all kinds of dispersed sources of information may require the construction of an integrated set of satellite tables. As an example, a set of tables summarizes non-monetary socio-economic indicators, such as life expectancy, infant mortality, adult literacy, nutrient intake, access to (public) health and education facilities and housing situation by household groups. Other tables may be used to show the size and composition of the population by household group (including the potential labor force), production capacity by industry and the possession of assets (e.g., agricultural land, consumer durables and financial assets) and liabilities (e.g., external debts) by sub-sector. Another set of tables may focus on a decomposition of (changes in) monetary values into (changes in) volumes and prices of different types of products (goods and services), the various categories of labor services and fixed capital formation by industry. Putting together monetary and non-monetary information into a system of economic and social accounting matrices and extensions opens up possibilities for analyzing the relationships between economic,

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<sup>5</sup> The SHA-OECD (OECD2000) was formerly titled as an NHEA-OECD Manual (January 1998).

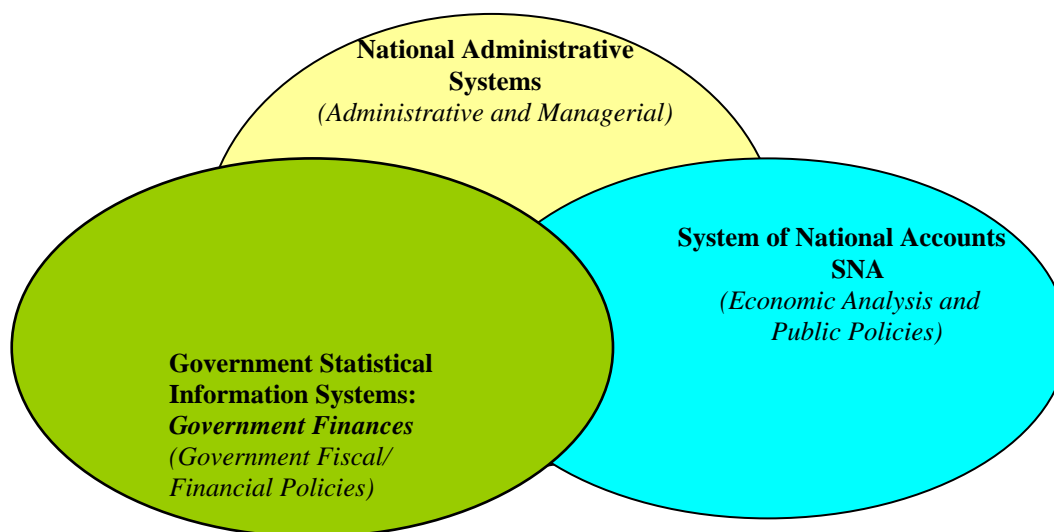
social and human development variables. It allows for modeling and analyzing the micro-economic foundations of relationships between non-monetary and monetary (economic) variables and the impact of government policies in an integrated social accounting framework.

*NHA and NHEA estimates: Information systems*

In a broad sense, NHA or NHEA approaches can be classified according to the type of information systems upon which they are built. Some approaches may rely exclusively on data from national administrative systems. Some may combine data from administrative and government finances statistical systems and regular administrative systems. Others again may refer to national health expenditure data (final consumption expenditures) from the national income and product accounts, while yet others may combine information from these three types of information systems (See Graph 1). However, the concepts, definitions, classifications and accounting procedures of these three systems are not uniform.

The national administrative system includes all the regular reporting systems used by all the economic agents for conducting their activities. It includes all the formal and informal information systems used by all the economic agents in the economy in their economic decision-making. It includes the official vital statistics records, regular social and economic surveys, population and economic censuses as well as the regular administrative reporting systems from financial and non-financial corporations, from central and local governments, from non-profit institutions, etc. While each country may have a set of rules for specific components of the official reporting systems, there are large variations in definitions, concepts and reporting rules used by different economic agents.

**Graph 1: Health Accounts: National Information Systems and the System of National Accounts**



Administrative expenditure and financing flows are of relevance for health care service administrators to support their decision making process. Health care service administrators have financial responsibilities over budgetary allocations. Issues of immediate concern are those of the relative efficiency in the use of those resources. Commonly used indicators include the average expenditure per unit of production, the expenditure/revenue or cost/revenue ratios, or the input-output relations. Financial indicators are used to assess the average productivity of different production inputs (consultations per physicians, occupancy rates, average length of stay, expenditure per consultation, expenditure per day of stay, or expenditure by type of disease or per type of health procedure; etc.) and to establish profitability ratios.

The government finances statistical systems (GFSS) is a component of overall government statistical information system. It is defined as a set of concepts, definitions and reporting rules used by national and local governments in managing fiscal resources. There are two types of government finances statistical information systems. One is a national government administrative information system; the other is the international standard government finances statistical system.

The administrative system includes the regular budgetary system and reporting rules adopted by national governments to conduct their public administration functions. Concepts, definitions and classification of government activities are determined by the institutional and organizational structure of national governments. Most countries will develop institution- or sector-specific information systems to address specific administrative, managerial and/or public policy concerns. Some examples of these systems are Brazil's MOH SIOPS information system, Honduras' MOH SIGAFI, or the SIAF (Sistema Integrado de Administracion Financiera/ Integrated Financial Management System), now in place in most countries in the Latin American and Caribbean region). All of these systems may be considered as part of the government information systems<sup>6</sup>.

The international standard government finances statistical system is the one contained in the Manual of Government Financial Statistics of the International Monetary Fund (GFS - IMF; 1986). It contains a set of concepts, definitions, classifications and accounting procedures for collection of internationally comparable financial information on the operations of governments (revenues, expenditures and finances). The analytical framework of the GFS-IMF is oriented to the formulation of public policies and international comparisons. The latest version of these systems (GFS IMF 2000) is now fully integrated with the analytical framework of the SNA.

The SNA system is built on the information coming from both the country's administrative system and government statistical information system. The system is build around a set of internationally agreed concepts, definitions, classifications and accounting rules designed for economic analysis, decision taking and policy making.

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<sup>6</sup> PAHO's WinSig; a computer software costing information system that may be considered as similar to the tools being used by MOH's financial information systems.

## II. National Health Accounts (NHA) and National Health Expenditure Accounts (NHEA): Approaches

In the last two decades there have been several initiatives to develop a comprehensive and coherent system to organize health statistics in a way similar to the one that the System of National Accounts (SNA) uses for deriving main macroeconomic aggregates. Some of the names used are Health Accounts (HA), System of Health Statistics (SHS), System of Health Accounts (SHA), National Health Accounts (NHA), Health Sector Satellite Accounts (HSSA), etc. A common feature of these approaches is the estimation or analysis of the economic or financial dimensions of health or of health care service related activities. Some approaches are geared to address sector specific industrial organization, labor markets, or demographic and social welfare issues related to the production and consumption of health care related goods and services. Most of these approaches are extensions of the SNA framework and may be considered to be health sector satellite or quasi satellite accounts (HSSA). I will refer to them all as NHA approaches.

Other approaches focus only on analyzing the financial dimension of health care service activities, on developing comprehensive estimates of national health care expenditures and the sources of funding (NHEA). Some approaches focus on ensuring the completeness and accuracy of national estimates of national health care expenditures and on constructing matrices describing the flow of funds (expenditure and revenues or financing) among different economic agents of an economy. Others focus on developing internationally comparable estimates of national health care expenditures and financing flows. I will refer to all these approaches as NHEA approaches<sup>7</sup>.

### *NHA Approaches: Conventional and non-conventional approaches*

NHA conventional approaches are those developed within the framework of a country's national accounts system. The focus of the Conventional NHA approaches is on the estimation of economic indicators of health and health care related activities. **Production** indicators focus on analyzing and comparing efficiency in the production of health care services vis-à-vis other sectors of the economy or among different type of producers of health care services that are classified in terms of size and type of services that are produced. Related economic production issues are those of the input-output relations in the production of health care related goods and services; the inter-sector linkages with other sectors of the economy, and the international competitiveness of the sector, among other issues.

On the **consumption** side the focus of NHA is on the welfare implications of the level and composition of final consumption expenditures in health related goods and services. One of the most important issues is the optimal level of final consumption expenditures in terms of collective and private or individual health care related goods and services. The issues of under-provision of public health services or the over-consumption of private health care services are

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<sup>7</sup> Currently the term NHA is widely used to refer to any study dealing with expenditure and financing of health care services, programs or diseases; mainly by non-economist or public health specialists and health practitioners with no training in national accounts. The approaches used in those studies are not included in this discussion.

key indicators to analyze the extent of market and government failures and the corresponding impact on the overall economic efficiency. A closely related issue is that of the welfare impact of the observed level of (final) consumption expenditures in health-related goods and services<sup>8</sup>.

On the uses or consumption side the focus is on the overall level of final consumption of health care related goods and services and on alternative classifications that may be used for planning purposes. Two of the most comprehensive NHA studies, developed within the framework of a country's national accounts system, are those on Sri Lanka and Brazil. The Sri Lanka study was sponsored by WHO (Alailima, 1972) and the Brazil study was sponsored by PAHO (Considera, et al, 1990). These studies use the basic input-output tables and production and uses matrices to analyze the economic dimension of the production and consumption of health care services. They estimate and discuss issues related to the value added and income and relative importance of health care services activities, the import content of the domestic production of health care services and the direct and indirect inter-sectorial linkages of the health care services industries with the rest of the economic sectors. In addition, the Sri Lanka study presents a detailed estimation of the direct and indirect labor content of health care services activities.

Some aspects of health care service activities are not well captured within the SNA framework and that lead to further methodological developments. A Health Care Accounts (HCA) framework, in the form of a satellite module of the SNA, was developed to analyze the economic dimension of the *health care delivery system* (Sunga and Swiname). This HCA approach differentiates between *health care production* and *health care delivery systems*. A health care *production* system includes the health care activities in all stages of production that are an input into or part of the final delivery of health care to individuals or groups in the society. The health care *delivery* system consists of the *providers* of health care engaged in supplying goods and services directly to the individuals for health care purposes. It represents the last stage of the health care production process since it interacts directly with individuals or groups within society.

Within the HCA framework the boundaries of the health care sector may be expanded to include activities that do not provide health care directly to individuals, yet have a direct bearing on the supply of and demand for health care, such as the provision of health care programs by government, medical and paramedical education and medical research (Sunga and Swiname, p. 286-87). This approach is summarized in a set of 5 tables containing different types of cross-classifications, between total expenditures in health care delivery by institutions and economic agents according to a functional (purpose allocation) and economic classification (macroeconomic allocation) (I do not understand this past sentence). One of the HCA's matrixes describes the sources of funds throughout the health care delivery system and indicates the income generated by the various factors of production. The system was applied to analyze the economic dimension of the health care delivery system of one of the Canadian provinces.

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<sup>8</sup> The difference between the concepts of national health care expenditures and final consumption expenditures is presented in the next section.

One of the policy issues to be addressed with a health delivery services satellite module is the economic linkages of health care production and health care delivery activities with the rest of the economic sectors of the economy. It allows for tracking the impact of changes in the separation of financing and delivery functions on the composition of final consumption expenditures by functions; as an example, the changes in the composition between preventive and curative health care services.

But there are disagreements about whether a system of health accounts should be linked or related to the SNA. In the early 1990's there was an effort to develop a System of Health Statistics - SHS (Wolfson, 1991). The SHS was conceived as something different from the concept of Satellite Accounts; it was seen as an account of lesser importance than, and therefore subordinated to the SNA. The argument was that, the health of the Canadian population and the efficiency (?) of the associated of health-related institutions was of sufficient importance to merit a system of statistics developed primarily for health related considerations, though it was obviously desirable that links with the SNA should be included where appropriate. The basic objective of the proposed SHS was to provide a systematic set of data on health matters where the data are synoptic yet comprehensive, and have some coherence or "adding-up" properties<sup>9</sup>. The basic premise of the SHS was to develop an overall healthfulness indicator (?) of the population, similar to the GDP of the SNA used to measure and compare countries' overall economic performance. The SHS is composed of a set of identities and matrices measuring the health status, socioeconomic status, prevalence and treatment rates, treatment demand and techniques, stock of resources and consumption, unit price and total costs. Most of the data on these variables would be collected on a yearly basis, by geographical areas; different types of socioeconomic attributes, risk factors, resources consumed in treatment, and health care institutions and sources of funding.

*National Health Expenditures Accounts - NHEA: Conventional and non-conventional approaches*

The term conventional and non-conventional is used here to distinguish between two broad types of approaches to the estimation of national health care expenditure and financing flows. A conventional approach is based on concepts, definitions, classifications and accounting procedures of a country's national account system that is used for the estimation of the GDP, national income and main macroeconomic aggregates. This ensures consistency and/or a clear understanding of the limitations of estimates of national health care expenditure flows and sources of funding, as well as the possibility of mapping of expenditure and financing categories into standard production and/or final consumption expenditure categories of the SNA.

A non-conventional approach to the estimation of NHEA is based on information from administrative information systems. Concepts of expenditure and financing and definitions of sectors and classifications are defined ad-hoc by the researchers or institutions developing or promoting the estimates. The term *national* is used to indicate the inclusion of all the institutions or agents and/or activities of a country's economy. The scope of most studies is

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<sup>9</sup> The "adding up" concept use to meant not only addition, but also multiplication and other mathematical operations; Wolfson, M. 1991; p. 82.

defined in terms of institutions and/or health programs to be included in health as defined by the country's Ministry of Health, the researcher or the agency sponsoring the research. Most non-conventional studies make no reference to standards concepts, classifications or accounting procedures used in the government's financial systems and/or to the country's national accounts framework<sup>10</sup>.

NHEA approaches discussed here include the one used in the OECD Health Data (OECD, 1999) for the collection of internationally comparable data on health expenditures. The OECD Health Data is one of the most widely used sources of data on national health care expenditures and sources of funding in OECD countries (OECD's System of Health Account-(SHA-OECD, Version 1.0; 2000). This approach contains the concepts, definitions and accounting rules for collecting internationally comparable data on national health care expenditure and financing. The main purpose of the OECD's SHA is to address some of the methodological inconsistencies of the current OECD Health Data. Also, I will include in the methodological discussion the concepts, definitions and accounting procedures used in PAHO's estimates for countries in Latin America and the Caribbean in 1994 and 1998(I am not sure how this sentence follows the previous one....). It includes estimates on the composition of national health care expenditures for 35 countries in the Latin American and Caribbean region (See PAHO; 1994 and PAHO, 1998). I will refer to this approach as an NHE-SNA based approach<sup>11</sup>.

Because of its importance and influence on different approaches to estimating national health care expenditures and financing data, I will include here the Health Care Financing Administration (HCFA) approach of the United States. The HCFA/HA/NHA approach and methodology was initially known as National Health Expenditure Accounts (NHEA). Up to the nineties, methodological issues on the estimation of national health care expenditures were discussed within the framework of periodical NHEA conferences (Lindsey, P. and Newhouse, J.; 1986; Haber, S. G. Newhouse, J.; 1991; Levit et al; 1991). The use of the concept of national health account to refer to the U.S. national health care expenditure and financing estimates was introduced in 1982 (Rice, D. et al (1982))<sup>12</sup>. This national accounts terminology was reintroduced in a study commissioned by HCFA (Research Triangle Institute; 1987) and reappeared in HCFA's Health Care Financing Review in 1990 in an article of the Office of National Cost Estimates (Office of National Health Cost Estimates; 1990).

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<sup>10</sup> Most of these types of studies; in both developed and developing countries, are conducted by health administrators, health professionals or economists from both developed and developing countries with little training in or knowledge of the use of the standards concepts, classifications and accounting procedures of the SNA or a country's own national accounts system. The case seems to be more acute in the case of professionals from the United States where the national accounting systems is know as the National Income and Product Accounts (NIPA).

<sup>11</sup> As in the case of OECD Health Data, the methodological guidelines used in developing PAHO's estimates were contained in a methodological annex of a PAHO's publication on national health care expenditures in the Americas (Suarez, R. et al, 1996). Methodologies for the estimation of particular components of national health care expenditures accounts are included in working documents presented at different conferences, seminars (Henderson, P. and ...1998; Suarez, R., 1998, 1999).

<sup>12</sup> The term NHA is to "identify all goods and services that can be characterized as relating to health care in the nation, and determine the amount of money used for the purchase of these goods and services..." (Rice et al, 1982); from Levit, K.R. et al 1991. See: <http://www.hcfa.gov/stats/NHE-OAct/lessons/lessonsna.htm>. 1.

In the 1990's the HCFA approach to NHA was defined as a framework within which the types of services and sources of funding for health care expenditures were measured. The essential framework consists of a matrix of operational categories classifying and defining the sources of health care dollars and services purchased with these funds. It was devised to portray the structure of health care **delivery** and financing in the United States (Levit, K. R. et al 1991). The focus of these papers and the periodical conferences was the best ways to use administrative data to improve the accuracy and consistency of national health care expenditure and financing estimates. In all these publications, the term national accounts was used in a non-technical sense to refer to ways of improving US estimates of different components of national health care expenditures. None of these documents contains a reference to concepts, definitions or methodological issues related to the SNA<sup>13</sup>.

Two factors seem to explain the widespread use of the term NHA in reference to studies on national health care expenditures and financing in both developed and developing countries. During the nineties grants were provided by HCFA to research institutes and universities for developing detailed NHA estimates or estimates on health care expenditure and sources of financing at the state level. Also, a grant was provided by HCFA to the OECD to support the development of a national accounts manual for collecting internationally comparable data on national health care expenditure and financing. The term NHA, used to refer to national health care expenditure and financing data, started to appear in methodological appendixes of the OECD Health Data<sup>14</sup>.

The United States Agency for International Development - USAID, was most instrumental on the dissemination of the re-labeling of the studies on national health care expenditures and financing as studies on NHA. A multi-regional project on NHA in developing countries promoted the development of methodological documents and tools for developing matrices of national expenditures in health and sources of financing in developing countries. Its basic framework (the Harvard-PHR/USAID), was an adaptation of HCFA's matrices describing the type of services and sources of funding for health care expenditures and the definition of operational categories classifying and defining the sources of health care dollars and services purchased with these funds (Berman, 1996, Waldo, 1996). By the end of the nineties the project had produced more than 100 NHA studies around the world and there is now a large number of NHA specialist and several networks of NHA "experts" promoting the institutionalization of health accounts in developing countries<sup>15</sup>.

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<sup>13</sup> Currently the system is HCFA approach is being referred as Health Accounts/ National Health Accounts (HA/NHA). Cautionary footnotes in some of the articles warn the readers of the non-technical use of the NHA term.

<sup>14</sup> My thanks to Jean Pierre Poullier and George Schieber for their insights on this HCFA-OECD collaborative agreement. Jean Pierre was the person at OECD in charge of producing, regularly, the OECD Health Data. George Schieber, a former Director at HCFA, spent some years working for OECD on some of these issues.

<sup>15</sup> Currently the name NHA is widely used by non-specialist in national accounts, to refer to a wide array of studies on expenditure and financing, on the cost and financing of health programs (AIDS, Malaria) or diseases, (AIDS, Malaria, TBC, Cancer, etc), or to studies on the economic impact of diseases. Most of these research projects are USAID sponsored projects. I will not discuss these approaches here.

A summary of the main characteristics of approaches to the estimation of national health care expenditures in terms of the definition of boundaries of expenditures, classifications used and accounting rules is presented in table A.1. To facilitate the presentation of the differences between administrative accounts and national accounts concepts, definitions and accounting issues I will discuss some of the HCFA approaches (?) in the framework of the US system of national accounts (BEA's National Income and Product Accounts -NIPA).

### III. National Health Expenditure Accounts: Methodological Issues

I will now turn to the discussion of the methodological issues regarding the concepts, definitions and accounting procedures used in approaches to the estimation of NHA and NHEA indicators. Differences in approaches can be summarized in terms of (1) the concept of national health care expenditure being measured; (2) definition of expenditure/activity boundaries; (3) classification of expenditure/financing categories; and (4) accounting rules and indicators.

I use standard SNA concepts, definitions and classifications to discuss methodological issues of different approaches to the estimation of national and international comparable data on national health care expenditures and sources of funding. The basic definition of the institutional sectors of the economy is combined with the international standard classification of expenditures and commodities to discuss the concepts and boundaries used in different approaches to estimate NHEA. The most important family of classifications to be used here is the international standard classification of expenditures by purposes of the institutional sector of the economy (COFOG, COICOP, COPP and COPNI), the international standard industrial classification (ISIC) and the newly released Central Product Classification (CPC, Version 1)<sup>16</sup>. A matrix of Uses (Uses of commodities by industries and final uses) is used to identify analytical differences and consistency of the concepts of national health expenditures used in this field.

#### *Concepts and definitions*

Table 1 summarizes two concepts of national health care expenditures and several definitions of national health expenditures or national health care expenditures (NHE). One concept is that of national health care expenditures as the expenditures in health spent by all the economic agents or institutional sectors of the economy. This is the most standard concept used in *national health care expenditure and financing* or NHEA studies. The second concept is the concept of (national) *final consumption expenditures* in health-related goods and services (FCE-H). This is an analytical welfare oriented SNA concept. It tries to capture the part of the national income (GNP) or gross domestic product (GDP) that may be considered as welfare enhancing, from a consumer perspective. It excludes from the total output of health related goods and services (Total Commodity Output) the intermediate consumption of goods and services used in the production process (by industries). Level and composition of final consumption of health care expenditures are used in the discussion of the optimality of the provision of public health

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<sup>16</sup> A detailed list of the SNA family of international standard classifications is found at [www.un.sdsta.class...](http://www.un.sdsta.class...). Table A.1 describe the SNA system of international classifications.

services (collective goods and services) and the level of over-consumption of personal health care services or private goods.

**Table 1. National Health Expenditure Accounts -NHE: Concepts and Definitions**

	NHEA			NHA	
	Administrative based *		Analytical ** SNA based		
Institutional Sectors	Institutional (Sector)	Functional (Program/ Budgetary)	Functional (Purposes)	Final Consumption Expenditures (Purposes)	
	I	II	III	IV	V
Government			COFOG	COFOG	CPC (PCE)
Corporations/Enterprises - Non-Financial - Financial			COPP		
Households			COICOP	COICOP	
Non Profit Institutions Serving Households -ISFLSH			COPNI		
<b>National Health Expenditures</b>	<b>NHE-S</b>	<b>NHE-P</b>	<b>NHE-F</b>	<b>FCE-H</b>	

\* Administrative data on expenditure and/or revenues. Nationally defined health sector institutions and/or health functions (programmatic).

\*\* Welfare oriented classification of purposes of expenditure/consumption. PCE is the classification of personal consumption expenditures used in the US system of national accounts (NIPA).

The data on final consumption expenditures of health related goods and services (FCE-H) is reported, regularly (normally?), as a component of final uses of output or final demand of goods and services tables of a country's national accounts systems.

The **NHE-S** or health sector/institutional expenditures approach is the most common estimate used in national studies on health sector expenditure and financing. In general, it includes the overall expenditures by institutions defined as belonging to or as being under the responsibility of national health authorities. It includes institutional budgets or balance sheets from public and private firms as well as household expenditures in health derived from administrative tax records or from national income and expenditure surveys or ad hoc health or medical expenditures surveys. It may include expenditures in schools of medicine, institutions in charge of water and sanitation, environmental health, and/or social welfare programs. Expenditures by NPISH include the expenditure by specialized NGO's working for or under the supervision of national health authorities<sup>17</sup>. Boundaries of activities to be included may vary across countries. This is the approach most commonly found in national health sector

<sup>17</sup> While this is the broadest definition of NHE, many studies based on this institutional approach use the name national to refer to expenditures by public sector institutions. Private expenditures are assumed to be "minor", limited to the people in the upper quintiles of the income distribution.

expenditure and financing studies, health sector expenditure and financing components of World Bank health sector studies as well as in some country estimates reported in OECD-Health Data.

In the NHE budgetary or program definition (**NHE-P**) only those programs defined as health or health related are included as government expenditures in health. Definition of health programs or functions could be based on an administrative classification of expenditures according to administrative or budgetary categories, or national analytically oriented functional classification of expenditures according to purposes, similar to the international classification of government expenditures by purposes (COFOG)<sup>18</sup>. Official reports from several countries present budgetary information in terms of nationally defined programmatic or functional classification of government expenditure. Some studies include estimates defined by programs (NHE-P) rather than by institutions (NHE-S) in the estimation of the public sector component of NHE. In the case of countries in Latin America and the Caribbean, most estimates on government expenditures in social programs, including health expenditures, use the countries' own definition of social programs<sup>19</sup>.

The **NHE-F** definitions is an approach using the SNA's international standard classification of expenditure by functions corresponding to each one of the institutional sectors of the economy (COFOG for general government, COPP for enterprises, COICOP for households and COPNI for non-profit institutions serving households). This is the NHEA-SNA based approach used by PAHO in deriving the 1994 and 1998 estimates for countries in the Latin American and Caribbean region<sup>20</sup>.

### *Boundaries of health expenditures*

Another important methodological issue is the definition of boundaries of health care goods, services, activities or programs, and which to include as components of NHE. Graph 2 summarizes some of the issues in the definition the boundaries of NHE estimates. Also in this case there is no general agreement or clear definition of the type of goods, services, activities or program services to be included as health care expenditures when measuring a country's NHE.

One definition (Definition I) includes only the Expenditures in Health Care Goods and Services. It is the most restrictive definition of national health expenditures. Health care goods and services are defined only as those provided by medical and paramedical personnel, public and private, and formal or informal providers. Expenditures in public health programs are also included.

This is the general approach taken in the definition of national health care expenditures in the HA/NHA/HCFA-US, and standard NHEA-SNA approaches. However, even in this case

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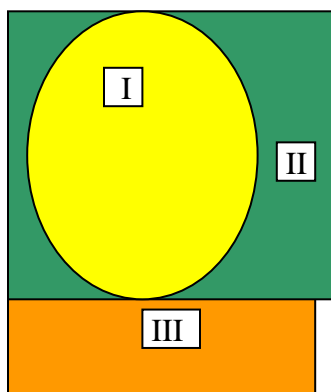
<sup>18</sup> An example of the 'national' functional classifications used in Argentina and Brazil can be found in [www.ibge.concla.gov](http://www.ibge.concla.gov)

<sup>19</sup> Most national reports on social expenditures, as well as the ECLAC estimates on social expenditures are based of the functional or program classification of expenditures, as defined by the countries.

<sup>20</sup> See, Suarez, R et al (1995) and Suarez, R. (1998).

there are some differences. In the HA/NHA HCFA-US approach, the boundaries of health care related goods and services are defined in terms of an administrative classification of health expenditures. Boundaries of expenditures are defined in terms of “all goods and services that can be characterized as relating to *health care* in the nation.” Expenditures on training of health personnel and environmental health (water and sanitation) are excluded. Classifications of health care expenditure were designed to address administrative and policy concerns about the total resources spent on health care services, the composition by type of services and programs, and the sources of funds (by institutions/agents such as federal and state governments, private insurance, and out-of-pocket expenses). In the NHEA-SNA, the boundaries of expenditures are defined in terms of the international classifications of expenditures. Only the health, sanitary and medical expenditure components of each of the classifications are included<sup>21</sup>. In this case the COFOG is used to measure public sector expenditures, and the COICOP is used to measure private sector expenditures.<sup>22 23</sup>

**Graph 2: Boundaries in Measuring National Health Expenditure and Financing Aggregates**



- I:** *NHE: Health Care Goods and Services*
- II:** *NHE: Health Care Goods and Services plus Expenditures in other health enhancing goods and services*
- III:** *Medical Care System: Activities/Goods and Services*

Most institutionally based estimates (NHE-S) use, implicitly or explicitly, a broader definition of boundaries (definition II). This definition will include other goods and services or

<sup>21</sup> This is also the approach taken by the BEA for reporting international comparable data on government expenditures. See, [www.bea.classifications](http://www.bea.classifications) (ref/date).

<sup>22</sup> COFOG's Health Affairs and Services Category includes hospital affairs and services; clinics and medical, dental, and paramedical practitioners; public health affairs and services; medicaments and prostheses; medical equipment and appliances or other health-related products; applied research and experimental development related to the health and medical delivery system; and health affairs and services not elsewhere classified. COICOP's Health Category includes medical and pharmaceutical products; therapeutic appliances and equipment; non-hospital medical and paramedical services; hospital services; and sickness and accident insurance services.

<sup>23</sup> Two other SNA Classification of Expenditures by Purposes of Non-Profit Institutions Serving Households (COPNI); and Classification of Outlays of Producers by Purpose (COPP) were not used in the estimates.

activities deemed as significant in affecting the health status of the population. Some estimates include expenditures in water and sanitation, environmental health, some educational programs, etc. Even more yet, other estimates are institutionally or sector based. In this case the concept of national health care refers to expenditures by national institutions under the responsibility of the Ministry of Health that are considered to be part of the national health or national health care system (NHE-S).

In the Medical Care System and Health-Related Functions approach (definition III) NHE estimates include expenditures in health-related goods and services (provided by institutions and individuals, as in definition I), plus expenditures in administering health insurance and other funding arrangements. This is one definition of boundaries contained in the OECD-SHA proposal. Boundaries of a functionally defined medical care system delimit the subject area of Health Accounts. The medical care system is defined as "the sum of institutions and individuals pursuing, through the application of medical and paramedical knowledge and technology, the goals of promoting health and preventing disease, curing illness and reducing mortality, and enhancing quality of life of those affected by chronic illness; enhancing quality of life of those with health related impairments, disabilities, and handicaps; assisting patients to die with dignity; administering public health; and administering health programs, health insurance, and other funding arrangements". The boundaries of activities may be expanded to include other health-related functions such as education and training of health personnel; health-related research and development; control of food, hygiene, and drinking water; environmental health; and administration and provision of health related cash-benefits.

The existence of different concepts and definitions of NHE combined with different definitions of the boundaries of goods and services or activities to be included is one of the limitations of international comparisons of NHE estimates. The approach taken in the collection of NHE data reported in OECD Health Data is flexible. Country data on national health care expenditures do not need to follow a common set of boundaries, classification categories or accounting principles. Some countries may narrowly define the boundaries of health (sector) expenditures as expenditures in health care-related goods and services while others may include expenditures for training health personnel, social welfare programs, or environmental health programs<sup>24</sup>. The OECD Health Data classification of expenditures is inclusive of classifications used in reporting countries. Some countries use administratively based budgetary categories while others combine administrative categories with 'ad-hoc' policy-relevant categories. Still others report components of national health expenditures according to SNA functional classifications of final consumption expenditures.

#### *NHE: Activities or Commodities*

Table 2 describes a SNA based matrix of uses of commodities (by industries and final uses). Also, Table 2 is used to discuss further analytical issues related to the estimation and consistency between NHE and GDP indicators. These issues are about whether the NHE estimates should be based on the production of health care service activities or on the

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<sup>24</sup> Table A.2 presents a summary of country differences in the type of expenditures included in the estimates of NHE reported by OECD-Health Data.

consumption of health care related goods and services, and on the limitation on the use of NHE/GDP ratios or percentages for assessing efficiency of national health systems and in international comparisons of national health care expenditures across countries.

National health care expenditure may be estimated in terms of the total industry output (production) or in terms of total commodity output (consumption). Boundaries of production are defined in the space of activities or industries; boundaries of consumption are defined in the space of commodities or goods and services. Adding components of NHE obtained from industry's expenditures or revenues of the production of health care services with components of the expenditures in consumption of health related goods and services is an obvious methodological inconsistency<sup>25</sup>.

In Table 2 the total industry output is defined over the space of industries or activities (vertically - A). The total commodity output is measured over the space of commodities (horizontally - B). The GDP aggregate could be measured in terms of consumption or in terms of production. On the production side the GDP is measured in terms of the sum of the value added of all the economic sectors of the economy (Gross value of production discounted for intermediate uses of goods and services).

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<sup>25</sup> National health care expenditures estimates may be derived from Product and Income accounts (BEA-US NIPA), from uses or consumption expenditure accounts (BEA-US NIPA, NHEA-SNA), or from a combination of Production and Expenditure accounts (HCFA-US). Consumption boundaries are defined over the space of goods and services (CPC in SNA or PCE in NIPA-U.S.A.), while production activities are defined in terms of ISIC-based economic activity or sector (ISIC SNA, ISC and NAISC in NIPA-U.S.A). Since not all health-related goods and services consumed by households are produced by health service activities or health sector industry, the boundaries of consumption and production are different from each other.

**Table 2. Use Table: Commodity Used by Industries and Final Uses**

	Industries A							Total Intermediate Use	Final Uses (GDP)	Total Output	Commodity
	1	2	..	...	Z	N					
Commodities B	1										
	2										
	..										
	...										
	Z								FCE-H		NHE
	N										
Total Intermediate Inputs Total											
Value Added VA											
	Total VA							VA-H			
Total Industry Output											NHE

On the production side industries are grouped according to the International Standard Industrial Classification (of economic activities) – ISIC. The Total Intermediate Inputs are discounted from the Total Industry Output to obtain the Industry Value Added. The aggregation of value added from all industries is the concept of gross national income (or product). The total output of the health care service industry (z) is the total in the corresponding industry column (E). As an example, in the case of the US, the boundaries of production of the health care services industry are based on the inclusion of seven of 498 categories of the US Industrial Standard Classification (ISC). National health care expenditures by health care services industries are measured vertically, as a component of the Total Industry Output.

On the consumption side the GDP aggregate is measured by the total final consumption expenditures (including final consumption expenditures and changes in stock of domestic and foreign goods and services; it is the total commodity output less the total use of commodities by the industry). On the uses or final consumption side, the total expenditures can be measured as a component of the total commodity output. Expenditures can be classified in terms of the international standard classifications of expenditures according to the purposes of each of the institutional agents of the economy (COICOP, COPP, COFOG, COPNI) and/or in terms of the Central Product Classification (table 1). National health expenditures in health related goods and services (E') are obtained by adding the corresponding definition of health care goods and services (z'). In the case of the US NIPA system, the boundary of final consumption expenditure in health-related goods and services is based on the inclusion of nine out of eighty-five categories of a Personal Consumption Expenditure Classification (PCE). The difference between the concept of final consumption expenditures in health (FCE-H) and estimates of national health expenditures (NHE) are presented in row z'. The NHE concept could be related to the Total Commodity Output, a concept different from that of GDP. Only the FCE-H aggregate is consistent with the macroeconomic aggregate of GDP. {Numerical examples to be included}.

*Valuation Issues: Current expenditures and economic prices*

A second methodological inconsistency is due to the differences in accounting procedures for estimating NHE and GDP data. In general, NHE estimates are derived by aggregating the expenditures in health-related goods and services by all the economic agents. They are based on financial reports, budgetary data or estimates of household expenditures in health related goods and services expressed in current monetary terms. Some data is reported on a cost basis, other in terms of producer or consumer prices. No differentiation is made between expenditure estimates in cash or accrual bases.

Table 2 shows the conceptual and methodological inconsistency of the NHE/GDP ratio. In general, the estimation of NHE is based on concepts, definitions, classifications and accounting rules different from the ones used in the estimation of GDP. For the estimation of GDP, financial reports, budgetary data and household income and expenditure data are inputs for deriving estimates of production and consumption. Accounting prices or economic prices need not correspond to the prices at which current transactions take place. In general, aggregate data on expenditures and revenues from the administrative accounting systems are inputs for the construction of the production and assumption (???) consumption(?) tables of the system of

national accounts. Moving from current monetary-financial data to production and consumption estimates involves a transformation of monetary transactional values into economic standard values. In simplest terms it is the equivalent of disaggregating different types of expenditures or revenues into the corresponding quantities and transaction prices and to use a common set of economic prices to measure the value of the level of production. Producer, wholesale and consumer prices are involved in ensuring overall macroeconomic equilibrium or consistency in prices, quantities by sectors of the economy and overall macroeconomic aggregates. This is a particularly important problem in countries where a significant part of the transactions are non-market transactions.

#### IV. Comments and suggestions

In this paper I used the SNA framework of concepts, definitions and accounting procedures to present and discuss methodological issues of different approaches for developing national health accounts (NHA) and national health expenditures accounts (NHEA). I summarize some of the conventional and non-conventional approaches to the estimation of NHA and NHEA and discuss the differences in concepts, definitions, accounting procedures and bases of information used by different approaches. The paper identifies a wide variety of methodological issues of approaches to the estimation of international comparable estimates of national health care expenditures and financing. Differences in concepts, definitions and accounting procedures for estimating NHE and GDP aggregates are a major analytical constraint for developing meaningful international comparable estimates of NHE across countries.

The main conclusion of this review is that a more rigorous assessment of the efficiency and equity of national health systems could be conducted by using standard national accounts indicators of production and *final consumption expenditures* rather than now widely used overall *national health care expenditure* and financing data. The development of NHA methodologies based on the SNA framework will ensure methodological consistency and will contribute to improved understanding of the analytical and policy uses of health care goods and services economic and financial indicators. It will enhance our understanding of economic and financing issues of health and health care service activities and improve our ability to design, implement welfare oriented health sector public policies.

At the same time, methodological developments and rapid progress in developing countries in the implementation of principles and guidelines of the System of National Accounts provide an excellent environment for rapid development of National Health Accounts. In the case of Latin America and the Caribbean, there is a long tradition for the use of international standard classification in the estimation of national health expenditure and financing accounts as well as for producing national accounts aggregates of final consumption in health related goods and services. Several countries have already developed SNA based national health expenditure accounts and some others are moving towards implementing Health Sector Satellite Accounts (HSSA). Development of NHA exercises within the framework of country's SNA system will contribute to strengthening of national information systems and will avoid the duplication of efforts and waist of resources.



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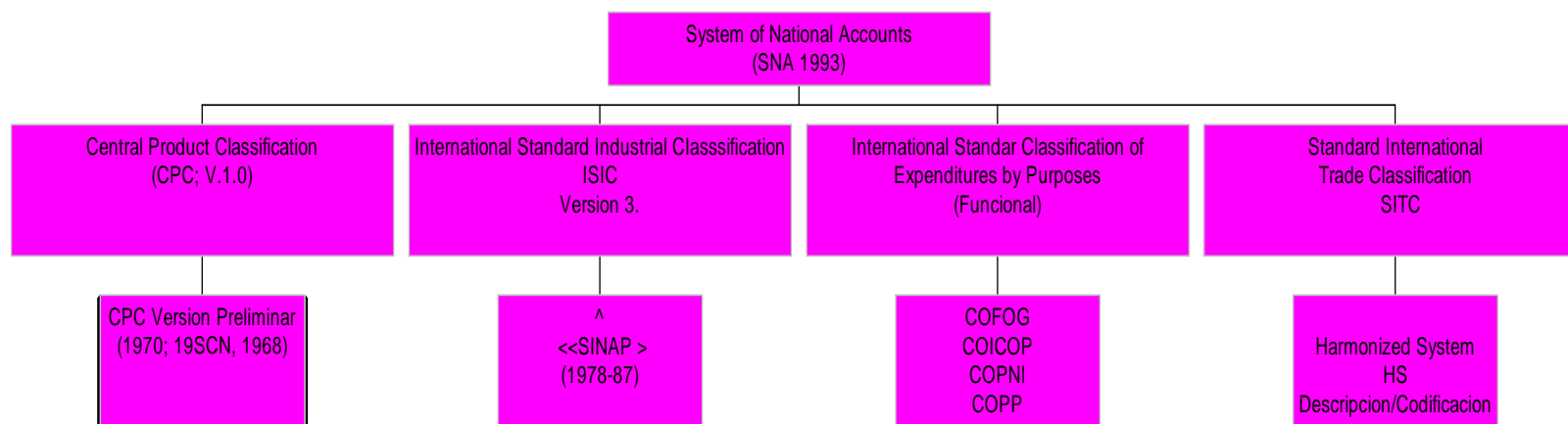
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Annexes: International Standard Classifications of the System of National Accounts

**Table A.1 System of National Accounts SNA –1993  
Intertational Standard Classifications**





**Table A.1: Health Accounts/National Health Accounts: Approaches, Boundaries, Classifications, and Indicators**

<b>Approaches</b>	<b>Expenditure boundaries</b>	<b>Classification of expenditure &amp; financing</b>	<b>Accounting Rules/Type of indicators</b>
<b>SHA-OECD proposal</b>	Narrow Definition: Medical Health Care System: health goods and services. Broad Definition: Health Related Functions: education, environmental health, and welfare programs. Broadest Definition: Health enhancing activities.	Proposed ICHA: International classification of health activities (by medical-health related functions).  By a combination of sources of revenue (taxes, social security contributions, etc.) and institutional units/agents.	Not decided yet. Standard NHE, NHE/GDP; and NHE; composition by medical-health functions and type of providers.  Finance: By sources of revenue, by financing agents, by type of providers.
<b>OECD-Health Data (National Accounts, National Health Expenditure Accounts)</b>	Flexible: May include expenditure in education, environmental health, and some social welfare programs.	By functions and type, based on administrative-budgetary; (COFOG), (COICOP); by age groups.  By sources of revenues (taxes, social security contributions, etc.)	Cash (expenditures) and accrual for GNP, and production aggregates. Standard NHE, NHE/GDP; and NHE composition. By functions, type, and age groups. Finance: Composition by sources of revenue.
<b>HCFA-USA: (National Health Expenditure Accounts (1980s to 1990); National Health Accounts (1990-present); Health Accounts (1996).</b>	National expenditure in health care related goods and services as defined by country administrative system.	Administrative Accounting System: Two major categories: health services and supplies, and research and construction, as well as 14 sub-categories.  Financing: By sources of funds/agents.	Cash for expenditures; accrual for GNP/GDP. Standard NHE, NHE/GDP; and NHE; and composition by type of expenditures. Finance: By sources of funds (financing agents).
<b>NHEA-SNA based (National Health Expenditure Accounts)</b>	National Expenditure in health care related goods and services as defined in the International Standard Classification of Expenditures (ISCE; COFOG, COICOP, COPNI).	Functional and economic (by purposes, SNA based: COFOG, COICOP, COPNI).  By sources of revenues: taxes, contributions; out-of pocket, etc.	Cash (expenditures) and accrual for GNP/GDP. Standard NHE, NHE/GDP; and NHE Composition, functional (purposes) and economic classification. Finance: Composition by sources of revenue.
<b>BEA HA/NIPA (SNA)</b>	On the production side: ISC/ (ISIC); Consumption: PCE/(COFOG,COICOP; CPC)	Final consumption.  N/A (Value added).	Final Consumption expenditures, capital accumulation, export-imports. (expenditure side). Production: Value added.
<b>NHA-PHR/USAID</b>  <b>Modified NHA-PHR/USAID</b>	Flexible: HCFA-USA; modified for developing countries.  Flexible: SHA-OECD modified for developing countries	HCFA based, adapted for developing countries.  ICHA: SHA-OECD (by medical functions); adapted for developing countries. By sources of funds/agents.	Cash for Expenditures; accrual for GNP/GDP. Standard NHE, NHE/GDP; and NHE; and composition by type of expenditures and type of provider. Finance: By sources of funds (financing agents). (Same as SHA-OECD)

