SHA TECHNICAL PAPER (2016)1

A Report on Measuring Expenditure on Pharmaceuticals and Preventive Care within the Health Accounts Framework in the Asia-Pacific Region

Afghanistan, Bangladesh, China, Fiji, Lao PDR,
Malaysia, Maldives, Pakistan, Sri Lanka

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A REPORT ON MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA-PACIFIC REGION: AFGHANISTAN, BANGLADESH, CHINA, FIJI, LAO PDR, MALAYSIA, MALDIVES, PAKISTAN, SRI LANKA

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OECD KOREA Policy Centre – Health and Social Policy Programme

SHA Technical Papers

This report is designed to make available to a wider readership health policy studies with a focus on the Asia/Pacific region.

OECD KOREA Policy Centre – Health and Social Policy Programme

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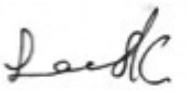
PUBLISHER'S FOREWORD

The OECD KOREA Policy Centre ("the Centre") was established with a Memorandum of Understanding between the Korean government and the OECD to disseminate various advanced policy systems and experiences to government officials and experts in the Asia-Pacific region. The Health and Social Policy Programme, which is one of the four Programmes at the Centre, activities include the publication of SHA technical paper (Green Paper), Korean translation of the OECD publication and in-depth study report as well as organization of various expert meetings related to health, social and pension issues.

A Report on Measuring Expenditure on Pharmaceuticals and Preventive Care within the Health Accounts Framework in the Asia-Pacific Region: Afghanistan, Bangladesh, China, Fiji, Lao PDR, Malaysia, Maldives, Pakistan, Sri Lanka is the result of an initiative to investigate country practices and assess the comparability of figures across countries of spending on pharmaceuticals and preventive care by using an ad hoc template. In this sense, this report represents a new kind of SHA technical paper and, accordingly, the color of the cover page is different from the Green Paper.

On behalf of the Centre, I would like to thank all the experts from the nine participating countries, WHO, the WHO Regional Office for the Western Pacific and the OECD for their contributions and efforts for this important, meaningful publication, and I hope that this report would be useful for health accounts experts in the Asia-Pacific region, and beyond.

March 2016



Lee, Suk Kyu, Director General of the Health and Social Policy Programme

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Annie Chu (WHO Regional Office for the Western Pacific), Chandika Indikadahena (WHO) and Luca Lorenzoni (OECD) prepared the overview of country practices.

ABSTRACT

The Organisation for Economic Co-operation and Development and the World Health Organization Regional Office for the Western Pacific undertook a project to review data sources and estimation methods used by Asia-Pacific countries in measuring expenditure on pharmaceuticals and preventive care within the health accounts framework. Those two areas were identified as challenging for international comparison by country experts that attended the 2014 Asia-Pacific health accounts expert meeting in Busan (Republic of Korea).

The objective of this project was to investigate country practices and assess the comparability of figures across countries of spending on pharmaceuticals and preventive care. To this aim, countries were asked to prepare a short report based on a suggested template that included an introductory section and is then divided into two parts detailing data sources, methods and issues with regard to expenditure on pharmaceuticals (Part I) and expenditure on prevention (Part II). A concluding section was also available for overall recommendations and conclusions.

Nine countries prepared a report between November 2014-April 2015: Afghanistan; Bangladesh; China; Fiji; Lao PDR; Malaysia; Maldives; Pakistan and Sri Lanka. This summary report provides an overview of country practices. The structure of this report is as follows. Following a snapshot of international comparative figures on expenditure on pharmaceuticals and preventive care, Section 2 briefly discusses the different estimation approaches. Section 3 continues with an overview of country practices as to pharmaceutical expenditure reporting, while section 4 describes the methods used to report preventive care expenditures. A discussion is provided in section 5. The template used to gather information from countries is showed in Annex 1, while country reports are comprised in Annex 2.

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A REPORT ON MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA-PACIFIC REGION

1. A snapshot of expenditure of pharmaceuticals and preventive care in the Asia-Pacific region

Countries in the Asia-Pacific region are committed to advancing universal health coverage (UHC), which entails all people having access to quality, needed health services without experiencing financial hardship paying for those services. As countries develop national health plans and policies to advance UHC, tracking health expenditures and understanding how funds flow within the health system contribute to policy development and monitoring progress.

For example, countries in the Western Pacific Region share the vision of UHC as the overarching vision for health sector development, taking actions that cut across the essential attributes of high-performing health systems – quality, efficiency, equity, accountability, and sustainability and resilience – to accelerate progress towards UHC. Strengthening health financing and tracking of health expenditures are core to specific action domains, such as improving health system architecture to meet population needs, setting incentives for appropriate provision and use of services, and ensuring transparent monitoring and evaluation (World Health Organization, 2015).

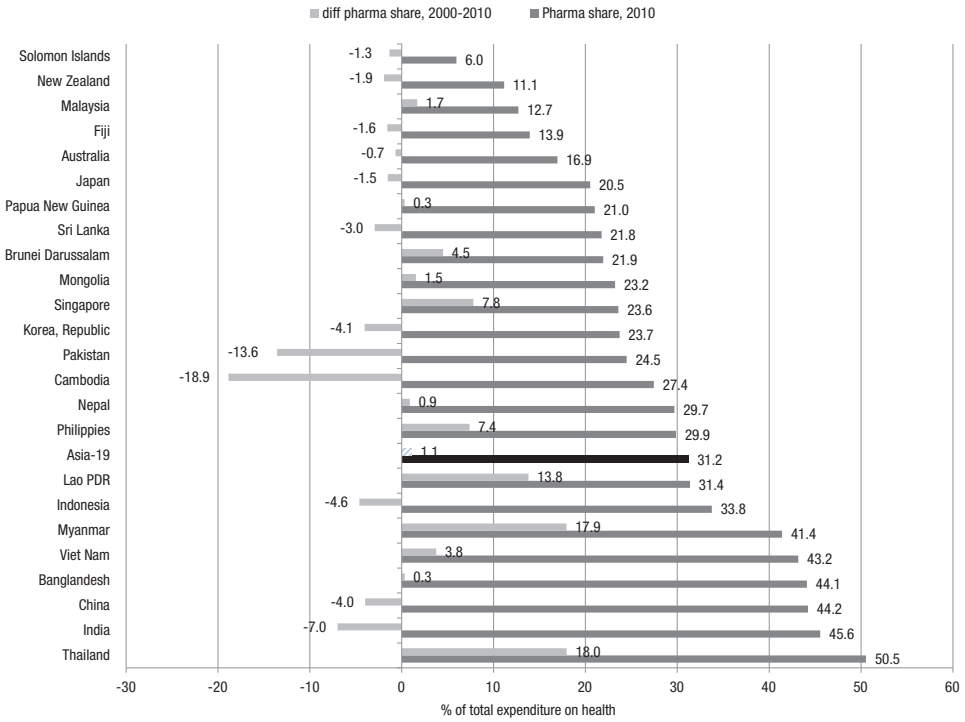
Countries are increasingly focusing on improving the estimation of pharmaceuticals and preventive care expenditures as they can comprise a large component of expenditure and, in particular, out-of-pocket expenditure on health (OOP). Household survey data analyses reveal that in the Lao People's Democratic Republic, Mongolia, and the Philippines, a majority of the out-of-pocket health expenditures are spent on pharmaceuticals. About 90% of out-of-pocket expenditure on health care is spent on pharmaceuticals in the Lao People's Democratic Republic (National Institute of Public Health et al., 2011). In Mongolia, 60% of out-of-pocket health expenditures are spent on medicines for those in the highest expenditure quintile and 95% of out-of-pocket expenditures for those in the lowest expenditure quintile (Tsolmongerel T et al., 2011). In the Philippines, pharmaceuticals account for the largest component of out-of-pocket expenditure at about 66% and constitute an even higher share of out-of-pocket expenditure at 75% among households of the poorest wealth quintile (Lagrada R et al., 2011). In terms of resource allocation, countries are also facing challenges in optimizing the investments in health across the spectrum of health services, including preventive care.

In the System of Health Accounts – SHA2011 (OECD, Eurostat and WHO 2011), expenditure on pharmaceuticals are reported under the functional classification category HC.5, Medical

goods (non-specified by function). Medical goods are broken down at the second level into pharmaceuticals and other medical non-durables (HC.5.1) and therapeutic appliances and other medical goods (HC.5.2). In SHA 2011, expenditures on preventive care are reported under the functional category HC.6, Preventive care, which is limited to primary and secondary prevention. The second-digit classes are then based on the type of services provided: information, education and counselling programmes (HC.6.1); immunisation programmes (HC.6.2); early disease detection programmes (HC.6.3); healthy condition monitoring programmes (HC.6.4); epidemiological surveillance and risk and disease control programmes (HC.6.5); and preparing for disaster and emergency response programmes (HC.6.6).

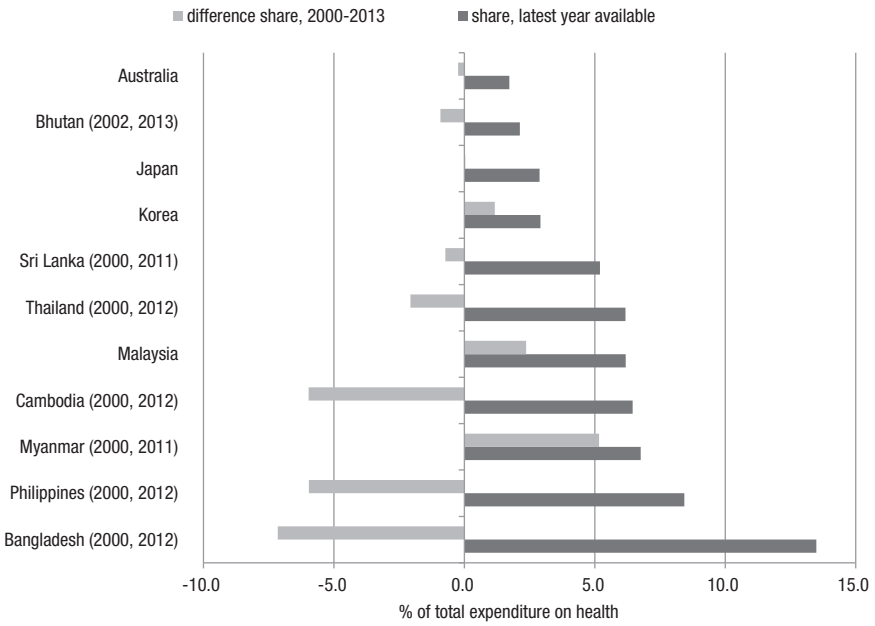
Spending on pharmaceuticals accounted for almost one third of all health expenditure on average across Asian countries and economies in 2010 (OECD, WHO 2014). Per capita pharmaceutical spending varies a lot among the countries and economies under study. In 2010, a large number of Asia-Pacific countries and economies reported spending below 60 USD PPP per capita, with Myanmar, the Solomon Islands, Pakistan, Lao PDR, Papua New Guinea and Nepal spending less than 25 USD PPP per capita. Myanmar, Singapore, China and Viet Nam reported an annual average growth rate of more than 9% from 2000-10, while Pakistan was the only country that showed a decrease over the same period, likely due to an increase in the use of generic drugs. In Myanmar, Viet Nam, Bangladesh, China, India and Thailand more than 40% of total health expenditure was on pharmaceuticals, while this share was less than 15% in Fiji, Malaysia, New Zealand and the Solomon Islands. Pharmaceutical share of total health expenditure increased by more than 10 percentage points from 2000-10 in Lao PDR, Thailand and Myanmar, while it decreased by more than 10 percentage points in Cambodia and Pakistan (Figure 1).

Figure 1 Change in pharmaceutical expenditure as a share of total expenditure on health, 2000-2010. Selected Asia-Pacific countries and economies



Spending on preventive care accounted for less than one tenth of all health expenditure across reporting Asian countries and economies in 2013 (WHO Global Health Expenditure database, http://apps.who.int/nha/database). The only exception is Bangladesh that reported a share of 13% in 2012, showing also a decrease of 7 percentage points from 2000. The share varies across countries, with a significant change over time for some countries too (Figure 2).

Figure 2 Change in preventive care expenditure as a share of total expenditure on health, 2000-2013. Selected Asia-Pacific countries and economies



The large variation observed across countries and over time in expenditure on pharmaceuticals and preventive care as a share of total health expenditure confirmed the importance of reviewing data sources and methods of estimations used by countries to improve international comparability of results.

2. Estimation approaches

The estimation of both pharmaceutical and preventive care expenditures pose challenges for countries where there are weak health and financial information systems and data are not available or not reliable. The estimation approach that is used for a particular expenditure flow will depend on the types and range of data that are available, and the reliability of these data sources. There is a menu of four potential approaches available to estimate health expenditures. These approaches can be used alone or in combination (Rannan-Eliya and Lorenzoni 2010):

- Estimation using data from the financing sources, e.g. private health insurance schemes, household surveys or government expenditure reports (*financing side perspective*);
- Estimation using data obtained from the providers; e.g., industry surveys of pharmacies, administrative data of providers (*provider side perspective*);
- Estimation using data obtained on the consumption of services, e.g. the composition of household spending on pharmaceuticals, or survey data on the distribution of providers providing a particular service to household (*consumption side perspective*); and
- Combining (typically) the first two approaches, by using the data from one to validate and adjust the data from the other (*integrative approach*).

Whether the financing side, provider side or consumption side perspectives should be used to estimate an expenditure area or element will largely depend on the availability and reliability of data sources for each approach. Experience in both OECD and non-OECD countries is that consumption side data tend to be subject to significant sampling and non-sampling error, and that the level of detail and the validity of provider side (cost and revenue) data are typically high, especially for inpatient services. Financing side data are often the most reliable for public expenditures (government and social security), but are typically incomplete because of the absence of data on out-of-pocket expenditures.

Each approach will be adequate when comprehensive and reliable data are available, but when dealing with private expenditures this is often not the case, and in this scenario the integrative approach is best. This approach involves examining expenditure flows from the perspective of all agents involved in a transaction, and attempting to balance all data sources by linking estimates on any one item by financing agents/schemes with those given

by providers. In practice, for any set of transactions, this involves looking at expenditure from both the provider (via data on their receipts or costs) and financing sides (e.g., data from financing schemes or from household surveys), and then reconciling the different data sources.

3. Expenditure on pharmaceuticals

Table 1 is a review of the methods used by countries in this study to estimate expenditure on pharmaceuticals.

Table 1. Expenditure on pharmaceuticals by type of approach

Countries	Financing	Provider	Consumption	Integrative
China	• pharmaceutical revenue • China health statistics yearbook	• total retail pharmaceutical sales • China Statistics • provider survey • expenditure on drugs as well as financing schemes (OOP)		
Fiji	• private sector: • pharmacy, donors, and NGO surveys • audited government accounts • Fiji Pharmaceutical and Biomedical services			• data from pharmacy surveys are triangulated with household income and expenditure surveys, reports from the Fiji tax office to estimate private expenditure
Lao PDR	• government expenditure report • donor and NGO surveys		• household survey data	
Malaysia	• government expenditure report • accountant general system through surveys	• IMS Health, provider surveys		• private expenditure: IMS, private standalone pharmacies, Department of Statistics • medical business enterprise surveys • third party payers (e.g. private insurance agencies, private corporations)
Pakistan			• household integrated health survey for OOP expenditures	

Countries	Financing	Provider	Consumption	Integrative
Sri Lanka	• audited government accounts	• Sri Lanka Pharmaceutical Audit conducted by IMS Health • retail outlet sales		

Estimation and assumptions used, and verification/quality check processes

Few countries provided information on the methods and assumptions used in estimating or verifying health expenditure data. For example, Malaysia employs a triangulation of various sources of data as an integrative approach, including the Account General system, IMS data, and provider information mostly from standalone private pharmacies. In China for the assumption on the out-of-pocket health expenditure reimbursement rate, validation through current health expenditures and household survey data is conducted.

The level of detail in the reporting in participating countries is at the 2-digit level for Bangladesh, China, Maldives, Pakistan (OOP only) and 3-digit level for Fiji, Lao PDR, Malaysia, and Sri Lanka. Afghanistan reports prescribed medicines only.

4. Expenditure on preventive care

Table 2 is a review of the methods used by countries in this study to estimate expenditure on preventive care.

Table 2. Expenditure on preventive care by type of approach

Countries	Financing	Provider
China	national monitoring and evaluation system for government health inputs, China health statistics yearbook, and health finance audit report	annual surveys to estimate ratio of preventive care expenditure to total expenditure by type of institution
Bangladesh	government operation plans, NPISH survey	
Fiji	biannual surveys for the private sector, donors, and NGOs; audited government accounts	
Lao PDR	government expenditure report, donor and NGO surveys	
Malaysia	government expenditure report, accountant general system	
Pakistan	government accounts (to be implemented)	
Sri Lanka	audited government accounts, biannual surveys for local government, external donors, direct data collection cross-validated	

Estimation and assumption used, and verification/quality check processes

Few countries also provided information on the methods and assumptions used in estimating or verifying health expenditure data. China and Fiji use expert opinions to estimate the functional breakdown. China also employs a quality control for sample survey, while Fiji notes that preventive care services (or programs) that are integrated into hospital services are difficult to estimate. Sri Lanka uses expert opinions as well and a review of official documentation to estimate function breakdown. Pakistan plans to use expert opinions while Malaysia aims to conduct a bottom-up approach with state level surveys.

The level of detail in the reporting in participating countries is at the 2-digit level for Bangladesh, China, Fiji, Lao PDR, and Sri Lanka. For Sri Lanka, four sub-categories are added to HC.6.1 and three sub-categories to HC.6.3. For Bangladesh, five sub-categories are added to HC.6.1. For Malaysia, the disaggregation of prevention expenditure under SHA 2011 is different from the Malaysian NHA framework as well as the existing government accounting system.

5. Discussion

Experience across countries in this study shows that the most used method of estimating expenditure flows for sales of *pharmaceuticals* from retail outlets is from the financing side perspective. Industry data on retail sales of pharmaceutical products are also used to estimate private spending in several countries. One important industry source for this information is market research firms[1] that have established an extensive infrastructure in many countries for routinely collecting and publishing these data.

The financing side approach uses mainly secondary data sources (government accounts), while the provider and consumption side methods use mostly primary data sources for in particular tracking private expenditure. An ad hoc survey is carried out every second year in China.

Some limitations of the estimations include: underestimation of pharmaceutical expenditures from not being able to separate pharmaceutical from curative care expenditures (Lao PDR and Malaysia) and difficulty of collecting data from non-pharmacy stores (e.g. outlets, petrol stations) that sell pharmaceuticals (Malaysia), lack of data on imported medical goods and commodities (Lao PDR). Two additional issues relate to the treatment under SHA 2011 of pharmaceutical rebates and tax allowances.

1 The most notable of these firms is IMS-Health.

The most used method of estimating expenditure flows for *preventive care* services is from the financing side perspective. The financing side approach uses mainly secondary data sources (government accounts) for public expenditure, while for donors and NGOs primary data sources (i.e. surveys) are used. An ad hoc survey is carried out in China.

For public expenditure, expert opinions are used to allocate expenditure at the 2 digit categories.

Three main issues reported were:

- Fiji enquired how useful other national systems find the SHA 2011 preventative classification of expenditure given that some reorganization of finance systems in Fiji will be required to capture accurate data to map to this classification. Moreover, several countries reported the use of a classification different from the SHA 2011 standard. Those countries added three digit categories to address local reporting needs.
- Several countries flagged the difficulties in capturing expenditure on preventive services provided as part of routine medical care delivery, especially for services provided by infectious disease hospitals, disease prevention and treatment specialist institutions. This may cause an underreporting of expenditure on this component.
- Physical check up has a broader definition in China, which may lead to overestimation.

A financing side approach drawing on secondary datasets is the most used method to estimate expenditure on pharmaceuticals and preventive care from public sources.

The survey results confirmed the need for increased monitoring and reporting of pharmaceutical expenditure from the private sector and pointed to the opportunity of reviewing the two-digit classification of preventive care within the health accounts framework. During discussions at the 2015 Asia-Pacific health accounts expert meeting, country experts agreed that the two areas of pharmaceutical and preventive care expenditure are increasingly important in policy development. Countries will continue to improve their estimation methods and data quality, particularly given the growing need to focus on and invest in primary care and ensuring financial protection to access quality health services for all populations.

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Template

The Template

1. INTRODUCTION

- Background to the study and the organisation(s) involved in the health accounts (HA) data collection.
- Experience to date of the organisation(s)/country in reporting health accounts according to the SHA framework.
- Version of the SHA manual used to report HA data (i.e. SHA 1 or SHA 2011).

Part I
Expenditure on pharmaceuticals (SHA HC.5.1 and HC.RI.1)

2. PROCESS AND METHODOLOGY

- Description of the primary data sources (e.g. scope, definition, units, variables, coverage, frequency, availability, etc) used in the current HA reporting exercises on pharmaceutical expenditures.
- If your country does not use SHA for reporting, what are the differences and is there a mapping to SHA?
- Description of the changes in reporting over time (if any).
- Description of the work process for allocating pharmaceutical expenditures to HA classifications (if applicable): functions (sub-categories); providers; financing agents/schemes.
- Description of the estimation methods and assumptions used, for example, in the case of missing variables (if any).
- Description of the process for verifying and checking the quality of pharmaceutical expenditures (if any).

3. DOCUMENTATION OF ISSUES IN REPORTING

- An assessment of the mapping and/or feasibility of reporting pharmaceutical expenditure in relation to the following HA functional classification items (based on SHA 2011):
  - 5.1.1, prescribed medicines
  - 5.1.2, over-the-counter medicines
  - 5.1.3, other medical non-durable goods

- An assessment of the mapping and/or feasibility of reporting pharmaceuticals expenditure functional categories cross-classified with financing agents/schemes categories.
- An assessment of reporting on total pharmaceutical expenditure (HC.RI.1), i.e. including pharmaceutical delivered to patients as part of inpatient care, etc.

4. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

- Description of the specific resources required to undertake the pharmaceutical expenditures compilation exercise within the overall HA compilation process.

5. CONCLUSIONS

- Overall recommendations and conclusions, including challenges and future directions to improve comparability with the SHA framework and quality of data.

Part II
Expenditure on preventive care (SHA HC.6)

6. PROCESS AND METHODOLOGY

- Description of the primary data sources (e.g. scope, definition, units, variables, coverage, frequency, availability, etc) used in the current HA reporting exercises on preventive care expenditures.
- If your country does not use SHA for reporting, what are the differences and is there a mapping to SHA?
- Description of the changes in reporting over time (if any).
- Description of the work process for allocating preventive care expenditures to HA classifications (if applicable): functions (sub-categories); providers; financing agents/schemes.
- Description of the estimation methods and assumptions used, for example, in the case of missing variables (if any).
- Description of the process for verifying and checking the quality of preventive care expenditures (if any).

7. DOCUMENTATION OF ISSUES IN REPORTING

- An assessment of the mapping and/or feasibility of reporting expenditures on preventive care in relation to the following HA functional classification items (based on SHA 2011):
  - HC.6.1, information, education and counselling programmes
  - HC.6.2, immunization programmes
  - HC.6.3, early disease detection programmes
  - HC.6.4, healthy conditions monitoring programmes
  - HC.6.5, epidemiological surveillance and risk and disease control programmes
  - HC.6.6, preparing for disaster and emergency response programmes
- An assessment of the mapping and/or feasibility of reporting preventive care expenditure functional categories cross-classified with financing agents/schemes categories.

8. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

- Description of the specific resources required to undertake the preventive care expenditures compilation exercise within the overall HA compilation process.

9. CONCLUSIONS

- Overall recommendations and conclusions, including challenges and future directions to improve comparability with the SHA framework and quality of data.

Country Reports

AFGHANISTAN

MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA/PACIFIC REGION

INTRODUCTION

National Health Accounts in Afghanistan

The Ministry of Public Health (MoPH) is committed to improving the health of the people of Afghanistan, including women and children in underserved areas. While the MoPH's strategy for increasing access to high-quality services is multi-faceted, particular emphasis is being placed on sustainable health financing (GIRoA, 2012a). Understanding the key players and financial flows in the health system enables governments to more effectively manage and allocate health resources. Therefore, Government of Afghanistan GIRoA, through the MoPH, has adopted the National Health Accounts (NHA) framework, an international, standardized resource tracking methodology used to summarize and analyze health expenditures in a country's health sector.

In recognizing the potential policy impact of consistent NHA data, Ministry of Public Health Afghanistan (MoPH) conducted its first NHA in 2011 with data from fiscal year 2008–2009, and the second NHA report was conducted in 2013 with the data from fiscal year 2012. The second report describes results from the general account as well as the findings of a reproductive health (RH) subaccount, a simultaneous sub-analysis specifically undertaken to better understand spending on RH services. Afghanistan so far has produced two rounds of NHA reports with one round of Reproductive Health (RH) Sub-accounts, both NHA reports produced using System of Health Accounts 1 (SHA 1) framework, for the next and third NHA report which will be produced in 2015, the NHA team at the MoPH Afghanistan is decided and are committed to use the new framework of SHA 2011version.

For the production of Afghanistan NHA primary and secondary data were collected from various government documents and key informants. Primary data were collected from the following sources:

- Donor surveys (bilateral donors, multilateral donors, and the International Security Assistance Forces [ISAF]),
- Nongovernmental organization (NGO) surveys (those responsible for delivering health care services),

- Ministry surveys (Ministry of Interior, Ministry of Defense, Ministry of higher education, Ministry of Education (fund recipients).
- Household expenditure on health for the first round and second round of NHA report were collected from Afghan Mortality Survey (AMS) and National Risk and Vulnerability Assessment (NRVA) respectively.
- The following secondary data sources were used for the production of the both reports;
- Afghanistan National Budget 1387 (operating and development budgets)
- Afghanistan National Budget 1390 (operating and development budgets)

In the first round of NHA the team produced the estimation using spreadsheets, and for the production of second NHA report the team used Health Accounts Production Tool (HAPT) to produce the estimation and map the data accordingly.

Part I
Expenditure on pharmaceuticals (SHA HC.5.1 and HC.RI.1)

1. PROCESS AND METHODOLOGY

The expenditure on pharmaceuticals was derived from non-household surveys and household surveys. As in non-household expenditure the pharmaceutical expenditure was part of the curative so most of the expenditure is from households. Afghanistan first NHA, household estimates were based on findings from the Afghanistan Mortality Survey 2010 (AMS 2010). The first national household survey of its kind in Afghanistan, the AMS 2010 specifically measures infant, child and maternal mortality, other causes of death and key health indicators, providing data from a nationally representative of households and covering the same period as this NHA exercise. Several general questions on out-of-pocket (OOP) expenditures on health care were added to the AMS 2010 while being mindful not to detract from the primary scope and purpose of the survey. For example, households were asked about the facilities where treatment was most recently sought, the costs associated with their visits (such as laboratory, diagnostic imaging, pharmaceuticals, and in-kind payments); and the number of visits over the past year. And for the second round of NHA the household OOP expenditures were derived from the National Risk and Vulnerability Assessment (NRVA) 2011–2012, a nationally representative multi-purpose survey completed by the Afghanistan Central Statistics Organization (CSO). Several general questions on OOP expenditures on health care were added to the NRVA 2011–2012 for NHA purposes.

Obtaining high-quality data in Afghanistan is often challenging, and although every NHA is an estimation of THE, technical teams require accurate data to determine an estimate closest to reality. Additionally, as NHA analysts build their technical expertise and become

more comfortable with the methodology, they are able to make better decisions for how expenditure data should be analyzed. With this in mind, and despite the NHA team working to make parallel decisions with the first estimation, differences in reported expenditures from year to year could be more representative of variations in NHA production rather than actual changes in health spending. For example, the 2011–2012 NHA used the NRVA for household data, and a partnership was formed to ensure that this same dataset be used on a continual basis. However, the Afghanistan Mortality Survey was used in the 2008–2009 estimation. Though the same questionnaire was used, but due to fundamental differences in the survey designs, data collection, and analysis plans, one must be careful when drawing comparisons from year to year. This is particularly relevant when comparing the country's first and second round of NHA. As the framework becomes institutionalized, this typically becomes less of an issue.

Expenditures on medicine were not attributed to detail information, due to insufficient detail information. There were a specific question about expenditure on pharmaceuticals, but there were not much more details of whether it was expended on over the counter, on pharmacy shops, retailers or any other.

The household expenditure on pharmaceutical were collected through NRVA household survey, while a specific question were asked about pharmaceutical expenditure of the household for the specific period of time. The expenditure on pharmaceuticals in public sectors which is covering Basic Package of Health Services (BPHS), Essential Package of Hospital Services (EPHS) and national hospitals levels, were collected through ministries, donors and the implementing NGOs surveys, in the questionnaires form over all information regarding expenditure on capital, preventive care, out- patient and in-patient expenditures were obtained from BPHS and EPHS surveys, as well there was a specific question about pharmaceutical consumed in the health facilities by NGOs and government. In Afghanistan the BPHS and EPHS are implemented by NGOs as contracted-out and contracting-in mechanism, which financially is supported through international donors mainly (World Bank, European Union, and USAID). The non-household surveys for health expenditure data collection and analysis were done by NHA team.

There is not a specific process in place to verify the pharmaceutical expenditures. But for the process of verifying and checking the quality of pharmaceuticals there are responsible departments i.e.; General Directorate of Pharmaceuticals Affairs, Food and drug control Laboratories, and medical legislation implementation review directorate, under the ministry of public health. Currently these departments are unable and do not have the capacity of verifying the quality of medicine at the country level. Availability of counterfeits drugs is another problem in term of quality of medicines.

2. DOCUMENATION OF ISSUES IN REPORTING

Afghanistan National Health Accounts reports expenditure on pharmaceutical based on the System of Health Accounts (SHA.1). Due to the unavailability of detailed expenditure data, the NHA team were only able to provide information on pharmaceuticals expenditure up to the following details, behind these details NHAs were not able to provide information on pharmaceuticals expenditure;

HC.5.1.1 prescribed Medicines

HC.5.2.1 Glasses and other vision products

HC.5.2.3 Hearing Aids

In the first NHA report, 2008-2009, retail sale and other providers of medical goods was the second largest area which made **28 percent (294,902,083USD) of total health expenditure**. While in the second round of NHA in 2011–2012, retail sale and other providers of medical goods provided the largest portion of services, accounting for **25.8 percent (387,689,137 USD) of total health expenditure THE**, slightly decreased of 2.2 % as percentage of expenditure is seems from 28% to 25.8% in the duration of three years. Although the percentage of the expenditure on the pharmaceuticals is slightly decrease but the amount of money is increased due to high increase in total health expenditure. This expenditure is classified under *HC.5 retail sale and other providers of medical goods (Medical goods dispensed to outpatients)*. This finding is indicative of the low quality of health services in the public sector, the lack of medical supplies and pharmaceuticals available at health facilities across the country, for unclear reason, and other access barriers to formal health facilities. There may be a general unavailability of medicines, or the lack of medical supplies and pharmaceuticals may be due to over-prescription by doctors or self-prescription by patients, commonly recognized as problems. Inpatients are often subject to visiting private pharmacies to purchase their own medication and then return to the hospital for treatment. Stock-outs and shortages of medical supplies and pharmaceuticals at public facilities can serve as a motivation for individuals to seek care at private facilities, despite that the national hospitals, Basic Package of Health Service (BPHS) and Essential Package of Hospital Service (EPHS) offer free health services.

Rational use of medicine is one of the important and hot subjects in the country, NHA reports recommend to promote rational medicine use and improve drug supply.

Overall it is challenging to obtain expenditure on the pharmaceutical of the health system of the country, it is considered to be not feasible within the available resources, public and donors expenditure on pharmaceutical are going to be done by NHA team. Due to unavailability of sound recording and reporting systems, it is very challenging and sometimes impossible to get detailed expenditure data on pharmaceuticals. Currently NHA team is consists of two persons NHA team lead and NHA team member, they can manage to collect the expenditure data from public and donor sources to the extend it is available, but for the

household expenditure on pharmaceutical which need a household survey the financial and human resource requirements are higher to implement it independently for NHA purpose. Fortunately a memorandum of understanding between Ministry of Public health and Central Statistic Organization is signed and based on this NHA related household health expenditure questions are included in their surveys. As the main propose of these surveys are different, so it is not possible to include many questions on health expenditure and obtain more detailed data. The rest of the process; the compilation process and the analysis of collected data from private, household, public and donors will be completed by the team considering the capacity of the team on the methodology, analysis of the expenditure and understanding of the new methods and finally report writing.

3. CONCLUSIONS

Retail sale and other providers of medical goods provided the largest portion of services both in the first and second round of NHA respectively 2008-2009 and 2011-2012. These findings are indicative of the low quality of health services in the public sector, the lack of medical supplies and pharmaceuticals available at health facilities across the country, for reasons unclear, and other access barriers to formal health facilities. There may be a general unavailability of medicines, or the lack of medical supplies and pharmaceuticals may be due to over-prescription by doctors or self-prescription by patients, commonly recognized as problems. Inpatients are often subject to visiting private pharmacies to purchase their own medication and then return to the hospital for treatment. Stock-outs and shortages of medical supplies and pharmaceuticals at public facilities can serve as a motivation for individuals to seek care at private facilities, despite that the BPHS and EPHS offer free health services.

It is highly recommended to, promote rational medicine use and improve the drug supply: Pharmaceuticals and other medical non-durables make up the bulk of household health expenses with a significant proportion dispensed through pharmacies and retail shops. Other costing studies showed that public allocation to medicine is low compared to other goods and services (GIRoA, 2012d). Stock-outs occur often in public health facilities and drive patients to seek care in private settings. There are numerous reasons why this might be the case. First, not only are doctors thought to frequently overprescribe medications, but patients often demand medication that is not clinically indicated. Overuse of medicines by patients is commonly accepted as patients also ask private pharmacies to prescribe medicines, despite that the majority of pharmacies do not have qualified pharmacists on staff. (A significant amount of pharmaceutical products are also thought to be purchased through illegitimate channels). The MoPH must further its plans to survey the retail sector and formulate effective regulatory functions.

Detail information on pharmaceutical and preventive care should be collected from different stakeholders and households' considering the SHA2011 framework which will be used for

producing of health accounts in the country. For this purpose we recommend a comprehensive training of staff who is working for of the countries health accounts production, especially for such a specific expenditure details; pharmaceutical and prevention care and continues capacity building plan for the team member to implement and follow the new methodology.

Part II
Expenditure on preventive care (SHA HC.6)

1. PROCESS AND METHODOLOGY

The Afghanistan NHA reports the expenditure on preventive care which is derived from central government and donors who spend on preventive care programs. Expenditure on preventive care of household was difficult to obtain, as most people do not spend their money on preventive care. Out of over all the government expenditure on health, 18 percent was spent on prevention and public health services which this percentage made 5% (75,131,516 USD) of THE in the second round of NHA and in the first round of NHA out of over all the government expenditure on health, 22 percent was spend on prevention and public health services which this percentage made 5% (56,636,570) of total health expenditure, it means private sector expenditure on preventive cares are not available. There was not a specific question available about expenditure on preventive care for the household, because people in Afghanistan cannot afford to seek preventive care and therefore only seek care when treatment is critically important. The preventive care in the SHA 1 classification is counted under:

HC.6 Prevention and public health services

Expenditure on preventive care was collected from stakeholders surveys like; Ministries, donors and NGO's Surveys. NHA team was unable to obtain the data of household expenditure on preventive care therefore the 5% expenditure on preventive care is all public (donors and government) expenditure.

In addition to the MoPH, several other ministries have health programs and receive funds from the national budget for the provision of health services. These ministries include the Ministry of Defense (MoD), Ministry of the Interior (MoI), Ministry of Education (MoE), Ministry of Higher Education (MoHE), and the National Department of Security (NDS). The MoD, MoI, and NDS operate hospitals and clinics nationwide, while the MoHE operates medical faculties and teaching hospitals in select provinces. The MoE operates health centers in some schools as well as health education programs—pharmaceuticals for their health centers as well as relevant staff salaries are included in NHA. A survey was circulated to each ministry.

2. DOCUMENTATION OF ISSUES IN REPORTING

In the NHA report the following classification were used for reporting of preventive care, immunization, education and training of health personal:

General accounts including RH

HC.6 Prevention and public health services

HC.6.1 Maternal and child health; family planning and counselling (subaccount specific)

HC.6.1.1 Maternal and child health, family planning for RH

HC.6.1.3 Prevention and immunization for RH

HC.6.1.99 Other Maternal and child health; family planning and counselling

HC.6.2 School health services

HC.6.3.99 Other prevention of communicable diseases

HC.6.9 All other miscellaneous public health services

HC.R.2 Education and training of health personnel

HC.R.2.1 Education and Training for RH

HC.R.2.99 Other education and training of health personnel

HC.R.3.99 Other research and development in health

HC.R.4.99 Other food, hygiene, and drinking water control

The percentage of expenditure out of total public expenditure is different for the first NHA public expenditure on prevention and public health services excluding household OOP , was 22% (56,636,570 USD), while in the second NHA expenditure on prevention and public health services excluding household OOP was about 18% (75,131,516 USD). Though the percentage is lower and the amount of money expend on preventive care is higher in the second round than the first round of NHA. Prevention and public health services, were underutilized. This is not necessarily surprising given that BPHS and EPHS are the MoPH's flagship efforts to expand coverage to households. Furthermore, this makes sense in the absence of insurance networks in Afghanistan and the high burden placed on households. Many cannot afford to seek preventive care and therefore only seek care when treatment is critically important.

Overall expenditure on preventive care come from government and donors fund, and does not include household expenditure on preventive care, as one of the NHA recommendation was to increase investment on preventive care and improve understanding of investments in preventive care

Currently a team of NHA is available in the MoPH to work and produce NHAs in the country. The compilation process of health accounts will be completed by the team considering the

capacity of the team on the methodology, analysis of the expenditure and understanding of the new methods and finally report writing. The NHA team plans to use the SHA 2011 for the production of next rounds of NHA in Afghanistan, by that it will be possible to report more details on preventative care and disease control programs expenditures.

3. CONCLUSIONS

Prevention and public health in these NHA reports does not include preventive care provided as part of outpatient treatment. Rather it encompasses exact services "designed to enhance the health status of the population as distinct from the curative services, which repair health dysfunction." In Afghanistan, typical programs that fall under this category are vaccination campaigns. This means that items such as *HC 6.1. Maternal and child health care and HC 6.3. Prevention of communicable diseases* refers only to programmatic expenditures and not refers to those services delivered as part of outpatient care.

It is highly recommended that to improve understanding of investments in preventive care: Under the BPHS and EPHS, physicians and other medical personnel conduct certain preventive activities, including counseling, screening, vaccinations, and blood pressure, cholesterol, and diabetes tests. However, the time and resources spent on these are considered as curative under the NHA because they are provided as inpatient and outpatient services. Thus, government expenditure on preventive health is likely to be underestimated. An in-depth study of the BPHS/EPHS may be able to more finely distinguish spending on preventive and curative services. The same underestimation applies for household expenditures on preventive care as questions included in the National Risk and Vulnerability Survey (NRVA) survey were primarily directed at spending on curative services. Future household surveys can be improved by asking for information on preventive services received.

Similarly, spending on RH preventive services such as family planning and counseling is likely underrepresented in these studies. Aside from organizations dedicated to providing RH public health services specifically, it was challenging to distill the RH preventive and public health components from the secondary datasets utilized for the NHA. Future NHAs using primary data from both institutions and households will more finely tune the national expenditures surrounding preventive service for RH.

BANGLADESH

MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA/PACIFIC REGION

1. INTRODUCTION

Bangladesh arguably the first developing country produced a complete National Health Accounts (NHA) back in 1997. Since then, the Health Economics Unit (HEU) of the Ministry of Health and Family Welfare (MOHFW) has been instrumental in periodical production of NHA for Bangladesh. The first Bangladesh National Health Accounts (BNHA1) estimate was produced for the fiscal year 1996-97, and was published in 1998. In 2003 Bangladesh published its Second Round of NHA (referred to as BNHA2) estimates and covered up to 2002 including revised estimates for 1997. During this second round, the BNHA framework was updated and made compatible with the System of Health Accounts (SHA), which was the statistical framework recommended by World Health Organization (WHO).

The third round of BNHA (referred to as BNHA3) provided estimates of health expenditure in Bangladesh for the 1997 – 2007 period. The third round of BNHA was linked to the SHA framework (OECD, 2000), and used classifications based on the SHA's International Classification for Health Accounts (ICHA). The fourth round of BNHA uses SHA 2011 extensively as a guide. The revised BNHA framework relied considerably on the earlier versions of the BNHA framework developed particularly under BNHA3. This allowed the current version of BNHA to have duel coding system which can make estimated in both (SHA1 and SHA2011) versions.

A BNHA cell was established in the Health Economics Unit (HEU) of MOHFW. The BNHA cell has been leading the updating SHA 2011 compatible BNHA Framework, data collation, data editing, and data analysis. The team members were supported by an international NHA expert in conceptualizing definitional issues conforming to SHA 2011 and linking them to BNHA framework. In addition, concerted effort was expended in introducing best practice estimation techniques

2. PROCESS AND METHODOLOGY FOR PHARMACEUTICALS EXPENDITURE

Pharmaceuticals expenditure is the largest component of total health expenditure (THE) in Bangladesh. For estimation of pharmaceuticals expenditure, BNHA uses Bangladesh National

Accounts (NA) derived estimates, Household Income and Expenditure Survey (HIES) and IMS Health data on of pharmacy sales. The NA and IMS estimates are produced on an annual basis while HIES is conducted in every five years. HIES reports two set of pharmaceuticals expenditure made by the households; (1) using 30 days recall method; (2) household annual consumption of medicine. IMS estimates on sales of pharmaceuticals based on nationwide survey of retail outlets of pharmaceuticals which they carry out every year.

In addition to the three dataset, BNHA also consider value of western medicines produces estimates by Drug Administration under the Ministry of Health and Family Welfare (MOHFW). Indirect estimate of pharmaceuticals sales based on ratio of consumption from household survey is also calculated as an input for the analysis. Information on mark-ups at various points of sales and unrecorded flows of pharmaceuticals, such as imports of medicine as part of passenger baggage are analysed with caution. Final estimates on pharmaceuticals are made by spreadsheet analysis using the final results from all datasets.

3. DOCUMENTATION OF ISSUES IN REPORTING

Pharmaceutical expenditure under BANH is unable differentiate the sales of prescribed medicine, over-the-counter medicines and other medical non-durable goods. Due to data limitation BNHA reports all these expenditure as pharmaceuticals sales as prescribed medicine. Uses of traditional medicine are very common in rural Bangladesh and BNHA consider indigenous, complementary, alternative medicine as part to total pharmaceutical sales.

4. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

All dataset mentioned above are provided to the BNHA cell for free. The BNHA cell is not yet fully equipped to analyse all the data of its own. External consultants are hired for analysis and approximately two person months external consultants are used for completion of pharmaceutical expenditure analysis.

5. CONCLUSIONS

The BNHA cell needs to work closely with the Bangladesh Bureau of Statistics (BBS) and IMS-Health. BNHA cell can influence both the organizations and modify their data collection instruments which will allow having the breakdown of pharmaceutical expenditure according to System of Health Accounts classification.

6. PROCESS AND METHODOLOGY FOR PREVENTIVE CARE

Preventive care in Bangladesh is primarily provided by the Ministry of Health and Family Welfare (MOHFW) and Non Profit Institutions Serving Households (NPISH). MOHFW

expenditure on preventive care is made following operation plan of the ministry and therefore it is relatively easy to track such expenditure. The BNHA cell also collects expenditure data from the line director in charge of implementing the operation plan.

Estimating expenditure made by the NPISH in preventive care is always challenging. BNHA relies on primary data collected using systematic random sample survey of NIPSH. It is important to remember that more than 90% of NPISH expenditures are funded by the developing agencies working in Bangladesh. Therefore a separate survey of all developing agencies working in Bangladesh is also carried out which gives a different estimates of NPISH expenditure. Both sets of survey data are compiled and compared as part of analysis.

7. DOCUMENTATION OF ISSUES IN REPORTING

BNHA uses its own classifications of healthcare functions and report preventive care with the following details.

BHC.6.1.1	Maternal and child health
BHC.6.1.2	Family planning and counseling
BHC.6.1.3	HIV/AIDS/STD
BHC.6.1.4	Reproductive health
BHC.6.1.5	Awareness
BHC.6.2	Immunization programmes - Expanded Programme on Immunization (EPI)
BHC.6.3	Early diseases detection programmes
BHC.6.4	Healthy condition monitoring programmes
BHC.6.5	Epidemiological surveillance and risk and disease control programmes

8. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

A sample survey of approximately 400 NPISH requires a team of 8 enumerators for two months of field work. Data analysis needs another weeks of a senior NHA expert with practical knowledge on NPISH financing and healthcare service delivery.

9. CONCLUSIONS

NPISH expenditure estimates probably the weakest spot of BNHA. Improvement of the existing universes of NPISH that receive direct foreign funds is a must. Cooperation between the BNHA cell and NGO Affairs Bureau is considered necessary for improvement of the existing universes.

CHINA

MEASURING EXPENDITURE ON PHARMACEUTICAL AND PREVENTIVE CARE WITHIN HEALTH ACCOUNTS FRAMEWORK

1. INTRODUCTION

In the early 1980s, with the cooperation of the World Bank, the Chinese government estimated China total expenditure on health by sources for the first time. Since then, China has begun the systematic study on health accounts theories and methods, and Department of National Health Accounts and Policy Studies, National Health Development Research Center (the former China Health Economics Institute) was commissioned by MOH to work on China NHAs. In terms of data collection, a cooperation mechanism has been established between NHA team with Ministry of Finance, National Development and Reform Commission, National Bureau of Statistics, Ministry of Human Resource and Social Security, etc. Under the SHA1.0, China NHA team has completed estimation of health expenditure by sources and providers in time series from 1978 to 2013. And every year, the estimates are reported in China Statistic Yearbook, China Health Statistic Yearbook, among other authority statistics. Also, the estimates are submitted to OECD, WHO as official data of China.

In order to keep pace with international new standard, China did pilot study of SHA 2.0 in 2010. After the publication of *A System of Health Account 2011* by OECD, Eurostat and WHO, China NHA team applied SHA 2011 in China and produced results according to the ICHA of SHA 2011 for the first time. It has achieved great success in applying SHA 2011 in China NHAs and the feasibility has been demonstrated. However, some are still some challenges facing China NHAs team, for example, the mapping of preventive programs in China practice to sub-classification of prevention by SHA2011.

Part I
Expenditure on pharmaceuticals (SHA HC.5.1 and HC.RI.1)

Pharmaceutical expenditure under SHA2011 includes pharmaceutical used in curative care, rehabilitative care, long-term care, medical goods and prevention in theory. In practice, expenditure on pharmaceuticals estimation in China includes: 1) žexpenditure on pharmaceuticals as part of curative care (including rehabilitative care) by health care facilities, including expenditure on outpatient pharmaceutical and inpatient pharmaceuticals,

and žexpenditure on retail pharmaceuticals obtained from pharmacies by households. There are quite a few independent rehabilitative care providers or long-term care providers, and most of rehabilitative care services or long-term care (health) services are provided by hospitals in China, and it difficult to distinguish those services from curative care both in health provision and finance record in hospitals.

Therefore, current health expenditure estimating in China, rehabilitative care and long-term care (health) is included in curative care. In addition, besides vaccines, expenditure on other drug used in prevention is limited, and it is hard to access the necessary basic data.

In China, health providers involved in estimating pharmaceutical expenditure comprises hospitals, providers of ambulatory health care and pharmacies. Besides, pharmaceutical expenditure may also occur in some of preventive care providers (such as Maternal and Child Health Care Institutions) because those providers also provide curative care services.

In term of health financing, the expenditure on pharmaceuticals with specified function, as integrated in curative care expenditure, can be financed through government schemes(such as free medical care fund directly financed and managed by government, civil servant medical assistance, medical aid, etc.), compulsory contributory health care financing schemes, including Urban Employees Basic Medical Insurance (UEBMI), Urban Residents Basic Medical Insurance (URBMI) and New Rural Cooperative Medical Schemes (NCMS), voluntary health insurance, enterprising financing schemes, NPSHI financing schemes as well as household out-of-pocket (OOP) payments. For the expenditure on pharmaceutical with non-specified function, namely pharmaceutical expenditure in pharmacies, it usually relies on household OOP, and individual accounts of social health insurance can reimburse part of spending according to UEBMI policy.

2. PROCESS AND METHODOLOGY

2.1 Basic principle of estimation

From the perspective of boundary, pharmaceutical expenditure refers to expenditure determined by drug price in transaction, namely the drug revenue obtained by health providers and pharmacies, not covering other expenses paid for by patients at the point of receiving pharmaceutical care services (such as dispensing fee). The basic estimating method is top-down approach, first to determine the aggregate of pharmaceutical expenditure both in outpatient care and inpatient care service provision by medical institutions and aggregate of retailed pharmaceutical expenditure by pharmacies. Then those aggregate will be allocated to health financing schemes and beneficiaries combining parameters from field investigation, and matrix balance results will also be generated.

There is no routine statistic on aggregate of pharmaceutical expenditure by financing schemes, because there is no separate reimbursement policy or financing scheme specific

to pharmaceuticals. However, the aggregates of current health expenditure by health financing schemes, like compulsory contributory health financing schemes, voluntary health care insurance, can be obtained by from routine statistics of each health financing scheme. To allocate pharmaceutical expenditure by health financing schemes, it assumes the reimbursement rate of pharmaceuticals is as same as that of its responding outpatient expenditure or inpatient expenditure by financing scheme. According to the boundary mentioned above, government current subsidy designated to institutions has not been included in pharmaceutical expenditure financing schemes.

According to classification principle and record method, prescribed medicine, OTC and other medical non-durable goods expenditure cannot be distinguished on retail pharmaceutical and medical goods with non-specified function in China.

2.2 Basic estimation process

- Aggregate determination

Aggregate of outpatient and inpatient expenditure by health provider is determined using China Health Statistic Yearbook; the sale amount of pharmaceutical and medical goods is obtained from regular statistics of statistics sector. The amount of each medical insurance reimbursement, medical assistance, among other financing schemes, is obtained from regular statistics of sectors of finance, social security, civil affairs and statistics.

- Sample institution investigation and allocation parameters estimation

Based on data from sample investigations by types of medical institutions, outpatient and inpatient expenditure by patient case was obtained, and then the proportion of pharmaceutical expenditure in outpatient and inpatient expenditure by medical institutions was estimated, which also include the information of pharmaceutical expenditure by disease, gender and age. The proportion was applied to the aggregate of outpatient and inpatient expenditure for each type of institutions reported in China Health Statistic Yearbook.

- Top-down approach is used to allocate outpatient, inpatient and retail pharmaceutical expenditure by financing schemes for each health provider.
- And using data from sample institutions on beneficiary to determine the outpatient, inpatient and retailed pharmaceutical expenditure by health provider, by disease, and by age.

2.3 Main data source of estimating pharmaceutical expenditure

There are two types of basic data needed in estimation, the first is secondary data, which come from available national statistics, such as China Health Statistic Yearbook, Budgetary Report of Social Insurance Fund, China Statistics, etc.; the second is first hand data, namely data from field survey. The detailed see follow table.

Table1. Basic data list for estimating China pharmaceutical expenditure

	Data source	Indicator	Coverage	Frequency
Secondary data	China Health Statistic Yearbook	Medical revenue, outpatient revenue, inpatient revenue; pharmaceutical revenue, outpatient pharmaceutical revenue, inpatient pharmaceutical revenue	All medical institutions	annually
	China Statistics	Total retailed pharmaceutical sales	National	annually
	China Statistics	Claims of commercial health insurance	National	annually
	Budgetary Report of Social Insurance Fund	Expense amount of social insurance fund	National	annually
	National Government Health Input Monitoring System	All related government subsidy to pharmaceutical (recorded into government schemes)	National	annually
First-hand data	Field investigation	Data on outpatient and inpatient cases of all medical institutions, including age, sex, diagnose, outpatient and inpatient expenditure, pharmaceutical expenditure, reimbursement by health insurance and OOPs, etc.	Sample institution	1field survey/year

Field survey in this study is the same as preventive care survey, and the only difference is in inpatient and outpatient case survey. If there is well established hospital information system (HIS) in investigated institutions, data on outpatient cases of four months (one month for each quarter) and inpatient cases of one year will be collected in medical institutions. The detailed sampling process and tool see following:

- Sampling process:

The field investigation in this study employs multi-stage stratified sampling method. The first step is areas sampling to determine the sites of investigation, in view of that the level of socio-economic development and geographical location has a high correlation with the level of population health and currently socio-economic development quite differs among regions in China. In order to ensure a representative sample, the first stage of sampling is to select a province from each of the three regions, namely east, central and west China and a municipality from four municipalities. The second stage is to determine three cities/counties among the selected provinces/municipality, according to the level of economic development and the amount of health service provision. The third stage of sampling is to select a district and a county in each selected cities based on the condition of health information system. The fourth stage of sampling is to select three street communities and towns, and two villages are selected as samples in each town.

The second step is to select investigation institutions at each administrative level after first step. Provincial institutions are selected by different types of institutions, at provincial level, the only one Center for Disease Prevention and Control (CDC), MCHs, health education institution, emergency center and TCM hospital, and other specialized hospital (usually one)

are directly enrolled into the survey. Half the number of the provincial general hospitals is selected as samples. This sampling method also applies to institutions sampling at city level. At county/district level, CDCs, MCHs, emergency center and county hospitals (including TCM hospital) are directed enrolled and one community health service center in each sample street community and one township hospital in each sample towns is selected, and two village clinics in each sample village are selected.

At the first step, Fujian province, Jilin province, Gansu province and Tianjin municipality have been finally selected; at the second step 318 institutions, most of which were medical service providers, are selected.

- Survey tools:

Medical record questionnaire on inpatient and outpatient cases for hospitals is the main employed survey tool, which is fulfilled by IT staff in hospital through data query and export from HIS. The content of medical record questionnaire includes patient basic information (sex, age etc.), diagnosis (disease diagnose and its ICD-10 code), and expenditure by item, such as total curative expenditure, expenditure on checkup, chemotherapy, drugs, etc., as well as the financing schemes which pay for expenditure this time, like pooling reimbursement by medical insurances and OOP. A set of questionnaires on preventive services provision is used for investigate the functions and activities of each type of health providers, which collect data for estimating expenditure on preventive care.

2.4 Detail estimation method of pharmaceutical expenditure

2.4.1 Expenditure on pharmaceuticals with specified function

2.4.1.1 Aggregate determination of outpatient and inpatient pharmaceutical expenditure

Using China Health Statistic Yearbook, aggregate of curative care expenditure (including outpatient and inpatient care) by all types of hospitals (including community health service centers and township hospitals) can be obtained, and data on total outpatient visits of providers of ambulatory care as well. Then combine data on expenditure per visit from sampling institutions, it can get outpatient expenditure aggregate of ambulatory providers. For each type of institution, the proportion of pharmaceutical expenditure in outpatient and inpatient care can be estimated by the data from investigated institutions. The proportion was applied to the aggregate of outpatient and inpatient expenditure of each institution reported in China Health Statistic Yearbook to estimate the aggregate of outpatient and inpatient pharmaceutical expenditure.

2.4.1.2 Estimating pharmaceutical expenditure by financing schemes other than OOP

The amount of contributory medical insurance reimbursement, commercial medical insurance claims, medical assistance among financing schemes, was collected from regular

statistics of sectors of finance, social security, civil affairs and statistics. However, data from those financing schemes are targeted not for outpatient or inpatient pharmaceuticals, but for the whole outpatient and inpatient expenditure. Therefore, the distribution of financing schemes by outpatient and inpatient care by health provider was used as parameters to allocate outpatient and inpatient pharmaceutical expenditure by financing scheme for each type of health provider.

2.4.1.3 Estimating OOP

OOP comes from aggregate of outpatient and inpatient expenditure deducting reimbursement by compulsory medical insurances, commercial medical insurance, medical aid, other medical security and government subsidy to patients.

This estimate can be validated with the estimate of OOP by function in current health expenditure. In current health expenditure estimating, OOP has been distributed by function, and OOP on curative care services can further be distributed to pharmaceutical curative service and non-pharmaceutical curative care. Besides, another method has been used to validate the OOP in total pharmaceutical (including outpatient and inpatient pharmaceutical and retail pharmaceutical) expenditure with OOP in pharmaceutical expenditure which is estimated by using per capita pharmaceutical expenditure per year multiplying the number of population with the data from representative household survey by China National Statistics Bureau. The validation of the two methods showed insignificant variety. Notably, the estimate of OOP on pharmaceutical is just calculated on the assumption of reimbursement rate, it is hard to get the real pharmaceutical expenditure by OOP, because reimbursement is made for the whole package of medical service, but not specific to one item of service.

Once the above estimation has been done, it can obtain results of outpatient and inpatient pharmaceutical expenditure by health provider, financing schemes and matrix tables will also be available.

2.4.1.4 Allocating to beneficiary

Through the sampled institutions, it can obtain the basic data and distributional parameters on pharmaceutical expenditure of all types of hospitals and providers of ambulatory care. Much information on outpatient and inpatient cases will be collected for one certain period in field investigation, including sex, age and other demographic information, diagnosis (disease diagnose and its ICD-10 code), and expenditure by item, such as total curative expenditure, expenditure on checkup, chemotherapy, drugs, etc., as well as the financing schemes which pay for expenditure this time, like pooling reimbursement by medical insurances and OOP. Take the allocation of inpatient pharmaceutical expenditure as one example. It can get distribution of pharmaceutical expenditure by age groups, by diseases, among other beneficiary characteristics with data from sampled hospitals. Appling this distribution to

the aggregate of inpatient pharmaceutical expenditure, it can get inpatient pharmaceutical expenditure by age groups, by diseases or by other beneficiary characteristics.

2.4.1.5 Expenditure pharmaceuticals and medical goods with non-specified function

2.4.1.6 Aggregate determination: amount of retail pharmaceuticals and medical goods expenditure can be directly obtained from China Statistics Yearbook.

2.4.1.7 In China, providers of pharmaceuticals and medical goods are pharmacies and other providers of pharmaceuticals and medical goods.

2.4.1.8 Expenditure on pharmaceuticals with non-specified function by financing scheme

Total compensation by individual accounts of UEBMI to retail pharmaceuticals can be collected from regular statistics of human resources and social security, which is recorded into compulsory contributory health care financing, and the remaining expenditure on pharmaceuticals is financed by household OOP.

2.4.1.9 Allocating to beneficiary:

There is no detailed record on retail pharmaceuticals and medical goods to reflect pharmaceuticals consumption by beneficiary in China. In practice, expenditure on pharmaceuticals (non-specified function) is allocated to beneficiary by borrowing the distribution parameters of outpatient pharmaceutical expenditure in hospitals, which is considered by experts to be similar distribution.

2.5 Quality control of estimating pharmaceutical expenditure

The aggregates of pharmaceutical expenditure come from national authority statistics, and the employed top-down principle guarantees the accuracy of aggregate of pharmaceutical expenditure.

During the selection of investigated institutions, it makes a full consideration of characteristics of institution, and high coordination from health administration at all levels and from institutions, which ensures the representativeness of sample institutions. Pharmaceutical expenditure data on outpatient and inpatient care of patients are directly from hospital information system, which are accurate and reliable.

3. DOCUMENTATION OF ISSUES IN REPORTING

For expenditure on pharmaceutical with non-specified function, it fails to disaggregate it to prescribed medicines, OTC and non-durable medical goods, and to make it, the specific investigation to pharmacies will be needed. Due to the absence of information, some assumptions have been used when generating pharmaceutical expenditure by beneficiary.

Currently, pharmaceutical expenditure in China doesn't include drugs consumed in preventive care, and it is rare to record drug expense specifically in preventive care expenditure.

In this round of study, it only consider the expenditure determined by drug price in transaction, namely the drug revenue obtained by health providers and pharmacies, not covering other expenses paid for by patients at the point of receiving pharmaceutical care services (such as dispensing fee) or relevant government subsidies. As the zero-markup policy for pharmaceuticals has been implemented in China, governments transferred earmarked subsidies for pharmaceutical care services, including subsidy to pharmaceutical care staff and pharmaceutical loss, which is closely associated with pharmaceuticals received or used by patients or consumers. Those should be also taken into consideration in future pharmaceutical expenditure estimating.

4. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

In line with the estimating principle and data collection method, estimating pharmaceutical expenditure in China is conducted at the same time with estimating curative care expenditure. The fund and human resource invested in pharmaceutical expenditure estimating are mainly used for study design, field survey and data processing and analysis.

In term of fund use, it cost 100,000 USD in total in this study to produce current health expenditure in China under SHA2011. According to experience in field survey and data processing, curative care expenditure estimating cost half of total fund. If current health expenditure accounting is conducted just for one province in China, it will spend 20,000 USD. Usually, it needs more than 10 interviewers and 5 days for one province to conduct health accounting. The most spending is intercity traffic fare and daily subsistence when conducting field survey. Besides, it also needs to pay honorarium for resources persons, which is also costing, and survey questionnaire printing and stationary purchase, which doesn't cost much. As for data processing and estimation, due to the massive size of data, it cost much human resources for data cleaning and sorting, especially for disease coding when data collected from HIS without ICD-10 code, which is a common problem for most hospitals. And there is specific budget for micro-data statistics purchase and expert consultation in the whole process. However, extra amount of money is necessary if investigations specific to pharmacy will be conducted. In view of the current information can't meet the demand of estimation, the investigation to pharmacy must encounter a time costing data collection and processing involving number of basic information.

It needs support from researchers and experts in many areas in pharmaceutical expenditure estimating:

- Health accountants
- Expert of health economics

- Medical professionals to provider help with ICD-10 coding
- Health system administrators
- Financial manager in health care institutions
- If specific pharmacy investigation will be done, pharmacists will also be necessary.

5. CONCLUSIONS

Overall, it is feasible and accurate to estimate outpatient and inpatient pharmaceutical expenditure in China. Although some challenges still exist when estimating expenditure on retail pharmaceutical, it is accurate to estimate the aggregate expenditure on retail pharmaceutical and expenditure by health financing schemes. The parameters from field investigation are indispensable for matrix balance estimates. With the development of hospital information system in health providers, both the feasibility and quality of data on outpatient and inpatient cases collected from health providers will be increased.

In the next study, we plan to do specific design for estimating expenditure on retail pharmaceutical and prevention. Some specific field investigations will be added to make sure further allocate retail pharmaceutical expenditure to prescribed medicine, OTC and other medical non-durable goods as well as the expenditure on prevention drug. As the zero-markup sale of pharmaceuticals push forward, the boundary of pharmaceutical expenditure will change, namely on the basis of pharmaceutical revenue, government subsidy, dispense fee, etc. will also be taken into consideration.

In order to further enhance the capacity of national and regional health accountants in China, it plans to use China NHA Monitoring Network to push forward NHA under SHA 2011 at regional level through efforts as follows:

- to continue the localization of NHA under SHA 2011 in China and to develop the standard guidance to produce NHA under SHA2011 fitting for China condition;
- to provide training courses, guidance for regional health accountants to conduct sub health account under SHA2011 at regional level; and
- to make use of data and estimates from extended field investigation to further improve the estimation method and estimates at national level.

Part II
Expenditure on preventive care (SHA HC.6)

In China, providers of preventive care, primary health care institutions as well as hospitals, all play an import role in preventive care provision. There is no one to one correspondence between health functions and health providers, for example, primary health care institutions

(include township hospitals, community health institutions) provide essential medical care services, and also assume great of essential public health services. All preventive care activities carried out in China can be mapped to SHA2011 and SHA1.0. The preventive services provided by different health providers see table 2.

Table 2. Preventive care provision system and main activities in China

Providers of preventive care	Preventive care type	
	SHA2011 classification	**The main activities**
Hospital	Information, education and counselling programmes	Health education
	Immunization programmes	Vaccination programmes
	Early disease detection programmes	Infectious disease control, neonatal screening, etc.
	Healthy condition monitoring programmes	Physical examination, prenatal examination, etc.
	Epidemiological surveillance and risk and disease control programmes	Nosocomial infection control, public health information management, etc.
	Others	Family planning and counseling
Primary health care institutions	Information, education and counselling programmes	Health education
	Immunization programmes	Vaccination programmes
	Early disease detection programmes	Prevention of non-communicable diseases, prevention of communicable diseases, etc.
	Healthy condition monitoring programmes	Elderly health care, prenatal examination, child routine physical exam, etc.
	Epidemiological surveillance and risk and disease control programmes	Resident health record, severe mental illness management, health supervision coordination management, etc.
Providers of ambulatory health care	Information, education and counselling programmes	Health education
	Immunization programmes	Vaccination programmes
	Early disease detection programmes	Prevention of non-communicable diseases, prevention of communicable diseases
	Healthy condition monitoring programmes	Elderly health care
	Epidemiological surveillance and risk and disease control programmes	Resident health record, severe mental illness management
Centers for disease prevention and control	Information, education and counselling programmes	Health education
	Immunization programmes	Vaccination programmes
	Early disease detection programmes	Prevention of communicable diseases, Prevention of non-communicable diseases
	Healthy condition monitoring programmes	Routine physical examination
	Epidemiological surveillance and risk and disease control programmes	Test, occupational health, etc.

Providers of preventive care	Preventive care type	
	SHA2011 classification	The main activities
Maternal and child health institutions	Information, education and counselling programmes	Health education
	Immunization programmes	Vaccination programmes
	Early disease detection programmes	neonatal disease screening, child eye care, child oral care
	Healthy condition monitoring programmes	Prenatal examination, children growth and development
	Epidemiological surveillance and risk and disease control programmes	Health information statistics, health special investigation, etc.
	Others	Family planning and counseling
Health education institutions	Information, education and counselling programmes	Health education
Blood taking and supply agency	Others	Blood safety
Family planning and counseling agency	Others	Family planning and counseling
Health supervision agency	Epidemiological surveillance and risk and disease control programmes	Health supervision

Note: *Occupational health here only accounts for services provided by health system, and not include services provided by other types of institutions (e.g. coal mining enterprises).

Financing schemes for preventive care services can be grouped into health financing schemes of ICHA-HF in SHA2011. The main financing schemes include government schemes, enterprise financing schemes and household out-of-pocket (OOP) payment.

6. PROCESS AND METHODOLOGY

6.1 Basic principle of estimation

The main principles and assumptions applied in preventive care estimation are as follows:

6.1.1 Boundary of preventive care expenditure

Based on the types of preventive care providers, preventive care expenditure accounting may involve: charges by providers for prevention care provision, government subsidies, funds from foreign/domestic NGOs, payment made by providers. Payment by providers finance part/all of the preventive services they provide to patients at lower than cost significantly price or free from their own source, which should be included in the accounting in order to obtain an adequate estimation of the value of the services consumed by the individuals.

There is a large of preventive services are provided free or at a price lower than cost significantly, so it is necessary to estimate expense by items including personnel expense, material expense and other expense, then to determine estimate approach by comparing the total expenses and service charges.

6.1.2 Basic approaches of preventive care accounting

Most of preventive services are public goods or quasi- public goods, and are provided by health care institutions freely or charged much lower than cost. For those services, costing approach is used. In China, for some preventive care programs, their charge can compensate cost sufficiently, like the extra EPI vaccines, service charges and government subsidies were estimated as the expenditure.

Market price approach: expenditure of preventive care provision= revenue (includes charge and government subsidy) when revenue > =50% of cost, like extra EPI vaccines, Physical checkup, family planning services.

Cost approach: expenditure of preventive care provision= total expense (includes personnel expense, material expense, other expense) when revenue< 50% of cost.

6.1.3 Estimation procedure

- Data collection and basic estimation starts with health providers

To determine the preventive services provided by all types of providers, and then to make clear the quantitative relation between cost and revenue of each preventive program in sample providers.

- How to estimate the preventive care expenditure aggregate

It is clear that some preventive care is free or lower-than- cost charged, however, there is lack of data on revenue or expense of preventive service in financial statistics report in health system. So the determination of aggregate preventive care expenditure needs the parameter on numeric relationship between the revenue and cost of preventive care to total revenue and cost by providers, and then applies the parameters to the total revenue and cost in national level by providers which can be accessed from regular statistics.

- Top-down approach is adopted, with parameters of distribution from samples to disaggregate total preventive care expenditure by function, by health provider, by financing scheme and each two dimensions of three for matrix tables.
- During the disaggregation process, the accounting of total amount of expenditure for some dimension or certain preventive service fully made use of the existing statistical reporting system. For example, the total amount of earmarked government subsidy for preventive health services can be got from National Monitoring and Evaluation System of Government Health Input.

6.1.4 Principle of estimating current government subsidy

Referring to current government health investment policies in China, there is no obvious tendentiousness for allocation of current government subsidy between preventive care service and medical service in hospitals. In this study, equivalent person work times approach has been employed for hospitals. While, for public health care providers and primary health care institutions, recurrent government subsidies tend to prioritize preventive care provision (especially for personnel expense).

6.2 Detailed estimation method

6.2.1 Data collection

There are two types of basic data needed in estimation, the first is secondary data, which come from available national statistics, such as National Monitoring and Evaluation System for Government Health Input, China Health Statistical Yearbook and Health Finance Annual Report, etc.; The second is first-hand data, namely data from field survey. The detailed see follow table.

Table 3. Basic data list for estimating China preventive care expenditur

Data type		Meaning	Index	Date source	Coverage	Frequency of collection
Secondary data	Revenue item	Revenue by items and by health provider at national level	Total revenue, government earmarked subsidy, current subsidy and outpatient revenue	China Health Statistic Yearbook, Health Finance Annual Report	National	1 time/year
			Total amount of health projects and by health provider and health function	National Monitoring and Evaluation System for Government Health Input	National	1 time/year
	Expense item	Expense by items and by health provider at national level	Total expense, personnel expense and other expense	China Health Statistic Yearbook, Health Finance Annual Report	National	1 time/year
First-hand data	Revenue item	Revenue by service provision and preventive service charge by preventive program	Total revenue, government earmarked subsidy, current subsidy and outpatient revenue	Field survey	Sample institution	field survey/ year
			Finance for prevention, including government earmarked subsidy, domestic and international NGOs fund, charge of prevention	Field survey	Sample institution	field survey/ year

Data type		Meaning	Index	Date source	Coverage	Frequency of collection
	Expense item	Expense cost and cost for preventive service provision by preventive program,	Personnel expense, health material expense, drug expense and other expense	Field survey	Sample institution	field survey/ year
			Personnel expense, health material expense, drug expense and other expense, which is cost by prevention provision	Field survey	Sample institution	field survey/ year
	Human input	Human resource input by health function in sample institutions	Number of staff by professional rank	Field survey	Sample institution	field survey/ year
			Equivalent person work times by rank cost by preventive care provision for each type of health provider	Field survey	Sample institution	field survey/ year

The sampling of field survey in China NHA study adopted multi-stage sampling method. Firstly, sampling areas were determined according to social economic development and geographic location. Then health care institutions were selected at each administrative level. Institution will be included if there was only one institution for some type of providers (e.g. CDC), and random sampling method was used when there were several institutions for one type of health provider.

6.2.2 Estimation process

Preventive care expenditure accounting is to estimate expenditure by preventive program by health provider, then to add up to get the total preventive care expenditure. The following takes estimation method of provider A as an example.

6.2.2.1 Preventive care expenditure of type A institution.

Firstly, estimating the ratio of preventive care expense to total expense in type A institution.

(1) $$p^{A-div} = \sum_{i=1}^{N} P_i^{A-sam} / \sum_{i=1}^{N} H_i^{A-sam}$$

Where, p^{A-div} is the ratio of preventive care expense to total expense in type A institution. N is the sample size.

P_i^{A-sam} is the total expense of sample institution of type A, got from the summarization of personnel expense, material expense, drug expense and other expense. For personnel expense, it was generated by the share of equivalent person work times to total equivalent person work times multiplying the total personnel expense of institution , and for material expense, drug expense and other expense is directly from field survey.

Then total preventive care expenditure in type A institution can be generated by equation (2).

(2) $P^{A-all} = p^{A-div} \cdot H^{A-all}$

Where, P^{A-all} is the total preventive care expenditure in China of type A institution. H^{A-all} is the total expense of type A institution, got from the summarization of personnel expense and other expense of type A institution using China Health Statistical Yearbook and National Health Financial Annual Report.

6.2.2.2 Preventive care expenditure by preventive program of type A institution.

Practically, first is to estimate the cost and revenue (including charge and government subsidy), and then based on numeric relationship between revenue and cost of this preventive program to decide the appropriate approach.

Cost estimation

The share of different preventive program cost in total preventive care cost in sample institutions was generated based on sample survey data. Base on the share, equation (3) was used to disaggregate cost aggregate of preventive care by preventive program.

(3) $HC_j^A = P^{A-all} \cdot \sum_{i=1}^{N} HC_i^{j-sam} / \sum_{i=1}^{N} P_i^{A-sam}$

Where, HC_j^A is the total cost of preventive program j, HC_i^{j-sam} is the cost of preventive program in sample institution of type A.

Charge revenue estimation

Charge revenue by preventive program can be obtained through equation (4).

(4) $F_j^A = O^A \cdot \sum_{i=1}^{N} F_i^{j-sam} / \sum_{i=1}^{N} O_i^{A-sam}$

Where, F_j^A is the national total charge revenue of preventive program j;

O^A is the total outpatient/business revenue (charge revenue) of institution of type A reported in China Health Statistical Yearbook;

F_i^{j-sam} is the charge revenue of preventive program j in sample institution of type A.

O_i^{A-sam} is the outpatient/business revenue (charge revenue) of the sample institution of type A.

Determination of boundary of expenditure

The recurrent government subsidy is calculated using equivalent person working time, and data from Monitoring and Evaluation System for Government Health Input or field survey is used to calculate government earmarked subsidy, funds from international organizations or other NGOs. Once those estimates obtained, plus charge revenue, the total revenue of preventive program will be generated.

The boundary of expenditure by preventive program will be determined based on the numeric relationship between its cost and total revenue.

6.2.2.3 Total preventive care expenditure of institution of type A

The total preventive care expenditure of institution of type A can be obtained through summing up the expenditure by preventive program, which equals its revenue when market price approach is used, or its cost when cost approach is used, based on the numeric relation of its revenue and cost.

6.2.2.4 Estimating preventive care expenditure of type A institution by financing scheme.

It is based on the estimates of preventive expenditure by financing scheme of the sample institutions.

Estimation of preventive expenditure by financing scheme of the sample institutions

For preventive expenditure generated by cost approach, step by step allocation method was used. Namely preventive expenditure was deducted by in the order of government earmarked subsidy, international and domestic NGOs donation, charge, recurrent government subsidy. If the difference is positive after deduction, the difference would be considered as contribution by enterprise financing schemes.

Additionally, some physical examination of New Rural Cooperative Medical Scheme (NCMS) enrollees will be reimbursed by NCMS.

For preventive program expenditure estimated by market price approach, its financing contribution by government earmarked subsidy, charge and recurrent government subsidy has been obtained from survey data.

During the allocation process, national data from China Health Statistical Yearbook and Monitoring and Evaluation System for Government Health Input was used as total quantity control, to make sure government earmarked subsidy, charge and recurrent government subsidy for preventive care estimated above not exceed the total amount of the above items received by this type of institution.

The above procedure also can produce the matrix table for health function by financing scheme of preventive expenditure.

6.2.2.5 Preventive care expenditure by health provider

The above expenditure estimation is conducted by health provider, so that, it can directly produce preventive care expenditure by health provider and the matrix table by health provider, health function and financing scheme.

6.2.2.6 Mapping of the classification of three main dimensions in China to SHA2011

Classification of preventive care

Through the literature review and expert consultancy, sub-category of prevention of China has been mapped to SHA 2011 (see table 4). The main problem encountered is that

classification of prevention activity in China is based on preventive program like SHA 1.0, while the classification is based on preventive activities in SHA2011. One preventive program in China can cover several sub-activities, i.e., infectious disease control program includes health education, early disease detection, disease control, etc. The measure adopted in China is to group preventive program into the main activity, i.e., infectious disease control will be grouped into early disease detection program (HC.6.3) by SHA2011.

Table 4. Mapping of sub-classification of prevention from China to SHA201

China prevention class	SHA2011 service code	China prevention class	SHA2011 service code
1. Health education	HC.6.1	6.7 High risk infant management	HC.6.4
2. Vaccination programmes	HC.6.2	6.8 Child eye care	HC.6.3
3. Prevention of communicable diseases	HC.6.3(HC.6.1, HC.6.5)	6.9 Child oral care	HC.6.3
4. Prevention of non-communicable diseases	HC.6.3(HC.6.1, HC.6.4, HC.6.5)	6.10 Child hearing care	HC.6.3
5. Maternal health care		6.11 Child health special research	HC.6.5
5.1 Prenatal examination	HC.6.4	6.12 Technic guidance, quality control and assessment	HC.6.5
5.2 Postnatal examination	HC.6.4	6.13 Child health information statistics	HC.6.5
5.3 Prevention of Mother-to-Child Transmission	HC.6.5	6.14 Infants health record	HC.6.5
5.4 High risk maternal management	HC.6.4	**7. Routine medical check up**	HC.6.4
5.5 Maternal health special research	HC.6.5	**8. Serious mental illness management**	*HC.6.5*(HC.6.3)
5.6 Technic guidance, quality control and assessment	HC.6.5	**9. Prevention of endemic**	*HC.6.5*(HC.6.3)
5.7 Maternal health information statistics	HC.6.5	**10. Resident health record**	HC.6.5
5.8 Maternal health record	HC.6.5	**11. School health services**	*HC.6.5*(HC.6.1)
6. Children health care services		**12. Occupational health care**	*HC.6.5*(HC.6.4)
6.1 Child mortality monitoring	HC.6.5	**13. Family planning**	HC.6.9*
6.2 Neonatal screening	HC.6.3	**14. Elderly health care**	*HC.6.4*(HC.6.1)
6.3 Child's growth and development	HC.6.4	**15. Reproductive health**	HC.6.4
6.4 Child's nutrition assessment and guidance	HC.6.4	**16. Laboratory tests**	HC.6.5
6.5 Child's neuropsychology development evaluation	HC.6.4	**17. Health supervision**	HC.6.9
6.6 Child's development promotion	HC.6.4	**18. Others**	*HC.6.9*(HC.6.5)

Note: *HC.6.9 is the miscellaneous generated during the mapping from classification of preventive care in China to SHA 2011.

Classification of health provider

The mapping from classification of health provider in China to SHA 2011 see table 5. Notably, primary health care institutions are grouped into hospital by SHA2011, but in China, they assume very important responsibility of public health service provision. Maternal and child health care institutions which are grouped into providers of preventive care by SHA2011, but in China they provide great of curative services.

Table 5. Mapping of preventive care provider from China to SHA201

Providers of preventive care in China	SHA2011
Hospitals	Hospital (HP.1)
Primary health care institutions	
Community health service station	Providers of ambulatory health care (HP.3)
Village clinics	
Center of disease prevention and control	Providers of preventive care (HP.6)
Maternal and child health institutions	
Health education institutions	
Blood Taking and Supply Agency	
Family planning and counseling institutions	
Health supervision agency	Providers of health care system administration and financing (HP.7)

Classification of health financing scheme

In the above estimation of expenditure by financing schemes is based on revenue or funding source of preventive program, the mapping of financing schemes in China to SHA 2011 see table 6, where contribution from self-business revenue is mapped to enterprise financing scheme (HF.2.3).

Table 6. Mapping of financing scheme of preventive care from China to SHA2011

Financing schemes of preventive care in China	SHA2011
Government earmarked subsidy	Government schemes (HF.1.1)
Government current subsidy	
New Rural Cooperative Medical Scheme	Compulsory contributory health insurance schemes (HF.1.2)
NGOs fund	NPISH financing schemes (HF.2.2.1)
Business income	Enterprise financing schemes (HF.2.3)
Charge of service provision	Household out-of-pocket expenditure (HF.3)
International organization fund	Philanthropy/international NGOs schemes (HF.4.2.2.1)

6.3 Quality control

Most of data used in this study is from field survey, so the quality control of field survey is the priority.

During the design of research tools, it made the best of expert consultation to define all types of preventive care by each type of health provider as far as possible, and to figure out the feature of preventive care delivery.

Many measures were applied to ensure the integrity and accuracy of data from field survey, including interviewer training, direct contact with staff, recheck on site and multi-person review, etc.

The total quantity control principle is followed throughout the whole estimation, and it makes best use of national regular statistics to check the data and estimates, which guarantees the accuracy of preventive care expenditure estimates.

7. DOCUMENTATION OF ISSUES IN REPORTING

During the estimation of preventive care expenditure under the framework of SHA2011in China, the main problems encountered is the boundary of preventive care services need be checked and verified, and the mapping of classification of preventive care in China to SHA 2011. For the estimating of matrix table of function by health provider/by financing scheme, it is completed successfully based on current estimation method and data from survey.

7.1 Scope and boundary of preventive care

The primary purpose of "health promotion" is the key to define the boundary of preventive care. In SHA2011, boundary for "preventive services" is defined as having the primary purpose of risk avoidance, of acquiring diseases or suffering injuries, which can frequently involve a direct and active interaction of the consumer with the health care system.

In China, the scope and boundary of prevention need further check and verification. For example, in the provision system of health care in China, some services is combination of curative care and preventive care, especially the services provided by infectious disease hospitals, disease prevention and treatment specialist institutions, etc. For those services, it is difficult to distinguish the prevention from curative care.

Take the TB control as an example. In China, TB prevention and control institution is the professional public health institution in the field of TB control. Through the field survey, it found that services provided targeted for TB not only cover the TB screening, health education, among other preventive care, but also curative care. In practice, however, it is very hard to differentiate various health function, and the financial data in these kind of institutions also cannot be specified into different function which may lead to the expenditure on TB preventive care also include expenditure on curative care.

Some kinds of service are public based on policy framework or traditional classification in China, like family planning. But family planning services are usually outpatient services, including ligation of oviduct, vasectomy and reproductive health service and artificial abortion, expenditure on all of which services are included in preventive care, which may be different from international classification practice.

Physical checkup is one kind of the healthy condition monitoring according to SHA 2011. But in China, the scope of physical checkup is much wider, not only including the general healthy condition monitoring, but also including mandatory physical checkup, such as new recruits' checkup and school enrollment checkup. Currently, all those expenditure are included in preventive care expenditure in China.

7.2 Scope of expenditure on preventive care

The numeric relationship between cost and revenue of preventive program differs greatly, based on which, it requires choose the cost approach or market price approach to estimate expenditure. The scope of expenditure and process of estimation becomes complex.

7.3 Mapping of classification of prevention in China to SHA2011

Preventive service provided in China is based on preventive program, and the data collection is also conducted by program, which is easier to be grouped into classification by SHA1.0. While the classification by SHA2011 is based on activity of service, it's hard to map preventive care to SHA 2011 one to one in China in view of one program covering several activities of SHA 2011 (i.e., infectious disease control may include health education, early disease detection, disease control etc.). During the field survey, it tried to collect data on sub-classification of prevention by SHA2011, but it failed due to the absence of required information. Therefore, we group ambiguous preventive program into the main classification in SHA2011. For example, we group entire infectious disease prevention program as early disease detection programs (HC.6.3), expenditure on information, education and counseling (HC.6.1) in infectious disease prevention program would be under-estimated.

8. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

The fund and human resource needed in preventive care expenditure estimating under SHA 2011 in China are mainly used for research design, field survey and data processing and analysis.

The estimating of preventive care expenditure is conducted as one part of current health expenditure estimating. In this study, it cost 100,000 USD in total. According to the experience in field survey and data processing, preventive care expenditure estimating cost half of total fund. If current health expenditure accounting is conducted for one province in China, it will spend 20,000 USD. As mentioned above, most of work can be conducted

together for preventive care accounting and pharmaceutical care accounting, and many items of expenditure are shared between studies, for example, micro-data statistics purchase, survey questionnaire printing and stationary purchase, and intercity traffic fare, daily subsistence, and honorarium for resources persons in filed survey. It also needs to allocate human resources to data processing and estimation. Besides, expert consultation is also necessary.

Usually, it needs more than 10 interviewers and 5 days for one province to conduct health accounting. The most spending is intercity traffic fare and daily subsistence when conducting field survey. Besides, it also needs to pay honorarium for resources persons, which is also costing, and survey questionnaire printing and stationary purchase, which doesn't cost much. As for data processing and estimation, due to the massive size of data, it cost much human resources for data cleaning and sorting, especially for disease coding when data collected from HIS without ICD-10 code, which is a common problem for most hospitals. And there is specific budget for Micro-data purchase and expert consultation before and after the estimation done.

Due to the complexity of preventive care provision, there is no sufficient available data on expense by item, so that preventive care expenditure estimating needs support from researchers and experts in many areas:

- Health accountants
- Expert of health economics
- Expert of public health
- Expert of health finance
- Health system administrators
- Financial manager in health care institutions
- Public health practitioner in health care institutions

9. CONCLUSIONS

The study on China preventive care accounting based on SHA2011 is a valuable experience of applying SHA2011 and has demonstrated the feasibility in China. Although it has completed accounting following the principles, classification, and methods of SHA2011 in strictly, some challenges remain, of which, the biggest challenge is the lack of regular financial statistical data (including revenue and expense) by preventive program of health provider. Therefore, it has to conduct field survey to collect a number of data from sample institutions to obtain the basic parameters for accounting. To undertake preventive care accounting, it needs adequate research, concrete human resource and sustained fund, and otherwise it is difficult to ensure the sustainability of accounting work.

Some issues of boundary and operation are found during the accounting process, such as the boundary of preventive care and its mapping to SHA2011. Thus the suggestions are as following:

- To further clarify the boundary of preventive care, and summarize the boundaries of preventive care of countries where has carried out preventive care expenditure estimating, which is benefit for improving the international comparability of results.
- To add the "not elsewhere specified" sub-classification of prevention in SHA2011, to include some preventive care in case it can't be classified into the six sub-classifications.

In order to further enhance the capacity of national and regional health accountants in China, it plans to use China NHA Monitoring Network to push forward NHA under SHA 2011 at regional level through efforts as follows:

- to continue the localization of NHA under SHA 2011 in China and to develop the standard guidance to produce NHA under SHA2011 fitting for China condition;
- to provide training courses, guidance for regional health accountants to conduct sub health account under SHA2011 at regional level; and
- to make use of data and estimates from extended field survey to further improve the estimation methods and optimize the process of estimation at national level.

FIJI

MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA/PACIFIC REGION

Experience from:
Fiji National Health Accounts

Produced by

Centre for Health Information, Policy & Systems Research

Fiji National University

In collaboration with the

Fiji Ministry of Health and Medical Services

Abbreviations

ADB	Asian Development Bank
CHIPSR	Centre for Health Information, Policy and Systems Research
FBOS	Fiji Bureau of Statistics
FNU	Fiji National University
FMIS	Financial Management Information System
FPBS	Fiji Pharmaceutical and Biomedical Services
FRCA	Fiji Revenue and Customs Authority
GL	General Ledger
HC	Health Care Functions
HIES	Health Income and Expenditure Surveys
HP	Heath Care Providers
MoF	Ministry of Finance
MoHMS	Ministry of Health and Medical Services
MoSPNDS	Ministry of Strategic Planning, National Development and Statistics
NGO	Non-Government Organization
NHA	National Health Accounts
OOP	Out of Pocket Expenditure
PATIS	Patient Information System
SHA	System of Health Accounts
WHO	World Health Organization

1. INTRODUCTION

Background to the study and the organization(s) involved in the health accounts (HA) data collection.

Fiji was first introduced to National Health Accounts (NHA) in the year 2006. The first NHA report was produced by a World Health Organization (WHO) consultant in 2007 and reported data for the year 2005. This report to a limited extent tried present health expenditure using the System of Health Accounts (SHA) 1.0 framework.

In 2009, as part of a WHO-ADB project, Fiji was selected as one of three pilot countries to produce a second NHA report. With the assistance and guidance from external experts, the second NHA report was completed in 2010 and this reported data for the years 2007 & 2008 in the SHA 1.0 framework. The production of this report was the joint efforts of a National Health Accounts Committee and external consultants involved in the WHO-ADB project. This was also the first time a functional National Health Accounts Committee was formed and which was endorsed by the Ministry of Health and Medical Services (MoHMS). The role of this committee was operational since they directly engaged in the production of the report both in analysis and report writing. The committee reported directly to the Permanent Secretary and the Minister for Health.

After 2010 there was significant increase in political support from Senior Health Management Decision makers for NHA. This support led to the production of the third NHA report on financial data for the years 2009 and 2010. This report was published in 2012. This report used the SHA 1.0 methodology and was produced for the first time by the National Health Accounts committee without external assistance. Recognizing the importance of the routine production of NHA in the Ministry and the support from Permanent Secretary for Health and Medical Services office, a health care financing (HCF) unit was proposed which was approved by the Cabinet in 2009. The HCF unit was to be under Planning Policy and Development Division and to have staff that could coordinate the NHA activities. The budget and activities of NHA are to be within the ambit and coordination of the HCF unit.

In 2012 a new SHA methodology was produced and referred to as SHA 2011 and was an update of its predecessor version SHA 1.0. Fiji adopted the SHA 2011 framework using a step-wise approach and produced the fourth NHA report for the years 2011 and 2012. This report was published in 2013. This report included both private and public government data. To produce this report required a mapping of the Fiji SHA 1.0 classifications to the new SHA 2011 classifications. Since Fiji's financing system of the health system is less complex (largely government funded through revenue taxes) it was not too difficult to introduce the new SHA 2011 classifications of Financing Schemes and Revenue for Financing Schemes.

After the 4th NHA report, the committee agreed it was important that data from previous NHA reports be mapped to the new SHA 2011 classification. It was found that this was

possible for the Government data however not possible with the private data. Private data was not included because it was not feasible to collect previous year's private sector data according to the SHA 2011 requirements. The NHA Committee thus produced a report on government data for the years 2007 to 2012 using the SHA 2011 classification in 2014. This made possible some trend analysis on government finances and led to the production of three policy briefs for the Ministry of Health and Medical Services.

The current status of NHA is that the committee has just recently regrouped with the inclusion of some new members. The NHA committee is now finalizing their work plan to begin the production of the 5th NHA report for the years 2013 and 2014. This report is expected to be completed in the 4th quarter of 2015.

Since 2009, Fiji has taken some significant steps forward towards NHA institutionalization. One can say that the institutionalization of NHA is well underway with the following processes in place:

- Ministry of Health and Medical Services in Fiji has now established the position of a NHA coordinator within the department of Policy, Planning and Development Division.
- The establishment of a functioning Fiji NHA committee for the last 4 years. The committee comprises of staff from the Ministry of Health and Medical Services (MoHMS), Ministry of Finance (MoF), Ministry of Strategic Planning, National Development and Statistics (MoSPNDS), Fiji Bureau of Statistics (FBOS), Fiji National University (FNU), Private sectors and development partners. The role of the committee is stipulated in the Terms of References for the committee.
- The production of NHA has a budget within the Ministry of Health and Medical Services budget
- The production of an NHA report is a deliverable indicator in the Ministry of Health and Medical Services annual corporate plans.

Data collection is an integral part of the production of NHA and is coordinated by the MoHMS under the leadership of the NHA coordinator. Fiji NHA collects data in three major categories: public expenditure (government), private expenditure and donor spending (development partners).

The data on government spending is directly obtained from the Ministry of Finance (MoF) from its Financial Management Information System (FMIS). This data is the most credible since it is audited data and transaction line expenditure by GL code, date, amount, etc. is directly exported into a CSV file from the FMIS system. The Ministry of Finance through the FMIS division extracts the data and have this forwarded to the NHA coordinator. A representative from the MoF who is also a member of the NHA committee is responsible for ensuring that the data is extracted and received by the NHA coordinator.

Data from the private sector and donors is obtained from surveys commissioned by the NHA committee bi-annually. Most of the surveys for the private sector are developed by the NHA team after discussions and deliberations. The survey for donors and NGOs are adapted versions of the surveys within the WHO NHA production tool.

Apart from the three discussed above, other secondary sources of data are also used to triangulate responses from the private sector surveys. These secondary sources include:

- Health Income and Expenditure Surveys (HIES) which are carried out every five years by the National Statistics Office
- Annual reports, publications and data from the Fiji Ministry of Health and Medical Services
- Annual reports, publications and data from the Reserve Bank of Fiji
- Annual reports, publications and data from the Fiji Revenue and Customs Authority (FRCA)
- Publications from the National Statistics Office
- Other recent research and project reports that have some reporting of health expenditure data

Experience to date of the country in reporting health accounts according to the SHA framework and version of SHA used

The production of the NHA reports is coordinated by the Ministry of Health and Medical Services and is the responsibility of the NHA Coordinator. The Coordinator ensures that the NHA Committee is established and a work plan for the production of the report is produced and endorsed and the work plan is followed.

Various tasks are assigned to various members of the committee based on position, ministry, expertise and access to data. The MoHMS coordinates the surveys of the private sector with some assistance from the National Statistics Office. Analysis of data (both Government and Private) is undertaken by the Fiji National University through the Centre for Health Information, Policy and Systems Research (CHIPSR). Final tables of results are presented to the Committee for finalization before being forwarded to the Permanent Secretary and Minister for Health for final endorsement.

The experience of Fiji and NHA reports production to date is summarized in the Table below.

Year published	Year of data reported in report	Person who produced the report	SHA methodology used
2007	2005	External consultant	None
2010	2007 & 2008	NHA Committee and External consultant	SHA 1.0

Year published	Year of data reported in report	Person who produced the report	SHA methodology used
2012	2009 & 2010	NHA Committee	SHA 1.0
2013	2011 & 2012	NHA Committee	SHA 2011
2014	Government data for 2007 to 2012	NHA Committee	SHA 2011

Once the results are endorsed, the Committee begins drafting the report. On completion of the draft, the report is then presented to pre-identified persons for expert technical review. After review and amendments the report is then presented to the Permanent Secretary for Health and the Minister for Health for review and endorsement of the report. Once endorsed the report is prepared for publication, printed and then disseminated.

Part I
Expenditure on pharmaceuticals (SHA HC.5.1 and HC.RI.1)

2. PROCESS AND METHODOLOGY

Description of the primary data sources (e.g. scope, definition, units, variables, coverage, frequency, availability, etc.) used in current HA reporting exercises on pharmaceutical expenditures.

Expenditure on Pharmaceuticals is collected from both the private sector and the public (government) sector. Pharmaceuticals refer to medicine and other non-durable goods.

Public expenditure on pharmaceuticals is collected from the Fiji Pharmaceutical and Biomedical Services (FPBS), the department responsible for the purchasing, management and coordination of supplying pharmaceuticals to all government health facilities. FPBS provides data on the amount and costs of pharmaceuticals supplied to government health facilities. Such data is recorded routinely at FPBS and have supplied annual data to inform previous NHA reports. The distribution of use of pharmaceuticals within health facilities (e.g. across various wards) is only possible for those facilities that are on the health ministry's Patient Information System (PATIS). FPBS is the main source used to collect data on public spending on pharmaceuticals. And this is also crosschecked with the government financial management information system (FMIS) that sits with the Ministry of Finance (albeit at the aggregate level).

Private expenditure on pharmaceuticals is collected through surveys of all private Pharmacies in the country. The surveys are done for every new NHA report thus they are carried out bi-annually. The survey questions are designed to estimate the private expenditure on pharmaceuticals. Data from the surveys are also triangulated with the household income and expenditure surveys, as well as reports from the Fiji tax office.

Donor and NGO expenditure on pharmaceuticals is minimal and is also collected via surveys.

Pharmaceutical Data	Public	Private	Donor/NGO
Definition of Pharmaceuticals	Any chemical substance intended for use in the medical diagnosis, cure, treatment, or prevention of disease (SHA 2011)		
Scope	All expenditure by Government funds	All expenditure by private funds: households, insurance, corporations	All expenditure by donor funds
Units	Quantity of items and unit costs	Sales by private sector	Expenditure incurred by donor
Coverage	Total government expenditure on pharmaceuticals	Total public expenditure on pharmaceuticals	Total donor expenditure on pharmaceuticals
Frequency/Availability	Databases updated daily	Not available. Bi-annual surveys done to capture data	Not available. Bi-annual surveys done to capture data

Note: *Assume: purchase of pharmaceuticals = consumption*

If your country does not use SHA for reporting, what are the differences?

Fiji uses SHA for reporting NHA

Description of the changes in reporting over time (if any)

The changes in reporting went from partial-SHA in 2007, to SHA 1.0 in 2010, and then to SHA 2011 in 2012. SHA 2011 is the current reporting framework.

Description of the work process for allocating pharmaceutical expenditures to HA classifications (if applicable): functions (sub-categories); providers; financing agents/schemes.

For government pharmaceutical expenditure the Revenue of financing schemes (sources) and Financing Schemes is straight forward: Central government schemes (HF.1.1) and Ministry of Health and Medical Services as the financing agent. The distribution of drugs to health facilities by the FPBS is used as the means of distributing pharmaceutical expenditure across government health providers. Using quantity of items and unit costs, percentages are calculated for each facility. These percentages are then used as the allocation keys to distribute FPBS expenditure in the FMIS system across health facilities.

Pharmaceutical expenditure by government is not directly allocated to functions. Because they have already been allocated to health providers, the expenditure locked to various health providers that are then distributed across functions. Only where detailed data permits, direct allocation of pharmaceutical expenditure to functions is done. In other cases percentage distributions presented in previous costing study reports are used as the distribution keys. In some cases, expert opinion is obtained on how best to distribute expenditure across functions.

For private pharmaceutical expenditure the revenues of financing schemes are mainly household income and voluntary prepayments while financing schemes is generally household out of pocket (OOP). The classification of Revenues is made possible via the information collected from surveys of the private sector pharmacists. The Revenues are then allocated to Retailers of other providers of medical goods (HP.5) in the health provider classification

and Medical Goods (HC.5) in the functional classification. This is again made possible by the data obtained from the surveys. The surveys are designed so as to capture data at the sub-category levels under HP.5 and HC.5 and this is used to classify pharmaceutical expenditure at the sub-category levels of HC.5.

Description of the estimation methods and assumptions used, for example, in the case of missing variables (if any)

Government pharmaceutical spending

The audited accounts will show the amount of funds used by FPBS for the year. FPBS databases will have the quantity and costs of pharmaceuticals distributed to all health facilities in the year. The cost percentages of this distribution are then used against the audited accounts amount total to determine and distribute the cost of pharmaceuticals across health providers. Missing data – in terms of drugs distributed and not recorded - may have some effect on the cost percentages allocations. However since all pharmaceuticals that leave FPBS are recorded in databases and documents (e.g. dispatch documents), we assume that missing data is minimal and thus its effect is negligible.

Private pharmaceutical spending

Data from the private sector is attained through surveys of all the pharmaceutical companies in the country. The quality of the data thus rests on the honesty of the responses. After 3 rounds of NHA and surveys, we have found that response rates as well as quality of the responses have improved. We use several techniques for arriving at our final estimates for private spending on pharmaceuticals:

- In the questionnaire, three cross-checking questions are asked in terms of expenditure: the annual revenue, monthly revenue and weekly revenue. The monthly revenue is multiplied by 12 months to compute annual revenue. Similarly, weekly revenue is multiplied by 50 weeks to compute annual revenue instead of 52 weeks to accommodate for 10 days public holidays. In most cases we have taken the more realistic value of the three, in some cases the average of the three values, while in some others the highest value.
- Responses that are outrageous in terms of responses are treated as non-respondents
- For non-respondents we have taken the average responses by geographical divisions and used these values.
- We have found that follow up with respondents in the private sector is not conducive to encouraging participation in current and future surveys. Thus clarifications on responses are done with great caution.

Some donor expenditure on pharmaceutical is obtained from the donor surveys. In the case of donors, we do not estimate for missing variables. Donor expenditure is recorded as provided in the surveys.

Description of process for verifying and checking the quality of pharmaceutical expenditures (if any)

Since government data used in NHA is audited financial figures, they are taken as final. In cases of seeking clarity, consultation and comments are always sought from the MoHMS finance team, the Ministry of Health and Medical Services, and the Chief pharmacist at FPBS.

In the private pharmacies survey, there are questions in there that are included to check responses to other questions. For example question on monthly revenue verses question on annual revenue. This is one form of checking the quality of responses. In data cleaning, some checks help remove erroneous responses and outliers (e.g. outrageous responses).

Furthermore private sector surveys are cross-checked with values obtained from Household surveys and information received from the FRCA.

In the case of donor and NGO surveys, follow up with respondents is done to verify data provided on pharmaceutical expenditure.

3. DOCUMENTATION OF ISSUES IN REPORTING

An assessment of the mapping and/or feasibility of reporting pharmaceutical expenditure in relation to the following HA functional classification items (based on SHA 2011):

HC.5.1.1, prescribed medicines

HC.5.1.2, over-the-counter medicines

HC.5.1.3, other medical non-durable goods

Government pharmaceutical is not recorded under HC.5 since it distributed to health providers and later to other functional classifications except HC.5. Functional distribution of government health providers is determined on bases of previous costing studies, as well as consultation with medical superintendents, divisional medical officers, director nursing, deputy secretary hospital services, sub divisional medical officers and other prominent stakeholder.

In the private survey to pharmacies, questions are specifically asked to respondents to provide percentage distribution of revenue for prescribed medicines, over-the-counter medicines and other medical and non-durable goods. Thus the private sector data are directly mapped to the HC.5 classifications.

Donor expenditure is distributed to providers (and later to functions based on those providers) thus there is no direct coding of donor expenditure to HC.5 unless this is directly stated in the donor survey.

An assessment of the mapping and/or feasibility of reporting pharmaceuticals expenditure functional categories cross-classified with financing agents/schemes categories

For the private sector expenditure on pharmaceuticals, this information is captured in our private sector survey. Specific questions are asked on identifying the revenues sources, schemes and functions as per SHA 2011 classification. The survey questions ask respondents to breakdown total revenue (by percentages) into various financing sources and schemes.

Government mapping of pharmaceuticals to financing agents/schemes is not as clear cut since they are embedded in health providers and their corresponding functions.

An assessment of reporting on total pharmaceutical expenditure (HC.RI.1), i.e. including pharmaceuticals delivered to patients as part of inpatient care, etc.

Total pharmaceutical expenditure is an important number to be reported since it is always of interest to health policy makers and this value cannot be directly picked out from the functional classification categories that exist above the line. For Fiji, HC.RI.1 is doable since this is simply an addition of private plus public plus donor expenditure on pharmaceuticals. However while private expenditure can be obtained from HC.5, public expenditure will have to come directly from the Government GL code for FPBS.

What would also be interesting is to breakdown HC.RI.1 into out-patient, in-patient and other patient services. Not sure if the current SHA 2011 has provision for this reporting item either in the classification (above the line) or memorandum item (below the line).

4. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

Resources required are human resources: persons with knowledge on the government financial reporting system, persons with knowledge on the drugs warehouse distribution and databases of the FPBS, and persons with technical knowledge on NHA and SHA 2011. Placing all persons with these different knowledge and skills to work together as a team would enable an improved costing of pharmaceutical expenditure.

Financial resources are needed for carrying out surveys of the private pharmaceutical market and paying the human resources required to undertake the analysis of both private and government data. Currently the funding for carrying out the survey of private pharmacies (and the private health sector) is the Government via the Ministry of health. Enumerators for these surveys are provided by the National Statistics Department (known as the Fiji Bureau of Statistics).

5. CONCLUSIONS

Overall recommendations and conclusions, including challenges and future directions to improve compatibility with the SHA framework and quality of data

In Fiji, the Ministry is more interested in knowing the

- Total expenditure on pharmaceuticals (public and private)

- Pharmaceutical expenditure by providers (hospitals, clinics, etc.)
- Pharmaceutical expenditure by functions (inpatient, outpatient)

Part II
Expenditure on preventive care (SHA HC.6)

6. PROCESS AND METHODOLOGY

Description of the primary data (e.g. scope, definition, units, variables, coverage, frequency, availability, etc.) used in current HA reporting exercises on preventive care expenditures.

Fiji NHA reports data from three major sources that are public spending (government), private spending and donor spending. The data for government spending is directly obtained from the Ministry of Finance (MoF) and Ministry of Health and Medical Services. The data from MoF only shows how much in total was spent by each preventive care program. The data fails to provide details information on where the money was spent. For example expenditure is not reported on what type of activities within the program the funds were used for. Preventive care expenditure is available annually and records all the preventive care expenditure of public health programs.

Private expenditure is collected through private sector survey by NHA team bi-annually. Private expenditure on preventive care is minimal (as reported in surveys) as a proportion of government expenditure on preventive care. Donor expenditure is again collected through donor survey bi-annually. Donors contribute quite significantly towards preventive care.

If your country does not use SHA for reporting, what are the differences?

Fiji currently uses SHA framework for NHA reporting.

Description of the changes in reporting over time (if any)

The changes in reporting went from non-SHA in 2007, to SHA 1.0 in 2010, and then to SHA 2011 in 2012. Currently SHA 2011 is the current reporting framework.

Description of the work process for allocating preventive care expenditures to HA

Classifications (if applicable)

Classifying preventive expenditure to revenue of financing schemes (sources) and financing schemes is not difficult since the Fiji Health Financing system not complicated with Government funding almost all preventive health care expenditure. However the allocation of preventive care expenditure to functions and providers was found to be very challenging for Fiji.

In the government financial reporting system, all preventive programs have specific account codes under which the total spent on these programs can be obtained. However the preventive care expenditure that may exist in health facilities such as hospitals is unknown unless they

are under a specific program with a corresponding account code. This means that vertical programs are easy to track but those preventive care services (or programs) that are integrated in hospital services are difficult to estimate. Thus the expenditure presented in preventive care may be underestimated in the case of Fiji.

Preventive care expenditure by function is the most difficult since data does now give detail within preventive programs on what services and activities the money was utilized for. For example while we do know how much expenditure a preventive program incurred over the year, we do not know whether this expenditure was information and counseling (HC.6.1) or Immunization (HC.6.2) and so on as per SHA 2011 functional classifications of Preventive care.

To estimate this distribution, the program managers of each preventive care program were asked to estimate the functional breakdown by percentages. Thus expert opinions and guess estimates was the only possible way to achieve functional coding of preventive care expenditure in the circumstance of no data. However this approach also has its limitations. For example some program managers were new and not quite aware of the past activities of the program before their watch.

Description of the estimation methods and assumptions used (if any)

- Preventive care functional classification used 100% estimations from program managers and project officers on how program expenditure is distributed across the SHA 2011 preventive care sub-categories.

Description of process for verifying and checking the quality of preventive care expenditures (if any)

The quality of government data is compared with audited figures from Ministry of finance and accounts record kept within Ministry of Health and Medical Services. NHA team uses audited financial reports as measure of government expenditure. However in case of clarifications, advice is sought from MoHMS principal accountant and Program managers for verification.

Private expenditure on preventive care is collected through surveys. To verify the quality of survey data, this is compared with figures available with Fiji Revenue and Customs Authority, Reserve Bank of Fiji, publications and report and other secondary data. The survey questionnaire is also designed to check the consistency and quality of data. For example three questions to ascertain expenditure: annual revenue, average monthly income and average weekly income.

For donors expenditure on preventive care is obtained from the donor surveys. Follow up with respondents is done for checks and clarifications. No estimation is done if a donor has not responded.

7. DOCUMENTATION OF ISSUES IN REPORTING

An assessment of the mapping and/or feasibility of reporting expenditures on preventive care in relation to the following HA functional classification items (based on SHA 2011):

HC.6.1, information, education and counseling programmes

HC.6.2, immunization programmes

HC.6.3, early disease detection programmes

HC.6.4, healthy conditions monitoring programmes

HC.6.5, epidemiological surveillance and risk and disease control programmes

HC.6.6, preparing for disaster and emergency response programmes

- This was the most difficult to do since data records do not permit a direct coding to the sub categories of the functional classification, expect for a very few programs.
- In Fiji program managers and project officers were asked to estimate the percentage breakdown of funds according to the functional classification. However this approach has its limitations.
- Uncertain of how to improve this reporting moving forward. Have developed policy briefs suggesting improving the detail in reporting preventive care and programs expenditure to activity level, however there is still the question how that activity detail will map to the HC sub categories.
- The categories of the HC did not look very interesting to the program managers and officers and the MoHMS. Thus it is uncertain as to whether they saw any value in these sub categories of reporting preventive expenditure. The program managers were only interested in seeing how much was spent on things such as transport, medicines, training, workshops, salaries, etc. within their programs without having some thought or relating these expenditures to outcomes and outputs. This was also the manner budgets and expenditure reports was prepared.

An assessment of the mapping and/or feasibility of reporting preventive care expenditure functional categories cross-classified with financing agents/schemes categories

For Fiji the three major source of financing sources of preventive care expenditure is government (public), private sector and Rest of the world (donors). Majority of the expenditure is managed by Ministry of Health and Medical Services and classified as a government financing scheme.

It is not very difficult for Fiji to map the direct preventive care programs to the SHA 2011 classification of revenue sources, schemes, and providers. For the functional classification direct mapping to the higher level category is easy and direct however the subcategories of the preventive care classification required estimation.

The difficulty lies in classifying preventive care expenditure that is integrated in health facilities (example hospitals and ambulatory care centres). At present due to lack of detailed data, these have been locked to health providers and disaggregated into curative care as per the rules of distribution for individual health providers.

This is how mapping of preventive care was undertaken in the Fiji NHA 2011-2012 report.

8. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

Description of the specific resources required to undertake the preventive care expenditure compilation exercise within the overall HA compilation process.

There needs to be some work undertaken to improve the reporting of preventive care programs and projects (including some providers). This will further improve and strengthen the reporting of functional classifications. This needs the input of the Ministry of Finance since it involves re-categorizing of account codes in the Government financial management system to better capture and report activity data of preventive programs (as according to the SHA 2011 preventative care classifications). Some substantial involvement of staff time may be required. It is unsure at this stage the amount of effort required to tweak the current expenditure reporting (government financial management system) to enable a more detailed reporting of the expenditures of preventive programs.

In the case of pharmaceuticals an investment in some warehousing database to be able to capture actual drug and medicine utilization at the facility level and within departments of the facility would be most beneficial to improving the reporting of pharmaceutical expenditure.

9. CONCLUSIONS

Overall recommendations and conclusions, including challenges and future directions to improve compatibility with the SHA framework and quality of data

Although Fiji has made the transition to the SHA 2011 framework, there still remain avenues for improvement of data so that expenditure is more accurately reported and reduces the use of estimations and rules of allocation currently used. This will always be work in progress but it is great to see this has already started.

With the development of 3 policy briefs (and their subsequent endorsement by the health ministry) all recommending and calling for better recording and management of data, more accurate reporting of health expenditure is expected to improve.

While improving data to be able to better report SHA framework is one thing, the other is how useful national systems find this categorization of expenditure given the reorganization of systems required to capture this data. For example there was little excitement about the categories of reporting of preventive expenditure by the HC classifications.

LAO PDR

MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA/PACIFIC REGION

(FY 2009/2010 and 2010/2011)

Ministry of Health

Acronyms

DPs	Developing partners
FY	Fiscal year
HAPT	Health Account Production Tools
HC	Health care functions
LSB	Lao Statistic Bureau
MoH	Ministry of Health
MPI	Ministry of Planning and Investment
NGO	None-governmental organizations
OOP	Out-of-pocket expenditure
SHA	System of Health Accounts
TCAM	Traditional Complementary and Alternative Medicine

1. BACKGROUND

Lao PDR is a lower middle income country located in South East Asia with 6,385,057 of population (LSB, MPI 2011), its GDP per capita is USD 1,077.

National Health Accounts estimates has been led by the Department of Finance, Ministry of Health (MoH), NHA taskforce team has been set up with team members from departments under the MoH, Ministry of Planning and Investment, Ministry of Finance, Ministry of Foreign Affairs, Ministry of Labor and Social Welfare, and National Assembly.

Lao first 2009-2010 NHA report was conducted in 2012 based on the international standard of System of Health Accounts 1.0 (SHA 1.0). Since then those estimations have been updated and complemented with data of better quality. Among the highlights of that NHA 2009-2010 report, are the low per capita expenditure level, the important role of households to finance health care and a preliminary level of Developing Partners (DPs) contributions and estimates for the Traditional Complementary and Alternative Medicine (TCAM) spending.

The second NHA estimates for the fiscal year 2010-2011 started in 2013. SHA 2011 was applied for this study. This second study includes a more comprehensive set of information and illustrates a first set of estimates of the main services and health expenditures by the most frequent diseases, both at national and provincial levels. Disparities found may contribute to reorient domestic and external aid spending and refine the allocation process based on the priorities. The information presented here is aimed at initiating the routine monitoring process and at broadening the use of the data.

Part I
Expenditure on pharmaceuticals

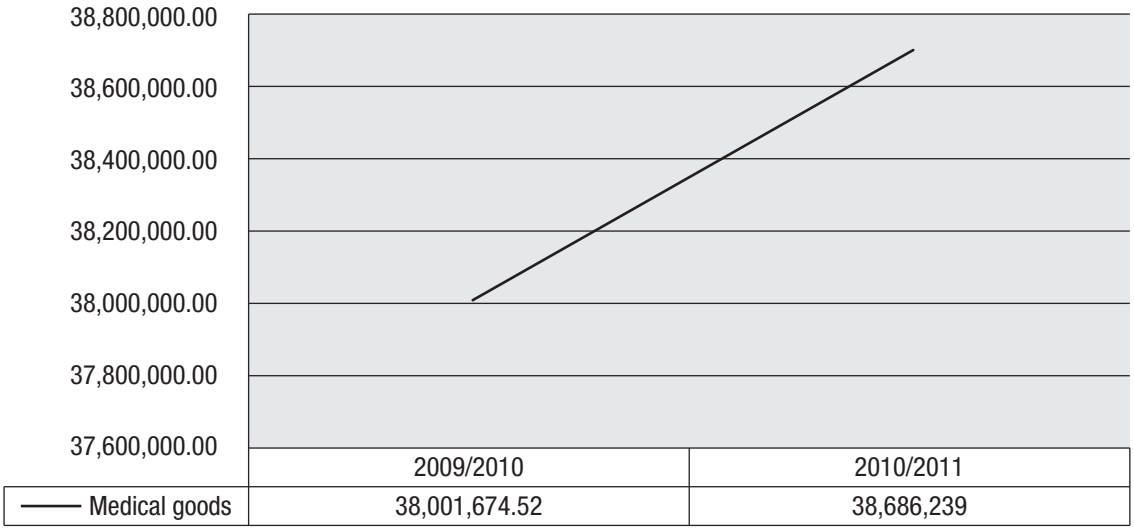
1. PROCESS AND METHODOLOGY OF PHARMACEUTICAL ESTIMATES

Pharmaceutical expenditure was tracked in coincidence with the overall health accounts estimates in both FY of 2009/2010 (SHA 1.0) and 2010/2011 (SHA 2011). The primary data is from the government expenditure report (Official Gazette), focusing pharmaceutical line expenditure; the spending on pharmacies of the out-of-pocket expenditure. In addition, another source of data is from the donor and NGO surveys, regarding their spending on drugs.

In Lao NHA 2010-2011 estimates, pharmaceutical was classified in HC.5 Medical goods (Non-specified by function) and followed by its sub-function of HC.5.1 Pharmaceuticals and other medical non-durable goods (sub- categories of HC.5.1.1 Prescribed medicines, and HC.5.1.3 Other medical non-durable goods); HC.5.2 Therapeutic appliances and other medical goods (sub-categories of HC.5.2.9 All other medical durables, including medical technical devices).

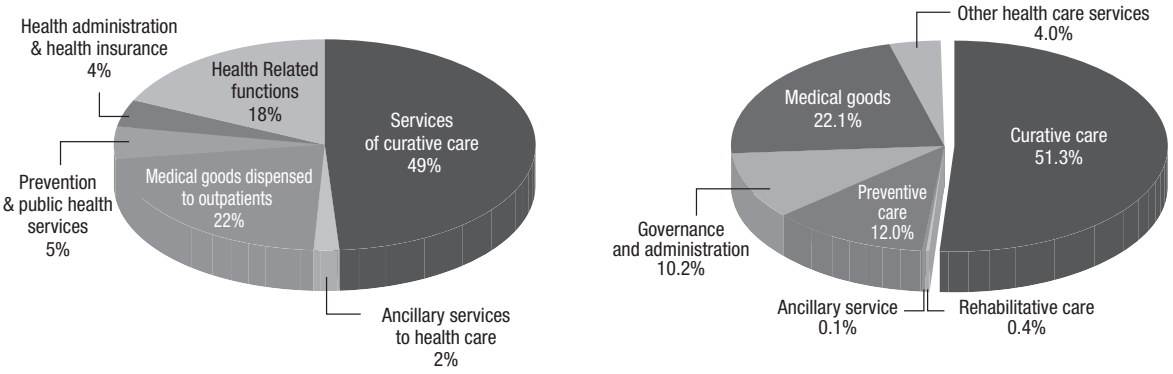
The figure 1 below demonstrates the changes of the pharmaceutical spending over the period of Fiscal Year 2009/2010 and 2010/2011. Overall, it was clear that there was a minor change from the budget spending on pharmaceutical from 38 million USD in 2009/2010 to 38.6 million USD in 2010/2011, it increased 2% during the mentioned fiscal years (FY).

Figure 1: Pharmaceutical spending in 2009/2010 and 2010/2011



Regarding the share of pharmaceutical spending among other functions in the two fiscal years, the figure 2 indicates that pharmaceutical expenditure accounts for 22% in FY 2009/210, and 22.1% in FY 2010/2011.

Figure 2: Share of pharmaceutical spending in 2009/2010 and 2011/2011



A spreadsheet was prepared for the mapping of pharmaceutical spending of the government budget across the other classifications. Quality check was also done in the excel sheet displaying the mapping by classification, before importing to the Health Accounts Production Tools (HAPT).

2. DOCUMENTATION OF ISSUES IN REPORTING PHARMACEUTICALS

Pharmaceutical expenditure is one of issues to improve in next NHA study in Laos, as Laos still partially lacks data on imported medical goods and commodities. Also, drugs for treatment are reported jointly with OOPs payments for other services and there was not accessed the records to separate them yet. Many people buy medicines from pharmacies for consumption without doctor's prescriptions, which leads to the high proportion of pharmaceutical spending among the OOP expenditure.

3. FINANCIAL AND HUMAN RESOURCES REQUIREMENTS FOR PHARMACEUTICAL ESTIMATES

An earmarked budget for pharmaceutical study is very necessary, an international expert (consultant) and the current NHA team will be key actors for the study.

Sub-accounts on pharmaceutical other than the NHA overall estimates is also interested by the Food and Drug Department of under the Ministry of Health.

4. CONCLUSIONS OF PHARMACEUTICAL ESTIMATES

The pharmaceutical spending in NHA 2009/2010 and 2010/2011 study was around 38 million USD, and accounts for approximately 22% among the other functions. These figures were derived from the overall NHA estimates, with the lack of detail in pharmaceutical spending. Therefore, the study on specific pharmaceutical expenditure (sub-accounts on pharmaceutical) is highly recommended.

Part II: Expenditure on preventive care (SHA HC.6)

5. PROCESS AND METHODOLOGY OF PREVENTIVE CARE

The tracking of expenditure on preventive care was part of the overall Lao NHA estimates, the data sources is from the survey of donors and NGOs, as well as the government financial report (Official Gazette).

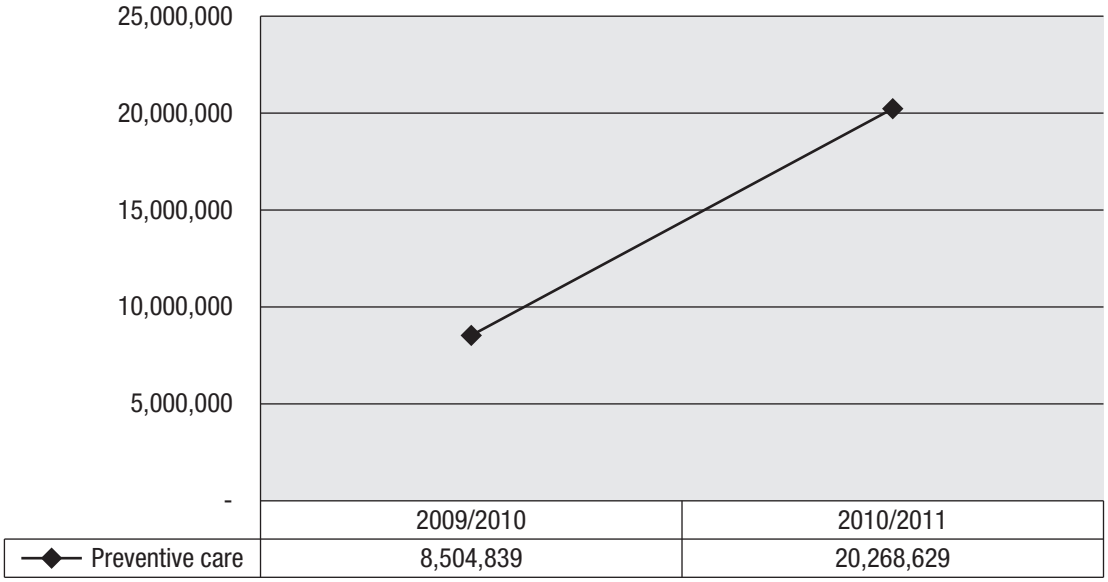
Spending on preventive care was classified in HC.6; then followed by its sub-categories of HC.6.1 (Information, education and counseling programmes), HC.6.2 (Immunisation programmes), HC.6.3 (Early disease detection programmes), HC.6.4 (Healthy condition monitoring programmes), HC.6.5 (Epidemiological surveillance and risk and disease control programmes, HC.6.6 (Preparing for disaster and emergency response programmes), and HC.6.nec (Other preventive care (n.e.c.)). More deeply, every expenditure related to the health information and counseling services was with HC.6.1, vaccinations and immunization spending was tracked in HC.6.2, early case detection of HIV/AIDs, TB, malaria and other

diseases were with HC.6.3, antenatal care, post natal care and children growth monitoring were classified in HC.6.4, disease control programmes and epidemiological surveillance were with HC.6.5, disaster and emergency response programmes were classified in HC.6.6, and other spending related to prevention but not able to be specified in any of its sub-categories added to HC.6.nec.

The figure 3 below shows that expenditure on preventive care has increased almost three times from 8.5 million USD in FY 2009/2010 to 20.2 million USD in FY 2010/2011.

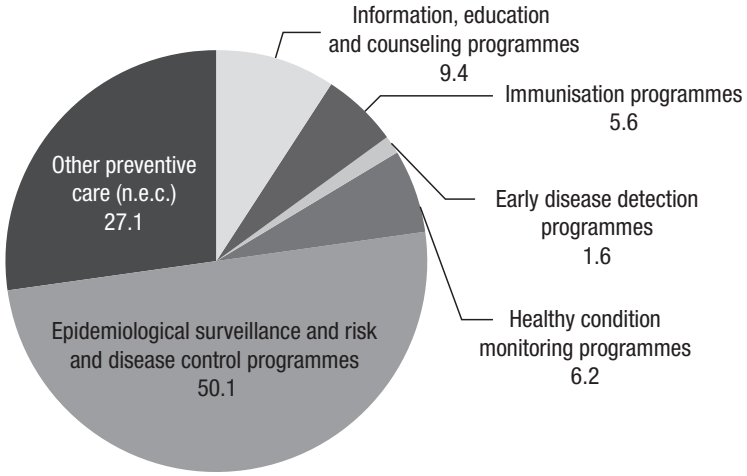
The figure 2 above also demonstrates that the share of preventive care across other classification in FY 2009/2010 was 5%, and FY 2010/2011 was 12%. It is important to highlight that there has been a change on the classification of the 2009-2010 report, as the standard SHS 2011 has better defined the preventive care vs the public health priorities. Thus, the increase on these spending categories is larger as many of the pharmaceutical treatment has now been classified as curative care when they imply treatment of cases (e.g. HIV, Tb, etc).

Figure 3: Spending on preventive care in FY 2009/2010 and FY 2010/2011



Regarding the share of preventive care among its sub-line expenditure, it is shown in the figure 4 below that epidemiological surveillance and risk and disease control programmes dominates the line share, it represents 50.1%, and the early disease detection program has the smallest share, it accounts for only 1.6%. The class of disease control programs contains related spending on personnel of all health programs, the training to better manage technically them and it also includes the spending on procurement.

Figure 4: Share of preventive care in FY 2010/2011



6. DOCUMENTATION OF ISSUES IN REPORTING ON PREVENTIVE CARE

Using SHA 2011 to track the expenditure on preventive care is clearer than the pharmaceutical. However, the health expenditure data for the two Lao NHA FYs reports was mostly in aggregated level, it was difficult for the team to report in every sub-categories of preventive care. Therefore, the expenditure on others preventive care (HC.6.nec) in figure 3 of the NHA FY 2010/2011 estimates shares the second largest proportions, it accounts for 27.1%.

The Lao NHA FY 2009/2010 estimates was not able to track the sub-expenditure by preventive care, due it the lack of detail expenditure amount from the questionnaire survey, the official government financial report, as well as the unavailable of National Health Production Tools.

There were also comments raised by the Ministry of Health during the two FYs NHA estimates for the small proportion of the preventive care spending compared to the curative care expenditure. The conflict was that because the government and developing partners put their most effort on the preventive care during the years, why is it very small compare to curative care (only 5% in 2009/2010, and 12% in 2010/2011)?. As a result, the team re-analyzed the figure and found that it makes sense for the smallest share of prevention compared to treatment, because OOP and insurance expenditure were only for curative care, and this OOP share is the largest proportion of THE, while government and developing partners spent only part of their budget on preventive care.

7. FINANCIAL AND HUMAN RESOURCES REQUIREMENTS ON PREVENTIVE CARE

Preventive care is measured in line with the overall NHA estimates, same financial and human resources of the overall NHA estimates are necessary for this sub-expenditure. However, it would be desirable to have more detailed surveys and also, to have time to find out the spending details needed to obtain the full information related to government spending programmes.

8. CONCLUSIONS ON PREVENTIVE CARE

Spending on preventive care was relatively well tracked in both NHA 2009/2010 and NHA 2010/2011 estimates. However, detail budget line by each sub-category of the preventive care was not available, which links to the high share of other preventive care. Improvement of the data collection and the analysis is needed.

References

Lao PDR National Health Accounts FY 2009-2010, MoH, Lao PDR;

Lao PDR National Health Accounts FY 2010-2011, MoH, Lao PDR;

National Health Accounts Production Tools, SHA 2011, OECD, WHO;

Annexes

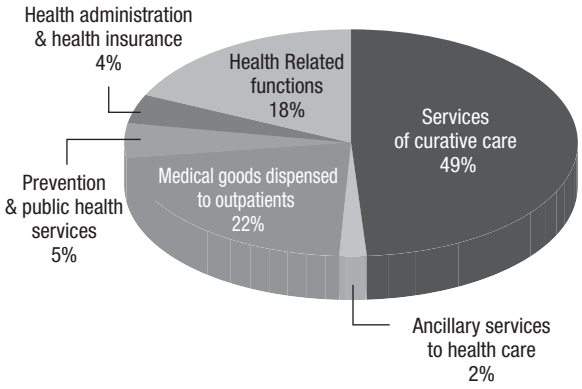
Annex 1: Share of HCs for NHA 2010/2011 Estimates

Health care functions	Amount (LAK)	Amount (USD)	% Share
Curative care	717,709,832,024	86,795,239	51.3%
Rehabilitative care	5,567,529,468	673,301	0.4%
Ancillary service	917,318,925	110,935	0.1%
Preventive care	167,601,293,102	20,268,629	12.0%
Governance and administration	142,358,655,285	17,215,946	10.2%
Medical goods	309,489,914,622	37,427,732	22.1%
Other health care services	55,705,877,500	6,736,713	4.0%
Total	**1,399,350,420,925**	**169,228,494**	

Annex 2: Spending on pharmaceuticals of NHA Estimates FY 2009/2010 & 2010/2011

	FY 2009/210		FY 2010/2011	
Medical goods	LAK	USD	LAK	USD
	304,013,396,187	38,001,674.52	309,487,914,622	38,686,239

Annex 3: Share of HCs for NHA 2009/2010 Estimates



Annex 4: Spending by preventive care of NHA Estimates FY 2009/2010 & 2010/2011

	FY 2009/210		FY 2010/2011	
Expenditures by Function	Amount Kips	Amount USD	Amount Kips	Amount USD
Preventive care	70,037,350,397	8,504,839	167,601,293,102	20,268,629

MALAYSIA

MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA/PACIFIC REGION

1. INTRODUCTION

In the year 2001 a project titled MNHA Project was officially launched under joint collaboration involving Ministry of Health (MOH) Malaysia and Economic Planning Unit (EPU) of the Prime Minister's office. This project received financial support from United Nations Development Programme (UNDP) and technical expertise from international consultants involved in National Health Accounts (NHA). At the completion of this project the top level health care managers in the country found the final results to be beneficial for policy decisions. Hence by September 2006 the Malaysia National Health Accounts (MNHA) Unit was established under Planning & Development Division of MOH. The main task of this unit was to produce timely and useful NHA data on a regular basis.

Subsequently the unit was successful in producing several rounds of annual MNHA reports. This was carried out despite challenges such as insufficient in house technical expertise and issues related to manpower and other resources. In 2009 when the time series NHA data were required as inputs for health sector financial transformation, some significant MNHA data glitches were noted. As a result over the next two years starting from 2010 all previous work was reviewed and several measures adopted to standardize NHA methodology. This significantly improved the time series MNHA data quality.

Since then the MNHA unit continued to make gradual progress under constrained resources to produce regular NHA data for policy makers and other stakeholders. Currently the unit functions under two teams whereby one team conducts analysis and the other supports in raw data collection and data entry, as well as other logistics in the daily operations of the unit. However as NHA production requires a fair amount of technical expertise, the frequent movements of trained technical personal is a major threat to efficient functioning of the unit. This occurs even after much emphasis on vigilant documentation as it is difficult to correctly document all the technical intricacies in the analysis. Hence the team has to be provided with continuous training and motivation to meet target dates for timely NHA production. These data are has to be produced based on both the MNHA framework for national policy developments and the SHA framework for international NHA data comparisons and reporting.

In recent years there has been national interest in the tracking of pharmaceutical expenditure through MNHA database. This area of concern has become more important as health planners and policy makers in the country move towards transformation of health care delivery and financing system. For the last few years the MNHA Unit has been reporting to the Pharmacy Division of MOH on the private sector pharmaceutical expenditure. This reporting is carried out to provide the concerned Division some estimates on private sector pharmaceutical expenditure which is part of the data monitored under the Malaysian National Medicines Policy (MNMP) implementation.

However the pharmaceutical data extracted from MNHA database has its limitations. The Pharmacy Division is aware of these limitations and this was also discussed during the recent regional NHA expert group meeting as one of the major data challenges faced in NHA. During this meeting several other country members supported the need for a standardized and comparable methodology in pharmaceutical expenditure data production. However the adoption of a standardized methodology can be challenging for regional countries at different stages of NHA institutionalization. Some have already migrated from SHA 2000 to SHA 2011 whereas others are still prodding along to institutionalize NHA in their countries. Although Malaysia has institutionalized NHA, currently the country produces its NHA data using SHA 2000 framework instead of SHA 2011 framework. This is because currently SHA 2000 is able to provide sufficient information to meet expenditure related data requests from policy makers and health planners.

It took Malaysia slightly more than two years to develop the robust MNHA framework based on SHA 2000 framework. In 2010 an extensive revision of all previous annual MNHA data was carried out based on a newly developed standardized internationally acceptable NHA methodology to produce comparable time series data. As a result of this exhaustive exercise two reports have been published, MNHA Health Expenditure Report (1997-2009) and MNHA Health Expenditure Report (1997-2011). From then onwards, at each subsequent cycle of NHA production, the country has made gradual refinements in methodology.

In addition the MNHA team was also able to produce and submit a second set of SHA compatible MNHA data to World Health Organization (WHO) using the same standardized methodology. Although the MNHA framework was developed based on SHA 2000 framework, it was necessary to produce this second set of SHA compatible MNHA data due to differences between the two frameworks. These SHA compatible MNHA data are usually reviewed by WHO NHA team before uploading onto their Global Health Expenditure Database as well as for the production of annual World Health Report (WHR). Although both the MNHA and SHA compatible MNHA data are defined by different boundaries, they are produced using similar revised standardized NHA methodology.

Currently all NHA data reported by Malaysia either for national or international reporting is based on MNHA framework or SHA 2000 framework. As SHA 2011 is thought to provide

more disaggregated data with its extended boundaries of health expenditures, the additional information will be useful for health sector financial transformation. Furthermore as more countries migrate towards this new format the migration from SHA 2000 to SHA 2011 is thought to be inevitable.

PART 1 - Expenditure on pharmaceuticals (SHA HC.5.1 and HC.RI.1)

2. PROCESS AND METHODOLOGY

Scope and Framework:

In most countries including Malaysia, the provision of medical or personal health care includes several modalities of health care services such as consultation, radiological investigations, laboratory tests, treatment and rehabilitation. Pharmaceuticals is a product often associated with a range of activities such as health promotion, prevention, treatment and rehabilitation that lead to better or good health and wellbeing. Variations in provision, accessibility and expenditures for pharmaceuticals are often results of individual behaviour or national health policies and practices in a country. Some of these variations pose great challenges in identifying pharmaceutical expenditures which in turn may determine individual behaviour or changes in national policies and practices. For example when patients seek medical treatment they may receive all therapeutic modalities and health care services at or within the same clinic, hospital or other health facility. Therefore the billing and payments for these therapies and services of health care are often bundled together. Such practices under various health accounting systems pose real challenges in the separation of pharmaceutical expenditure.

In brief, pharmaceutical expenditure is really a sub-set of total health expenditure under any health accounting framework. The estimation of this expenditure requires a clear delineation of the boundaries of "pharmaceutical expenditure" and an understanding of various methods used in the accounting system to derive at this output. Therefore under the NHA framework as the accounting system it is immaterial that the pharmaceutical expenditure is estimated based on SHA 2011, SHA 2000 or any country specific NHA framework as long as this expenditure can be separated from the rest of health spending. However comparability across countries requires some conformation to boundaries and standardization of data estimations. A suggestion is proposed to use the SHA 2011 boundaries for this reporting.

In Malaysia, like most countries with institutionalization of NHA, the production of regular NHA data is cyclical with specific identified processes that culminate in the final outputs of NHA. This cyclical process includes several pre-determined steps starting with the creation and updates of a list of various agencies under each sources of financing which provides the necessary raw data that could be either primary or secondary data on health expenditure.

Subsequently all processing of these raw data until the final output is based on MNHA framework. This final product identified by each agency is then mapped to SHA framework which is kept as additional processed data. All the final analysis by each agency are then loaded into one master database before the production of various NHA tables and figures in a format that is easily understood by policy makers and health planners.

As many countries including Malaysia still use SHA 2000 framework this study proposes the use of SHA framework to extract pharmaceutical expenditure. Also since Malaysian analysis is carried out using MNHA framework some comparison of MNHA framework with SHA 2000 and SHA 2011 is also made under relevant sections.

Pharmaceutical related SHA 2000 and MNHA codes:

The boundaries of "pharmaceuticals" may vary from country to country. According to SHA 2000 framework the function code HC.5.1 defines "pharmaceuticals" as medicinal preparations, branded and generic medicines, drugs, patent medicines, serums and vaccines, vitamins and minerals, and oral contraceptives. This two-digit classification has additional three-digit sub-classification of codes HC.5.1.1 for prescribed medicines, HC.5.1.2 for over the counter (OTC) medicines and HC.5.1.3 for other medical non-durables. The first and third sub-classifications can be mapped to MNHA framework with similar boundary of definition under function codes MF5.1.1 and MF5.1.3. However MNHA framework further disaggregates the second sub-classification in SHA framework to code MF5.1.2.1 for OTC allopathic medicines, and MF5.1.2.2 for traditional, complementary and alternative medicine (TCAM). Since SHA 2000 definition of OTC medicines excludes TCAM, Malaysian reporting based on SHA compatible MNHA database for HC.5.1.2 for OTC medicines excludes expenditures under code MF5.1.2.2 that relates to TCAM expenditures. A point to note here is that most of the time two-digit level coding in the MNHA framework will actually correspond to three-digit coding in SHA 2000 framework. This feature of the local framework with further disaggregation was developed based on request from policy makers to further disaggregated expenditure data in some areas, a situation that often creates some confusion even at local level.

Pharmaceutical related SHA 2011 codes (HC5.1 and HC.RI.1) and terminologies:

SHA 2011 has better defined the boundary of "pharmaceuticals" compared to SHA 2000 with greater clarity whereby "pharmaceuticals" is defined as any chemical compound used in the diagnosis, treatment or prevention of a disease or other abnormal condition and it includes reactive and other chemical products used in laboratory tests. In addition SHA 2011 framework refers to two sets of extended definitions for "pharmaceuticals" which would be of interest to policy makers. The first set are items under function code HC.5.1 for pharmaceuticals and other non-durable goods, which would be considered as mandatory reporting, and the second set would be optional reporting under functional residual item with

two groups of items under code HC.RI.1 for total pharmaceutical and non-durable goods expenditure, and HC.RI.2 for TCAM. The functional mandatory reporting code of HC.5.1 includes both allopathic or mainstream medicines and traditional medicines purchased from a pharmaceutical distribution channel. This expenditure is further disaggregated to make distinction between prescribed medicines as HC.5.1.1 and non-prescribed OTC medicines as HC.5.1.2. It also includes items under code HC.5.1.3 for medical non-durables. The TCAM is an extension of the definition "pharmaceuticals" under SHA 2011 framework which was excluded in SHA 2000 framework. This expenditure is included under code HC.5.1 if purchased from a registered pharmacy.

In addition SHA 2011 introduces the terminology of "pharmaceutical consumption" which is thought to be important for policy makers. This is meant to reflect the actual spending for pharmaceutical that are consumed and excludes that which is purchased but stocked for future use. The summation of expenditures under code HC.5.1.1 and HC.5.1.2 is expected to provide the value of this pharmaceutical consumption.

Another terminology introduced in SHA 2011 is "total pharmaceutical expenditure" under code HC.RI.1 which is thought to be about one-third of current health expenditure. This high value is due to the extended boundary which includes all pharmaceuticals irrespective of consumption, allopathic or TCAM and even includes complementary distribution services and items with the pharmaceuticals such as pill boxes, drip sets, inhalers, syringes and others that are provided together with medication. It is also thought to include the pharmaceutical component under curative, rehabilitative and preventive care. The extraction of this data is thought to be a real challenge even for countries with established NHA.

Estimation of SHA HC.5.1 and HC.RI.1 Expenditures:

The estimation of SHA 2011 HC.5.1 expenditure may not be too difficult for countries that are already reporting their NHA. This is because the boundaries are similar and mapping from SHA 2000 to SHA 2011 for this expenditure only requires additional reporting of TCAM expenditure. This reporting would be possible for Malaysia since the national framework already includes the TCAM component. Unlike the mentioned reporting code, the extended boundary of expenditures under code HC.RI.1 would be a challenge both to users of SHA 2000 or SHA 2011 framework especially in the summation of complementary distribution services and items to pure pharmaceuticals.

Ideally the reporting of HC.RI.1 expenditure would require combination of data extraction from accounting database as well as specific surveys conducted on consumer and pharmaceutical providers. A challenge prior to the actual data extraction and surveys under this code would be the identification and creation of a comprehensive list of pharmaceutical providers other than clinics, hospitals, private standalone pharmacies and similar facilities, such as supermarkets, sundry shops, petrol or gas station outlets and so on. The next challenge

would be disaggregation of pharmaceutical component that are provided as part of curative, rehabilitative or home care service which would be difficult to identify separately in the accounting system.

It is proposed that in order to identify pharmaceutical expenditure the sources of funding in NHA framework normally coded as HF or MS can be used as basis to summate for the total pharmaceutical expenditure. This approach requires good understanding of accessibility and financial flow of funding for pharmaceuticals in each of this source of funding or agency in respective countries. In addition as this data is estimated from NHA framework, there must be sufficient knowledge of various inputs, challenges and methods to overcome data limitations in the estimation of NHA in the countries concerned.

Proposed Methodology:

A method is proposed for countries like Malaysia that use SHA 2000 to extract the pharmaceutical expenditure based on boundaries under SHA 2011 for this expenditure. A "pharmaceutical spreadsheet" as seen in Table 1 containing an exhaustive list of data sources or agencies based on MS or HF codes should be drawn up. This list of data sources or agencies can be segregated into public and private sector sources for countries like Malaysia that are still using SHA 2000 framework. The list of data sources or agencies is similar to the existing "TEH spreadsheet" currently used by MNHA unit as a gross data validation checklist to derive at estimated annual total health expenditure prior to final database extraction.

If pharmaceutical expenditure estimation is required on an annual basis the process of data entry onto the "pharmaceutical spreadsheet" can run concurrently to data entry into "TEH spreadsheet". At the completion of analysis of each source of funding or agency, pharmaceutical data should be recorded onto the "pharmaceutical spreadsheet" based on disaggregated codes of HC5.1.1, HC5.1.2, HC.1.3 and HC.RI.2 of SHA 2011 framework. The pharmaceutical expenditure under HC.5.1 and HC.RI.1 will be the summation of expenditures from these four codes under each public or private source of funding or agency.

This proposed methodology would produce two NHA databases in a country, one for pharmaceutical expenditure that is comparable to SHA 2011 framework and the other for total health expenditure which could be based on either SHA 2000 or SHA 2011 framework. However countries that have not reported TCAM expenditures will have an additional task to identify the best methodology to derive at these estimates.

Table 1: Dummy table for the production of Pharmaceutical Expenditure

SOURCE/FUNCTION CODES					Codes/ Function	Prescribed medicines	OTC prescribed medicines	Other medical non-durables	TCAM***	# Pharmaceutical expenditure extraction	TOTAL PHARMACEUTICAL EXPENDITURE
					MNHA Codes	MF5.1.1	MF5.1.2.1	MF5.1.3	MF5.1.2.2	# subset of MF1	
					SHA 2011 Codes**	HC.5.1.1 (a)	HC.5.1.2 (b)	HC.5.1.3 (c)	HC.RI.2	# subset of HC.1 (d)	HC.RI.1 (a+b+c+d)
	MNHA Codes	MNHA description	SHA 2000 Codes*	SHA description		PHARMACEUTICAL CONSUMPTION					
PUBLIC SECTOR	MS1.1.1.1	Ministry of Health	HF.1.1.1	Central government							
	MS1.1.1.2	Ministry of Education	HF.1.1.1								
	MS1.1.1.3	Ministry of Defence	HF.1.1.1								
	MS1.1.1.9	Federal Agencies	HF.1.1.1								
	MS1.1.2.1	State Government	HF.1.1.2	State government							
	MS1.1.2.2	State Agencies	HF.1.1.2								
	MS1.1.3	Local Authorities	HF.1.1.3	Local government							
	MS1.2.1	Employee Provident Fund	HF.1.2	Social Security Funds							
	MS1.2.2	Social Security Organization	HF.1.2								
	MS1.2.9	Other govt mandated funds	HF.1.2								
	SUB-TOTAL PUBLIC										
PRIVATE SECTOR	MS2.1	Private Social Insurance	HF.2.1	Private Social Insurance							
	MS2.2	Private insurance enterprises	HF.2.2	Private insurance enterprises							
	MS2.3	Managed Care Organizations	HF.2.2								
	MS2.4	Household Out-of-pocket	HF.2.3	Household Out-of-pocket							
	MS2.5	Non-profit institutions	HF.2.4	Non-profit institutions							
	MS2.6	All Corporations	HF.2.5	All Corporations							
	MS9	Rest of the World	HF.3	Rest of the World							
	SUB-TOTAL PRIVATE										
	TOTAL										

Note: *Based on SHA 2000 Framework
**Based on SHA 2011 Framework
***TCAM = Traditional, Complementary and Alternative Medicines
This is pharmaceutical expenditure extracted from curative care function which includes pharmaceuticals

Pharmaceutical Expenditure Estimations:

At the production of this document Malaysia has time series NHA data spanning over fifteen year period from 1997 to 2012. These data were estimated using both the MNHA and SHA 2000 framework which produced the final MNHA database and SHA compatible MNHA database.

Pharmaceutical expenditure can be extracted from the SHA compatible MNHA databases using SHA 2000 function code HC.5.1 which corresponds to "pharmaceutical expenditure". The latest MNHA publication shows that for the year 2012, the Malaysian pharmaceutical expenditure under this function code accounted for 10% of total current health expenditure. However pharmaceuticals spent by MOH in hospitals and various clinics are excluded in this value as they are segregated under function code HC.1 for curative care. Therefore this is an under reporting of pharmaceutical expenditure especially when the fifteen year time series data shows the Ministry of Health (MOH) as the largest source of funding for health throughout this period. SHA 2011 framework addresses this under reporting of pharmaceuticals by extending the boundary to include pharmaceutical spending under curative care identified with a new label as "total pharmaceutical expenditure".

A study was carried out to derive at this "total pharmaceutical expenditure" from the existing SHA compatible MNHA database by applying SHA 2011 boundaries. The proposed "pharmaceutical spreadsheet" was used to derive at the final estimations. The results of this estimation were then compared with the value usually stated in MNHA publication.

In order to populate the necessary cells in the "pharmaceutical spreadsheet" a combination of data extraction from MNHA 1997-2012 database as well as additional data extraction from the existing public sector accounting system was carried out. The data extraction closely adhered to boundaries of pharmaceutical expenditure definitions stated under SHA 2011 function codes HC.5.1 and HC.RI.1.

This short study used the proposed "pharmaceutical spreadsheet" to derive at the newly defined pharmaceutical expenditure for Malaysia. The necessary data were produced by a combined method of data extraction from the existing database developed for MNHA reporting and additional MOH pharmaceutical expenditure data extraction from the Accountant General (AG) database. Some keys points in the methodology, findings and limitations encountered during this approach are described further. Additional clarifications regarding MNHA 1997-2012 database are unnecessary as most of those involved in NHA production are familiar with SHA 2000 framework and the estimation methods. However the public sector accounting system is country specific and will be elaborated.

All public sector agencies in the country including MOH use the Accountant General (AG) accounting system. Since this accounting system adopts detailed documentation of every financial transaction, it has a rather complicated coding system which includes the Specific

Object and Detailed Object (SODO) codes, Cost Responsibility Center Codes (CRCC), Programmes & Activities Codes, and so forth. Some of these coding systems have slight annual variations or differences from one government agency to another. Hence these codes have to be checked and updated at every cycle of NHA analysis. In view of non-standardization of some of these coding system across various government agencies and limited additional significant benefit to NHA analysis only the MOH AG database is used to disaggregate public sector source of health expenditure.

The MOH AG database and its various coding system were studied to seek best method for pharmaceutical expenditure data disaggregation which was previously coded under curative care. This MOH AG database uses SODO code 27400 to identify pharmaceuticals and supplies expenditure which is further classified into five sub-categories of drugs and pharmaceuticals (code 27401), medical gas (code 27402), reagents (27403), vaccines (27404) and others (27499).

Previously the MNHA team published two reports titled "MNHA MOH sub-account 1997-2009" and "MNHA OOP sub-account 1997-2009". An attempt was made in these sub-accounts to report some detailed pharmaceutical expenditure that was not available in the annual total health expenditure reports. A section in the MOH sub-account report addressed pharmaceutical expenditure which also used the SODO coding system for data extraction.

At that stage due to some difficulties in setting the boundary of "pharmaceuticals" MOH pharmaceutical expenditure was reported as the summation of only two of the SODO sub-categories, namely code 27401 for drugs and pharmaceuticals, and code 27499 for others. This second sub-category under code 27499 which accounted for nearly a quarter of all pharmaceuticals expenditure under code 27400 was included in the then defined boundary after discussions with various hospital accountants. There were also some discussions regarding inclusion and exclusion of expenditures under the other three sub-category codes of 27402 for medical gas, 27403 for reagents and 27404 for vaccines which were finally excluded. Retrospectively the pharmaceutical expenditure reported in the MOH sub-account was also an underestimation by SHA 2011 boundaries. This demonstrates the importance of definitions in delineating boundaries of data especially when required for international comparisons.

Besides MOH, the MNHA framework captures many other public sector sources of funding such as Ministry of Higher Education (university hospitals), Ministry of Defence, Local Authority and others. The use of AG database of these various public sector sources of funding to obtain their respective health expenditure requires good knowledge on AG coding system of each of these agencies. As this approach is too resource intensive in comparison to valuable data extraction, the MNHA team normally conduct surveys using questionnaires for each of these agencies to gather as much raw data as possible on their respective health expenditure. The extraction of pharmaceutical expenditure from these agencies have their limitations as some of them are able to separate their pharmaceutical expenditure while

others report it as part of activities such as under the provision of curative care. Furthermore the priorities of these public sector agencies vary and they may have insignificant health expenditure.

In the private sector out-of-pocket (OOP) component is the largest source of funding reported under NHA. The country estimates OOP expenditure through an integrative approach with expenditure data from multiple agencies. This approach is based on the concept of consumption and financing for health care and starts with a listing of providers where potential OOP payments can be incurred for healthcare consumption. In Malaysia although the public health care system is heavily subsidized some payments are still required when seeking care at MOH hospitals, university hospitals and National Heart Center. These providers form the public sector providers in the listing. The private sector providers comprise of private sector hospitals, private medical and dental clinics, private standalone pharmacies and private traditional practitioner providers. In addition OOP payments are also used to purchase traditional medicines from non-allopathic pharmaceutical agencies as well as purchases of durables such as prosthesis, medical aid equipment and supplies, ancillary services such as private ambulance and other private transport services. These public sector and private sector providers form the comprehensive list where OOP payments are made for healthcare purchases. The expenditure data for all these providers and financier are collected from various data sources. The public sector data are obtained from the government accounting system of respective agencies. The OOP payments made at private hospitals and private medical plus private dental clinics are extracted from Department of Statistics (DOS) medical profession surveys. Similarly the Intercontinental Medical Supply (IMS) database which is a pharmaceutical industry monitoring agency is another data source for pharmaceutical expenditures at private standalone pharmacies. The remaining OOP expenditures for all other private sector services and purchases are extracted from various DOS medical business enterprise surveys.

DOS conducts rolling surveys on private sector health professionals which include registered private medical clinics, dental clinics and private hospitals. Their aggregated data on OOP payments for all health care services provided at these facilities are submitted for NHA estimations. Since only revenue data can be extracted from the multiple DOS surveys, this value is assumed to be the OOP expenditure. Besides DOS surveys, MNHA surveys are also conducted to provide further information on disaggregated spending for services based on the provider and function code of NHA including that of pharmaceuticals. Private hospitals with itemized billing can provide information on pharmaceutical expenditure. However as mentioned earlier one of the limitations in this approach is that often billing at private medical and dental clinics is based on bundled services which are coded under the NHA framework as curative outpatient care. Thus listing of all data sources for OOP estimations and summation of their pharmaceuticals would provide the OOP pharmaceutical expenditure.

However some of the payments made through OOP can be reimbursed from private insurance agencies, private corporations, Employee Provident Fund (EPF), Social Security Organizations (SOCSO) and various statutory agencies. They are considered the third party payers where the claims made at these agencies captured through various MNHA surveys are deducted from the original OOP agency listing. This is done to avoid double counting of OOP expenditures. The OOP pharmaceutical expenditure can be easily extracted from each of these agencies using the pharmaceutical NHA functional codes.

Besides OOP, other private sector sources of funding under NHA framework include non-governmental agencies and private business enterprises (limited and private limited corporations) which have some pharmaceutical expenditure amounting to less than 5% of all private sector pharmaceutical expenditure. Other surveys conducted by DOS are used to derive at private business enterprises health expenditures. The value of total health spending by these enterprises are obtained from specific DOS surveys whereas MNHA private corporation surveys are used to disaggregate to provider and function codes of NHA which includes pharmaceutical expenditure.

Pharmaceutical Expenditure Findings and Limitations:

In this study data were extracted by methods as described above to populate the proposed "pharmaceutical spreadsheet". All items listed in the five SODO codes or sub-categories from MOH AG database were extracted to populate part of code HC.RI.1 corresponding to MOH expenditure. Data extracted from DOS, responses to several MNHA questionnaire administered surveys and some of the final outputs of analysis for the rest of the sources of funding were used to populate the remaining cells of this "pharmaceutical spreadsheet" to derive at final expenditures under codes HC.5.1 (pharmaceuticals and other non-durable goods), HC.RI.1 (total pharmaceutical) and HC.RI.2 (TCAM).

This study showed that for the year 2012, the pharmaceutical and other non-durable goods expenditure coded as HC.5.1 under SHA 2011 was 14% and total pharmaceutical expenditure coded as HC.RI.1 was 18% of current expenditure. Both these figures are higher than that previously reported under SHA 2000 framework which was 10% of current health expenditure. The new code HC.RI.1 expenditure now includes MOH pharmaceuticals that were previously coded as part of curative care. Even this is still an underestimate as in many instances such as in private hospitals and clinics often it is not feasible to separate the pharmaceutical expenditure which is delivered as part of curative care. Figure 1 shows that 28% of all private sector spending was for pharmaceuticals (HC.5.1) which consists of almost two-thirds for allopathic pharmaceuticals and one-third for TCAM with OOP as the main source of funding. However Figure 2 shows that total pharmaceutical expenditure coded under HC.RI.1 has a higher value than HC.5.1 coded pharmaceutical expenditure. The pharmaceutical expenditure estimations under both these codes would be useful for policy makers.

Figure 1: Private Sector Pharmaceutical (HC.5.1) vs Current Health Expenditure, 2012

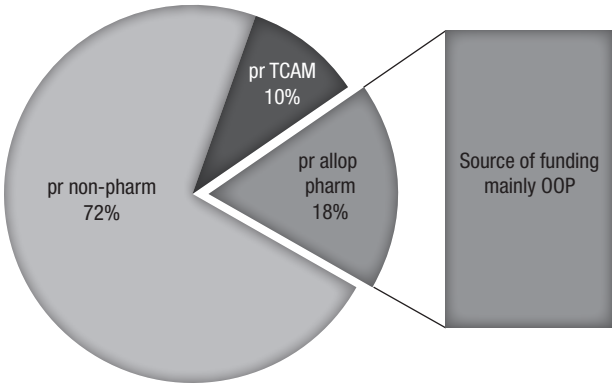
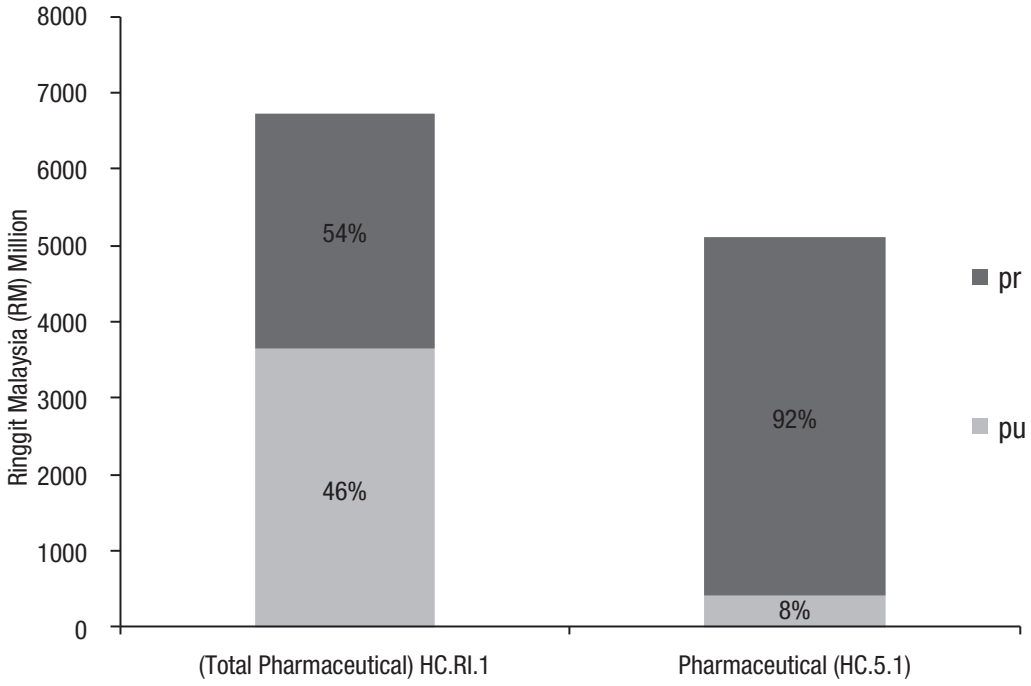


Figure 2: Public and Private Source of Funding for Pharmaceutical (HC.5.1) and Total Pharmaceutical Expenditure (HC.RI.1), 2012



A point to note is that all these data have some limitations and are still under estimated values. One reason for this private sector pharmaceutical underestimation is the exclusions of spending at various sundry shops, small 7-eleven grocers, petrol station outlets, Chinese Medicine Halls and so on. The MOH Pharmacy Division published a "National Survey on Use of Medicines (NSUM) by Malaysian Consumers 2012" that identified consumers behaviour regarding purchases of medicines from private clinics, hospitals, pharmacies and non-pharmacy premises. Statistics from this survey as well as IMS estimations identify that about 6-7% of all pharmaceuticals sold at these non-pharmacy premises, which mainly occur in urban areas, were excluded from pharmaceutical data capture due to logistic reasons. SHA 2011 classifies such sales under the code HP.8.2 for all other industries as secondary

providers of health care whereby the capture of this data will definitely be a great challenge to all concerned.

Changes in Reporting

SHA 2011 does not categorize the sources of funding into public or private source. Instead there is a suggestion that if there is a need for such categorization then this can be done by using either the classification of financing schemes or classification of revenues of financing schemes. Since public and private sector expenditure disaggregation is still of relevance to national policy decisions in Malaysia the suggested expenditure disaggregation would be included in the planning of migration from SHA 2000 to SHA 2011. As the current NHA estimations in the country do not include reporting by financing agents and financing scheme, the development of these estimations will be an additional task during the migration. Furthermore this additional dimension under NHA estimation is thought to be useful for planning of health sector financial transformation.

There is no doubt regarding the increasing need for pharmaceutical expenditure data both at national and international levels. At national level, since SHA 2000 framework did not suggest any recommended methodology for pharmaceutical expenditure estimations, several attempts were made in the past to derive at this estimates. The MOH sub-accounts (1997-2009) is an example where MOH pharmaceutical expenditure was extracted from the existing government accounting system. Retrospectively the methodology adopted in that report has several limitations and could be further refined.

The increasing need for pharmaceutical expenditure at international level is clearly demonstrated when in recent years WHO decided to include pharmaceutical expenditure in the country level NHA data collection template. As practised in the past, all country specific data that is submitted to WHO, including pharmaceutical expenditure, is usually reviewed by WHO NHA experts before updating the Global Health Expenditure Database (GHED) as well as producing the annual World Health Statistics Report. However both the latest WHO report as well as GHED has not published any country specific pharmaceutical expenditure. A possible reason for this could be non-standardized pharmaceutical analysis and reporting by various countries.

The importance and interest of policy makers in pharmaceutical expenditure data can be better met in SHA 2011 framework compared to SHA 2000. SHA 2000 framework only had one functional code HC.5.1 for pharmaceuticals and other medical non-durables, to describe pharmaceutical spending. SHA 2011 framework has expanded this expenditure to two sets of functional classification that is HC.5.1 for pharmaceuticals and other medical non-durables, code HC.R1.1 for total pharmaceutical expenditure and code HC.RI.2 for TCAM expenditure. The expenditure tracked under HC.RI.1 is expected to be a larger value than the main functional code of HC.5.1 as it captures pharmaceuticals included as part of

curative, rehabilitative or home care. However these estimations could be difficult especially for countries where various health care providers do not practice such detailed accounting system. Countries such as Malaysia are likely to face this challenge during migration from SHA 2000 to SHA 2011. It is foreseen that some bottom-up approach will be necessary to track data on pharmaceutical expenditure especially where accounting systems are aligned to services offered in packages.

The results of this study show that it is feasible to estimate pharmaceutical expenditure even prior to migration to SHA 2011. This can be achieved if during annual NHA estimation using SHA 2000 framework a separate pharmaceutical expenditures database that conforms to boundaries of SHA 2011 is compiled and established at the same time. As suggested in this document a separate pharmaceutical expenditures database has to be built up as a separate subset of data extracted from various public sector and private sector sources of funding classified under codes HC.1 and HC.2 of SHA 2000 framework. As an expected norm in NHA estimations, some assumptions will have to be made along with recognition of limitations in estimation methodology where pharmaceutical expenditure data cannot be obtained explicitly.

Data Verification Process

Verification of estimated pharmaceutical data is important to ensure data quality. One possible method for this process is data triangulation or comparisons with reported pharmaceutical expenditure by multiple agencies. In Malaysia this could be achieved through triangulations between estimations derived by using the proposed "pharmaceutical spreadsheet", IMS pharmaceutical expenditure database, and data extraction based on provider or function codes from the final NHA health expenditure database at each cyclical analysis of NHA.

It is feasible to report pharmaceutical expenditure by countries that have not migrated to SHA 2011 using the proposed "pharmaceutical spreadsheet" as described in this document. Data verification can be achieved through triangulation of multiple sources of data. The first source could be the summation of "pharmaceutical spreadsheet" data from various public and private sector sources of funding as described in this document. The second source could be Intercontinental Medical Supply (IMS) pharmaceutical database. IMS reports pharmaceutical expenditure by various channels of pharmaceuticals such as public and private hospitals, private clinics, private pharmacies, and others such as associations, NGO groups, Chinese Medicine hall and so on. Furthermore they are able to provide pharmaceutical expenditure by products which includes three products groups, namely "ethical" similar to Poison B drugs and require a doctor prescription, "pharmacy" which are similar to Poison C drugs and sold under pharmacist approval without doctor prescription, and "over-the-counter (OTC)" which are similar to Poison D drugs and includes mainstream Western or allopathic medication. This IMS pharmaceutical expenditure database reported by channels and products can be a second source for data verification.

The third source for data verification could be pharmaceutical expenditure data extracted by provider or function code from NHA total health expenditure database. Based on MNHA and SHA 2000 framework this would correspond to provider code MP4.1 or HP4.1 for dispensing chemists and function codes MF5.1.1 or HC5.1.1 for prescription medicines and MF5.1.2.1 or HC5.1.2 for OTC Western Medicines. Since in the Malaysian context all pharmaceuticals dispensed at public provider facilities such as clinics and hospitals are dispensed as part of curative care, this code captures mainly standalone private pharmaceutical sales for household consumption. On the other hand if pharmaceutical expenditure is extracted by the function code then this would include some of those consumed from facilities other than private standalone pharmacies. Therefore it is recommended to extract pharmaceutical expenditure data by function code rather than by provider code.

3. DOCUMENTATION OF ISSUES IN REPORTING

As described earlier, the reporting of pharmaceutical expenditure based on SHA 2011 function code HC.5.1.1 can be extracted from NHA database estimated using SHA 2000 framework with some additional estimations based on the extended boundaries of SHA 2011. This extended boundary refers to pharmaceuticals that are part of curative, rehabilitative and home care services with additional reporting of TCAM expenditure. A suggestion is made to maintain reporting items under code HC.RI.1 as an optional expenditure reporting item for countries that have not migrated to SHA 2011 or unable to capture the additional data separately. This approach will enable all countries with established NHA, whether based on SHA 2011 or SHA 2000 framework, to participate in reporting their respective pharmaceutical expenditure.

As stated earlier SHA 2011 has additional reporting items HC.R1 which includes HC.R1.1 total pharmaceutical expenditure and HC.R1.2 traditional, complementary and alternative medicines (TCAM). If the methodology described above is acceptable then countries which are at the early stages of SHA 2011 migration as well as countries such as Malaysia and others who are still reporting NHA using SHA 2000 framework can provide pharmaceutical expenditures.

However since the use of TCAM is related to national health policies and social practices within the country, it is recommended that a relatively loose but clearly identified items in reporting this category of expenditure be acceptable. The Malaysian national health policy accepts some forms of TCAM and so some MOH public hospitals provide both allopathic as well as some forms of TCAM. As this is a relatively new service the government budgeting system does not separate TCAM from allopathic health care services and neither does the MOH AG database have separate coding system for this expenditure.

The TCAM expenditure reported under MNHA framework is mainly funded as OOP payments. Department of Statistics (DOS) household income and expenditure survey (HIES)

has been an important source of data for this reporting. Over the past few years these DOS data showed an increasing trend in expenditure which led to some discussions between the MNHA team and various TCAM groups of providers in the country. As a follow-up to that discussion a MNHA survey on registered TCAM providers was conducted. Unfortunately this survey had poor response and the intended disaggregation of TCAM expenditure based on MoP classification of TCAM inpatient, outpatient and goods could not be carried out.

4. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

Most countries that have institutionalized NHA estimation carried out by established dedicated teams will only require minimal additional financial and human resource to report pharmaceutical expenditures. The bigger challenge for countries in similar situation as Malaysia would be in the mapping of existing time series NHA data to the new version, SHA 2011 framework, and further extend the reporting. NHA in Malaysia for the first time would require tracking expenditure by financing agents and financing scheme in supplement to the mandatory three dimensional NHA reporting by sources of funding, function of healthcare and providers of healthcare. It is hoped that all these can be achieved in due time with some additional technical expertise.

Meanwhile as suggested in this document the reporting of pharmaceuticals could be carried out prior to complete migration from SHA 2000 to SHA 2011. The reporting of pharmaceutical expenditure as described in this document would not require significant additional resources in terms of finances or human resource. This is one of the advantages for countries like Malaysia where there is institutionalization of NHA under a dedicated unit solely for the production of regular NHA.

In Malaysia the human resource allocation within this dedicated unit has facilitated detailed processing and analysis of even agencies with small health expenditure to culminate in relatively high quality NHA reporting including pharmaceutical expenditure. However in the absence of specific software for data uploads and analysis, much processing of each agency is done manually using Microsoft excel software. This has resulted in a relatively large workforce involved in regular NHA production.

Currently various categories and levels of staff from MOH are involved in NHA production inclusive of pharmaceutical expenditure reporting. Since the unit responsible for this activity is part of a government agency, staff employment is full time on salaried scale wages at full time equivalent (FTE) workload of 40 hours per week till retirement or resignation. There is a total of eight technical staff involved in data analysis with six supporting staff to conduct specific surveys, retrieve data and also do data entry. The current technical staff comprise of one senior medical officer, two junior medical officers, one research officer, one senior nursing staff, two senior medical record officers, one junior medical record officer. This relatively large number of staff was established as disruptions in NHA estimations can occur

due to various human resource matters such as young female staff employed in a country with policies that support population growth, older staff with potential medical conditions, organizations where promotions are linked to staff movements and so on. Furthermore each staff may have varying levels of expertise subject to differences in employment period, differences in technical capacity linked to varying categories and grades, as well as varying NHA related knowledge.

It is envisaged that more workforce would be required when Malaysia migrates to reporting both NHA and pharmaceutical expenditure using SHA 2011 framework. Ideally this would be additional nine staff with a combination of two senior medical officers, two junior medical officers or health accountants, one statistician, two research officers and two assistant research officers. All would be working at full time equivalent (FTE) workload of 40 hours per week. These staff who would have the advantage of knowledge and expertise in NHA production could conduct further analysis using NHA data that would be useful to policy makers. Malaysian experience in NHA production points in favour of engaging staff with some medical background as this facilitates better understanding of a complex health care system including various budgetary systems in both the public and private health care sectors. Even then any new staff would require some amount of training in understanding SHA 2011 framework, design relevant data collection instruments, create relevant analysis dummy tables, supervise data collection, and carry out the necessary analysis to produce various outputs including pharmaceutical expenditure.

5. CONCLUSIONS

This document suggest that countries like Malaysia where NHA is reported using SHA 2000 framework preliminary reporting of pharmaceutical expenditure based on SHA 2011 boundaries is feasible. Limitations such as difficulty in separation of pharmaceutical expenditure which forms an integral part of curative care should be clearly stated. Difficulties and challenges in TCAM expenditure reporting based on three-digit level MoP major category where these services are provided as part of allopathic therapy or in countries with poor documentation of TCAM expenditure should be clearly identified and addressed where possible.

Part II
Expenditure on preventive care (SHA HC.6)

1. INTRODUCTION

As resources are not infinite health related policy makers and health planners often require information on spending for different modalities of health care such as curative, rehabilitative,

terminal & palliative, as well as preventive & promotive care. Therefore it is not surprising that expenditures in these areas are also of interest to those involved in National Health Accounts (NHA) estimations.

In most health care system curative care consumes the largest proportion of health expenditure compared to that for prevention and promotion. The media is full of news about high spending associated with major illness, terminally ill, elderly health expenditure and so on. As policy makers and health planners continuously seek cheaper and cost effective solutions to these issues, data on expenditures related to illness and disease prevention and health promotion become vital. So too those involved in National Health Accounts (NHA) design methods to produce meaningful and useful expenditure data in these areas. One such area of data need is expenditure on preventive care.

2. PROCESS AND METHODOLOGY

SHA 2000 allocated function code HC.6 to prevention and public health services. Malaysia at the initial stages in institutionalization of NHA developed its own MNHA framework based on SHA 2000. Under this MNHA framework the boundaries of preventive and promotive expenditure corresponding to code HC.6 was designed to include expenditures on occupational health, food safety and drinking water quality control.

Ten years later SHA 2011 re-defines the boundaries of health function under the same code to only preventive care which is identified as any measure that aims to avoid or reduce the number or the severity of injuries and diseases, their sequelae and complications. SHA 2011 suggest further disaggregation of items under this preventive care to that for primary and secondary prevention. Expenditures for tertiary prevention is excluded as it is thought to often overlap with curative and rehabilitative care.

Malaysia developed the MNHA framework based on the earlier international framework with some modifications to respond to national policy maker and health planner data needs. Since Malaysia still uses SHA 2000 and MNHA framework to report the country NHA, the process and methodology in producing preventive expenditure disaggregates based on MNHA framework will be further described.

Scope and Framework of MNHA Preventive Expenditure (HC.6)

The MNHA framework preventive expenditure which can be mapped to SHA 2000 code HC.6 has further sub-classifications. As the bulk of spending for this is from MOH, the disaggregations of expenditure under this code was developed based on feasibility of data extraction from government accounting system in response to data required by policy makers and health planners. There are seven major disaggregations including expenditure for maternal and child health services, expenditure for school health services which is further disaggregated to medical and dental school health services, expenditure for communicable

diseases which is further disaggregated to that for HIV/AIDS, vector borne diseases, other preventive communicable diseases, expenditure for non-communicable diseases, expenditure for occupational health, expenditure for health promotion and education, and expenditure for food safety and drinking water quality.

MNHA Preventive Expenditure Analysis techniques

NHA time series data show that more than half the preventive expenditure comes from MOH, which is also the largest health care provider in the country. Since MOH has dedicated programmes for specific health prevention and promotion activities, the health expenditure can also be disaggregated according to these programmes and activities. The bulk of expenditure data for all these programmes and activities data can be obtained from the AG database. Some of the expenditure which cannot be disaggregated into the various higher digit MNHA codes are processed by an alternate analytical technique in the disaggregation of MOH preventive expenditure. This technique refers to the budget allocation proportions provided by various MOH divisions and units which are applied to each of the AG database disaggregated by programme and activity expenditure. This is a quick top-down approach which is less accurate than collecting the actual expenditure data directly from various providers under MOH.

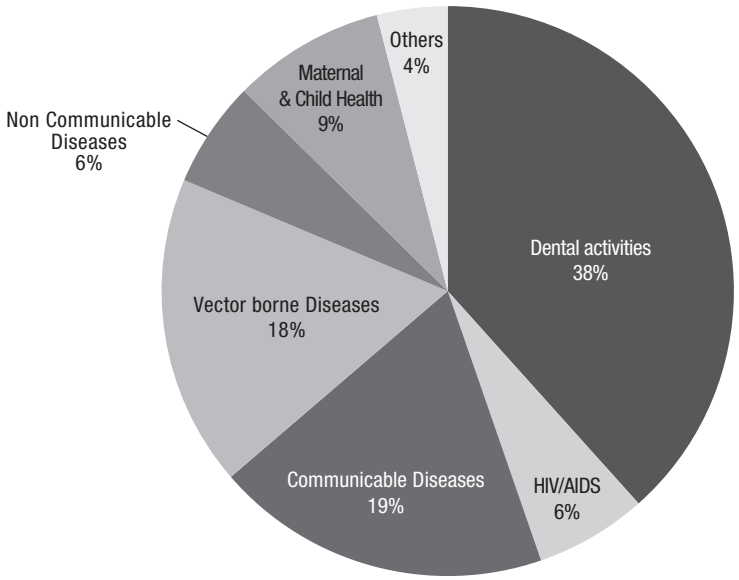
Preventive Expenditure Findings and Limitations

Since Malaysia is still using SHA 2000 framework currently the reporting of disaggregated expenditures for preventive care HC.6 can only be based on MNHA framework disaggregates which has seven major sub-classifications under this specific function code.

In general MOH is the largest provider and funder for preventive care. MNHA data shows that proportions of expenditure for various preventive care disaggregates have been quite similar throughout the fifteen year time period. As seen in Figure 3 the largest proportion was consumed for disease control which includes communicable diseases, non-communicable diseases and vector borne diseases, the last being policy priority based on disease trends in the country.

However there are some limitations in the current estimations as some disaggregates are based on budget allocations applied to data extracted from AG accounting database using programmes and activities codes. This approach to derive at preventive expenditure may not be the best way to report true preventive expenditure. However due to high policy relevance and constrained resources, the country will have to decide between rectification of this methodology or migration to SHA 2011 which will provide a different set of preventive expenditure data.

Figure 3: Proportions of MOH Preventive Care Expenditure, 2012



Data Verification Process

In view of policy relevance an additional data verification process was established to check the current top-down approach for reporting MOH preventive expenditure. Since relatively large amount of finance for these activities are disbursed through State Health Department a new MNHA survey was carried out at state level. The results of this bottom-up approach will be available only after the next cycle of MNHA data release.

Changes in Reporting

The previous SHA 2000 and MNHA framework defines this category (HC.6 or MF6) as expenditure for prevention and public health services. Although financial resources allocated to this function is meant for enhancement of population health status, often some of the finances are used for personal curative care and thus combination of the prevention component and services component in the coding system was pragmatic.

SHA 2011 has identified the code HC.6 solely for preventive care and specifically to primary and secondary preventive care. The disaggregation of this preventive expenditure under this new framework is very different from the existing MNHA framework as well as the existing government accounting system. As stated earlier in this document the migration to SHA 2011 reporting would require additional resources and expertise which can be obtained only with support from policy makers. Therefore policy makers who are often faced with limited resources for disbursements must be convinced of potential beneficial outputs from this new NHA framework. Ideally one way to acquire the necessary support would be the involvement of relevant policy makers with some related technical expertise from the inception period in preparation towards SHA 2011 migration. This approach was one of the useful lessons gained in the past during the development of national level MNHA framework. Those

involved in NHA estimations together with identified policy makers would have to identify the additional relevant information that could be useful for policy decisions. The garnering of policy maker support would be further fruitful if examples are produced of countries that have used some parts of SHA 2011 data for policy making.

Once the migration plan is ready the implementation phase may require some additional data collection and analysis to estimate preventive expenditure based on the new disaggregates. All these challenges will require some technical expertise in the design and implementation of this migration.

3. DOCUMENTATION OF ISSUES IN REPORTING

The scope and boundaries of preventive care expenditure under SHA 2011 is now better defined and specific compared to SHA 2000 or MNHA framework. The main SHA 2011 reference document has a table on the mapping of SHA 2000 codes to SHA 2011 codes. In addition some of the suggested disaggregation can be mapped from the existing MNHA framework. However there are disaggregates which do not conform to either activities under various Public Health Programmes nor the government accounting system. Some of the expected challenges that may be encountered during the migration are further described under the six suggested disaggregation of SHA 2011 framework.

There are some preventive care functions which will be hard to separate. For example, code HC.6.1 for information, education and counselling programmes relates to delivery of information, knowledge acquisition to bring about changes in attitudes and behaviour whereas code HC.6.3 for early disease detection programmes refers to screening and medical tests for specific diseases like cancer, diabetes, HIV, and so on. Often health providers in both the public and private sectors, conduct campaigns as a channel for information dissemination or delivery of counselling related to specific illness which may be followed by blood tests, BP examination, and other investigations. Therefore the accounting system would capture the expenditure for these activities as a bundled service which would be difficult to disaggregate into the two separate codes.

Similarly code HC.6.4 is allocated to monitoring of healthy conditions such as antenatal and postnatal care whereas code HC.6.2 is allocated for immunization programmes. However, it is common practice that during regular follow-up of a healthy pregnant mother or a newborn child to provide the mandatory pregnancy-related or routine childhood immunization at the same session as during the monitoring period. Another similar scenario would be situations when some providers conduct public health education session followed by relevant blood test as well as provision of specific immunization, all carried out during the same session. It would be challenging for NHA producers to disaggregate these expenditures into the separate codes.

SHA 2011 recommends that expenditure for programme design, monitoring and evaluation be allocated to code HC.6.5 as it falls under disease control programmes. The new framework also suggests that any regulation related activities linked to maternal and child health, or school health or even prevention of communicable diseases be allocated to code HC.7 instead of disaggregates of HC.6. However, often resources like personnel and finances allocated for these two activities are the same yet SHA 2011 recommends that the expenditure has to be separated under different codes. Even prorating expenditures based on workload or other proxies might be challenging for providers who would provide the necessary data.

Furthermore the MOH budgetary and accounting system which is the Accountant General financing system in the country follows a very different accounting system whereby it would be difficult to map some of the suggested preventive code disaggregation in SHA 2011 framework.

4. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

Malaysia has a mature and yet still expanding health care system with several providers from both the public and private sectors. The new format of SHA 2011 reporting is expected to provide additional information to all stakeholders involved in health care. However the collection, analysis and reporting of preventive expenditure data would most likely require specific NHA surveys and other innovative approaches. All these related activities can be achieved under the guidance of technical expertise with reasonable knowledge on SHA 2011 as well as knowledge on existing health care system in Malaysia.

As stated in earlier segment, Malaysia even with a bigger number of staff working on NHA compared to several regional countries will require additional workforce in the migration from SHA 2000 towards SHA 2011 reporting. There will be much work involved in understanding the existing public and private sector agencies accounting system that contribute to NHA estimations and extracting the necessary data to report in this new format. This would be several office visits and various agency engagements through discussions, meetings and other communications such as emails, telephone calls and so on to clearly understand the necessary data extraction in the estimations of preventive care expenditure. These activities are further challenging to communicate the different boundaries of preventive care in SHA 2011 to data submitters who have now become familiar with SHA 2000 framework. Ideally personnel involved in the delivery and accounting of various preventive care activities under public health function from various agencies should be engaged before beginning the design to capture preventive care expenditure. Likewise personnel involved in preventive care expenditure estimations should be familiar with the various functions of preventive care as well versed with various accounting system.

5. CONCLUSIONS

As the disaggregation of preventive expenditure varies quite significantly between SHA 2000 and SHA 2011, the reporting in this new format would be quite challenging even for those who are accustomed to various methods under health accounting. All these can only be achieved after gaining approval and additional support for necessary resources from higher level authorities and stakeholders who can provide additional data to derive at disaggregated preventive expenditure estimations of good quality.

MALDIVES

MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA/PACIFIC REGION

Ministry of Health

Abbreviations

HC 5.1	Consumption of Medical Goods
HSC	Health Service Corporation
IGMH	Indira Gandhi Memorial Hospital
MFDA	Maldives Food and Drug Authority
MoH	Ministry of Health
NGO	Nongovernmental Organization
NHA	National Health Accounts
NSPA	National Social Protection Agency
OOP	Out-of-Pocket
SHA	System of Health Accounts
STO	State Trading Organisation
THE	Total Health Expenditures
USAID	United States Agency for International Development
WHO	World Health Organisation

1. INTRODUCTION

This report is to help investigate country practices, assess the comparability of figures across countries and to improve estimates of spending on pharmaceuticals within the health accounts framework in the Asia/pacific region. As Maldives health sector is undergoing major changes during the last decade, the Government is revising its main policy document on health priorities, and at the same time moving to a system of national health insurance that will cover the whole population.

The Ministry of Health (MoH) coordinates and manages health sector and its reforms with major support from its main development partners such as the World Health Organization (WHO) and other donors like the World Bank and United Nations agencies, to implement government reforms and address key health sector systemic and operational issues. The MoH developed a health financing reform plan based on its priorities, and the National Health Accounts (NHA) was one of the priorities, that was developed in the year 2012.

National Health Account (NHA) is designed to give a comprehensive description of resource flows in a health-care system, showing where resources come from, and how they are used.

As a macroeconomic policy tool, NHA can assist the Government of Maldives in obtaining "the big picture" of the size, structure, and relative efficiency of the health-care sector. It allows the Government:

- to estimate the proportion of GDP spent on health care;
- to identify areas within the health system that may be operating less efficiently;
- to assess the alignment of the health-care system with national health policies; and
- to assist in evaluating the impact of national and health sector policies over a period of time.

First ever NHA study for the Maldives was conducted in 2012 based on the expenditure on 2011, when health service delivery was corporatized and health corporations were in place. However, in 2012 with the change of government and its policies, health facilities were moved back to MoH. To make comparisons possible MoH is trying to conduct another round of NHA soon.

The Maldives NHA study which was conducted in 2011 have used the methodology recommended in the Guide to Producing National Health Accounts (2003) prepared by WHO in collaboration with the World Bank and the United States Agency for International Development (USAID). The methodology is based on information matrices that allow four levels of analysis: (i) sources of health funds, (ii) financing agents handling funds, (iii) providers of services, and (iv) health functions. Furthermore, necessary modifications were made to the classification schemes to bring them in line with the Maldives national specifications as well as preparing the team to use the new System of Health Accounts (SHA

II) in the next round. Therefore, the first round of NHA was not done under the new system.

To adapt with the classifications the transactions were grouped so that each represents an important policy relevant aspect. To every extent efforts were made, to consider existing international standards and conventions when placing certain transactions into groups to assure international comparability of Maldives data. While preparing preliminary 2011 NHA tables, the NHA team relied on existing data sources but, when essential, additional efforts were made to compile the information.

The following is a list of the key components of the information matrices and levels of analysis was used in the NHA:

1. **Sources of health funds**

- Ministry of Finance and Treasury
- Private sector (employers and households)
- Donors and other sources.

2. **Financing agents**

- Public health sector (MOH, HSC, NSPA and other ministries, and public firms)
- Private health sector (household out-of-pocket, private insurance companies, NGOs, employer benefit schemes, etc.)
- Donors.

3. **Health providers**

- Government facilities (hospitals and health centres)
- Private facilities (hospitals and doctors)
- Private pharmacies
- Health administration providers
- Other providers
- Providers of other health-related functions.

4. **Functional classification of health**

- Inpatient care services
- Outpatient care services
- Medical goods and pharmaceuticals
- Preventive and public health services
- Health administration

- Other health-related functions.

2. PROCESS AND METHODOLOGY

The following sources were used for the NHA report:

- Ministerial accounts using the MoH Annual Report (Maldives Health Statistics 2011)
- Provider and facility-based surveys (time-use surveys, equipment and supplies surveys, and utilization surveys)
- Health Facility Registry (as at 13 November 2012)
- Annual Communicable Disease Report 2011
- Donor/lender records from the Donor Survey and "donations missions consultancies updates"
- NGO Survey
- Household Income and Expenditure Survey, Findings 2009–2010 (Department of National Planning, Ministry of Finance and Treasury, 22 May 2012)
- Census 2006
- Insurance Records Survey (public and private insurers)
- Traditional Healers Survey (NHA team 2013)
- Poverty Reduction in the Maldives (Asian Development Bank, January 2002)
- Interviews or expert opinions
- Health management information systems (Demographic and Health Survey 2009 (October 2010 publication)

Central purchasing and essential drugs programs

In case of the pharmaceutical expenditure the drugs in Maldives is thought to be higher than most neighboring countries with similar income levels. It is important to remember that this is an estimation of functional classification at the national level in Maldives.

Hence, in 2011 the government engaged in major health system reforms, transferring the responsibility of hospitals and health centers to eight health service corporations (HSC). The State Trading Organization or STO is a public company with 92.00% of the shares owned by the Maldivian Government with the rest 7.71% being held by the public. STO provides pharmaceutical drugs and other medical items to public consumers and corporate clients such as Indira Gandhi Memorial Hospital, local pharmaceutical companies and the regional hospitals. They have contacts with trusted manufacturing sources of multinational

businesses from where they supply pharmaceutical drugs to meet their customer's needs. STO reflect on a vigorous procedure to verify any new supplier and ensures that all their distributions are permitted by Maldives Food and Drugs Authority.

Table 1. Equity in distributing the function

Expenditures by Functions	Amount MVR	%	Amount USD	Per capita USD
Services of curative care	1,847,970,152	66.8%	$ 119,842,422	$ 375
Ancillary services to health care	2,990,018	0.1%	$ 193,905	$ 1
Medical goods dispensed to out-patients	470,488,294	17.0%	$ 30,511,562	$ 95
Prevention and public health services	51,558,748	1.9%	$ 3,343,628	$ 10
Health administration and health insurance	295,300,385	10.7%	$ 19,150,479	$ 60
Health Related functions	98,265,693	3.6%	$ 6,372,613	$ 20
Total	**2,766,573,290**	**100%**	**$ 179,414,610**	**$ 561**

Sources: NHA 2011

The Equity in distributing function (Table 1) findings shows that a total of 17% was spent on drugs as total health expenditure while the total of US $ 30,511,562 was spent as expenditure for medical goods dispensed to out-patients.

Table 2. Summary of National Health Accounts Findings, 2011

Summary NHA Results	Amount in MVR	USD	USD/Cap
Population	320,000		
Exchange Rate $1=	15.42		
THE	***2,766,573,290***	***USD 179,414,610***	***USD 561***
Government Budget on Health	*1,217,423,491*	*USD 78,950,940*	*USD 247*
Total Government Budget	*12,824,579,283*		
GDP Estimates for the Maladives - 2011	*29,936,000,000*	*USD 1,941,374,838*	
GDP Per Capita	*93,550*	*USD 6,067*	
Govt Expenditures on Health per Capita	*3,804*	*USD 247*	
Total Expenditures on Health per Capita	*8,646*	*USD 561*	
THE as Percent of GDP	*9.2%*		
Public Sector Exp as % of GDP	*4.4%*		
Private Sector Exp as % of GDP	*4.8%*		
MOHF as Percent of Government Budget	*3.1%*		
THE as Percent of Government Budget	*21.6%*		
HH OOP over THE	*49%*		
Drugs over THE	*17.0%*		

Note: Maldives population: 320 000; Exchange Rate: MVR 15.42 for US$ 1.0.
Sources: NHA 2011

Table 2 above shows that the total national health expenditures in Maldives amounted to MVR2 766 million (US$ 179 million) in 2011 fiscal year, with per capita health spending of MVR8 646 (US$ 561). Health spending as a share of GDP came to 9.2% representing a high range for low and middle-income countries.

Table 3. Finacing Schemes – Health care functions

Financing Schemes Health Care Functions		Governmental schemes and compulsory health Insurance			Voluntary health care payment schemes	Household out-of-pocket payment	Rest of the world financing schemes (non resident)	Providers Total
		Ministry of Health and Family Scheme	Health Service Corporation Scheme	Compulsory health Insurance (NSPA Scheme)				
		HF1.1	HF1.2	HF1.3	HF2	HF3	HF4	
HC.1	Curative care		669,141,141	61,395,645	122,209,095	995,224,271		1,847,970,152
HC.2	Rehabilitative care							-
HC.3	Long-term Health Care							-
HC.4	Ancillary services not specified by function		2,990,018					2,900,018
HC.5	Consumption of medical goods	10,785,384	709,847	181,459,639	27,467,497	250,065,925		470,488,294
HC.6	Preventive care	36,698,893					14,859,855	51,558,748
HC.7	Governance, management and health Admin	134,243,141	138,819,968	7,282,682	14,954,593			295,300,385
HC.8	Other Health Care Functions							-
HC.9	Health care related Function - Rest of Economy	38,672,501		677,250			58,915,942	98,265,693
all HC all functions		220,399,919	811,660,976	250,815,216	164,631,185	1,245,290,196	73,775,797	2,766,573,290

Sources: NHA 2011

Financing schemes in line with health care functions SHA HC.5.1 (Table 3) consumption of medical goods have been sub categorized to Government schemes and compulsory health insurance where they are shared with MoH Scheme, Health Service Corporation and Compulsory health Insurance. Along with them, consumption of medical goods has been sub categorized to Voluntary health care payment schemes, Household schemes and rest of the world financing schemes (non-residents).

Therefore, the details shows that the total consumption of MVR470,488,294 has been breakdown among MoH&F Scheme for MVR10,785,384 while Health Service Corporation has MVR790,489, and Health Service Corporation and Compulsory health Insurance spends MVR181,459,369. Likewise, Voluntary health care payment schemes spends MVR27, 467,497 whereas Household schemes consists MVR250, 065,925. However, there is no consumption for the rest of the world financing schemes (non-residents) according to the study that was conducted by the NHA team.

3. FINANCIAL AND HUMAN RESOURCE REQUIREMENT

STO Peoples Choice Medicals and STO Peoples Choice Pharmacy play an important role to

provide high quality pharmaceuticals and medical items to the consumers and our corporate clients at affordable prices. They holds the main stores of pharmaceuticals and is responsible to supply the Pharmacy and a number of other Corporate Clients which include the IGMH, the Regional Hospitals and a number of other Chemists and Pharmacists in Malé and other islands.

STO targets to reach 188 pharmacies in various islands of Maldives to provide their services to the end customers whereby now they have reached to 100 pharmacies. The human resource of 400 staffs at Medical Department along with a strong specific logistic and HR team for supplying pharmaceutical drugs makes up a great bond to undertake the pharmaceutical expenditures compilation exercise.

4. CONCLUSION

The actual volumes of health expenditure described in the first ever NHA report in Maldives reflects several strengths as well as shortcomings in the existing system and data in the Maldives. The main challenges faced was that the lack of data available for the study of NHA and the data regarding pharmaceutical expenditure. Moreover, the data on the private pharmaceuticals market were derived mainly from the Provider Survey as well as from the 2012 Pharmacy List of MoH. Therefore, there is very little knowledge about the cost of drugs and medical supplies, as most are covered by the health insurance scheme and provided mostly by the private chemists distributed across the country. The challenge that was highlighted by the State Trading Organization was lack of infra structure from some areas of Maldives to open their pharmacies in order to provide their services. Furthermore, necessary modifications were made to NHA 1 for the classification schemes to bring them in line with the Maldives national specifications as well as preparing the team to use the new System of Health Accounts (SHA II) in the next round.

PAKISTAN

MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA/PACIFIC REGION

1. INTRODUCTION

Pakistan National Health accounts were started in 2008. National Health accounts are housed in Pakistan Bureau of Statistics (PBS). The first round of NHA covered the year 2006. So far four round of NHA are completed. The NHA in Pakistan used methodology and classification of health accounts developed by the World Health organization. However it plans to use SHA II (2011)

The health accounts are now routinely published by PBS. It provides a detailed source and agent classification. The object and functional classification is yet to be carried out.

Part I
Expenditure on Pharmaceutical (SHA HC.5.1 and HC.RI.1)

2. PROCESS AND METHODOLOGY

Pharmaceutical expenditure is only reported for out-of-pocket health expenditure in Pakistan. It is reported as a type of Out-of-Pocket health payments in the national income and expenditure survey namely Household integrated economic survey. The survey is routinely conducted. The recent round of HIES was conducted in 2009-10 and 2010-11. It is reported on one year recall basis. It includes expenditure on medicine, vitamins and equipment. The other classification of OOP health payments are doctor's fee and hospitalization, travel cost and durable goods. Due to common GP practice it is likely that some medicine expenditure is reported in the category of doctor fee. As in many cases the doctor fee includes medicine charges. Moreover since medicine prescription and dispensing is not exclusively separate in Pakistan so it is likely the doctors' fees may include cost of medicine.

The government expenditure on health does not allow this detail due to object classification. Medicine expenditure is reported in the sub head classification on "operating expenses". Further breakup of this head is not possible according to appropriation account of the Account general of Pakistan Revenues.

The NHA in Pakistan uses methodology developed by the WHO for low and middle income countries. This methodology is slightly different from OECD for example it includes a classification on traditional medicine which is not included in SHA.

3. DOCUMENTATION OF ISSUES IN REPORTING

The medicine expenditure reported in HIES is aggregate level. It is not possible to estimate further breakup of medicine into prescribed medicine, over the counter medicine and other medical and durable goods. However it is possible to analyze medicine expenditure in association to other types of OOP health payments. For instance household reporting only medicine expenditure can be assumed as self-prescription. While household reporting OOP payments on medicine as well as OOP on doctor's fee can be assumed to be expenditure on prescribed medicine.

The other functional classification of medicines such as preventive care would not be possible. Nor it is possible to extract expenditure on medicine from OOP payments on hospitalization.

4. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

A minimum of 15 days of a health economist would be required to compile medicine expenditure form HIES data set and its possible classification. A data analyst would also be hired for a period of three months to assist in data compilation and classification. A total of USD 10000 would be required to estimate medicine expenditure as detailed above.

5. CONCLUSION

Health accounts in Pakistan are still at initial stages. The institutional capacity of compiling accounts data is limited due to technical expertise and lack of detailed breakup of health expenditure data at private and public levels.

Part II
Expenditure on preventive care (SHA HC.6)

6. PROCESS AND METHODOLOGY

Expenditure on preventive care can be compiled from the accounts of government of Pakistan. Only secondary data will be used. The national health accounts data for the first round (2005-06) is available. This data is based on National accounts classification of different functions of health expenditure. This includes government expenditure on curative services, other health facilities and preventive programs, expenditure on maternal and child health and research and development etc.

Majority of preventive programs are funded by the federal government and the provincial government. These programs in some cases have explicit functions such as Expanded Program on Immunization (EPI) is a vaccination program. While in other cases some of these programs perform multiple functions such as National Program for Primary Health Care and Family Planning (NPHC&FP) focuses on health education, early disease detection and prevention.

National Health accounts use WHO methodology for compilation of health accounts. This is an adaptation of SHA to the needs of developing countries.

Boarder functional classification would be used this can be cross tabulated with object classification such as staff salaries, capital investment and operating and other expenses. The financing agent/scheme classification would also be possible in the given data set of NHA.

An expert panel would be constituted to formulate the assumptions for further classification of preventive health expenditure. The expert panel will review the targets of the program/ scheme which have multiple functions of preventive care. On the basis of this review different functions would be assigned weights. These weights would be used to distribute expenditure across different preventive function of the program. Similar methodology would be used for such programs that have overarching preventive and curative services. For example National HIV AIDs program has a health education and counseling and curative care components.

7. DOCUMENTATION OF ISSUES IN REPORTING

The SHA classification of preventive care would be used and adopted to data. It would be ensured that the same classification is used; however in some cases it would be difficult to obtain data for certain types of classification. For example the disaster preparation and emergency response data is not included in NHA 2005-06 dataset. This data would be obtained from other agencies and might not have the same classification as of NHA and this expenditure is as an aggregate. In such case the cross classification of this data into source/ agent and object would not be possible.

8. FINANCIAL AND HUMAN RESOURCE CLASSIFICATION

Most of the work would be desk review, analysis and classification of secondary data. In some case field visits would be required to obtain additional data. A health economist would supervisor this research work. Total of 30 days of the health economist would be required. Data analysts would be hired for 6 months period. A total of USD 20000 would be required for the estimation of preventive care expenditure.

9. CONCLUSION

The estimation of medicine expenditure and preventive expenditure is not yet carried out in Pakistan. Such classification would provide an important policy direction for resource allocation. Since this analysis would be carried out on data from the first round of NHA it would serve as benchmark for future analysis of such nature. The combined cost of the research work would be around US43000. The project would be competed in less than one year. No-cost for an extension of three months would be requested only once if problem faced in data collection etc.

SRI LANKA

MEASURING EXPENDITURE ON PHARMACEUTICALS AND PREVENTIVE CARE WITHIN THE HEALTH ACCOUNTS FRAMEWORK IN THE ASIA/PACIFIC REGION

Institute for Health Policy

Colombo, Sri Lanka

http://www.ihp.lk

Abbreviations

CDDA	Cosmetics, Devices and Drugs Authority
DAC	Development Assistance Committee
DCS	Department of Census and Statistics
HA	Health Accounts
HC.RI.1	Total Pharmaceutical Expenditure (TPE)
HC.6	Preventive Care
HIES	Household Income and Expenditure Survey
IHP	Institute for Health Policy
JICA	Japan International Cooperation Agency
MOF	Ministry of Finance
MOH	Ministry of Health
MSD	Medical Supplies Division
n.e.c.	not elsewhere classified
NPI	Non Profit Institution
NSACP	National STD AIDS Control Programme
OECD	Organization for Economic Cooperation and Development
OOP	Out-of-pocket
OTC	Over-the-counter
PDoHS	Provincial Department of Health Services
RMSD	Regional Medical Supplies Division
SHA	System of Health Accounts
SLHA	Sri Lanka Health Accounts
SLNHA	Sri Lanka National Health Accounts
SLPA	Sri Lanka Pharmaceutical Audit
THE	Total Health Expenditure
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization

1. INTRODUCTION

1. The framework of the Sri Lanka Health Accounts (SLHA) system was developed during 1998-2000 by a Ministry of Health (MOH) project, and was designed to be compatible with the OECD System of Health Accounts (SHA) (Fernando, Rannan-Eliya, and Jayasundara 2007). The first estimates covered the period 1990–1999, and were released in 2001 (Institute of Policy Studies and Ministry of Health Sri Lanka 2003). Estimates are reported according to two frameworks, the MOH-approved Sri Lanka National Health Accounts (SLNHA) framework that was designed to meet national needs, and the OECD SHA 1.0 framework which was intended to support international comparisons. Subsequent updates have extended and revised the series on an annual basis, with the latest estimates covering the 1990–2012 period. Each annual release updates previous releases to take account of new data or methods. In 2015, the Institute for Health Policy (IHP) plans to start reporting estimates according to all three frameworks, SLHA, OECD SHA 1.0 and SHA 2011, and including SHA 2011 estimates for the full period from 1990.

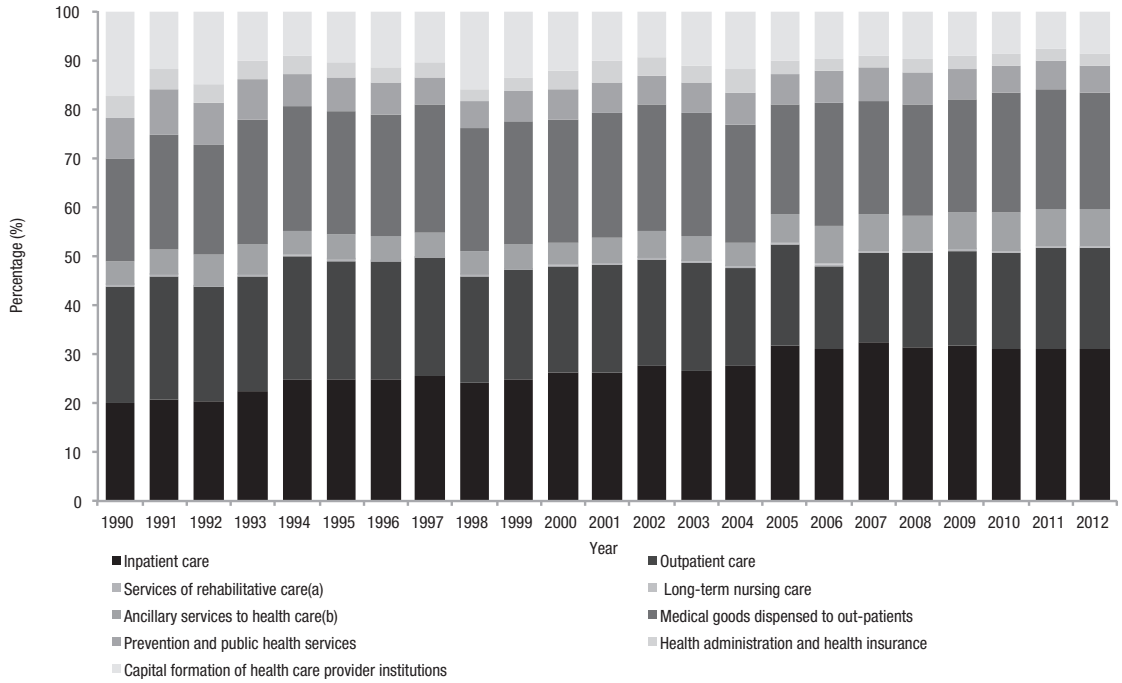
2. SLHA data collections and analysis are done by IHP staff with significant cooperation of government and private agencies. Secondary data is obtained from a range of government agencies, including the Ministry of Finance (MOF), Provincial Councils, the national statistical authority (Department of Census and Statistics (DCS)), and private agencies including private healthcare providers.

Part I
Expenditure on pharmaceuticals (SHA HC.5.1 and HC.RI.1)

2. PROCESS AND METHODOLOGY

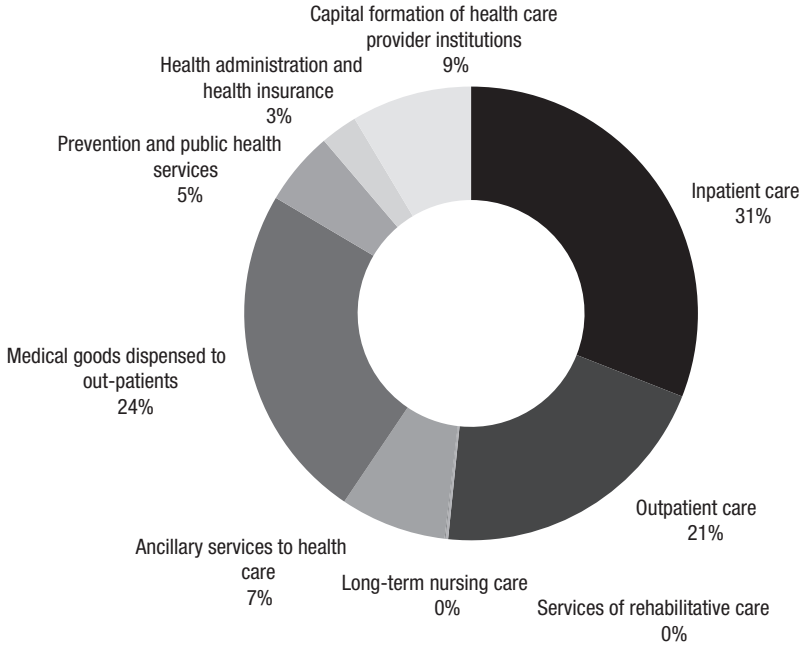
3. As Figure 1 and Figure 2 illustrate, medical goods dispensed to outpatients accounts for the second-largest component of healthcare spending, comprising 24% of total health expenditure (THE) in 2012. This category includes sales of medicines and other medical goods in the private sector via pharmacies and other retailers, as well those provided to outpatients in the public sector via outpatient dispensaries and related facilities. The bulk of this spending is privately financed, mainly through household out-of-pocket (OOP) spending; medicines distributed in the public sector are financed by the government and are thus provided free-of-charge to patients.

Figure 1: Total health expenditure by function (%), 1990-2012



Source:Amarasinghe et al. (2014)

Figure 2: Total health expenditure by function (%), 2012



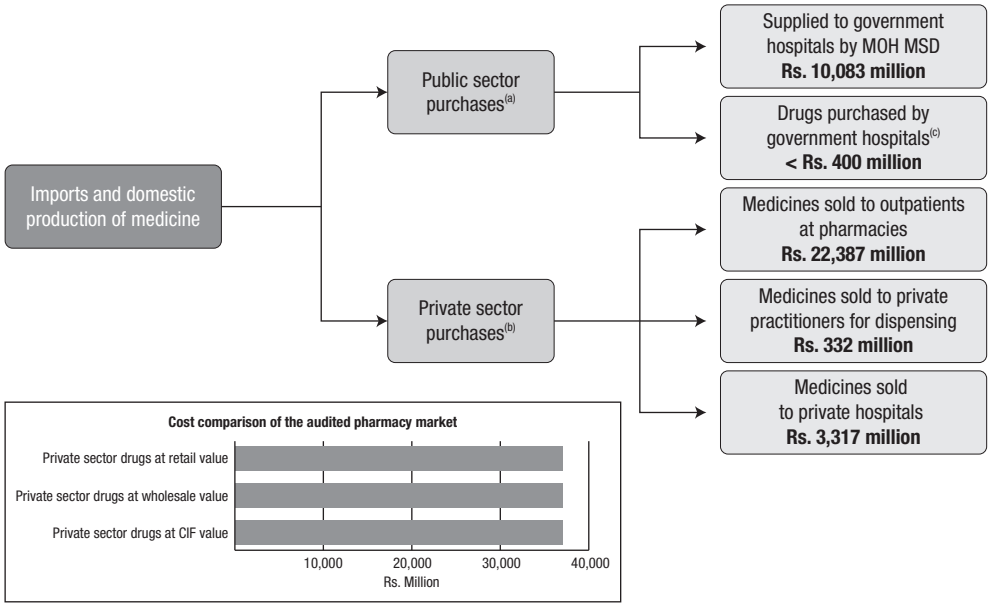
Source: Amarasinghe et al. (2014)

4. Figure 3 provides an overview of overall expenditure on medicines in Sri Lanka's health sector in 2012. Other than the supplies of medicines to outpatients by pharmacies and government outpatient departments, the use of medicines by public and private hospitals and dispensing doctors is substantial. Public financing dominates financing of medicines used in inpatient care. Government expenditure on medicines to inpatients is far greater

than the amount it spends on outpatient medicines, and also greater than the amount spent on inpatients in the private sector. 52% of all medicines by volume were financed by the government in 2009; however, as the government procures medicines at far lower prices than the private sector, it accounted for only 24% of total spending (Amarasinghe et al. 2013).

5. Almost all medicines (~96%) supplied in the public sector at all levels are purchased and distributed by the Medical Supplies Division (MSD) of the MOH, which also holds the main budget for medicines at both national and provincial levels. The MSD directly supplies healthcare facilities administered by the MOH and Regional Medical Supplies Divisions (RMSDs). The RMSDs, usually one in each district, in turn supply facilities administered under the Provincial Department of Health Services (PDoHS). In the event of a shortfall in stocks, hospitals under the MOH and PDoHS are authorized to purchase a limited volume of medicines from private wholesalers and retailers, the cost of which is subsequently reimbursed by the MSD. Approximately 4% of medicinal spending consists of self-purchases.

Figure 3: Flow of expenditure on medicines in the health sector, 2012



Source: Amarasinghe et al. (2014)

(1) Public sector purchases are mostly made by the Ministry of Health Medical Supplies Division and then distributed to government health institutions.

(2) Private sector expenditure at CIF (cost, insurance and freight) prices

(3) This refers to the small quantities of medicines that some government hospitals are permitted to self-purchase from their own budgets

Note: Public sector expenditure is valued in terms of actual purchase prices paid by MOH and MOH institutions. Private sector expenditure is valued in terms of wholesale prices, which are the prices normally paid by retailers to obtain their stocks. Actual retails prices paid by pharmacy customers are higher, as illustrated in the inset box. Wholesale prices are in turn higher than CIF prices which are what imported medicines cost when landed at the port.

6. IHP tracks and profiles pharmaceutical expenditure in the public sector in four steps. First, the total aggregate of public sector expenditure on medicines is estimated using figures reported in audited government accounts compiled by the Ministry of Finance. Second, inventory data supplied by MSD on the volumes of medicines issued to its different distribution points and their inventory cost are used to determine the allocation of medicines expenditure to major hospitals (each of which is its own distribution point) and to different provinces and districts. Third, data collected in various facility costing surveys conducted between 1992 and 2007 are used to estimate how the cost of medicines in a particular province or district is distributed between different types of government facilities. Fourth, data collected from facility cost surveys are used to estimate the distribution of medicinal expenditure (valued at cost) between inpatients and outpatients at government hospitals. In most cases, inpatient-outpatient ratios were estimated based on a sample of medicines recorded in hospital inventory lists, as in most cases, this data is not computerized.

7. Distribution of medicines in the private sector takes place mainly through retail pharmacies, while the remainder consists of medicines supplied by dispensing doctors and provided by private hospitals to their inpatients. Expenditure on medicines sold by retail outlets, primarily pharmacies, is assessed based on data reported in the regular Sri Lanka Pharmaceutical Audit (SLPA), conducted by IMS-Health Sri Lanka. IMS-Health Sri Lanka reports sales at wholesale prices by pharmacies, and excludes medicines utilized by private hospitals and dispensing doctors. The IMS-Health SLPA has also excluded from its coverage the Eastern and Northern provinces, because the internal conflict that lasted until 2009 prevented IMS-Health establishing a survey operation in those areas from the time the SLPA was established. Although the ending of the conflict removed that impediment, it has taken some time for IMS-Health to expand its operations. Therefore, during SLHA estimation, adjustments are made both for non-coverage of these provinces and for the differences between the wholesale and retail prices. Pharmacy sales are estimated for the two non-covered provinces using an adjustment factor based on additional information provided by industry sources. In future, it is anticipated that this adjustment will eventually not be needed, as SLPA coverage is expanded to the whole country.

8. IMS-Health data is routinely crosschecked with estimates of OOP spending on medicines via household surveys usually conduced by the DCS once in three years, given that the majority of such spending is at private pharmacies. However, demand-side survey estimates differ from IMS-Health estimates significantly and show considerable intertemporal inconsistencies owing to non-sampling biases. For these reasons, as well as the fact that IMS-Health data is available annually, SLHA only uses supply-side data for estimating medicinal spending. This is consistent with the approach outlined in the OECD guidelines on private expenditure measurement (Rannan-Eliya and Lorenzoni 2010).

9. Considering expenditure on medicines in the private sector, such estimates can be valued in different ways, depending on whether the cost is taken at the point of importation, at the wholesaler-level or at the point of sale to patients (see inset chart in Figure 3). The latter price in the case of pharmacies also includes the mark-up on medicines, which is used to cover the operating costs of running pharmacies. When making comparisons between public sector and private sector purchases, it is arguably better to use the values of expenditure at wholesale prices in the private sector. The SLHA itself reports pharmacy sales at retail prices, in the SLHA functional category referred to as "pharmaceuticals and other medical non-durables", and also in SHA functional category HC. 5.1.

10. The SLHA functional classification of medical goods dispensed to outpatients and corresponding definitions are shown in Table 1. SLHA categorizes expenditure on traditional medicines by extending the SHA 1.0 classification with two additional subcategories, namely *traditional medicines* (SLHA-HCF. 5.1.3) and *other medical goods dispensed to outpatients n.e.c* (SLHA-HCF. 5.9). This reflects a decision by MOH that the SLHA framework should distinguish between Western (i.e., allopathic) and indigenous (i.e., non-allopathic) forms of medical services and products, reflecting the official recognition of these different forms of medicines in Sri Lanka as distinct systems with their own licensing and policy arrangements.

11. Public expenditure on traditional medicine is obtained from MOF but estimates for medical goods dispensed to outpatients are not separated from outpatient curative care expenditure owing to lack of data. Private expenditure on traditional medical goods dispensed to outpatients is estimated using household survey data.

Table 1: SLHA definitions for the functional classification of medical goods dispensed to outpatients

SLHA code	Category title	SLHA category description	ICHA-HC code (SHA 1.0)
HCF.5	Medical goods dispensed to outpatients	This category includes medical goods dispensed to outpatients and the services connected with dispensing such as retail trade, fitting, maintaining and renting of medical goods and appliances. This includes medical goods dispensed under both western and traditional medicine.	HC.5
HCF.5.1	Pharmaceuticals and other non-durables	This comprises of pharmaceuticals such as medicinal preparations, branded and generic medicines, drugs, patent medicines, serums and vaccines, vitamins and minerals and oral contraceptives. This includes both allopathic and non-allopathic medicines.	HC.5.1
HCF.5.1.1	Prescribed medicines	Medicines exclusively sold to customers with a prescription, and include both branded and generic products.	HC.5.1.1

SLHA code		Category title	SLHA category description	ICHA-HC code (SHA 1.0)
	HCF.5.1.2	Over-the-counter medicines	Expenditure on non-prescription medicines.	HC.5.1.2
	HCF.5.1.3	Traditional medicines	Expenditure on medical goods dispensed by indigenous or traditional health care providers.	HC.5.1.3
	HCF.5.1.9	Other pharmaceuticals and medical non-durables n.e.c.	This item refers to expenditure on medical non-durables such as bandages, elastic stockings, incontinence, condoms and other mechanical contraceptive devices.	HC.5.1.3
HCF.5.2		Therapeutic appliances and other medical durables	This includes a wide range of durable goods such as glasses, hearing aids and other medical devices.	HC.5.2
	HCF.5.2.1	Glasses and other vision aids	This covers corrective eyeglasses and contact lenses as well as the corresponding cleansing fluid and the fitting by opticians.	HC.5.2.1
	HCF.5.2.2	Orthopaedic appliances and other prosthetics	This comprises orthopaedic appliances and other prosthetics such as orthopaedic shoes, artificial limbs and other prosthetic devices, orthopaedic braces and supports, surgical belts, trusses and supports, neck braces.	HC.5.2.2
	HCF.5.2.3	Hearing aids	This category covers all kinds of removable hearing aids including expenses on cleaning, adjustment and batteries.	HC.5.2.3
	HCF.5.2.4	Medico-technical devices	This comprises a variety of medico-technical devices such as wheelchairs.	HC.5.2.4
	HCF.5.2.9	Other therapeutic appliances and medical durables n.e.c.	This comprises a wide variety of miscellaneous durable medical products not elsewhere classified such as blood pressure instruments.	HC.5.2.9
HCF.5.9		Other medical goods dispensed to outpatients n.e.c.	This refers to expenditure on medical goods dispensed to outpatients by non-allopathic, non-indigenous, non-traditional health care providers.	HC.5.1.1

3. DOCUMENTATION OF ISSUES IN REPORTING

12. In the early SLHA annual releases, the functional category for medicines dispensed to outpatients (HC.5.1) did not include medicines provided by government hospitals to outpatients owing to lack of data and adequate methods. However, upon conducting a fresh analysis of public facility costing data obtained in multiple survey rounds, taking account of and adjusting for differences in study methodologies and definitions, such data was included from 2010. Following SHA 1.0, SLHA estimates do not include expenditure on medicines

and medical supplies used for inpatient care in public and private hospitals; this expenditure is included in the category of inpatient expenditure.

13. It is relatively easy to map and report pharmaceutical expenditure by financing agents/schemes categories, given the almost complete segregation of public and private financing flows. As the total pharmaceutical expenditure financed by the government is available in its audited accounts data, the only challenges are to estimate the proportion that is spent on medicines supplied to outpatients, and the distribution of spending between different types of public providers. In the case of private expenditure, which is essentially at private pharmacies, the only challenge is to estimate the proportion of expenditures financed by employers and commercial medical insurance schemes. Relatively robust estimates of both types of financing are available at an aggregate level; the major uncertainty is what proportion of each is spent on medicines. The latter proportion is based on a number of studies that have occasionally analysed medical insurance claims data.

14. In order to estimate HC.RI.1, an assessment of medicines and supplies utilized in private hospitals and by general practitioners is required. Approximate estimates are feasible using unpublished IMS-Health information, but as IMS-Health does not officially audit these two distribution channels, these estimates are subject to some error, and so current SLHA estimates do not report estimates of HC.RI.1 spending. Another problem is that current international standards do not provide adequate guidance on how medicines should be valued for this component, which matters since medicines can be valued at import cost (CIF), wholesale price and retail price in many cases.

15. Disaggregation of pharmaceutical expenditure by over-the-counter (OTC) and prescribed medicines is not straightforward nor necessarily meaningful in the Sri Lankan context. Although Sri Lankan regulations do differentiate between those medicines that must be supplied only with a prescription and those which are OTC, these regulations are in practice not enforced, with a few exceptions such as anti-malarials and opiates. For this reason, SLHA estimates do not currently make this distinction. However, detailed data collected by IMS-Health would allow estimation of this disaggregation if the categorization as based purely on de jure distinctions.

16. IHP is in the process of classifying pharmaceuticals as prescribed and OTC medicines, using the data collected by IMS-Health Sri Lanka and considering current regulations. The government of Sri Lanka regularly publishes a list of drugs registered under the Cosmetics, Devices and Drugs Authority (CDDA), the institution vested by the MOH with the responsibility of ensuring that pharmaceuticals, medicinal devices and cosmetics available to the public meet the required standards of quality and are within the existing legislative framework with respect to the production, marketing and dispensing of these items. Each drug is listed with its generic name, brand name and a corresponding "schedule" that determines the licencing requirements required for sale of the drug and whether or not

a prescription is required. As Table 2 illustrates, drugs listed under Schedule 1 and Schedule 2A refers to drugs that can be purchased without a prescription, while Schedule 2B and 3 can only be sold on a prescription issued by a registered medical practitioner. This listing can serve as a starting point to classifying drugs as OTC or prescribed medicines.

Table 2: Schedule of drugs

Schedule	Description	Example
Schedule 1	Drugs which can be sold by a non-licenced holder, considered "household remedies"	*E.g.*, aspirin, paracetamol
Schedule 2A	Drugs which can only be sold by a registered medical practitioner (pharmacists), but without a prescription	*E.g.*, compound ephedrine tablets, iron and B. Complex tablets
Schedule 2B	Drugs which can only be sold on a prescription issued by a registered medical practitioner	*E.g.*, antibiotics
Schedule 3	Drugs listed as "Dangerous"; these can only be supplied on prescription from a registered medical practitioner, only by a licenced retailer of drugs and only on premises licenced by the Authority for the purpose.	*E.g.*, morphine

Source: Jayakody (1994)

17. It should be noted that is not uncommon in Sri Lanka for drugs that require prescription to be sold over-the-counter at retail outlets. As per SHA 2011 guidelines which define OTC drugs as "all pharmaceuticals…which may or may not be available without prescription but have been purchased independently", such purchases of drugs should be classified as OTC. Similarly, there could be instances where drugs that can be purchased as OTC are provided in response to a prescription issued by a licenced medical practitioner or pharmacist; as per SHA guidelines, such expenditure should be classified as prescribed medicines and not OTC (OECD 2012). If the methodology described in paragraph were used, such cases would be incorrectly classified. Therefore, an estimation procedure is needed to reclassify such expenditure according to SHA 2011 definitions.

4. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

18. Although a *de jure* distinction can be made between OTC and prescribed medicines, the actual distinction for SHA purposes depends on how the specific items are obtained by patients from pharmacies. Owing to the current state of enforcement of regulations, this can only be determined by conducting surveys of pharmacy sales, which would require additional resources not available currently to the SLHA team. In addition, a study on pharmaceutical utilization and expenditure needs to be carried out to gather expenditure at private providers, which too will require additional resources in terms of human resources and money.

5. CONCLUSIONS

19. Sri Lanka's HA estimates fully adhere to SHA classifications when reporting expenditure on medicines. Overall estimates are considered quite reliable owing to the data sources used. The main unresolved areas are the accurate differentiation of medicines provided to outpatients into OTC and prescribed medicines, and the measurement and valuation of medicines provided to inpatients by hospitals and distributed by dispending doctors.

Part II
Expenditure on preventive care (SHA HC.6)

6. PROCESS AND METHODOLOGY

20. Preventative and public health service expenditure comprises the smallest component in recurrent health spending in Sri Lanka. Preventive health activities are predominantly carried out by the public sector, while the rest comes from donor agencies and non-profit institutions (NPIs).

21. As Figure 1 illustrates, expenditure has fallen from 8.4% of total health expenditure (THE) in 1990 to 5.3% in 2012. This decline has been solely due to a decline in central MOH expenditure. This, in turn, is largely explained due to a decline of more than 80% in malaria control expenditure, and a modest reduction in spending by the Family Health Bureau (FHB), the unit responsible for implementation of maternal and child health (MCH) programmes of the MOH. The decline in malaria control expenditure was due to adoption by the health ministry of a more efficient vector-control strategy in the late 1990s in accordance with WHO recommendations, and thus represents a productivity improvement, and then subsequently to the scaling down of spending on malaria control as domestic transmission of malaria was ended in late 2012 and the country entered the elimination phase of malaria control (Wickremasinghe and Newby 2014).

22. Public sector preventative health activities, accounting for more than 60% of financing for preventative care activities, are conducted by the line ministry (MOH), provincial councils and local government authorities, with most spending being by the first two. Data on public sector expenditure is gathered from government accounts maintained at the MOF, provincial councils and local government authorities. At the provincial level, preventive care expenditure is only reported at an aggregated level. Therefore, functional allocations percentages are estimated based on detailed studies conducted in previous rounds of SLHA.

23. Local government authorities mainly involve themselves in activities such as food hygiene and vector control. Their spending is assessed by biennial, mail surveys of their spending. Questionnaires are sent out to all local government authorities to gather

expenditure, with the questionnaire design currently used based on a detailed study of local government authority preventive services that was conducted by IHP in collaboration with MOH and the World Bank (Gupta et al. 2013).

24. The methodology used to estimate funding from external donors consists of direct data collection from donor agencies, supplemented by cross-validation using databases maintained by the Finance and Health Ministries, data reported annually by major donor countries and agencies to the Development Assistance Committee (DAC) of the OECD and annual/financial reports of donor agencies.

25. External donor financing in Sri Lanka consists mostly of grants and, to a lesser extent loans, and is channelled in two ways. Funds from most major donors, such as the World Bank and Japanese International Corporation Agency (JICA), are passed through the Treasury, while the rest is sent directly to the programme or institution administers the funds. Donor funds channelled through the Treasury is not classified as external financing in SLHA estimates, and is, instead, reported as government financing. This reflects the fact that this expenditure is already incorporated into the government budget and is reported as such by the government. It is also important to note that foreign loans from agencies, such as the World Bank, must ultimately be paid back from general revenue taxation, and so the ultimate source of financing remains the government, and by extension Sri Lankan households who finally pay all taxes.

26. The external donor financing reported in the SLHA estimates consists only of amounts that have not been channelled through the Treasury, and instead have been transferred directly from external donor agencies to the actual healthcare providers. These funds are mostly the financing coming from agencies such as WHO and UNICEF. However, even if external donor financing channelled through the Treasury is included, total donor funding typically accounts for less than 7% of total public spending.

27. Expenditure by NPIs is routinely tracked through annual reports of selected large NPIs and occasional surveys. A mail survey of NPIs was significantly revised and carried out in 2011, as part of joint project with MOH to compile National AIDS Spending. A comprehensive sampling frame was compiled based on list of institutions which were routinely tracked by IHP, institutions that receive funds from MOH, institutions known to National STD AIDS Control Programme (NSACP) and UNAIDS, and two directories of health-related NPIs published by the WHO (2003, 2010).

28. All major NPIs receiving funds from MOH, routinely tracked by IHP and all non-HIV/AIDs-related NPIs listed in the WHO directories were surveyed. In addition, all HIV/AIDS-related NPIs known to NSACP/UNAIDS and a sample of 20% of HIV/AIDS-related NPIs in the WHO directories were also surveyed. The questionnaire requested data on healthcare disbursements at the project level, including financing source, provider, and

beneficiary populations. Sometimes, follow-up action was required to clarify information or obtain additional details especially with respect to healthcare functions.

29. Often, NPIs serve as implementing partners for projects financed by donor agencies. Therefore, NPI data was crosschecked with donor estimates to eliminate double counting.

30. Most preventative health spending by the government or donor agencies is reported by programme. Disaggregation to SHA functional subcategories is typically done by consultation with MOH or donor programme managers, review of official documentation and discussion with relevant experts. In doing this, it is often necessary to consider activity level information such as the volumes of activities implemented and the numbers of beneficiaries as estimated by programme managers or experts to impute the allocation of costs to appropriate subcategories. When apportionment ratios to disaggregate total spending by subcategories can't be estimated due to inadequacy of data and no other information is available, they are usually weighted equally.

31. SLHA definitions for functional classifications of preventative and public health services expenditure are shown in Table 3. With the exception of subcategories added to HCF.6.1 and HCF.6.3, the classification schedule mirrors the ICHA-HC in SHA 1.0.

32. As the functional categories in SHA 2011 is now more aligned to the purpose of consumption, new local classifications and methods of estimation are needed to accurately capture and report the same. Most preventive care activities and expenditure of the central government are organized under specific programmes. However, since 2000, expenditure of some preventative programmes has been grouped together; in such cases, expenditure is distributed among programmes based on information available prior to 2000.

Table 3: SLHA definitions for the functional classification of prevention and public health services

SLHA code		Category title	SLHA category description	ICHA-HC code (SHA 1.0)
HCF.6		Prevention and public health services	This category include expenditure on services specifically intended to enhance the health status of the population or specific population subgroups, as distinct from the personal medical services, which repair health dysfunction. Many of these services may be specifically intended to enhance the health status of the population or specific population subgroups, as distinct from the personal medical services, which repair health dysfunction. Much of this expenditure may be provided in an integrated fashion by general medical institutions as part of their normal activities. This expenditure is not accounted for here, although SLHA does provide disaggregation of the relevant expenditure, where feasible. Typical examples are vaccination services, campaigns and special reproductive health programmes. Note that many of these items may be grouped to form categories relevant to other classifications. In particular, these can be identified or defined: 1. Safe motherhood services, as defined by some authorities, consist of maternal health (HCF.6.1.1) 2. Maternal and child health, also termed family health, consist of maternal health, well-baby, infant and childcare, and family planning services (HCF.6.1.1-HCF.6.1.3) 3. Reproductive health services consist of maternal health and family planning services (HCF.6.1.1, HCF.6.1.3, HCF.6.1.4) 4. Childbirth services are accounted for separately under personal curative services (HCF.1)	HC.6
	HCF.6.1	Family health and reprod uctive health services	This covers a wide range of services, which comprise significant elements in what is also known as reproductive healthcare, maternal and child health services, and family health.	HC.6.1
		HCF.6.1.1 Maternal health	Maternal health services include all special programmes designed to provide antenatal and postnatal care to mothers, including provision of dietary supplements for malnourished pregnant and lactating mothers, such as micronutrients, and iron and vitamins (Thriposha).	

SLHA code		Category title	SLHA category description	ICHA-HC code (SHA 1.0)
	HCF.6.1.2	Infant and childcare	This covers special services intended to promote and improve the health and development of infants and preschool children. It includes well-baby health care, growth monitoring and growth promotion of infants and preschool children, and provision of dietary supplements such as Thriposha and micronutrients.	
	HCF.6.1.3	Family planning services	This consists of programmes specifically intended to provide delivery of family planning methods and counselling, and health education in support of such services.	
	HCF.6.1.4	Other reproductive health services	This consists of other categories of reproductive health services not classified above and intended to enable both women and men to exercise safely their reproductive health functions. They include services dealing with subfertility, sexual behaviour, adolescent health, treatment and prevention of reproductive tract infections and conditions, including cancers of the reproductive system, menopausal problems, and genetic counselling services for the prevention of specific congenital abnormalities. Programmes dealing primarily with sexually transmitted diseases are excluded and are classified elsewhere.	
HCF.6.2		School health services	This consists of special programmes and services intended to promote and maintain the health of children at school. These services are generally delivered within school premises.	HC.6.2
HCF.6.3		Prevention and management of communicable disease	This category includes: compulsory reporting/notification of certain communicable diseases and epidemiological enquiry of communicable disease; efforts to trace possible contacts and origin of disease; prevention and management of tuberculosis and leprosy, and tuberculosis and leprosy control (including systematic screening of high risk groups); immunization/vaccination programmes (compulsory and voluntary); vaccination under maternity and child healthcare. It excludes: vaccination for occupation health; vaccination for travel and tourism on the patient's own initiative; and environmental health services intended to maintain food safety and hygiene.	HC.6.3

SLHA code		Category title	SLHA category description	ICHA-HC code (SHA 1.0)
	HCF.6.3.1	Immunization	This includes special programmes to provide immunization/vaccination services, including immunizations provided as part of routine maternal and child health care, and rubella immunization of girls and women. Where immunization services are delivered using existing infrastructure of other services, such as the maternal and child health (MCH) services, only the marginal costs represented are accounted here.	
	HCF.6.3.2	STDs	This includes special programmes to control, treat and manage sexually transmitted diseases (STDs), including HIV/AIDS.	
	HCF.6.3.9	Others not elsewhere classified	This includes services not explicitly classified above. This category comprises public health services of health education, disease prevention, and the promotion of health living conditions and lifestyles, directed towards non-communicable diseases and conditions. It includes services such as those provided by centres for disease surveillance and control, programmes for the avoidance of risks incurred through injurious behaviour, and programmes for the general improvement of the health status of the population.	HC.6.4
HCF.6.4		Prevention and management of non-communicable disease	This category includes: interventions against smoking, alcohol and substance abuse such as anti-smoking campaigns; activities of community workers; services provided by self-help groups; general health education and health information of the public; health education campaigns; and campaigns in favour of healthier lifestyles; and information exchanges, e.g. relating to alcoholism, drug addiction. Excludes: public health environmental surveillance and public information on environmental conditions.	HC.6.4

SLHA code	Category title	SLHA category description	ICHA-HC code (SHA 1.0)
HCF.6.5	Occupational healthcare	Occupational health care consists of health services provided to individuals or population groups in their capacity as employees and workers. They comprise a wide variety of health services such as surveillance of employee health (routine medical check-ups) and therapeutic care (including emergency medical services), provided on or off business premises. No distinction is made as to the sector of employment, including government and non-profit institutions serving households. This excludes, however, remuneration-in-kind of health services and goods, which constitute household actual final consumption rather than intermediate consumption of business.	HC.6.5
HCF.6.9	All other public health services not elsewhere classified	This item comprises a variety of miscellaneous public health services such operation and administration of blood banks and organ banks, and the preparation and dissemination of information on public health matters not classified elsewhere. It includes public health environmental surveillance and public information on environmental conditions.	HC.6.9

7. DOCUMENTATION OF ISSUES IN REPORTING

33. The criteria presently used to classify preventative care expenditure in the SLHA framework are programme-based, ranging from place of delivery to the beneficiaries involved. Thus, additional work is required to develop a new classification system based on the purpose of consumption, as given in the SHA 2011 framework. When programmes are deemed to involve more than one SHA functional category, the spending allocation is usually determined in consultation with programme managers or analysis of programme reports and documentation. This allocation is often subject to some error. Many issues regarding availability of data in disaggregating expenditure reported by program that serve multiple purposes need to be addressed in order to improve the accuracy of the functional categorization.

34. Some proportion of preventive services is provided as part of routine medical care delivery. For example, private general practitioners can provide child immunization as part of their regular services. This expenditure, which does not come under government preventative programmes, is not currently estimated owing to lack of data and methods, but their importance may be growing especially in the private sector.

8. FINANCIAL AND HUMAN RESOURCE REQUIREMENTS

35. Development of new methodologies and data sources to support the transition from SHA 1.0 to SHA 2011 is most challenging for preventive health expenditure. Some modest level of financial and human resources are required to adapt the current classification system for reporting expenditure by purpose of activity, as well as mapping and applying any new classification of spending to the earlier estimates. Further, steps need to be taken in disaggregating data by function in line with SHA 2011 requirements; this process is taking time owing to a lack of data and ambiguity over primary purpose in certain cases. As noted in OECD supplementary guidelines on preventative expenditure, the degree of effort taken to disaggregate such data by intent, may partly depends on the size of the expenditure and usefulness of results (OECD 2013).

9. CONCLUSIONS

36. Since SLHA classifications of preventative care expenditure are presently based on the SHA 1.0 classifications, steps will need to be taken in reclassifying such expenditure into accurate and mutually-exclusive groups as given in SHA 2011, whilst ensuring that all old estimates are also mapped. Issues regarding availability and clarity of data in disaggregating such expenditure need to be addressed. Finally, depending on the degree of effort taken in disaggregating such data, in certain cases as a last resort, expenditure may have to be allocated to areas which accounts for the largest part of the spending.

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