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Study on costs of scaling-up health interventions for the poor in Latin-American settings: final report

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Introduction

Despite the relative sophistication of the health sector in Latin America, the information available on unit costs for priority health interventions is scarce, perhaps almost as scarce as for much poorer countries in sub-Saharan Africa. Attempts to extract, from the few studies that exist, unit costs that are comparable across countries is further complicated by the lack of standardization of interventions. The very sophistication of the sector translates into health systems that rely less on definitions and norms developed by international organizations than do those in poorer countries. To take but one example, the WHO package of IMCI has little relevance in countries that have defined their primary care programs differently.

An important goal of Working Group 5 (WG5) of the Commission on Macroeconomics and Health (CMH) is to estimate the region-specific unit costs of priority health interventions so as to permit rough estimates of the cost of scaling-up such interventions. The present study was intended to contribute to that information base and, in retrospect, was not an efficient means toward that end. The study exhaustively reviewed the information available in three countries - the Dominican Republic, Mexico and Peru - and concluded that although the current government efforts in investigate how much their health programs cost, a small percentage of the few available literature, published and unpublished, was directly usable for estimating unit costs of the CMH priority health interventions. Had estimating region-specific unit costs been the only goal, it would have been far more efficient to collect data from a larger number of unit-cost studies from a larger number of countries using a far less exhaustive process of searching for data. Or,

in other case, define a specific technology for every intervention to cost and reach for the unit cost of the inputs involved in their processes.

The present study does enable the construction of three “cases” with the description of what unit-cost data for decision-making are available in three, very different, Latin American countries. It also provides a detailed comparison of the typologies of health interventions in these priority areas that should be useful for future efforts to standardize international reporting of coverage and costs of these interventions. The study is also instructive because it highlights the benefits to individual countries of increasing harmonization/standardization of both definitions of interventions and of costing methodologies. Without harmonization, the opportunity is lost to learn from the comparative efficiency of one’s neighbouring country. When difference in reported values are large (e.g. in this study in the average cost of a vaginal delivery), it is important for countries to know how much the cost differentials represents quality differences, efficiency differences or just differences in definition of services and costing methodology.

Methodology

The initial phase of the study consisted of:

- identifying and classifying the types of interventions in each of the five priority areas that are being undertaken in Mexico, Peru and the Dominican Republic, and
- identifying likely sources of cost data.

The former was largely accomplished by reviewing official government documentation and by conducting interviews with officials directly responsible for programs that correspond to the priority areas of the WG5 as well as with individuals working in planning and budgeting offices. The official government “norms and standards”, treatment guidelines, and health budget categories were obtained in each country.

These same individuals were asked about likely sources of cost data. We also conducted literature reviews, contacted authors of relevant articles in the published literature, consulted with the UN agencies that form part of the UNAIDS Theme Group at country level, approached bilateral donor agencies and foundations with large programs in country, spoke with NGO leaders (especially in the areas of HIV/AIDS and maternal/infant health), and consulted with local academic institutions. Our research team included nationals from each of the countries with close ties (MoH staff in Mexico and the DR) to the Ministry of Health to ensure access to the relevant civil servants and government programs.

The second phase of the research was conducted primarily during three-week missions to the countries (with the exception of Mexico where the research team is based). It consisted of locating sources of unit cost data and this proceeded along two different, parallel tracks. The first consisted of assembling and reviewing any published work, any government documents, and reports to funding agencies or similar documents that were likely to contain unit costs or data from which unit costs could be extracted. Secondly, we solicited the support of the managers of the relevant ministry programs and the managers of NGOs with substantial service delivery programs in one of the relevant areas. Our goal (with the exception of the few cases in which the manager was already able to provide us with unit cost data) was to collect data on total expenditures per program and on total volume of service delivery per program so as to be able to generate rough estimates of unit costs.

This latter approach had previously proven to be fairly successful, at least in estimating the costs of HIV/AIDS interventions in Africa. In the context of these three countries the approach was largely unsuccessful for a number of reasons. Government programs, with the exception of Peruvian programs and a couple of programs in the DR that rely heavily on external funding, were not able to identify budgets for the programs, to say nothing of budgets for individual interventions. Within the Ministries of Health, budgets are usually disaggregated by expenditure class (personnel, transport, maintenance, supplies, etc.) rather than by intervention or program. Often, whole expenditure categories don't even appear in the program budget because it comes out of a central budget. Thus,

program managers were consistently unable to provide the research team with even the total budget for their programme.

We expected this to be less of a problem with NGOs, but found that to be only marginally true. For both government and NGOs the short time available for the study posed an additional problem; for the NGOs it was especially difficult because often the availability of data depended upon one particular person being available, or the authorization of the international agency that sponsor the program. In addition, the large NGOs providing services at significant scale have difficulties similar to the government agencies. They receive funds from multiple sources: government, donors, user fees. They report to their funders on the utilization of the funds by expenditure class rather than by programme or intervention. And, they usually don't limit their work to a single category in the WG5 typology. To take one example, a Mexican NGO that provides prenatal care to poor women is unable to estimate even the total cost of that programme because the NGO does not distinguish the "programme", operationally or financially, from their other work in prevention of cervical cancer, care for rape victims and education of lay midwives.

As a result, the results we report are almost entirely drawn from costing studies that had previously been performed in the three countries. In a couple of instances, such as the Mexican National Vaccine Programme, there was no document or report available, but the programme had completed some costing work of its interventions and was able to provide us with preliminary data. Although of our efforts in seeking information from NGOs and state-level programmes, we could not present unit cost data for HIV/AIDS.

Finally, the assembled documentation was carefully reviewed for rigor, for completeness, for compatibility with the five core areas being studies, for compatibility with the goal of costing services for the poor – all in accordance with the evaluation format proposed by the LSHTM. All reviewed documents that were relevant to five core areas were annotated and included in the attached bibliography. A subset of those that we felt could appropriately be used for estimating unit costs were selected. These analyses were disaggregated and matched as well as possible with the WH5 typology. Where the study permitted, the costs were adjusted to improve the match with the WG5 typology, as mentioned above.

The articles, documents and reports that were used to generate the costs reported in the accompanying spreadsheet are summarized at the end of this document.

Results, typology

The attached spreadsheet, *typology*, summarizes the results from the analyses of the typology of interventions used in each of the study countries. In four of the intervention categories NGO/private interventions were largely similar to those provided by the government. In the case of HIV prevention, NGO activities significantly expanded the types of interventions offered in the three countries.

The spreadsheet's basic structure corresponds to Annex 2 and Tables 10.1 and 10.2 of *The Cost of Scaling Up Interventions: Methods and Estimates*, presented at the March 2001 WG5 meeting in Lausanne. The leftmost column lists the WG5 interventions. To the right of each intervention are listed the intervention or interventions that largely correspond to the WG5-defined intervention. To the extent that a sub-component of an intervention is assumed to be included in the WG5 definition it is shaded blue. If it is part of the same intervention but does not correspond to the assumed WG5 definition it is pale yellow. An example of the latter might be sputum culture for pneumonia as discussed above. Related interventions that do not correspond to a WG5 category but that are considered to be part of the country's basic package of services addressing one of the five WG5 core areas are listed below the WG5-consistent interventions. An example of the latter would be reduction of mosquito habitats. It is vector control for preventing malaria but corresponds to neither residual spraying nor insecticide-treated bed nets. In all three LAC countries the typology typically includes a broader and more complex range of services than was defined in the documents for Lausanne. While the same would surely be true of country-specific typologies from other regions, including sub-

Saharan Africa, examining the differences in the typologies can also help to identify gaps in the typology being used as the global standard. Many, and probably most of the services which appear only in the country-specific typologies have been explicitly excluded from the WG5 typology because they are not of sufficiently high priority. However, others should probably be included. They were initially excluded for a variety of reasons, for example: the intervention is not common in SSA, costing studies are not available, region-specific disease patterns, etc. As an example of how interventions were classified as consistent or not with the WG5 classification, please see the malaria typology in Table 1.

Discrepancies between typologies which suggest possible additions to the WG5 methodology include:

- Surveillance systems for infectious diseases and resistance to antimicrobial agents. In LAC these costs are not typically included in the treatment costs. Separating this out as a separate cost category would signal the importance of the activity (recent studies suggest large inefficiencies due to failure to modify empirical treatment strategies to take into account local patterns of resistance). Modelling the costs of surveillance systems would likely point out significant economies of scale and suggest possible efficiencies from cooperation among small countries.
- The educational component of medical interventions. For example, a significant proportion of the cost of an intervention to address malnutrition is generated by

the activities intended to educate the child's mother about how to purchase and prepare more nutritious meals

- Maternal and child health interventions in LAC include early detection of cervical and breast cancer. While these interventions probably were explicitly excluded from the package of basic services, the associated health provider costs are difficult to exclude from the reported costs.
- The EPI component is the only standardized component among the IMCI interventions. All of the countries include interventions for ARI, diarrhoea, fever and malnutrition. However, the contents of the other IMCI components differ significantly across countries.
- The WG5 definition of the malnutrition intervention appears to be very limited. Apart from the educational component mentioned above, growth monitoring also seems to have been excluded. The degree to which supplementation is costed in the WG5 approach was also not sufficiently clear to enable us to adjust our estimates.
- Related to the previous point on malnutrition, but also to the other areas, it would be useful to have a more detailed description of the “standard” costing for any particular area. This description would not only detail the specific “sub-interventions” that are included/excluded (i.e. define the scope of the intervention), but would also clarify when infrastructure/overhead/capital costs are and are not included. Such a description would simplify the task of adjusting costing studies to a common standard so as to make them as comparable as possible. It is not clear to us why the current WG5 typology sometimes takes a

“cost of intervention” approach (such as HIV prevention for sex workers) and in other areas takes a “cost of inputs” approach (such as the cost of iron tablets for anaemia).

- Perhaps the most difficult problem relating to using the typology to compare the services offered in different countries is that while it does a reasonably good job at capturing differences in scope (defining the differences in sub-components included or excluded), it is not useful for capturing differences in quality or level of services. For example, treatment of severe pneumonia in a low-income country would involve hospitalisation, treatment with intravenous antibiotics and perhaps a chest x-ray. In a middle-income country, even for the poor, such treatment might be supplemented by culture, adjustment of antibiotic according to the antibiotic sensitivity analysis, serial x-rays, referral if the patient deteriorates, and even endotracheal intubation and mechanical respiration. Although it is clear that the more sophisticated technologies are not (nor should they be) part of the WG5 packet of basic services, studies that compare the average cost of care for a particular illness are not easily comparable.

Results, unit costs

The attached spreadsheet *unit_costs* summarizes the unit cost data from the relevant studies in the three countries. Each of the five core intervention areas is summarized on a different sheet. As with the typology spreadsheet, the leftmost columns reproduce Annex 2 and Tables 10.1 and 10.2 from the draft costing document distributed at the Lausanne meeting. The following two columns contain the draft WG5 unit cost range for LAC. The two adjacent columns contain our suggested modifications to the unit cost ranges for providing health services to the poor in Latin America. In some cases we suggest modification of the prior estimates, in others we don't feel that the additional information we have collected justifies adjustment of the range. These recommendations are highly subjective and represent judgment calls regarding the validity and comparability of the cost data from the country studies.

In most cases the proposed revised ranges are higher than those proposed in Lausanne.

This raises a number of questions.

- Are the costing studies we used different, on average, from those in Africa? For example, are they more likely to include infrastructure costs, or are they more likely to represent average rather than incremental costs? We have tried to be as consistent as possible with the data presented in Lausanne, but to do so rigorously will require matching the assumptions in the primary studies from Africa with those in the reviewed studies from LAC.

- Is the PPP adjustment from Africa biased in some way? For example, does the weighting only consider low-income countries, rather than low-income populations?
- How should one account for the fact that the basic intervention is different from that assumed for Africa? The most common difference is the extent to which treatment is prescribed on the basis of a syndromic diagnosis or on the basis of a diagnostic test. For example, in some settings treatment for pneumonia may be given just on the basis of a consistent history and physical exam. In other settings it requires a radiograph, a sputum gram stain and perhaps a sputum culture. One could argue that the task of the working group is to estimate what it *would* cost to expand coverage for the basic (syndromic) intervention. However, it is also consistent to argue that in countries where treatment based on a diagnostic test is the prescribed norm, it is unrealistic to imagine that expansion of coverage for the poor will occur with a different “inferior” norm – and thus that the “true” cost of expanding coverage needs to take differing national norms into account. Even if the first option is chosen, it will be difficult to extract hypothetical costs from country costing studies that cost the provision of actual services. We have tried to tread the middle ground, eliminating costly “extras” (such as stool cultures) where feasible, but including services defined as basic and required (such as a diagnostic test prior to treating for malaria).

An example of these facts is illustrated in Figure 1. The right-hand side of each sheet in unit_costs presents the country-specific data. To the extent possible it has been divided into interventions that correspond to the WG5 typology (light turquoise), those that may correspond but additional information about the WG5 definitions is required (yellow) and those that do not correspond (white) – similar to the typology. Each column in the country-specific section corresponds to a particular study or data-source. Where studies have low and high-cost estimates, these are included as separate columns.

At this point, the spreadsheet contains the unit cost estimates reported in the primary studies. Where possible because of sufficiently detailed definition of the costed intervention and cost data that are sufficiently broken down, we have adjusted the unit costs to match the WG5 definitions. For example, we adjusted the cost of prenatal care in the DR by subtracting the cost of the prenatal visits in excess of six. In future work it should be possible to do a better job of adjusting and extrapolating unit costs. For example, it should not be difficult to extract from most costing studies the proportion of total costs represented by labour. It would also not be difficult to survey ministries of health regarding compensation rates in the public sector for physicians and nurses so that labour costs can be adjusted by differences in health sector salaries rather than a generic PPP. Such a cross-country survey could be extended to a small number of other inputs that could be defined in a consistent way across countries; pharmaceutical costs would be the most obvious example. It should also be possible to adjust studies that do not include capital and overhead costs on the basis of the proportion these costs represent in other studies in the region.

Summaries of Referenced Documents

The text below describes twelve studies carried out in Mexico, the Dominican Republic, and Peru and which were the basis for the work presented in this report. Sources are provided along with a brief summary describing the objectives, process, and outcomes of each work. Virtually no information on the unit costs of HIV prevention services was encountered. The only exception is limited information drawn from two modelling exercises of the cost of preventing mother to child transmission and these studies have not yet been abstracted; they are included below in summary format. Additional efforts are underway to identify data on unit costs of care for HIV/AIDS

MEXICO

spreadsheet code: PEC

Secretaría de Salud, Dir. General de Extensión de Cobertura (1998). Determinación de costos del Paquete Básico de Servicios de Salud (PBSS). Mexico.

Determination of the cost of the basic health care package (PBSS).

This study was carried out in 1998 and identified the unit costs associated with 284 health care related activities that make up the basic health care package in Mexico. Standard treatment guidelines were developed for each of these illnesses and were used as the basis for the costing study.

The purpose of this study was to identify the estimated direct costs and those costs related to staff, medication, treatment accessories (bandages, alcohol, needles, etc.), stationery, and teaching materials. General costs (such as electricity, gas, etc.) and indirect costs were not researched in this study.

While this study is the only one of its kind, there are several considerations to be made when studying the costs that were identified. For one, this work is taken from the health care provider's point of view, in this case being the Mexican Secretariat of Health (SSA). Because the SSA is one of the three largest health care providers in Mexico, all medication costs are based on consolidated purchasing. Therefore, these prices are often lower than would be expected from other buyers who do not buy in bulk. Additionally, salary tables were used to calculate the cost of time spent in carrying out each of the guidelines for care of specific illnesses. However, "dead time", where staff have breaks or when they are between tasks, was not taken into account. We have not yet done any modelling in an attempt to apply estimates of the difference between "hours compensated" and "hours actually worked" from other studies in Mexican health institutions to this comprehensive study in an attempt to address this systematic sub-estimation.

Another point worth mentioning is that no sensitivity analysis was carried out, nor are any estimates available of the uncertainty associated with the estimates.

In addition, due to the lack of sufficient written documentation of the methodology, efforts are still underway to clarify the cost tables through discussions with the authors of the

study. In several of the tables it is unclear what aspects of an intervention were costed and this explains (a) the numerous “to be clarified” notes in the spreadsheet and (b) the comparatively lower weight this study was given in generating the suggested revisions for the cost ranges for LAC.

While there are several issues to consider when studying the data made available from this work, it merits mention that this study is also the most comprehensive work that was found. It also serves to inform the budgeting of the Programa de Extensión de Cobertura (Program for the increase the coverage of health services) which has as its objective to minimize the gap in access to health care services among the poorest communities in Mexico.

spreadsheet code: SSA

Centro Nacional para la Salud de la Infancia y la Adolescencia, SSA. [*Ministry of Health, National Programme on Child and Adolescent Health (includes the National Vaccine Programme)*] Costos año, 2000.
Programme Costs, 2000, unpublished

These are unpublished data from the Ministry of Health’s National Vaccine Programme. They are the Ministry estimates of the per-dose costs of vaccination. They divide the costs into (a) direct costs: cost of the vaccine itself (sometimes produced by the National Biologicals Production Facility, sometimes purchased through consolidated PAHO purchases), cost of staff time, and cost of supplies

(syringe, alcohol, cotton, etc.), and (b) indirect costs (refrigeration, packaging, electricity, transport, etc.)

spreadsheet code: SOSA

Sosa, Sandra (2000). Evaluación económica de la atención materno infantil en el primer nivel de atención en una comunidad rural. Tesis para optar el grado de Maestra en Economía de la Salud. Centro de Investigación y Docencias Económica *Economic evaluation of maternal child health care at the primary level in a rural community. Masters Thesis in Health Economics.*

This thesis aimed to estimate unit costs associated with the health care activities that make up part of WHO's Mother Baby Package (MBP). The study was carried out in a rural health clinic in the state of Morelos, Mexico.

The study looks at costs related to two different maternal-child health care schemes: one, referred to as the "current" scheme, where only the MBP recommended activities offered by the clinic were costed and a second, "standard", scheme where all the interventions recommended by the package are costed. Total costs were estimated for the health centre as well as unit costs by type of care scheme. Costs were also looked at based on projected demand for services. In addition, direct, indirect, recurrent and total costs were identified. Unlike the SSA study, this work carried out a sensitivity analysis for cost variables as well as projected demand for the services.

The costs found were often lower than costs reported in similar studies, but it is important to remember that this study only costed services in a rural primary health clinic in a very poor community. Other studies have typically considered multiple levels of care or care delivered in larger, more comprehensive urban facilities. Though not representative of the range of public services in Mexico, this was a well done study that did its costing at an institution highly relevant to the CMH goal of expanding access for the poor to basic services.

spreadsheet code: CVI

National Institute of Public Health, Mexico (2001) Evaluación Económica de Intervenciones en Salud: Determinación de los Costos Asociados con Algunas Enfermedades Prevenibles por Vacunación en la Niñez. Reporte de México
Economic Evaluation of Health Interventions: Determination of the Costs Associated with childhood vaccine preventable illnesses. Mexican Report (Draft)

The aim of this study was to determine the cost of treating pneumonia, diarrhoea and meningitis in children younger than 5 years old at different levels in the health care system in the state of Morelos. It took both a provider and societal perspective. It examined the variation in costs among public (SSA, IMSS) and private health systems, and between urban and rural settings.

The study used a microcosting approach in all public hospitals and in all public ambulatory sites where medical records were available. In clinics without records, medical personnel were interviewed and a “typical case” was costed. In the private sector, patient payments were used in lieu of performing a costing study.

Overhead and capital costs were estimated, as were patient out-of-pocket costs and lost patient and family productivity. The costs in lost productivity were not included, nor were non-medical patient expenditures (e.g. travel costs).

Unfortunately, without additional analysis of the primary data it was not possible to obtain costs by level of severity of disease, nor costs that excluded tertiary care.

Thus, unless and until such additional analyses are performed, it is of limited use in this project.

Spreadsheet code: not coded

Rely, Kely et al. (2000) “Cost Effective ness of selected interventions to Reduce mother-to-child-transmission (MTCT) of HIV in Mexico” Centro de Investigación y Docencias Económicas – Instituto Nacional de Salud Pública, México – Thesis, Masters in Health Economics.

DOMINICAN REPUBLIC

spreadsheet code: BITRAN

Cárdenas, Cecilia and Ricardo Bitrán (1999). Estimación de costos del Nuevo Modelo de Atención Primaria de República Dominicana. Comisión Ejecutiva para la Reforma del Sector Salud. Cost estimation of the new model of primary health in the Dominican Republic.

This study identifies the costs related to a team of family health specialists (ESAF) made up of one doctor, one nurse, one family health specialist and one or two volunteer health promoters that covers 3,500 individuals (between 500 and 700 families). Unfortunately, the study did not include administrative and overhead costs.

Costs were calculated for 12 interventions drawn from the basic health care basket for the Dominican Republic. The costs were estimated based on population parameters, the epidemiological situation as estimated by the ESAF, estimated inputs per intervention and unit costs. The costs correspond to cost estimates of the norms provided by the Secretary of Health as well as treatment guidelines. These however, have not been validated using microcosting techniques.

Because calculations are based on the primary health care level, they do not include activities that are carried out at secondary and tertiary health facilities where the costs are likely to be higher.

spreadsheet code: COWLEY

Peter Cowley (1997). Canasta de Servicios Básicos de Salud. Comisión Nacional de Salud. Oficina de Coordinación Técnica, Peru.

Basic basket of health services.

This study determined the cost-effectiveness of 14 interventions selected on the basis of their impact in terms of disability adjusted life years (DALYs). A micro-costing was done for each of the interventions and included total costs, costs per capita, variable and fixed costs, and costs by type of health care facility.

Although the body of the document only mentions the total and per capita costs (i.e. integrated management of childhood illness, treatment and prevention of TB), the annex disaggregates costs into staff, medications, treatment supplies (bandages, alcohol, etc.), and laboratory. This allowed for the calculation of cost per case of specific interventions of interest in our research (acute respiratory infections, acute diarrheal disease, and cost per case of TB treated).

Spreadsheet code: not coded

Lutter, Chessa (1998) “Mother-To-Child Transmission of HIV in the Dominican Republic: Estimated Population Attributable Risk and Cost of the Integrate Preventive Package”. Food and Nutrition Program, PAHO

PERU

spreadsheet code: PNCT

PROGRAMA NACIONAL DE CONTROL DE TUBERCULOSIS, (2001) Estudio sobre el Impacto Económico de la Tuberculosis en el Perú. Ministry of Health (MINSa).

The economic impact of Tuberculosis in Peru.

This study was carried out by the Peruvian National Tuberculosis Control Program and estimates the total social costs related to tuberculosis in Peru. Several costs are studied and include:

- Prevention, diagnosis, and treatment costs from the government’s perspective;
- Direct costs to the patient;
- Opportunity costs to the patient;
- Opportunity costs to family care givers;
- Societal costs due to premature death; and
- Costs to facilities providing prevention, diagnosis, and treatment.

Care was costed in multiple different vertical health systems (Ministry of Health, Social Security and the armed forces system). The services costed were not only those directly related to treating tuberculosis, but also included complementary services, such as nutritional support programs for tuberculosis patients.

Outpatient costs were estimated using government guidelines developed for TB treatment. Staff costs were estimated using questionnaires about time devoted to specific TB related tasks. Overhead and administrative costs were estimated based on the costing system used in the Chulucanas hospital located in the North of Peru as well as the costing used in the two health centres and the one health post that make up the care network of this hospital.

The costs associated with hospitalization were obtained through clinical record reviews of various hospitals and health centres in Lima (which concentrates 50% of TB cases). The cost per day/bed at the Regional Hospital of Huaraz was determined and was used as the representative figure of average costs at all national level hospitals.

This study is the most comprehensive and recent research that has been carried out on the costs of TB in Peru.

spreadsheet code: PROYECTO VIGIA

PROYECTO VIGÍA (1999) Impacto Económico de la Malaria en el Perú. Lima, Ministerio de Salud .

The economic impact of malaria in Peru.

This study had the objective of estimating the costs of malaria to both the State and individuals affected by the illness. The effects of malaria on economic activity and the direct as opportunity costs were also researched.

In order to calculate the cost to families affected by malaria, a questionnaire was administered to 364 Peruvian households in the three areas most affected by the illness: Loreto, Piura, and Tumbes. The questionnaire was used as an instrument in order to determine the time lost to illness as well as to investigate the other costs faced by families affected by malaria.

The costs to health facilities were determined by a questionnaire which focused on identifying total costs. In addition to this, information from the Peruvian Ministry of Health (MINSa) and other organizations that provide resources to control malaria was also collected.

Questionnaires within the tourism sector (to hotel administrators, travel agents) were also administered with the purpose of identifying the costs of malaria in this sector.

Costs per case attended in the health sector were not calculated but information on the cost to families is available. In addition, detailed total costs for each type of activity and financing sources at the national and regional level is also available.

The study found that the total estimated cost of malaria to the Peruvian government in 1998 was 40.1 million US dollars. For the same year, it was also found that for families living in endemic areas, the average costs per illness is approximately 500 USD. This figure was derived by identifying, through household questionnaires, individual family expenditure in terms of direct and indirect costs which was then divided by the average number of malaria cases found in all families that were interviewed. In this case, the average number of malaria cases per family was 5.

Unfortunately, unit costs were not calculated. The very crude cost estimates obtained by dividing the program costs by number of people treated with malaria are included because they provide a reference point for costs of treating malaria costs in Peru.

spreadsheet code: PNSB (Current, Standard, Standard Adjusted)

PROYECTO SALUD Y NUTRICION BASICA (2000). Análisis Comparativo de Costos Observados y Costos Estándares de los Servicios de Salud que cubre el Seguro Materno Infantil. Ministerio de Salud. (Internal Report)

A Comparative analysis of observed and standard health care costs covered by maternal and child health insurance.

This study by the Ministry of Health was conducted to enable the Ministry to set reimbursement levels for maternal and infant services that are funded through the national maternal and infant insurance scheme (SMI). It estimates costs in two ways: by costing services as they actually provided in health facilities (*current*), and by conducting a hypothetical costing of services as outlined in the SMI clinical protocols (*standard*). The *Standard Adjusted* costs are the estimated reimbursement levels but do not include the cost of staff salaries paid by the Ministry of Health.

Costs were estimated for 125 health services directed to women and 74 services directed at children. These services were costed at two hospitals and two health centres which were representative of the Peruvian health care system.

The results from the study are controversial and are being reviewed in Peru. They cannot yet be used with confidence. The primary concern is that the research teams, in their costing of the *standard* packet of services, did not respect the Ministry definitions of the services to be delivered and included additional services they believed were technically justified. As a result, there are larger than expected differences between the *current* and *standard* costings for the same services.

These problems notwithstanding, the *current* costing was extremely detailed and has enabled us to extract data from this source, making adjustments when warranted to adjust the reported costs to the typology from WG5. As the study is being re-reviewed these adjustments are ongoing and are noted on the costing spreadsheet as comments on the relevant cells.

spreadsheet code: PROYECTO 2000

PROYECTO 2000

2000 Costos Unitarios Basados en el Sistema de Programación Presupuestal (SPP) 1999. Ministerio de Salud.

Unit Costs based on the Budget Planning System 1999- MoH, Peru

2001 Costos unitarios basados en el sistema de programación presupuestal (SPP) 2000 . Ministerio de Salud.

Unit Costs based on the Budget Planning System 2000 – MoH, Peru

In the past decade, the Peruvian government and USAID have made a strong effort to build a cost system called the Cost and Revenue Information System (“Sistema de Información de Costos e Ingresos” – SICI). The objective of this system is to help health authorities assign financial resources in an efficient way, in particular, how to calculate the payments needed to cover costs.

The information contained in SICI has also been used as the basis for the Budget Planning System (“Sistema de Programación Presupuestal” - SPP), a system designed to construct budgets using actual cost data.

Both of the “Proyecto 2000” studies are available in Excel spreadsheets and summarize the unit cost information from the SPP for urban and rural settings. In addition, they contain estimates of the variance in costs amongst different health institutions, namely health posts, health centres and hospitals. The study also separates the unit cost estimates into direct costs (staff and supplies) and indirect costs.

The Ministry is currently in the process of cleaning the data for 2001. Our cost spreadsheet only contains data through 2000. In a couple of cases, where 2000 data were not available, we have included preliminary data from 2001 (e.g. severe anaemia) though these data must be interpreted with caution as they have neither been validated nor has the Ministry yet provided complete information about how the services are defined in the 2001 round of the survey.