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Disease Control Priorities in Developing Countries, 3rd Edition
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Title: Costs and Affordability of Essential Universal Health Coverage in Low- and Middle-Income Countries

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1. Introduction

A central question for countries moving towards universal health coverage (UHC) is which health interventions should be publicly financed.[1] Highly resource-constrained low-income (LI) and lower middle-income (LMI) countries in particular currently have low coverage levels of health services and thus will probably require large incremental investments in order to achieve UHC. *Disease Control Priorities, Third Edition* (DCP3) has proposed a concrete notion of UHC that is based on a focused set of health interventions that provide very good value for money, address a significant disease burden, and are feasible to implement in LI and LMI countries.

Volume 9, Chapter 3, of DCP3 (forthcoming), entitled "Universal Health Coverage and Essential Packages of Care," draws on the content of 21 packages of essential health interventions contained in DCP3 and synthesizes them into a model health benefits package,[2] termed "essential UHC" (EUHC). A subset of these interventions have been distilled into a "highest-priority UHC package" (HPP) that is designed to address the

specific health needs of – and be feasible to implement in – LI countries by the end of the Sustainable Development Goal (SDG) period in 2030.[3]

The objective of this working paper is to present the approach, data sources, and assumptions used to generate estimates of the cost of EUHC and HPP presented in DCP3 Volume 9 Chapter 3.

2. Methods

As described in Volume 9 Chapter 3 of DCP3, the EUHC package is based on the content of 21 essential packages of care that cover, with some degree of overlap, the health concerns that different professional communities tend to address (e.g., reproductive health, cancer, or tuberculosis). EUHC reflects a harmonized, de-duplicated list of 229 unique health interventions that reflect the recommendations of these 21 groups of authors and editors. HPP reflects a subset of EUHC interventions that were identified by the authors of Volume 9 Chapter 3 of DCP3 as most feasible and high-impact in very low resource settings during the SDG period.

2.1 Analytic Framework

A variety of approaches have been used to estimate the cost of packages of health services.[4-8] Cost estimates for the same set of conditions can vary greatly according to time horizon, perspective, and what sorts of costs are included (e.g., financial vs. economic, marginal vs. average costs, total vs. incremental costs, etc.). An even more fundamental question is the objective of the costing exercise: is it primarily for an economic evaluation, or a national or subnational budget impact analysis, or perhaps for

advocacy and fundraising – as some global "price tag" (sometimes called "investment case") studies have recently done?[5,6,9]

DCP3 draws heavily on cost estimates conducted for (micro) economic evaluations and has summarized this literature in systematic reviews undertaken for several of its volumes. The recommendations of DCP3 have also been informed by previous global reports; for instance, the composition of its reproductive, maternal/neonatal, and child health packages closely mirrors the packages assessed by previous investment cases.[1,6] However to explore the potential costs of implementing a UHC scheme at a national level, the present costing exercise sought to estimate the budget impact of UHC and the HPP on a per-capita basis in "typical" LI and LMI settings.

Our costing approach was informed by the "comparative statics" approach that is commonly used in economic analysis.[10] Such an approach would treat population coverage of a specified set of interventions as an exogenous parameter and hold constant all other variables – such population size and structure and prices and quantities of goods and services – constant. The resulting cost estimate would be interpreted as a counterfactual estimate of the change in cost due to an instantaneous shift in the exogenous parameter (in this case, coverage).

While this approach is indeed a simplification of the potential stream of costs and their evolution over time in a given country, there are simply too many nuances, including both local contextual (health system) factors and knock-on epidemiological and demographic effects over time to provide a more precise, "normative" estimate of costs in

one or more countries. In addition, the scope of DCP3's work is meant to be illustrative rather than prescriptive. Hence we revert to estimating a cross-sectional, counterfactual set of costs without making reference to costs in specific countries or regions, which will deviate significantly from the estimates we present.

Within a comparative statics framework, the incremental cost C_1 of EUHC or an HPP containing n interventions can be expressed as

$$C_1 = \sum_{i=1}^{n} pop_i \times \Delta cov_i \times cost_i$$

where pop_i is a number of individuals in need of intervention i, Δcov_i is the difference in the proportion of individuals covered ex post minus ex ante (e.g., Δcov_i = 0.7 if current coverage is 10% and target coverage is 80%), and $cost_i$ is the yearly per-patient cost of the intervention (ideally incorporating both recurrent costs and annualized capital costs). This approach would incorporate unit cost estimates that reflect long-run average costs rather than marginal costs. Again, equilibrium is assumed ex ante and ex post, and Δcov_i is the exogenous parameter.

By inference, the total cost C_2 of the package would be

$$C_2 = 0.8 \sum_{i=1}^{n} pop_i \times cost_i$$

The scalar 0.8 is applied to the total cost to reflect the fact that the ministry of health is only financing care for 80% of the population in this stylized case. This scalar would vary along with Δcov_i if a country were to set a different coverage target. However the 80%

target coverage was chosen by the authors to be consistent with prior targets set by WHO;[11] it reflects the fact that a significant share of the population will continue to receive care outside the public sector and hence should not be included in the cost from the government's perspective.

2.2 Data Sources

The following sections detail data sources for costing most of DCP3's essential packages. Methods for a few unique packages (surgery, rehabilitation, palliative care, and pandemics) are presented at the end of this section.

2.2.1 Unit Cost of Interventions

We took as a starting point the cost and cost-effectiveness analyses contained in systematic reviews undertaken for DCP3. These reviews contain most of the highest-quality economic evaluations that have been conducted in their respective fields. We supplemented this database of economic evaluations with other studies cited in specific chapters of DCP3 or with our own literature search for intervention costs when we could not identify costs anywhere in DCP3. In a few cases where there were absolutely no previous published cost estimates, we undertook our own "bottom-up" costing using assumptions about personnel, equipment, and drugs and consumables.

In all cases, we extracted costs in 2012 US dollars (i.e., as reported in the DCP3 systematic reviews) or converted and inflated costs when needed to 2012 US dollars (i.e., when we used other literature sources or undertook our own costing).

For many interventions, there was more than one published cost estimate. Due to differences in costing methods and quality, we did not attempt meta-analysis of these data

points but rather selected the costing study that we deemed to be the highest quality (based on recognized standards for costing studies[12]) and most useful for our purposes – i.e., detailed costs that reflected long-run average costs. We gave preference to studies from LI and LMI countries, but we used upper middle-income country data when necessary.

After compiling estimates of intervention unit costs in 2012 US dollars, we adjusted the primary cost estimates to "average" costs in LI and LMI settings countries. To accomplish this, we used an internal WHO database of healthcare worker salaries for different skill levels for all countries (J. Serjie, 2015 – personal communication). We assumed that 70% of healthcare costs were nontradeable, so this share of the unit cost was multiplied by the ratio of average healthcare worker salaries in LI or LMI countries to the healthcare worker salaries in the country in which the original study was conducted. The remaining 30% share of unit cost was held constant, representing the tradeable component of healthcare. The assumption of 70% nontradeable was based on analyses using WHO System of Health Accounts data.

2.2.2 Population in Need of Specific Interventions

We next identified the population in need of an intervention. For most interventions, this was equivalent to the annual number of incident or prevalent cases of disease/injury for acute or longitudinal interventions, respectively. For some routine services, such as screening interventions, vaccinations, or family planning services, we used demographic estimates (e.g., 2015 birth cohort, women of reproductive age, adults 30-69 years, etc.). Often the epidemiological or demographic estimates were scaled down based on assumptions about the proportion of eligible individuals who would actually receive the

service. For instance, screening for diabetes is recommended in adults over 40, but only every three years, so the number of individuals over 40 in the population would be divided by three to estimate the number of individuals in a given year who would receive screening.

Most incidence and prevalence data were taken as country-level data and aggregated into LI and LMI groups from the Global Burden of Disease 2015 study unless similar data were available from the World Health Organization.[13] For a variety of epidemiological estimates related to reproductive and maternal health, we used data from a report from the Guttmacher Institute on the cost of these services, which provided aggregate estimates by country income group.[14] Our population estimates for LI and LMI countries were based on our aggregation of country-level GBD demographic estimates by income groups based on World Bank classification in 2014. These estimates were very similar to UN Population division estimates.

2.2.3 Baseline and Target Levels of Coverage

Estimates of baseline coverage of specific interventions in LI and LMI countries are usually sparse. The WHO Global Health Observatory provides the most comprehensive list of coverage indicators, aggregated in many cases by country income group.[15] Where relevant and available, we used coverage indicators from WHO. For interventions that were closely related to a service for which we had coverage estimates, we assumed the available coverage estimate would be a reasonable proxy. (For instance, we have coverage rates for antiretroviral drug therapy but not for community-based HIV testing

and counseling, so we assumed that coverage of testing and counseling would be similar to coverage of antiretrovirals.)

In a number of cases, particularly for noncommunicable diseases (NCDs), we had no data on coverage rates. Discussions with DCP3 authors and experts in LI and LMI countries supported the assumption that baseline coverage of these interventions would be very low. In general we assumed that if an intervention had no coverage indicator or reasonable proxy and was not a major area of NCD policy focus, then coverage would be about five percent in LI countries and 10% in LMI countries. Assumptions about coverage will be tested in forthcoming sensitivity analyses as described below.

As mentioned previously, we chose 80% as the target coverage for all interventions. This suggests differential coverage gaps, ranging only a few percent for immunizations to nearly 75% for interventions for some neglected NCDs. These gaps influence the estimates of incremental but not total costs. Implicit in this costing framework is that it is equally feasible by 2030 to address a 75% coverage gap for one intervention and a 5% coverage gap for another. In reality, there will be more momentum to close coverage gaps for major infectious diseases and maternal/child health interventions than for NCDs and injuries. Still, since we endorse the progressive universalist approach to UHC as the most ethically defensible and efficient one, we present costs of reaching full coverage for all interventions. We argue that if budget constraints are tight then a smaller set of

interventions should be implemented at full coverage rather than a larger set at partial coverage.

2.2.4 Exceptions to general costing approach

Surgery

An analysis by Levin and colleagues (forthcoming) details the methods, data sources, and assumptions used to estimate the cost of essential surgical procedures. We used the final cost estimates from their analysis for this study.

In brief, Levin and colleagues started by estimating the cost of first-level hospital services. They used a top-down approach based on detailed facility survey data in Ghana, Zambia, Uganda and Kenya that were collected for the Access, Bottlenecks, Costs, and Equity (ABCE) study (http://www.healthdata.org/dcpn/abce). They allocated hospital expenditures proportionally to surgical services, then they used data on facility size and catchment area to extrapolate costs in LI and LMI countries.

Next, they estimated the cost of the outpatient and specialty surgical procedures contained in the essential surgery package. They assumed the outpatient procedures would comprise ten percent of the total cost of surgery at first-level hospitals. They used rates of specialty procedures from previous publications and multiplied by the average cost per surgery (US$ 400).

The DCP3 essential surgery package also contains a few interventions that require a general surgeon instead of a general physician or midlevel practitioner with surgical training (the latter of which is the norm in most LI and LMI first-level hospital settings). Hence we added the annual salary of a specialist physician (taken from the Guttmacher

report) to the cost of the first-level hospital services, assuming one surgeon per hospital (or about one surgeon per 100,000 population).

Palliative care and pain control

Costs for the palliative care essential package were estimated in Volume 9 Chapter 12 of DCP3. The authors of that chapter conducted a bottom-up costing of palliative care services using detailed data from three countries. They concluded that the package would cost 0.25% or 0.03% of gross domestic product (GDP) per capita in a LI or LMI country, respectively. We used this figure and applied LI and LMI country average GDP per capita estimates. We assumed that the coverage of palliative care services is currently 0% in LI and 10% in LMI countries.

Rehabilitation and disability

The package of rehabilitation services presented in Volume 9 Chapter 16 of DCP3 is oriented around human resources rather than equipment, drugs, and consumables. Further, other costs beside human resources are likely to vary widely according to epidemiological context. For instance, older populations suffering from causes like stroke or visual/hearing impairment will require more assistive devices, whereas younger populations suffering from causes like injury will require more rehabilitative exercise equipment. WHO has recommended a target of 750 rehabilitation specialists per million population, so we estimated the cost of the rehabilitation package as the cost of these human resources. We took WHO salary data for skilled workers in LI and LMI countries.

We assumed that the coverage of rehabilitation services is currently zero percent in LI and ten percent in LMI countries.

Pandemic preparedness

The pandemic preparedness package largely followed the recommendations of the Commission on a Global Health Risk Framework for the Future, which drew on costs estimated by a 2012 World Bank report for scaling up preparedness in a large number of low- and middle-income countries.[16] This report estimated that the annual incremental cost of bringing all low- and middle-income countries up to international preparedness standards would be between US$ 1.9 billion and US$ 3.4 billion depending on epidemiological assumptions. Applying the higher figure to the total population in these countries implies an incremental per-capita cost of US$ 0.55. We assumed that in LI and LMI countries the incremental and total costs would be equivalent.

2.2.5 Other Considerations

Ancillary services

In nearly all cases, we applied a markup for ancillary services. These costs include items such as non-medical personnel, utility costs, and rents. These costs are not easily allocable to specific health services but are required in order to deliver the services. They are also not usually included in microcosting studies such as the ones used for this costing exercise. We thus applied a standard markup of 50% to our estimated total and incremental costs.[6,17] The exception to this was the essential pathology package, which we subtracted from the 50% markup. (Volume 9 Chapter 11 of DCP3 estimated that essential pathology services generally comprise about six percent of total facility

expenditures.) Since this markup could vary substantially by country, disease, and health system level, and thus significantly change our total costs, we explored a range of values from 20% (best case) to 80% (worst case).

Scale-up costs

Whereas ancillary services can be conceived as "indirect" or "overhead" costs that are allocable to delivery of specific health services, there are a variety of other costs that are not allocable to specific interventions but are nonetheless important investments that ensure the health system is able to effectively deliver all the components of UHC at scale. The Lancet Commission on Investing in Health (CIH) report recently estimated these costs as part of the cost of a comprehensive package of services for reproductive, maternal, neonatal, and child health and infectious diseases of adults.[18]

The CIH team found that, in addition to service delivery costs, LI countries would need to spend US$ 19 per capita in 2011 to reach full population coverage of their package of services and US$ 12 per capita in 2030 to sustain full coverage. The analogous figures for LMI countries, whose health systems in most cases are already more advanced, were US$ 7 and US$ 5, respectively. We applied the CIH's 2030 estimates to our total costs and the CIH's 2011 estimates to our incremental costs, under the assumption that relative to service delivery costs more would need to be spent to reach full coverage than to maintain it.

We made a few adjustments to the CIH scale-up costs, however. First, the CIH team noted that about 20% of the scale-up costs in their analysis would be applied to noncommunicable diseases and injuries, whereas in our analysis these costs comprise

about half of total costs. Hence we adjusted the scale-up costs upward proportionally. Second, we varied the estimate of scale-up costs in a scenario analysis alongside the ancillary services markups: the best case scenario took the CIH costs at face value (not adjusting for additional costs due to noncommunicable diseases and injuries), and the worst case scenario multiplied our adjusted scale-up cost by a further 50%.

Other drivers of costs

We plan to incorporate into our scenario analyses above two additional sources of uncertainty in our cost model: (1) variations in unit costs of very expensive interventions that are provided to a large proportion of the population (such as antiretrovirals); and (2) coverage gaps (ten percent higher or lower than in the base case). Best and worst case scenarios will be defined taking the most extreme variations in either of these parameters.

We also note the concern that our costs may not accurately reflect dollar amounts faced by LI and LMI countries in 2030. In absolute terms this is certainly true; prices of nontradeable goods are expected to rise with income, so dollar costs will rise. However as a fraction of income, we expect costs to be fairly similar in 2030 as in 2015, the year from which we take demographic and epidemiological data. So we expect the cost of EUHC and HPP as a share of income will be very similar during the SDG period. At the same time, in the longer term, demographic and epidemiological shifts will occur both naturally and as a result of certain interventions – particularly those that affect child and young adult survival. We stress that our approach to costing (comparative statics) is meant to be illustrative and does not claim to capture all potential long-term shifts in demography and epidemiology. Methods for projecting disease burden and costs will,

hopefully, become more advanced over the next decade and will allow for more precise and realistic long-run economic models.

A Supplementary Appendix (forthcoming) will detail all the interventions included in EUHC, unit costs used (including literature citations), baseline estimates of intervention coverage, and epidemiological and demographic assumptions, including a list of countries in the LI and LMI groups.

3. Findings

Table 1 presents cost estimates by package, including current spending, incremental costs, total costs (the sum of the prior two figures), and the proportion of total health service allocable costs that can be attributed to each package. The largest shares are from the cardiovascular and related disorders package (24% in both groups) and the HIV/AIDS, STIs, hepatitis and hepatitis package (19% in LI countries and ten percent in LMI countries). In LI countries, the surgery, maternal and neonatal health, and child health packages were also significant contributors to cost, each exceeding five percent of total costs. In LMI countries, the maternal and neonatal health and musculoskeletal packages were also significant contributors to cost, each exceeding five percent of total costs.

The aggregate cost of EUHC and the HPP are presented in Table 2. Unlike the costs in Table 1, these costs do not include duplicate interventions that appear in multiple packages, but they do include scale-up costs. At full coverage, EUHC would comprise 17% and 7% of current gross national income per capita income in LI and LMI countries, respectively, translating to US$ 95 and US$ 124, respectively. The incremental

investment required to implement EUHC would comprise 14% or 4% of current income in LI and LMI countries, respectively, translating to US$ 78 and US$ 70, respectively. The higher incremental cost in LI countries is due to the larger gap in coverage required to reach full coverage. The higher costs in LMI countries are due both to higher prices and to a greater share of costs due to interventions for noncommunicable diseases, which tend to be more expensive.By contrast, the HPP would comprise 9% and 4% of current income in LI and LMI countries, respectively, translating to US$ 49 and US$ 67, respectively. The incremental investment required to implement EUHC would comprise 6% or 2% of current income in LI and LMI countries, respectively, translating to US$ 34 and US$ 36, respectively.

4. Interpretation

DCP3 has presented a concrete notion of UHC that is grounded in economic realism and draws on a wide body of economic evidence that can inform efficient pathways to reaching UHC in highly resource-constrained settings. The findings of this costing exercise confirm that DCP3's notion of UHC, which economically efficient, is indeed expensive and will require a large amount of additional resources to implement.

As a share of current income, publicly financed EUHC is probably unaffordable and unsustainable in most LI countries. The total cost of this package, US$ 95 per capita, is nearly four times the combined investment by governments and donors of US$ 25 per capita, and reaching EUHC would require significant investments in health system capacity as well as expansion of the scope of existing services. Financing even the HPP, which has a more narrow scope, would still require a significant increase in resources –

about $34 per capita (or six percent of income) annually in the short run. Conceivably, much of this could come from external support, particularly for costly, high-priority issues such as HIV/AIDS and child heath. Yet recent trends suggest that developmental assistance for health is flattening out, and it is unlikely that donors in such an austere environment will expand their priorities to issues such as noncommunicable diseases and injuries.[19]

By contrast, at four percent of current income, a publicly financed HPP would probably be sustainable in LMI countries and would require an additional two percent of current income. To meet the SDG 3 targets for UHC, many LMI countries could start by ensuring full implementation of the HPP, and then as resources permit, they could begin to phase in EUHC. At nine percent of current income, the EUHC package would be a significant investment but similar to the share currently devoted in more well-resourced countries. The incremental cost of EUHC would require about six percent of current income. Countries that could not afford the entire EUHC package could consider a package that builds on the HPP and adds in the EUHC interventions that provide the best value for money and have the greatest overall impact on health, subject to the budget constraint. Such decisions would ideally be based on local analyses that take into account the existing health system, local epidemiology, and the needs and preferences of the population.

One implication of comparing the costs of EUHC and the HPP in LI and LMI countries is that the latter are probably more on track to implement significant UHC reforms during the SDG period. At the same time, LI countries would not be able to implement such reforms, raising the unsettling prospect of widening inequalities between

LI countries and the rest of the world. An urgent priority for LI countries and international agencies over the coming years will be to identify fiscal space for UHC so that these countries can make progress towards SDG 3. A recent review of fiscal space analyses undertaken by WHO suggested that improved efficiency of spending is probably the most feasible approach to increasing fiscal space in many countries.[20] In keeping with this general principle – and the prospect of limited additional domestic resources for health – our HPP may provide a framework for disinvestment in more costly, less effective services, and this could complement other measures to increase efficiency.

Our estimates are comparable to previous costing exercises, though somewhat higher. The WHO *Commission on Macroeconomics and Health* estimated that a basic package of services would cost the equivalent of US$ 71 per capita in current dollars.[4] A more recent estimate from the WHO High-Level Task Force suggested a figure of US$ 86 per capita.[8] McIntyre and colleagues proposed a minimum target for UHC spending of five percent of GDP per capita, which would imply a minimum spend of US$ 90 in LMI countries.[21] Our scenario analyses fall within the range of these costs but also raise the possibility that the minimum cost of EUHC could be much higher, ranging US$70 to US$ 120 in LI countries and US$ 90 to US$ 150 in LMI countries. Our scenario analyses underscore the need for better data, not just on the direct cost of health services, but also on the other health system costs required to implement EUHC.

5. Conclusions

While financing EUHC will be challenging for many LMI countries, it could be a reasonable aspiration during the SDG period for most of these countries. EUHC would

probably not be affordable or sustainable for LI countries, but the HPP would be a reasonable starting point. At the same time, even implementing the HPP would require significant external aid and domestic resource mobilization in LI countries. Our UHC cost estimates are consistent with the work of other groups but have the added value of providing detailed costs by package and by intervention.

Our costing framework may be useful as a starting point for ministries of health that do not currently have the capacity to conduct budget analyses but who wish to advocate for additional resources to plan the transition to UHC. The forthcoming Supplementary Appendix provides access to all data inputs that can be adjusted by users locally who may wish to employ other data sources or assumptions. A critical research priority for the global community will be to develop detailed, transparent, user-friendly, open-access costing models. Such models would ideally also be able to forecast the future burden of disease, identify potential economies of scope and scale across interventions, and determine the optimal allocation of current resources.

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1. Tables and Figures

Table 1. Cost of essential UHC in low- and lower middle-income countries, by package.

	Low-income countries				Lower middle-income countries			
	Current spending	Incremental cost*	Total cost**	Share of total EUHC costs	Current spending	Incremental cost*	Total cost**	Share of total EUHC costs
Surgery (SUR)	$3.31	$3.09	$6.40	7%	$3.25	$2.48	$5.73	4%
Reproductive health (RHC)	$1.46	$0.67	$2.13	2%	$7.44	$0.93	$8.36	5%
Maternal and neonatal health (MNH)	$2.25	$2.83	$5.09	6%	$14.43	$3.20	$17.63	11%
Child health and development (CHH)	$4.72	$1.61	$6.33	7%	$19.28	$1.40	$20.68	13%
Cancer (CAN)	$0.54	$2.98	$3.52	4%	$0.82	$1.96	$2.77	2%
Mental and neurological disorders (MNS)	$1.50	$3.07	$4.57	5%	$2.67	$4.46	$7.13	4%
Cardiovascular disease (CVD)	$1.09	$20.68	$21.77	24%	$15.12	$23.90	$39.01	24%
HIV, STIs, and hepatitis (HSH)	$9.94	$7.05	$16.99	19%	$8.78	$6.76	$15.54	10%
Tuberculosis (TB)	$0.74	$0.24	$0.97	1%	$0.73	$0.30	$1.03	1%
Malaria (MAL)	$2.52	$2.33	$4.85	5%	$3.75	$1.38	$5.13	3%
Neglected tropical diseases (NTDs)	$0.46	$0.38	$0.83	1%	$0.28	$0.59	$0.87	1%
Adult febrile illness (AFI)	$0.31	$0.48	$0.79	1%	$2.60	$1.14	$3.74	2%
Injury prevention (IPR)	$0.01	$0.03	$0.05	0%	$0.05	$0.12	$0.17	0%
Environmental improvement (ENV)	$0.05	$0.17	$0.22	0%	$0.08	$0.09	$0.16	0%
School-age health and development (SAC)	$0.20	$0.58	$0.78	1%	$0.16	$0.47	$0.63	0%
Adolescent health and development (AHD)	$0.93	$1.87	$2.80	3%	$0.80	$1.60	$2.41	2%
Congenital and genetic disorders (CGD)	$0.91	$1.82	$2.73	3%	$1.37	$2.04	$3.41	2%
Musculoskeletal disorders (MSK)	$0.94	$2.32	$3.26	4%	$4.88	$10.78	$15.66	10%
Palliative care and pain control (PCP)	$0.41	$1.65	$2.06	2%	$0.08	$0.19	$0.27	0%
Rehabilitation and disability (RHB)	$0.25	$0.99	$1.24	1%	$1.23	$2.87	$4.10	3%
Pandemic preparedness (PAN)	$0.00	$0.82	$0.82	1%	$0.00	$0.82	$0.82	1%
Pathology (PTH)	$0.98	$1.67	$2.65	3%	$2.63	$2.02	$4.66	3%

Table 2. Potentials cost of Essential UHC and the HPP in low- and lower middle-income countries, including uncertainty ranges from scenario analyses.

	Low-income countries		Lower middle-income countries	
	HPP	**EUHC**	**HPP**	**EUHC**
Total annual cost per capita	US$ 49 (37 to 62)	US$ 95 (73 to 120)	US$ 67 (50 to 82)	US$ 124 (93 to 153)
Total annual cost as a share of current GNI per capita	8.9% (6.8% to 11.2%)	17.3% (13.2% to 21.9%)	3.7% (2.8% to 4.5%)	6.8% (5.1% to 8.4%)
Incremental annual cost per capita	US$ 34 (25 to 45)	US$ 78 (57 to 103)	US$ 36 (27 to 45)	US$ 70 (54 to 88)
Incremental cost as a share of current GNI per capita	6.2% (4.5% to 8.1%)	14.3% (10.4% to 18.7%)	2.0% (1.5% to 2.4%)	3.9% (3.0% to 4.8%)

Notes: GNI = gross national income. Incremental cost is the cost of scaling from current to 80% coverage. Most recent GNI data from World Bank, deflated to 2012 US dollars. See text for details of scenario analyses.