

## Chapter 1

# Universal Health Coverage and Intersectoral Action for Health

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## INTRODUCING *DISEASE CONTROL PRIORITIES*, THIRD EDITION

In 1993, the World Bank published *Disease Control Priorities in Developing Countries (DCPI)*, an attempt to systematically assess value for money (cost-effectiveness) of interventions that would address the major sources of disease burden in low- and middle-income countries (LMICs) (Jamison and others 1993). A major motivation for *DCPI* was to identify reasonable responses in highly resource-constrained environments to the growing burden of noncommunicable diseases (NCDs) and of human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) in LMICs. The World Bank had highlighted the already substantial NCD problem in country studies for Malaysia (Harlan, Harlan, and

Oii 1984), for China (Jamison and others 1984), and in a *New England Journal of Medicine* Shattuck Lecture (Evans, Hall, and Warford 1981). Mexican scholars (Bobadilla and others 1993; Frenk and others 1989) pointed to the rapid growth of NCDs in Mexico and introduced the concept of a protracted epidemiological transition involving a dual burden of NCDs combined with significant lingering problems of infectious disease. The dual burden paradigm remains valid to this day. The World Bank's first (and so far only) *World Development Report* (1993) dealing with health drew heavily on findings from *DCPI* to conclude that a number of specific interventions against NCDs (including tobacco control and multidrug secondary prevention of vascular disease) were attractive even in environments where substantial

burdens of infection and insufficient dietary intake remained policy priorities (World Bank 1993).

*Disease Control Priorities*, second edition (*DCP2*), published in 2006, updated and extended *DCP1* most notably by explicit consideration of implications for health systems of expanded coverage of high-priority interventions (Jamison and others 2006). One important link to health systems was through examination of selected *platforms* for delivering logistically related interventions that might address quite heterogeneous sets of problems. Platforms examined included the district hospital as a whole, the surgical and emergency room platforms within the district hospital, and school-based platforms for delivering a range of services. Platforms often provide a more natural unit for investment—and for estimating costs—than do individual interventions. Analysis of the costs of providing platforms—and of the health improvements they can generate in a given epidemiological environment—can thus help guide health system investments and development. Both *Disease Control Priorities*, third edition (*DCP3*), and the World Health Organization's (WHO)

major investment case for health (Stenberg and others 2017) continue to utilize platforms and their costs as important organizing concepts.

This chapter conveys the main findings of *DCP3*, and in particular its conclusions concerning intersectoral policy priorities and essential universal health coverage (EUHC). Like its two predecessors, *DCP3*'s broad aim is to assist decision makers in allocating often tightly constrained budgets so that health system objectives are maximally achieved. Beyond informing policy discourse, the granularity of analysis reported in *DCP3*'s nine volumes is intended to serve officials within ministries at the implementation level. Beginning with *DCP3* volume 1 on *Essential Surgery*, *DCP3*'s first eight volumes (and related overviews of six of them in *The Lancet*) appeared between 2015 and 2017. This final volume contains cross-cutting and synthesizing chapters. Box 1.1 lists *DCP3*'s nine volumes and their editors.

*DCP3* differs importantly from *DCP1* and *DCP2* in terms of its multivolume format, in terms of extending

### Box 1.1

#### *DCP3*'s Nine Volumes

The World Bank has published *DCP3* in 2015–2018. In contrast to the single (very large) volume formats of *DCP1* and *DCP2*, *DCP3* appeared in nine smaller topical volumes, each with its own set of editors. Coordination across volumes is provided by seven series editors: Dean T. Jamison, Rachel Nugent, Hellen Gelband, Susan Horton, Prabhat Jha, Ramanan Laxminarayan, and Charles N. Mock. The topics and editors of the individual volumes are as follows:

**Volume 1: *Essential Surgery***, edited by Haile T. Debas, Charles N. Mock, Atul Gawande, Dean T. Jamison, Margaret E. Kruk, and Peter Donkor, with a foreword by Paul Farmer

**Volume 2: *Reproductive, Maternal, Newborn, and Child Health***, edited by Robert E. Black, Ramanan Laxminarayan, Marleen Temmerman, and Neff Walker, with a foreword by Flavia Bustreo

**Volume 3: *Cancer***, edited by Hellen Gelband, Prabhat Jha, Rengaswamy Sankaranarayanan, and Susan Horton, with a foreword by Amartya Sen

**Volume 4: *Mental, Neurological, and Substance Use Disorders***, edited by Vikram Patel, Dan Chisholm, Tarun Dua, Ramanan Laxminarayan, and María Elena Medina-Mora, with a foreword by Agnes Binagwaho

**Volume 5: *Cardiovascular, Respiratory, and Related Disorders***, edited by Dorairaj Prabhakaran, Shuchi Anand, Thomas Gaziano, Jean-Claude Mbanya, Yangfeng Wu, and Rachel Nugent, with a foreword by K. Srinath Reddy

**Volume 6: *Major Infectious Diseases***, edited by King K. Holmes, Stefano Bertozzi, Barry R. Bloom, and Prabhat Jha, with a foreword by Peter Piot

**Volume 7: *Injury Prevention and Environmental Health***, edited by Charles N. Mock, Rachel Nugent,

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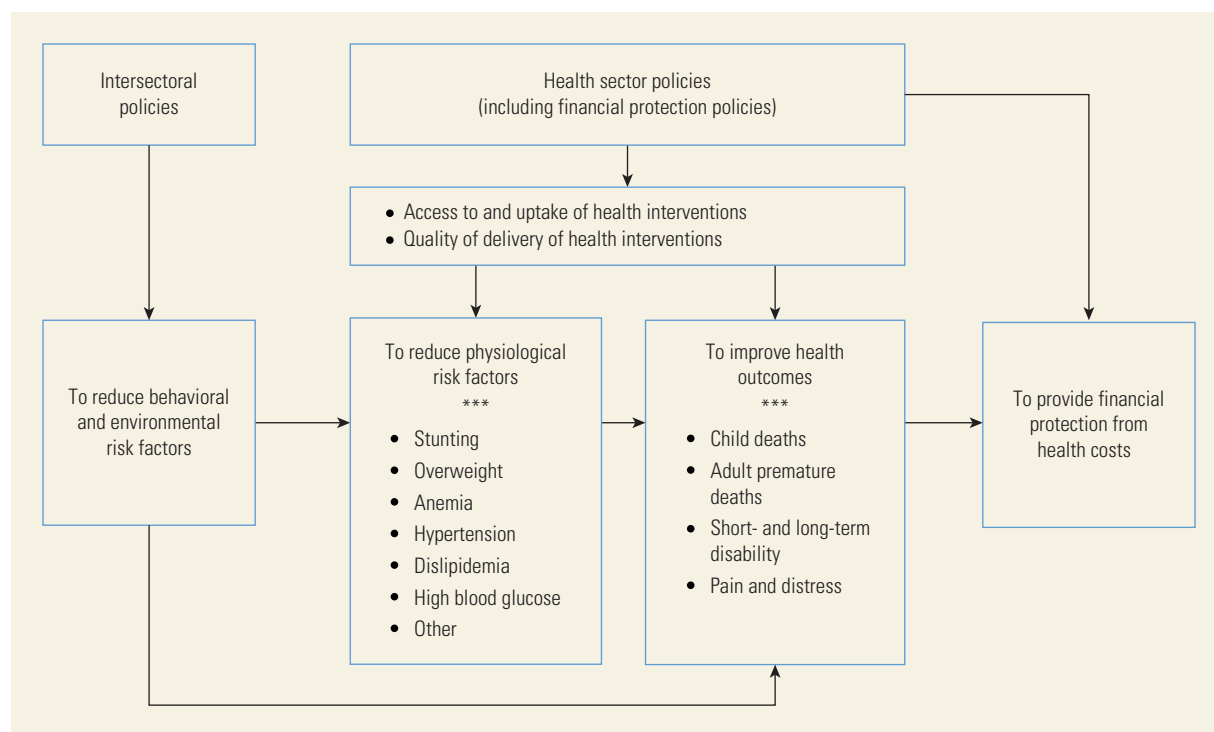
**Box 1.1** (continued)

Olive Kobusingye, and Kirk R. Smith, with a foreword by Ala Alwan

**Volume 8: *Child and Adolescent Health and Development***, edited by Donald A. P. Bundy, Nilanthi de Silva, Susan Horton, Dean T. Jamison, and George C. Patton, with a foreword by Gordon Brown

**Volume 9: *Disease Control Priorities: Improving Health and Reducing Poverty***, edited by Dean T. Jamison, Hellen Gelband, Susan Horton, Prabhat Jha, Ramanan Laxminarayan, Charles N. Mock, and Rachel Nugent, with a foreword by Bill and Melinda Gates and an introduction by Lawrence H. Summers.

**Figure 1.1** Policies for Health



and consolidating the concept of platforms, and in terms of explicit consideration of a broad range of intersectoral and fiscal policies for health. Figure 1.1 illustrates the division of *DCP3*'s analyses between intersectoral policies and health sector policies and shows examples of the risk factors and conditions that the policies address. Importantly, the *DCP3* structure views the role of intersectoral action to be reduction of behavioral and environmental risks, which themselves

affect the level of physiological risks and health outcomes directly. The health sector's role in reducing behavioral and environmental risk is viewed as modest—rather the health sector's main role is in reducing (some of) the physiological risk factors and reducing the duration and severity of health conditions and their sequelae. Appropriate health sector policies also offer the potential for reducing health-related financial risks in a population.

*DCP3* has four major objectives that go beyond previous editions. The first is to address explicitly the financial risk protection and poverty reduction objective of health systems, as well as other objectives such as provision of contraception, reduction in stillbirths, and palliative care or enhancement of the physical and cognitive development of children. Standard health metrics such as the quality-adjusted life year (QALY) and disability-adjusted life year (DALY) fail to encompass these other objectives of health systems, and *DCP3* has endeavored to be explicit about them and their importance. The second extension lies in systematic attention to the intersectoral determinants of health.

The third major way that *DCP3* goes beyond previous editions lies in organizing interventions into 21 essential packages reflecting professional communities. Table 1.1 lists *DCP3*'s 21 packages. *DCP3* defines a concept of EUHC in the health systems components of the essential 21 packages. *DCP3* further identifies a subset of EUHC, the highest-priority package (HPP), that can potentially be afforded by low-income countries (LICs) and that offers the most potential achievement (given limited resources) of health, financial protection, and other objectives. Finally, *DCP3* provides estimates for low- and lower-middle-income countries of incremental and total costs in 2030 for both EUHC and HPP and of the magnitude of their impact on mortality. In addition to these new elements, *DCP3* updates the efforts of *DCP1* and *DCP2* to assemble and interpret the literature on economic evaluation of health interventions.

This chapter introduces the substantive topics addressed by *DCP3* and relays our main conclusions. Before turning to that, we briefly describe the context in which *DCP3*'s analyses have been undertaken.

## CONTEXT

Five considerations set the context for *DCP3*: (a) the 20th-century revolution in human health, (b) the scientific underpinnings of that revolution, (c) the high estimated returns to (carefully chosen) health investments, and (d) the increasing implementation of universal health coverage (UHC) as a practical goal for domestic finance of health systems. Skolnik (2016) provides further discussion of these four issues. A fifth consideration concerns evolution in the thinking about the international dimension of health finance—development assistance for health broadly defined.

Chile exemplifies the two key elements of the 20th-century revolution in human health. One is the

sheer magnitude of improvement. As recently as 1910, Chilean life expectancy fell below 32 years. By 2012, life expectancy exceeded 78 years. Second, time has narrowed cross-country differences. In 1910, world leaders (such as Australia and New Zealand) achieved life expectancies almost 30 years greater than Chile, but by 2010 that gap had narrowed to around 4 years. The magnitude of Chile's success has been unusual, but the broad story it conveys is not. That said, Sub-Saharan Africa now lags 20 years behind global life expectancy of 72 years, and countries in other regions (and regions within large countries) remain similarly disadvantaged. *DCP3*'s main purpose is to provide information to help close those gaps.

Income growth in the past century and past decades has contributed to increased life expectancy as has, to a somewhat greater extent, improvements in education levels (Pradhan and others 2017). Most improvements, however, have resulted from an ever-expanding menu of drugs, diagnostics, vaccines, and knowledge (Jamison, Jha, and others 2013). Nurturing continuation of the scientific investment therefore remains a policy priority, as was extensively discussed in *DCP2* (Bloom and others 2006; Mahmoud and others 2006; Meltzer 2006; Weatherall and others 2006). *DCP3* has devoted less attention to research and development (R&D) than did *DCP2*—in part because of the coverage there. While R&D is discussed in several places (for example, Bundy and others 2017; Trimble and others 2015), a careful mining of *DCP3* for its implications for R&D remains to be done.

Valuation of mortality decline (or health change more generally) is excluded from the global system of national income and product accounts. Economists have nonetheless expended substantial effort tracing the effect of health improvements on household and national income and in assessing the value of the small reductions in mortality risk that have occurred year by year. *Global Health 2035* (GH2035), the report of the *Lancet* Commission on Investing in Health (Jamison, Summers, and others 2013), reviewed and extended the literature on the value of health improvements. That literature points to high returns indeed. The Copenhagen Consensus, a project that comparatively assesses returns across all major development sectors, has likewise found high returns: its 2012 assessment found that 9 of the 15 highest return investments were health-related, including all of the top 5 (Kydland and others 2013).

As national incomes rise, countries typically increase the percentage of national income devoted to health.

Equally significantly, they increase the proportion of health expenditures that are prepaid, usually through public or publicly mandated finance. WHO's leadership in advancing a global UHC agenda has accelerated this underlying movement of political systems toward UHC. Dr. Tedros Ghebreyesus, WHO's new Director-General, has reaffirmed the WHO commitment to UHC and to the use of evidence and data in support of achieving that goal (Ghebreyesus 2017). *GH2035* advocated variants on a pathway toward UHC, "progressive universalism," that emphasized two initial priorities for action: (a) universal coverage of publicly financed interventions and (b) reductions of user payments at the point of service to very low levels (Jamison, Summers, and others 2013). With inevitable constraints on public budgets, these two priorities point to the need for initial selectivity in the range of interventions to be publicly financed, the so-called benefits package. Many considerations will influence national choices of how benefits packages will evolve over time and on the appropriate pathways to universalism. Hence, the importance of maintaining the focus on the highest priority health investments as *DCP3* is intended to facilitate.

With substantial income growth in most LMICs and an increasing number of countries committed to public finance of UHC, the role of development assistance is being reexamined (Bendavid and others 2018; Jamison, Summers, and others 2013). As the World Bank and others have long argued, finance ministers will often reduce domestic allocations to sectors receiving substantial foreign aid. The challenge to those concerned with aid effectiveness thus becomes one of identifying and supporting important activities that national finance ministries are likely to underfinance (such as R&D, pandemic preparedness, and control of antimicrobial resistance). A recent assessment found that support for these international functions already constitutes more than 20 percent of development assistance broadly defined; the authors make the case that percentage should steadily increase over time (Schäferhoff and others 2015). This view of development assistance has clear implications for the construction of model benefits packages for domestic finance; other things being equal, domestic finance needs to emphasize services having minimal *international* externalities.

## PACKAGES, PLATFORMS, AND POLICIES

*DCP3* defines *packages* of interventions as conceptually related interventions—for example, those dealing with cardiovascular disease or reproductive health or surgery.

An objective of each *DCP3* volume was to define one or more essential packages and the interventions in that package that might be acquired at an early stage on the pathway to UHC. The essential packages comprise interventions that provide value for money, are implementable, and address substantial needs.

*Platforms* are defined as logistically related delivery channels. *DCP3* groups EUHC interventions within packages that can be delivered on different types of platforms. The temporal character of interventions is critical for health system development. Patients requiring nonurgent but substantial intervention—repair of cleft lips and palates is an example—can be accumulated over space and time, enabling efficiencies of high volume in service delivery. Urgent interventions, which include a large fraction of essential surgical interventions, are ideally available 24/7 close to where patients live—with important implications for dispersal of relevant platforms and integration of different services. Nonurgent but continuing interventions to address chronic conditions (for example, secondary prevention of vascular disease or antiretroviral therapy for HIV-positive individuals) provide a major and quite distinct challenge. One new product of *DCP3* has been to explicitly categorize all essential interventions into one of these three temporal categories and to draw relevant lessons, including concerning cost, for health systems.

In total, 71 distinct and important intersectoral policies for reducing behavioral and environmental risk were identified, and 29 of those were identified as candidates for early implementation. In addition to intersectoral policies, *DCP3* reviews policies that affect the uptake of health sector interventions (such as conditional cash transfers) and the quality with which they are delivered (Peabody and others 2018).

## METHODS

*DCP3's* authors have thoroughly updated findings from *DCP2* on costs, effectiveness, and cost-effectiveness. The literature provides much of specific interest, but formulation of policy, when informed by evidence at all, requires expert judgment to fill extensive gaps in the literature. The first subsection of this section discusses *DCP3's* approach. The second and third subsections discuss methods of economic evaluation and *DCP3's* extension of standard methods to include analysis of the financial protection objectives of health systems. The final subsection discusses the process of formulation of *DCP3's* packages.

**Table 1.1** *DCP3's* Clusters of Essential Packages

	Packages
<i>Age-related cluster</i>	1. Maternal and newborn health; 2. Child health; 3. School-age health and development; 4. Adolescent health and development; 5. Reproductive health and contraception
<i>Infectious diseases cluster</i>	6. HIV and STIs <sup>a</sup> ; 7. Tuberculosis; 8. Malaria and adult febrile illness <sup>b</sup> ; 9. Neglected tropical diseases; 10. Pandemic and emergency preparedness
<i>Noncommunicable disease and injury cluster</i>	11. Cardiovascular, respiratory, and related disorders; 12. Cancer; 13. Mental, neurological, and substance use disorders; 14. Musculoskeletal disorders; 15. Congenital and genetic disorders; 16. Injury prevention; 17. Environmental improvement <sup>c</sup>
<i>Health services cluster</i>	18. Surgery; 19. Rehabilitation; 20. Palliative care and pain control; 21. Pathology

Note: HIV = human immunodeficiency virus; STIs = sexually transmitted infections.

a. Most forms of hepatitis are in part sexually transmitted and hence control of hepatitis is included in this package.

b. Dengue is included among adult febrile illnesses.

c. Environmental improvements affect the incidence of risk factors both for infectious and for noncommunicable disease. We include them under the noncommunicable disease and injury cluster because the more significant consequences lie there.

## Use of Evidence

Using research (or other) evidence to guide policy is most simply done when randomized controlled trials of the relevant intervention (or mix of interventions) have been undertaken on the population of interest in the appropriate ecological setting. Even in high-income countries, such strong evidence is rarely available. In lower-income environments, the problem of the quality of evidence is compounded. As always, evidence must be used to help decision makers (a) avoid adopting interventions that don't work in a given context and (b) avoid rejecting those that do. Box 1.2 discusses the *DCP3* thinking on this issue.

## Economic Evaluation

The methods and findings of *DCP3's* approaches to economic evaluation appear in three separate chapters of this volume: one on cost-effectiveness, one on benefit-cost analysis, and one on extended cost-effectiveness analysis (Horton 2018; Chang, Horton, and Jamison 2018; Verguet and Jamison 2018). Table 1.2 provides a high-level overview. Several of the entries in that table—covering value for money, dashboards, and extended cost-effectiveness analysis—point to the desirability of multicriteria decision analysis of the sort explored by Youngkong (2012) and others.

The bottom row of table 1.2 takes the multioutcome extended cost-effectiveness analysis (ECEA) approach one step further to discussion of the “dashboard” *DCP3* uses to help inform and structure setting priorities. This health dashboard concept is a natural extension of the dashboard approach that Stiglitz, Sen, and Fitoussi (2010) propose to go beyond gross domestic product

(GDP) as a macroeconomic indicator. The health dashboard is likewise a natural step beyond use of cost-effectiveness league tables in constructing health benefit packages, an approach consistent with that of Glassman, Giedion, and Smith (2017).

## Protecting against Financial Risk

In populations lacking access to health insurance or pre-paid care, medical expenses that are high relative to income can be impoverishing (figure 1.2 illustrates mechanisms). Where incomes are low, seemingly inexpensive medical procedures can be catastrophic. WHO's *World Health Report 2010* documented the (very substantial) magnitude of medical impoverishment globally and pointed to the value of universal health coverage for addressing both the health and the financial protection needs of populations (WHO 2010). Most of the literature on medical impoverishment fails to identify the medical conditions responsible. Essue and others (2018) point to where specific causes of medical impoverishment information are known, an obviously central point for construction of benefits packages.

Although multiple studies document the overall magnitude of medical impoverishment, most economic evaluations of health interventions and their finance (including those in *DCP1* and *DCP2*) have failed to address the important question of *efficiency* in the purchase of financial protection. In work undertaken for *DCP3*, an approach was developed—ECEA—to explicitly include financial protection and equity in economic evaluation of health interventions. Smith (2013) has developed an approach that addresses the same concern from

## Box 1.2

### Evidence for Policy: From Research Findings to Policy Parameters

Analysis in *DCP3* proceeds by attempting to make the best use of the evidence available for informing important decisions rather than exclusively using what ideally generated evidence has to say (Jamison 2015). The distinction is important. An example illustrates. Quite good evidence is available on the effect of vector control on malaria mortality in specific environments. Likewise there is strong evidence concerning treatment efficacy. Very little evidence, however, exists on how different mixes of vector control and treatment affect mortality, but this is the important question for policy.

Inevitably imperfectly, our task in the *Disease Control Priorities* series, beginning with the first edition, has been to combine the (sometimes) good science about unidimensional intervention in very specific locales with informed judgment to reach reasonable conclusions about the effect of intervention mixes in diverse environments. To put this in a slightly different way: the parameters required for assessing policy differ, often substantially, from what has been addressed (so far) in the research literature. The transition from research findings to policy parameters requires judgment to complement the research and, often, a consideration of underlying mechanisms (for example, use of incentives) that might suggest generalizability (Bates and Glennerster 2017).

In particular, four types of judgments were often needed in the course of *DCP3* to make the transition from research findings to evidence for policy. Examples illustrate:

1. *Similar interventions.* Assume we have evidence that intervention A is effective, and we believe intervention B is quite similar. (Think of two lipid-lowering agents.) We use judgment to infer that intervention B is (or perhaps is not) also effective.
2. *Combined interventions.* As in the malaria example, assume that evidence shows interventions A and B are both effective. What about A + B? Is the combination's effect the sum of the separate effects? Or are the two substitutes? Hard evidence on combinations is far more rare than evidence on individual interventions.
3. *Changed settings.* Assume we have strong evidence that intervention A works in environment Y, for example, that antimalarial bednets reduce all causes of child mortality when mosquitos bite indoors at night, at moderate intensity. Good evidence concludes that bednets were effective where evaluated, but other, biological considerations suggest that that evidence be rejected in an environment with very high-biting intensity. Economists have discussed this point in the context of "external validity." Ozler (2013) provides a clear overview.
4. *Trait-treatment interactions.* Finally, patient characteristics may differ. Measles immunization in healthy child populations may have been shown to have no effect on mortality rates. Generalizing that finding to a population with different traits (for example, undernourished or sickly children) might and in this case would generate an unfortunate false negative.

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Evidence can be weak. Or, as in the examples above, evidence can be strong but only partially relevant. Often weak evidence for effectiveness, or partially relevant evidence for effectiveness, is likewise weak evidence concerning lack of effectiveness. Interpreting weak evidence as grounds for rejecting an intervention could generate false negatives that cost lives. The attempt in *DCP3* has been to unashamedly combine evidence with informed judgment in order to judiciously balance false positives and false negatives.

a different perspective. ECEA is the approach that *DCP3* used to address issues of both reduction in financial risk and distribution across income groups of financial as well as health outcomes resulting from policies, such as public finance, to increase intervention uptake. ECEA has been

used to evaluate tobacco taxation and regulatory policies (Verguet and Jamison 2018). An important implication of the ECEA evaluations of tobacco taxation in China and in Lebanon was that such taxation, when the full range of consequences is considered, is progressive in

**Table 1.2 Economic Evaluation Methods**

Economic method	Costs	Consequences
<p>1.1 <i>Cost-effectiveness analysis (CEA)</i></p> <p>Horton (2018) overviews <i>DCP3</i>'s findings on CEA. Wilkinson and others (2016) and Sanders and others (2016) provide recent guidelines for health CEA. Jamison (2009) provided earlier guidelines that pointed to inclusion of financial protection outcomes and nonfinancial constraints in CEA.</p>	<ul style="list-style-type: none"> <li>• Social costs<sup>a</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Changes in specific outcomes (child deaths, new HIV infections)</li> <li>• Changes in aggregated measures (YLL, QALY, DALY)</li> </ul>
<p>1.2 <i>Value-for-money assessment</i></p> <p>Value-for-money assessment of health sector interventions includes CEA but acknowledges the CEA is irrelevant for some health sector outcomes.</p>	<ul style="list-style-type: none"> <li>• Social costs<sup>a</sup></li> </ul>	<p>Important outcomes of health sector intervention are not measurable in mortality or DALY terms (and are therefore excluded from CEA) include the following:</p> <ul style="list-style-type: none"> <li>• Contraception provided</li> <li>• Stillbirths averted</li> <li>• Palliative care</li> <li>• IQ or stature enhanced.</li> </ul>
<p>1.3. <i>Extended cost-effectiveness analysis (ECEA)</i></p> <p>Verguet and Jamison (2018) overview of <i>DCP3</i>'s findings on ECEA.</p>	<ul style="list-style-type: none"> <li>• Costs are viewed separately from perspectives of provider, patient, and society.</li> </ul>	<ul style="list-style-type: none"> <li>• Consequences are reported from a distributional perspective (for example, by gender, income, or membership in a disadvantaged group). See, for example, Asaria, Griffin, Cookson, and others (2015).</li> <li>• Valuation of financial risk protection is included.</li> </ul>
<p>1.4. <i>Benefit-cost analysis (BCA)</i></p> <p>Chang, Horton, and Jamison (2018) overview of <i>DCP3</i>'s findings on BCA.</p>	<ul style="list-style-type: none"> <li>• Social costs<sup>a</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Changes in income or gross domestic product</li> <li>• Changes in income plus the monetary value of change in mortality (or health)</li> </ul>
<p>1.5. Economic dashboard</p> <p><i>DCP3</i>'s judgments about interventions to include in ECEA and in the HPP involved combining multiple strands of evidence. While intervention cost-effectiveness was typically most important, in the end judgments involved considering a dashboard of information including disease burden, value for money assessment, ECEA, and BCA. Stiglitz, Sen, and Fitoussi (2010) propose making this dashboard explicit and the primary guide to decision making in the macroeconomic context.</p>	<ul style="list-style-type: none"> <li>• As with ECEA</li> </ul>	<ul style="list-style-type: none"> <li>• Poverty reduction consequences or insurance value are explicitly considered.</li> <li>• Distribution of costs and consequences across income quintiles are explicitly considered.</li> <li>• Dashboard contains a fuller and more disaggregated list of consequences than ECEA, which is itself much more comprehensive than CEA.</li> </ul>

Note: DALY = disability-adjusted life year; *DCP3* = *Disease Control Priorities* third edition; HIV = human immunodeficiency virus; HPP = highest-priority package; IQ = intelligence quotient; QALY = quality-adjusted life year; YLL = years of life lost.

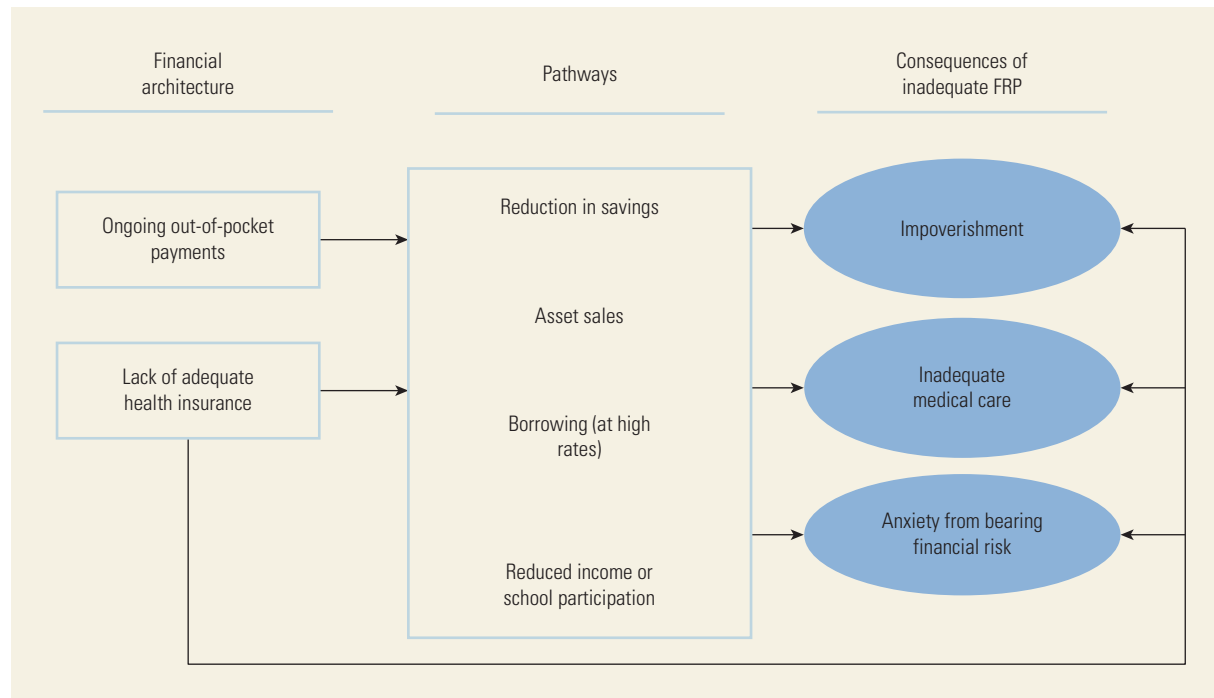
a. Social costs refer to the value of real resources used to implement an intervention. For example, if a health ministry needs to pay import taxes on pharmaceuticals, the social cost is the pretax cost not the posttax cost, as the tax simply represents a transfer (from the health to the finance ministry). Taxation itself is often considered by economists to involve a real cost (the so-called deadweight loss from taxation) arising from distortion of prices and hence decisions of actors in the economy. *DCP3* follows standard practice in health-related CEA in not considering deadweight losses from taxation. Inclusion of deadweight losses as currently assessed would typically increase the cost per unit of outcome by 50 to 70 percent.

terms of health outcomes and unlikely to be regressive in terms of financial outcomes (Salti, Brouwer, and Verguet 2016; Verguet and others 2015). A 13-country ECEA of tobacco taxation found results similar to those from China and Lebanon (Jha and Global Tobacco Economics Consortium 2017).

The tobacco ECEAs suggest a more general point about government policies to provide populations with protection against financial risk. Policy can operate either upstream or downstream. Upstream provision of financial risk protection (FRP) attenuates the need for costly medical intervention. Upstream measures include



**Figure 1.2** Financial Risk Protection



Note: FRP = financial risk protection.

prevention, early treatment, and investment in improved medical technologies (see Lakdawalla, Malani, and Reif 2017). Most health systems emphasize downstream measures through payment for expensive procedures in the hospital. Downstream measures will always be needed. That said, resource constraints will sharply limit public finance of downstream financial protection; provision only of downstream measures perverts incentives in the obvious way and in many (but not all) cases upstream measures more efficiently purchase FRP given budget constraints.

### Construction of Packages

Editors of *DCP3* volumes and authors of specific chapters in volume 9—on rehabilitation (Mills and others 2018), on pathology (Fleming and others 2018), on palliative care (Krakauer and others 2018) and on pandemic preparedness (Madhav and others 2018)—constructed the 21 essential packages listed in table 1.1. The series editors and authors of this paper then consolidated those policies and formats into a common level of aggregation and a common structure (for example, screening was not considered an intervention by itself but only in conjunction with the indicated response). This generated a set of harmonized essential packages. The originals

appear as an annex to this chapter, and chapters 2 and 3 provide a full discussion of methods. Several interventions appear in more than one package as the final lists of 71 intersectoral policies, and 218 EUHC interventions remove this duplication. A consequence is that the cost of EUHC is less than the sum of the costs of the packages within it.

## INTERSECTORAL POLICIES FOR HEALTH

Eleven of *DCP3*'s 21 packages contain a total of 71 intersectoral policies. These policies fall into four broad categories: taxes and subsidies (15 of 71), regulations and related enforcement mechanisms (38 of 71), built environment (11 of 71), and information (7 of 71). These policies are designed to reduce the population level of behavioral and environmental risk factors—tobacco and alcohol use, air pollution, micronutrient deficiencies in the diet, unsafe sexual behavior, excessive sugar consumption, and others (figure 1.1). Watkins, Nugent, and others (2018) provide a thorough overview of *DCP3*'s findings on intersectoral policy. Here we highlight several of *DCP3*'s points:

First, at initially low levels of income, the levels of many risk factors rise with income, creating headwinds

against which health sector policy must proceed. These rises are at least potentially countered by sound policy. We identify 29 of 71 intersectoral policies to be well worth considering for early adoption.

Second, for important categories of risk, such as pollution and transport risks, there are multiple sources of the risk, each of which is addressed through different modalities. Rather than a clear set of “first priorities,” there are multiple country- or site-specific actions to be taken. Perhaps the single most important point to note is that the success of many high-income countries in reducing these risks to very low levels points to the great potential that these multiple policies can have for dealing, in particular, with air pollution and road traffic injuries.

A third point of importance is that fiscal policies—finance ministry policies—are likely of key significance. Discussion of these policies has most prominently involved taxes on tobacco, alcohol, and sugar-sweetened beverages. But the possibilities for taxation are broader: sugar production and imports, fossil fuels (or carbon), and industrial or vehicle emissions. Also of importance is reducing expensive subsidies that now exist on fossil fuels and often on unhealthy food production or unhealthy child dietary supplements. While health improvement may be only one of several objectives for lowering subsidies, it is an important one. The literature

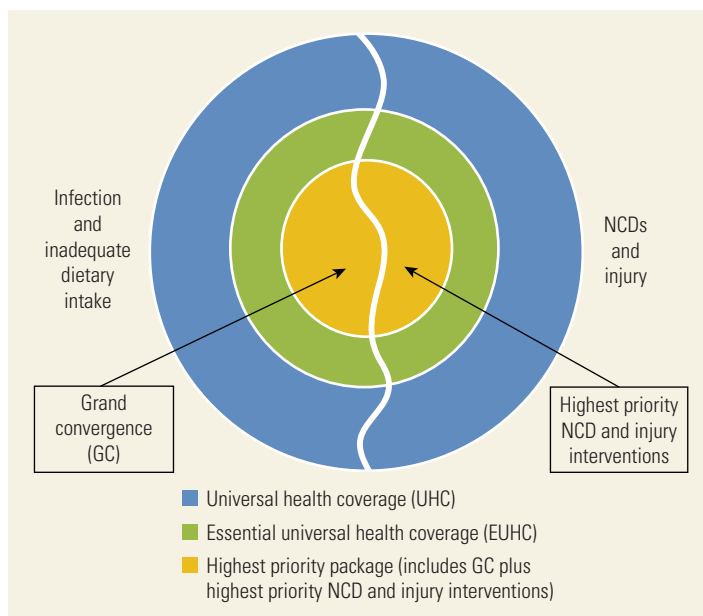
on the health potential for removing subsidies remains limited. But the sheer magnitude of some of these subsidies, as the International Monetary Fund has stressed, points to the value of careful further analysis. In all likelihood, a country’s finance ministry is the most important ministry (after health) for improving population health. And many—not all—of the measures it can take can enhance public sector revenue.

## ESSENTIAL UNIVERSAL HEALTH COVERAGE

The heart of *DCP3* consisted of reviewing available evidence on health sector interventions’ costs, effectiveness, ability to be implemented, and capacity to deliver significant outcomes. *DCP3*’s nine volumes provide granular overviews of this evidence, overviews directed to the implementation community as well as to the policy community. Chapter 3 of volume 9 provides an integrative overview (Watkins, Jamison, and others 2018).

Figure 1.3 provides a schema of how *DCP3* defines EUHC. Beyond EUHC is the full range of available, efficacious health sector interventions, or UHC. While no country publicly finances all interventions, many high-income countries come close and can reasonably be described as having achieved UHC. Short of EUHC is what *DCP3* labels the HPP. Individual countries’ highest priorities will differ from our model list for multiple reasons. That said, the HPP is intended to provide a useful starting point for national or subnational assessments. As with EUHC, *DCP3* provides estimates for the cost and effects of EUHC. *GH2035* (Jamison, Summers, and others 2013) pointed to the possibility of a “grand convergence,” across most countries, in our lifetimes, in levels of under-age-five mortality and major infections. Figure 1.3 illustrates grand convergence in the *DCP3* structure. The two following subsections provide our estimates of the costs and mortality-reducing consequences of EUHC.

**Figure 1.3** Essential Universal Health Coverage and Highest-Priority Packages



Note: NCD = noncommunicable disease. The “grand convergence” agenda for reducing child and infectious disease mortality was advanced by the *Lancet* Commission on Investing in Health (Jamison, Summers, and others 2013).

## Costs

We generated two estimates of costs for the health system component of each of *DCP3*’s 21 packages. The first was an estimate of how much additional funding it would take—in the 2015 cost and demographic environment—to implement each package to the extent judged feasible. The packages were designed so that for most cases, “full” implementation, defined as 80 percent effective coverage, was judged feasible by 2030. The second estimate of cost was of total cost for the package, defined as incremental cost plus the amount already (in 2015) being spent on the intervention. These costs were estimated both for LICs and for lower-middle-income

countries. Some interventions were included in several packages, which was a natural outcome of a package formulation process that delineated packages as areas of concern to specific professional communities, such as surgeons or reproductive health specialists. Eliminating this duplication resulted in 218 distinct EUHC interventions. This implies that the sum of the package costs will exceed the cost of providing all packages. The subset of EUHC that was judged by explicit criteria to be highest priority (the HPP) was costed in the same way as for EUHC. All these costs are the estimated costs associated with expanding coverage in the 2015 environment, an environment for which we have substantial, if incomplete, information without making assumptions about the evolution of costs and epidemiology over time. Costs should be interpreted as long-term steady state costs, that is, costs that include (a) training of staff to replace retirements and (b) investment to counter depreciation of equipment and facilities.

Table 1.3 reports the calculated expenditure increases required above baseline and expresses those numbers as a percentage of gross national income (GNI). (Chapter 3, volume 9, of *DCP3* reports costs by package.) We consider it reasonable to think of the costs in 2030 of EUHC and the HPP in these percentage terms (as well as in numbers of dollars). Only a small fraction of reasonably anticipated economic growth in most countries would cover the incremental costs of EUHC, although achieving the increased percentage of gross national income

required would require substantial reallocation of public sector priorities (Jamison, Summers, and others 2013). In principle, projections could be made of changes in both the tradable and nontradable components of cost, of the responsiveness of costs to demography (and in particular to fertility decline), and on whether improved transport and other infrastructure might reduce our estimates of the cost of expanding coverage to ever-more difficult-to-reach parts of the population. In a country-specific context, this might well be worthwhile. But for purposes of reasonable overall cost estimates we judge that adding these layers of assumption would add little or nothing to the information content of table 1.3.

Table 1.4 presents our cost assessments divided along two other relevant dimensions. Panel a provides estimates of the costs associated with each platform, and about half of our calculated costs occur at the health center level. For EUHC, another 15 to 25 percent each of incremental expenditures would go to the first-level hospital and to the community level. Panel b reports intervention cost estimates by degree of urgency. The health systems implications for increasing intervention coverage differ markedly by urgency. Continuing interventions require appropriate community capacity for delivery. Examples include antiretroviral therapy or antihypertensive therapy. A full half of incremental costs are needed to finance continuing, very long-term intervention. Urgent interventions—for example, for trauma or obstructed labor—require that first-level hospitals be

**Table 1.3** Total and Incremental Annual Costs of Essential UHC and the Highest Priority Package, 2015 (in 2012 US\$)

	Low-income countries <sup>a</sup>		Lower-middle-income countries <sup>a</sup>	
	HPP	EUHC	HPP	EUHC
<b>1. Incremental annual cost (in billions, 2012 US\$)</b>	\$23	\$48	\$82	\$160
<b>2. Incremental annual cost per person<sup>b</sup> (in US\$)</b>	\$26	\$53	\$31	\$61
<b>3. Total annual cost (in billions, US\$)</b>	\$38	\$68	\$160	\$280
<b>4. Total annual cost per person<sup>c</sup> (in US\$)</b>	\$42	\$76	\$58	\$110
<b>5. Incremental annual cost as a share of current GNI per person<sup>b</sup></b>	3.1%	6.4%	1.5%	2.9%
<b>6. Total annual cost (as percentage of current GNI per person)<sup>d</sup></b>	5.1	9.1	2.8	5.2

Source: Watkins, Jamison, and others 2018.

Note: EUHC = essential universal health coverage; GNI = gross national income; HPP = highest-priority package.

a. This paper uses the World Bank's 2014 income classification of countries. As a country's income changes, its classification can also change; for example, both Bangladesh and Kenya moved from low- to lower-middle income after 2014.

b. Incremental annual cost is the estimated cost of going from current to full (80%) coverage of the EUHC and HPP interventions. The *total* annual cost is the incremental cost plus the cost of the current level of coverage assuming the same cost structure for current as for incremental coverage. Estimated costs are inclusive of estimates for (large) health system strengthening costs and are steady state (or long-term average) costs in that investments to achieve higher levels of coverage and to cover depreciation are included.

c. The 2015 population of low-income countries was 0.90 billion. For lower-middle-income countries, it was 2.7 billion.

d. The 2015 GNI of low-income countries was \$0.75 trillion. For lower-middle-income countries, it was \$5.6 trillion.

**Table 1.4** Incremental Costs of the HPP and EUHC by Platform and by Intervention Urgency, Percent

	Low-income countries		Lower-middle-income countries	
	HPP (percent)	EUHC (percent)	HPP (percent)	EUHC (percent)
<i>(a) Incremental costs by platform, percentage of total</i>				
<b>Population based</b>	0.57	2.3	0.6	2.0
<b>Community</b>	18	16	12	14
<b>Health center</b>	50	52	57	52
<b>First-level hospital</b>	25	25	22	25
<b>Referral and specialty hospitals</b>	6.4	5.2	9.1	6.1
	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<i>(b) Incremental costs by intervention urgency, percentage of total</i>				
<b>Urgent</b>	35	28	27	24
<b>Continuing</b>	41	48	50	52
<b>Nonurgent</b>	24	24	23	24
	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Watkins, Jamison, and others 2018.

Note: EUHC = essential universal health coverage; HPP = highest-priority package.

accessible quickly (Reynolds and others 2018). About one-quarter to one-third of incremental costs are required to provide this capacity. Nonurgent (but potentially important) interventions (for example, cataract extraction) allow patients to be accumulated over space and time with concomitant potential for efficiency and quality resulting from high volume.

### Mortality Reduction from Essential UHC

DCP3 generated estimates of mortality in 2015, as well as estimates for a “counterfactual 2015” and of how many fewer deaths would have occurred following implementation of EUHC and the HPP. This analysis thus provides a reasoned estimate of the costs and consequences of using—in the 2015 demographic context—today’s medical and public health technology as fully as reasonably possible (as well as associated cost-effectiveness estimates). This subsection discusses estimates of mortality reduction.

Norheim and others (2015) developed a structure—40x30—for thinking about mortality reduction goals for the Sustainable Development Goal (SDG) period. Their starting point was the United Nations Population Division’s (UNPD) projected age distribution of population in 2030 and an age distribution of deaths generated from that age distribution of population and age-specific mortality rates from 2010. The overall 40x30 goal was, then, to reduce the calculated

number of premature deaths by 40 percent, where *premature* is defined as under age 70 years. Subgoals were to reduce under-age-five and major infectious disease deaths by two-thirds and NCD and injury deaths by one-third.

Our approach in DCP3 followed the approach of Norheim and others (2015) in broad terms but inserts into it our “counterfactual 2015” analysis. We start with a baseline age distribution of deaths by age and (broad) cause generated from the UNPD’s projected 2030 age distribution of population and age combined with cause-specific death rates from 2015 (Mathers and others 2018). We then estimate the effect of EUHC (and HPP) on mortality by assuming that the underlying intervention packages are implemented over the 15 years from 2015 to 2030. (The packages were designed to make this assumption reasonable.) The age- and cause-specific mortality rates from counterfactual 2015 were then applied to the UNPD 2030 age distributions to give the age distributions of death by cause estimated to result from implementation of EUHC.

These calculations enable comparison of the EUHC mortality profile to an explicit counterfactual baseline. Table 1.5 shows these comparisons for EUHC and for the HPP. What we can see from this comparison is that full implementation of the HPP could achieve about half of the 40x30 goal. Full implementation of EUHC could achieve about two-thirds of the

**Table 1.5** Implementation of *DCP3's* Essential Packages: Estimated Reduction in Premature Deaths in 2030<sup>a</sup> (in Millions)

Age group or condition	Low-income countries <sup>b</sup>				Lower-middle-income countries <sup>b</sup>			
	Projected number of premature deaths, 2030	40x30 reduction target <sup>c</sup>	Expected reduction in premature deaths from		Projected number of premature deaths, 2030	40x30 reduction target <sup>c</sup>	Expected reduction in premature deaths from	
			HPP	EUHC			HPP	EUHC
<i>By age group</i>								
0–4	2.2	1.5	0.62	0.77	3.3	2.2	1.1	1.3
5–69	5.2	1.5	0.99	1.2	14	4.8	2.2	2.9
<b>0–69</b>	<b>7.4</b>	<b>3.0</b>	<b>1.6</b>	<b>2.0</b>	<b>17</b>	<b>7.0</b>	<b>3.2</b>	<b>4.2</b>
<i>By cause (age 5+)<sup>d</sup></i>								
<b>Group I</b>	<b>1.9</b>	<b>0.76</b>	<b>0.59</b>	<b>0.65</b>	<b>3.2</b>	<b>1.5</b>	<b>0.85</b>	<b>0.94</b>
Tuberculosis	0.34	0.22	0.11	0.13	0.90	0.60	0.29	0.35
HIV/AIDS	0.44	0.29	0.18	0.20	0.48	0.32	0.23	0.26
Malaria	0.087	0.058	0.051	0.051	0.055	0.037	0.026	0.026
Maternal conditions	0.17	0.11	0.075	0.086	0.20	0.13	0.079	0.026
Other diseases	0.90	0.074	0.18	0.18	1.6	0.40	0.22	0.22
<b>Group II</b>	<b>2.5</b>	<b>0.60</b>	<b>0.36</b>	<b>0.53</b>	<b>8.9</b>	<b>2.7</b>	<b>1.3</b>	<b>1.9</b>
Neoplasms	0.65	0.22	0.010	0.039	1.8	0.60	0.10	0.16
Cardiovascular diseases	0.93	0.31	0.24	0.36	4.0	1.3	0.89	1.4
Other diseases	0.93	0.076	0.11	0.13	3.2	0.80	0.28	0.35
<b>Group III</b>	<b>0.77</b>	<b>0.13</b>	<b>0.043</b>	<b>0.060</b>	<b>2.0</b>	<b>0.54</b>	<b>0.070</b>	<b>0.10</b>
Road injuries	0.25	0.085	0.032	0.046	0.57	0.19	0.048	0.069
Other injuries	0.52	0.042	0.010	0.014	1.4	0.36	0.022	0.032

Sources: Watkins, Norheim, and others 2017; Watkins, Qi, and others 2017; Watkins, Jamison, and others 2018.

Note: EUHC = essential universal health coverage; HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome; HPP = highest-priority package. All estimates are in millions of deaths. The 40x30 reduction target includes a 40 percent reduction in deaths ages 0-69 overall; a two-thirds reduction in under-age-five deaths and adult deaths from tuberculosis, HIV/AIDS, malaria, and maternal conditions; and a one-third reduction in deaths from major noncommunicable diseases. The quantitative targets above reflect these goals; however, targets for the residual categories (“other diseases” and “other injuries”) have been calculated in light of the targets for specific causes of death so that the total number of target deaths for ages 5–69 is sufficient to meet the 40x30 target.

a. A death under age 70 is defined as premature.

b. This paper uses the World Bank’s income classification of countries.

c. A reduction target of 40x30 is defined as a 40 percent reduction in premature deaths by 2030, relative to the number that would have occurred had 2015 death rates persisted to 2030. The *United Nations Population Prospects* (UN 2017) median population projection for 2030 was used to provide the population totals for calculating deaths by age and sex.

d. World Health Organization’s *Global Health Estimates* provided the 2015 cause distributions of deaths for these calculations (Mathers and others 2018).

40x30 goal. In a sensitivity analysis, Watkins, Norheim, and others (2018) demonstrate that higher levels of coverage (on the order of 95 percent) and more optimistic assumptions about the quality and efficiency of intervention delivery could achieve the 40x30 goal in lower-middle-income countries and exceed it by about 20 percent in low-income countries. If we were to assume that both tools and implementation capacity improve over the period to 2030—*Global Health 2035* (Jamison, Summers, and others 2013) made an

assumption of a 2 percent rate of technical progress in one of their scenarios—then the reduction in deaths from EUHC could be more substantial than shown in this table. Such progress is certainly possible, but may be unlikely. Likewise there could be more than anticipated reduction in behavioral and environmental risk. Our model is estimating what is technically and economically feasible given today’s tools. The results are indeed substantial—and are viable options for decision makers. But required resources are substantial,

and at realistic (that is, 80 percent) coverage levels the goals are incompletely met. The actual decision to commit resources remains, of course, in the hands of national authorities.

## CONCLUSIONS

*DCP3* has been a large-scale enterprise involving multiple authors, editors, and institutions. The first volume appeared in 2015 and the last of the nine volumes is being published at the beginning of 2018. The volumes appear as serious discussion continues about quantifying and achieving SDGs, including SDG 3 for health.

*DCP3*'s analyses complement those of *GH2035* and WHO's recent assessments of the cost of attaining SDG 3 (Jamison, Summers, and others 2013; Stenberg and others 2017). Each of these analyses addresses somewhat different questions (table 1.6), but the broad results they convey are mutually supportive.

*DCP3* reached six broad conclusions:

1. *DCP3* has found it useful to organize interventions into 21 essential packages that group the interventions relevant to particular professional communities. Each package can contain both intersectoral interventions and health system interventions. Specific findings from packages point to the attractiveness of widely available surgical capacity, the value of meeting unmet demand for contraception, the potential of a multipronged approach to air pollution and the importance of maintaining investment in child health and development far beyond the first 1000 days.
2. Interventions were selected for packages by a systematic process using criteria of value for money, burden addressed, and implementation feasibility. Collectively, the selected interventions are defined to constitute "essential" universal health coverage

**Table 1.6** Comparison of *Global Health 2035*, *DCP3*, and WHO 2017 Resource Estimates for Costs and Consequences of Large Scale Investment in Health Systems

	Global Health 2035	DCP3	WHO 2017
1. Countries included	34 low-income and 3 (large) lower-middle-income countries. Separate estimates for the low- and lower-middle-income countries groups are provided.	34 low-income and 49 lower-middle income countries. Separate estimates for the low- and lower-middle-income countries groups are provided.	67 low-, lower-middle, and upper-middle-income countries individually estimated and then aggregated. Reported results are for all included countries combined.
2. Key definitions and intervention range covered	Grand convergence (GC) interventions are defined as ones leading to very substantial crosscountry convergence in under age 5, maternal, tuberculosis, malaria, and HIV/AIDS mortality and in the prevalence of neglected tropical diseases (NTDs).	<ul style="list-style-type: none"> <li>• 21 packages of care (table 1.1) are identified in terms that include intersectoral and health sector interventions (71 distinct intersectoral interventions and 218 distinct health sector interventions).</li> <li>• Essential universal health coverage (EUHC) is defined as health sector interventions in the 21 packages (covered in national health accounts and potentially included in benefits packages).</li> <li>• A highest priority subset of EUHC. The highest-priority package (HPP) includes the GC interventions but goes beyond it, including a limited range of interventions against noncommunicable diseases (NCDs) and injuries, and cross-cutting areas such as rehabilitation and palliative care.</li> </ul>	<ul style="list-style-type: none"> <li>• Investments were modeled for 16 SDGs, including 187 health interventions and a range of health system strengthening strategies (the latter of which included investments required to achieve target levels of health workforce, facilities, and other health system building blocks).</li> <li>• Two scenarios were modeled, a <i>progress scenario</i> (in which coverage is limited by the absorptive capacity of current systems to incorporate new interventions) and an <i>ambitious scenario</i> (in which most countries achieve high levels of intervention coverage and hence SDG targets).</li> </ul>

table continues next page

**Table 1.6** Comparison of *Global Health 2035*, *DCP3*, and WHO 2017 Resource Estimates for Costs and Consequences of Large Scale Investment in Health Systems (continued)

	Global Health 2035	DCP3	WHO 2017
3. <i>Intersectoral action for health</i>	Extensive discussion of intersectoral actions for health but not included in modeling grand convergence.	Intersectoral interventions defined as those typically managed and financed outside the health sector. Each of the 21 packages contains the intersectoral interventions deemed relevant. The costs and effects of intersectoral action on mortality reduction not explicitly modelled.	WHO 2017 scenarios include some finance of intersectoral interventions, from the health sector perspective, as well as their effects on mortality.
4. <i>Intervention coverage</i>	Full coverage defined as 85%; rates of scale-up defined using historical data on “best performers” among similar groups of countries.	Full coverage defined as 80%. The HPP differs from EUHC not in coverage rate but in the scope of interventions included.	Full coverage defined as 95% for most interventions in the ambitious scenario, with a range from 53–99% depending on the intervention.
5. <i>Estimated additional costs (including requisite investment in health system capacity), in US\$</i>	For low-income countries in 2035: US\$30 billion annually between 2016 and 2030.  For lower-middle-income countries in 2035: US\$61 billion per year.	Low-income countries, 2030: HPP—US\$23 billion/year EUHC—US\$48 billion/year  Lower middle-income countries, 2030: HPP—US\$82 billion/year EUHC—US\$160 billion per year. (Costs presented in 2012 US\$)	Low-income countries: \$64 billion in 2030.  Lower-middle-income countries: \$185 billion in 2030. (Costs presented in 2014 US\$)
6. <i>Estimated deaths averted<sup>a, b, c</sup></i>	For low-income countries: 4.5 million deaths averted per year between 2016 and 2030.  For lower-middle-income countries: 5.8 million deaths averted per year between 2016 and 2030.	Low-income countries: 2.0 million premature deaths averted in 2030.  Lower-middle-income countries: 4.2 million premature deaths averted in 2030.	Low-income countries: 2.9 million deaths averted in 2030.  Lower-middle-income countries: 6.1 million deaths averted in 2030.

Sources: *Global Health 2035*: Jamison, Summers, and others 2013; Boyle and others 2015. *DCP3*: Watkins, Qi, and others 2017; Watkins, Norheim, and others 2017. Stenberg and others 2017.

Note: HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome; SDGs = Sustainable Development Goals.

a. *DCP3* reports the number of *premature* deaths averted, that is, deaths under age 70.

b. Averted deaths included stillbirths averted in *GH2035* and WHO 2017, but not in *DCP3*.

c. For *GH2035* and *DCP3* the reported deaths averted included only deaths averted among children actually born. Family planning averts unwanted pregnancies and hence potential deaths of children from those pregnancies who were never born. The difference is major. For low-income countries, a *GH2035* sensitivity analysis estimated that the more comprehensive figure was 7.5 million deaths averted rather than the 4.5 million shown in the table. The WHO 2017 headline numbers do include deaths averted from pregnancies averted but sensitivity analyses were undertaken. Ambitious scale-up of family planning services accounted for 50 percent of averted child and maternal deaths and over 65 percent of averted stillbirths in the WHO analysis (K. Stenberg 2017, personal communication).

or EUHC. A subset of 97 of these interventions, selected using more stringent criteria, are suggested as the highest-priority package or HPP, constituting an important first step on the path to EUHC. Five platforms—from population-based through the referral hospital—provide the delivery base for 218 health sector interventions. The specific interventions selected for the HPP and for EUHC and the definitions of platforms and packages are necessarily quite generic. Every country’s definitions and selections will differ from these and from each other’s. Nonetheless, we view *DCP3*’s selections as a potentially useful model—as a starting point for what are appropriately country-specific assessments.

3. The costs estimated for the HPP and EUHC are substantial. The HPP is, however, affordable for LICs prepared to commit to rapid improvement in population health, and the EUHC is affordable for lower-middle-income countries. Many upper-middle-income countries have yet to achieve EUHC and they, too, might find that the EUHC interventions are a useful starting point for discussion.
4. The goal of a 40 percent reduction in premature deaths by 2030 (Norheim and others 2015), 40x30, represents a goal for mortality reduction closely mirroring the quantitative content of SDG 3. Our calculations suggest that implementing EUHC or the HPP by 2030 will make substantial progress

toward 40x30. Higher levels of coverage than we have assumed here would be required to reach 40x30, but this might be a realistic target for some early-adopter UHC countries.

5. *DCP3* has shown that it is possible to identify the main sources of health-related financial risk and impoverishment to estimate the value of risk reduction and to use ECEA to help achieve efficiency in purchase of risk reduction. Although *DCP3* has made a beginning in applying these methods, much remains to be done.
6. In addition to the aggregate conclusions of *DCP3* just summarized, each volume provides rich detail on policy options and priorities. This granularity in the volumes makes them of use to the implementation level of government ministries as well as the policy level.

## ACKNOWLEDGMENTS

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## ANNEX

The following annex to this chapter is available at <http://www.dcp-3.org/DCP>.

- Annex 1A: Essential Packages as They Appear in *DCP3* Volumes 1 through 9

## NOTE

World Bank Income Classifications as of July 2014 are as follows, based on estimates of gross national income (GNI) per capita for 2013:

- Low-income countries (LICs) = US\$1,045 or less
- Middle-income countries (MICs) are subdivided:
  - (a) lower-middle-income = US\$1,046 to US\$4,125.
  - (b) upper-middle-income (UMICs) = US\$4,126 to US\$12,745.
- High-income countries (HICs) = US\$12,746 or more.

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