Author Instructions

Version 2.5
March 4, 2013

Instructions for DCP3 Editors and Authors

Introduction to DCP3 Volume Authors

The first and second editions of *Disease Control Priorities in Developing Countries* (*DCP1* and *DCP2*) were published in 1993 and 2006 respectively. Like its predecessors, the third edition (*DCP3)* will summarize and synthesize evidence of the costs and effectiveness of global health interventions and offer comparative economic evaluation. *DCP3* will also include new analyses for select health conditions that illustrate the potential for policies to provide financial protection to households experiencing health-related costs, as well as the differential effects of policies on equity, measured across income quintiles.

These instructions are provided to authors of *DCP3* to guide you in preparing manuscripts before submission to the project Secretariat. They are intended to answer your questions about the scope, format, and procedures that your chapter will require. They will evolve along with the *DCP3* itself and are not intended to replace direct human contact. As an author, your primary point of contact for information and guidance on *DCP3* administrative and publishing matters is the series editor for your volume or your volume coordinator (refer to your author invitation letter or volume outline for your volume's series editor and coordinator. A full list of editors can be found in Appendix A). You may also contact the Project Secretariat at the University of Washington, Department of Global Health to get any issues resolved. Brie Adderley (adderley@uw.edu) is the project coordinator.

DCP3 will consist of nine separate volumes, eight focusing on a specific health topic, disease category, or population (i.e. cardiovascular disease, child health), and one as an overview volume. Each volume will contain approximately 15 to 20 chapters written by prominent scholars and practitioners in the field. Each volume will have 3 to 5 editors, including a series editor, and each chapter will have a lead author who will work with the editors to select co-authors. Lead authors are invited by the volume editorial teams and additional authors are selected by the lead authors in consultation with editors. Chapters should strive to have at least one author from a low- or middle-income country. The volume editors will serve as advisors to chapter authors and fellow editors with an independent chapter review process managed by the Inter-Academy Medical Panel (IAMP) and coordinated by the U.S. Institute of Medicine.

Chapter Length, Style, and Format

DCP3 chapters should be up to 10,000 words, excluding references and footnotes. The chapter manuscripts should be submitted to the series editor and coordinator in Word format, using Times New Roman, 12 point font size, and double-spaced. The style for text, tables, charts, footnotes, etc. should follow *DCP2* style (see Appendix E for sample pages.) We will not be able to accept incomplete manuscripts so please carefully adhere to the ***Author Checklist*** on the last

page of this document and ensure that you have met all the guidelines before submitting your draft.

The language should be understandable to a Minister of Health (perhaps with some interpretation from technical people) or another high-level policy professional but the chapter should also be informative for a technical healthcare professional. Technical terms can be used as long as they're explained.

Volume editors will review manuscripts for completeness and clarity before sending them to the *DCP3* Secretariat for publication. They are responsible for ensuring that the chapters are numbered clearly and consistently, and that numbering of chapters does not change from first draft to final submission.

Chapter Scope and Outline

In general, *DCP3* chapters will have the following contents and structure. However, we anticipate that you will make adjustments to suit your style and preferred organization.

Section I: Introduction and Overview

- What is included in the chapter, what is excluded and why, mentioning overlaps with other chapters
- Recent changes in the disease conditions and response
- Summary of findings and main messages of the chapter

Section II: The condition or risk factor[1]

- Importance of the condition (or issue) for LMICs
- Natural history
- Geography
- Burden (briefly reflecting the WHO Global Health Estimates or alternative numbers published in each volume)
- Risk factors
- Consequences
- Trends

Section III: Interventions and/or policies, their effectiveness, and their coverage (by income/geographical area or other relevant parameter)

- Array of available interventions, delivery platforms, and policies. Why some are chosen for new analysis in this chapter
- Prevention (including behavioral and medical)

[1] WHO 2010 Global Health Estimates for your chapter burden are available here. Authors should plan on referring to GHE regional groupings unless otherwise discussed with Volume and Series Editors. Authors should look to the latest (2012) World Development Indicators for economic data.

- Screening
- Diagnosis
- Care and treatment—curative and palliative
- Potential for scaling up
- Adequacy of evidence for each intervention of interest, considering use in low- and middle-income countries

Section IV: Summary of costs and cost-effectiveness of interventions (*from literature)* and extended cost-effectiveness analysis results *(from DCP3 economics team).*

- Program costs and health system costs
- Cost/years of life saved/DALYs/QALYs
- CEA, ECEA results (recommend a table or two for this)
- Economic and other non-health benefits, where relevant

Optional: Examples of successful and/or failed programs (may be boxes)

Optional: R&D

Section V: Conclusions and recommendations

- What to do, what to avoid doing (the latter is especially important to discuss)
- Resource-stratified approach to integrate/adopt interventions

REFERENCES: The number of references per chapter will vary depending on the length of the chapter. References should follow the Chicago Style format and contain names of authors, title of publication, name of publisher, date of publication, and other essential information.

TABLES AND FIGURES: Anything that can be summarized in a table, or even better, a good figure, should be. The *DCP3* Secretariat will help you with visuals on a limited basis.

Authors should consider using one graphic for every two pages of the printed book with each page containing approximately 700 words.

ABSTRACT: An abstract of no more than 100 words should be included with the chapter when submitted to editors for review.

In some cases, chapters will largely be revisions or updates of *DCP2* chapters. If you would find it useful, email Brie Adderley (adderley@uw.edu) to obtain a Word version of the relevant *DCP2* chapters.

Publication

Once they are accepted by the volume editors, draft chapters will be lightly edited and then published on the *DCP3* website (www.dcp-3.org) in the *DCP3 Draft Chapters Series*. They will be available on the website for comment and feedback for up to two months. The purpose is to

obtain informal feedback and begin to advertise *DCP3* to key constituencies. We will also ask you to provide names of people, organizations, listservs, etc. that you would like us to inform when your draft is ready for feedback. Feedback will come in directly to you from readers. You may use it in preparing the final version for submission to the editor and peer reviewers. If you are planning on submitting your work to an academic journal, note that certain journals *do* refrain from publishing work that has appeared elsewhere and each journal maintains their own policies on pre-publication. See below for more information on prior publication policies.

Final chapters and volumes will be published electronically and in softbound books by the World Bank after being professionally edited. As with draft chapters, final chapters will be electronically published as they are completed. The first wave of complete volumes (expected to be the cancer, surgery, and RMNCH volumes) will be published in mid-2014. All completed volumes of *DCP3* are expected to be published by late-2015.

Journal Submissions

Authors are encouraged to submit papers stemming from the *DCP3* work to journals, should they wish to do so. In some cases, "pre-publication" posting will jeopardize your ability to submit your material for publication. Please fill out this web form if you are planning to submit your work to a journal. The *DCP3* secretariat will work with you to ensure you are complying with the journal's policies and practices. For more detailed information about Journal submission, see Appendix B.

Should you wish to acknowledge any support from *DCP3* in your journal publication, the following language is recommended:

The authors gratefully acknowledge the support of Disease Control Priorities (3rd Edition) and the Bill & Melinda Gates Foundation.

Appendices

The five appendices in this document contain additional information that will be relevant to authors. In them you will find the *DCP3* Author Checklist, Journal Publication Guidelines, a list of volume editors and coordinators, evidence retrieval guidelines, and sample pages from *DCP2*.

Appendix A: DCP3 Author Checklist

This checklist summarizes the minimum requirements for submission to the publication workflow. Compliance is especially important for effective electronic dissemination.

Drafting the Manuscript

1. Consider clarity and electronic searchability when writing chapter titles; section headings; figure, map, and table titles; and appendix titles.

- Ensure that readers have sufficient information to make sense of these elements if they are viewed apart from the book or chapter: for example, "Results of Regression Analysis" will not adequately inform prospective readers of the content of a table or appendix.

- Use descriptive titles that cover What + Where + When. This will ensure that important details like main topics, keywords, country or region names, and years of relevance (where appropriate) are featured in the title and catch readers' attention.

2. Provide shorter paragraphs and more subheads for improved readability of online versions and e-books.

3. Collect all materials for your manuscript, including boxes, figures, maps, math, tables, and references.

When you are ready to submit your manuscript:

Step 1: Finalize your manuscript

- □ **Adhere to chapter word limit** of **10,000** words.
- □ **Provide sources** for figures, maps, and tables.
- □ **Check that all boxes, figures, maps, and tables are mentioned** in the text.
- □ **Follow the numbering conventions of figures, maps, and tables** provided below.
- □ **Check that all references are complete and accurat**e (names of authors, title of publication, name of publisher, date of publication, and other essential information).
- □ **Place notes and references at the end of each chapter**.
- □ **Delete any comments in the Word file**s and ensure that no tracked changes remain.
- □ **Name the files by chapter number**. *Examples:* Ch_1 Neurological Disorders.docx.
- □ **Assemble appropriate source files (data or art) for figures, maps, and images.**
  - ➢ Excel files for dense figures (for example, scatter plots with tightly grouped data points and line graphs with significantly overlapping data lines).
  - ➢ High-resolution files (300 dpi or greater in eps) of figures derived from Stata/similar programs
  - ➢ Map files (high-resolution files/300 dpi in jpg, eps, or vector)
  - ➢ Any source math or tables, if these were provided as pictures and are not editable.
- □ **Write chapter abstract** (100 words).
  - ➢ Include 5 keywords for online search purposes

Step 2: Submit the following once you have the full package in print and in electronic format:

- □ Submission Form/copyright release completed and signed
- □ Biographical sketch of authors
- □ Chapter abstract
- □ Excel files clearly titled for dense figures
- □ High-resolution files (eps, jpg, or vector) for maps and images

Naming conventions

- ***Annexes*:** The first annex to chapter 7 should be titled "Annex 7A" and the second annex, "Annex 7B". Each annex should have a descriptive text heading.
- ***Chapters:*** Name the files by chapter number. *Example:* **"**Ch_1 Neurological Disorders.docx".
- ***Figures**:* "Figure O.1" is the first figure in an overview; "Figure I.1" is the first figure in an unnumbered introduction; "Figure 1.1" is the first figure in chapter 1.
- **Maps**: Maps are numbered separately from figures, for example, "Map 1_1.eps" is the first map in chapter 1.
- **Tables:** "Table O.1" is the first table in an overview; "Table I.1" is the first table in an unnumbered introduction; "Table 1.1" is the first table in chapter 1, and "Table 2A.1" is the first table in the first annex to chapter 2.

Permissions

Secure written permission for the use of a **substantia**l amount of copyrighted material of any kind.

If figures are (a) owned by a third party and (b) require permission, then use the following line: "Source: ©[copyright owner]. Reproduced, with permission, from [author-date citation]; further permission required for reuse."

***Written permission is generally not required for the following element*s:** The doctrine of fair use allows authors to quote from other authors' work or to reproduce small amounts of graphic material based on data, excluding pictorial elements, for purposes of review or criticism or to illustrate or buttress their own points. Authors who follow fair use should ensure they accurately transcribe any material, give credit to their sources, and do not quote out of context. Additional information is provided in *The Chicago Manual of Style*, 16th Edition, 4.77.

Appendix B: Journal Publication Guidelines

Background

The University of Washington is excited to partner with the World Bank to publish the 3rd edition of *Disease Control Priorities in Developing Countries* (*DCP3*). This will continue a decades-long partnership between *DCP* and the World Bank which served as the publisher for the first two editions of *DCP*. The University of Washington is working with the Bank to give this edition its furthest reach to date. To that end, *DCP3* will be the first edition of *DCP* to be published using the Creative Commons Attribution (CC BY) copyright license. As the broadest creative commons license, it will allow *DCP3* to be accessed and reproduced with very few restrictions.

The World Bank will also be using several new distribution channels for *DCP3*. Readers will be able to access it through channels such as Scribd, Amazon Kindle, the *DCP3* website, and print-on-demand. The publication will be analogous to that of the World Development Reports in its scope. *DCP3* will be comprised of eight volumes with a ninth volume providing summary and introductory information. To further increase the reach of *DCP3*, the University of Washington has also arranged for the first chapter of each volume to be published as a special edition of the *Lancet.*

For chapters within each volume, we expect some authors to have an interest in publishing their work outside of *DCP3* as well. To that end we are providing guidance for authors who:

1. Wish to publish work in a journal that would come out before your *DCP3* volume
2. Are basing their *DCP3* chapter on work that they has already published in a journal
3. Intend to publish your work in a journal after *DCP3* has been published

These guidelines provide general procedures for DCP3 copyright management. Each author and chapter will have specific copyright circumstances and will need to be handled on an individual basis. Please contact the DCP3 Secretariat to begin that process.

Definitions

Creative Commons Licenses - DCP3 will be published using an open access Creative Commons Attribution (CC BY) copyright license. CC BY is the most liberal of all Creative Commons licenses. Creative Commons licenses are a simple, explicit, copyright tool that allows authors and publishers to designate the extent to which their work can be used, shared, and reproduced by others. A list of journals offering Creative Commons licenses can be found here (DOAJ). These journals often have submission fees ranging from $500-$5,000. Some examples include:

- The Lancet Global Health - $4750

- PLOS ONE $1350
- International Journal of Infectious Disease - $1750

Below are some of Creative Commons licenses that authors may encounter. To see others, please visit the Creative Commons website.

- CC BY – CC BY allows anyone to publish their work for any purpose so long as they provide attribution. *DCP3* will be published under this license. If your work is being used for anything other than *DCP3*, the best way to avoid conflict is to submit to a journal that offers a CC BY license.
- CC BY NC – Identical to CC BY except it only allows sharing and reproduction of work so long as it is not used for commercial purposes. Many open-access journals will offer this option and it may be used for *DCP3*.
- CC BY SA – Identical to CC BY except it does not allow those using the work to change the license.

Guide

All authors wishing to submit to journals should first submit this form so that *DCP3* staff can work with you through the publication process. As *DCP3* will be published under a CC BY license, we strongly advise that authors publish in journals that also use this license or obtain similar permissions. Any other license will limit the ability to include a chapter in all *DCP3* publication formats. As a general rule, DCP3 is not able to pay these journal submission fees for authors. However, we will try to negotiate umbrella arrangements with some publishers that will allow DCP3 licensing of chapters.

The steps below provide an overview of what the process will look like for obtaining the appropriate copyright permissions.

If you are submitting for publication in a journal before DCP3 publication

1. Determine a list of journals to which you may submit your work.
2. Investigate the copyright provisions of each journal.
    a. If the journal has an open-access copyright policy, determine the procedures for submitting under those auspices
        i. CC BY is the preferred open-access policy.
        ii. Other creative commons licenses may be used only on a case-by-case basis after conferring with the *DCP3* secretariat.
    b. If the journal does not use an open-access copyright format, contact the publisher to determine how permissions can be obtained to use any publications in *DCP3*
        i. There cannot be time limitations on publication that are outside *DCP3* publishing dates. i.e., *DCP3* will not be able to include your article if it is embargoed by another publisher
            1. Contact Brianne Adderley (adderley@uw.edu) if you are unsure of your volume's publication timeline
        ii. The material must be approved to be distributed in any form and language on any platform
        iii. If the journal does not allow this type of license, contact publishing@dcp-3.org.

DCP3 **may** be able to work out an institutional agreement with the publisher.
    1. If no agreement is reached, authors must submit work whose primary motivation was *DCP3* to another journal.
3. Upon acceptance of an article, email a copy of the copyright agreement between the author and publisher as well as the permission agreement to publishing@dcp-3.org.
    a. If the copyright is CC BY, a copy of the form will be sufficient for DCP3 publication
    b. If the copyright is not CC BY, follow the procedure laid out by the publisher

If your work for DCP3 is based on an already published article

1. If the publisher uses CC BY, submit a copy of the copyright agreement to publishing@dcp-3.org.
2. If there is any other copy-right agreement in place, contact the publisher to determine how permissions can be obtained to use any publication in *DCP3*.
    a. There cannot be time limitations on publication that are outside *DCP3* publishing dates. i.e., *DCP3* will not be able to include your article if it is embargoed by another publisher
        i. Contact Brianne Adderley (adderley@uw.edu) if you are unsure of your volume's publication timeline
    b. The material must be approved to be distributed in any form and on any platform
    c. Submit a copy of the agreement to publishing@dcp-3.org.

If you plan on publishing a DCP3 chapter in a journal after DCP3 publication

1. Obtain a copy of the copyright agreement between yourself and *DCP3*.
    a. Note that the CC BY license allows you to do anything with your work so long as attribution is provided
2. Many journals will not accept work that has been published elsewhere
    a. This is different from *DCP3* prepublication where draft chapters are placed online for review because some journals may accept something that has been posted online in a forum such as the *DCP3* website, but not other peer-reviewed publications. For more information see the pre-publication section below.

DCP-3 Pre-Publication

In some cases, "pre-publication" on the *DCP3* website may jeopardize your ability to submit your material for publication. In those cases we will not pre-publish your article on the DCP3 website. We have links below to the pre-publication policies of key medical journals which all allow electronic pre-publication.

1. PLOS
2. British Medical Journal
3. Elsevier journals

Authors are expected to notify the journal of any prior publication and provide the journal with copies of previous versions. Many other journals also allow pre-publication and we encourage authors to learn the policies of prospective journals prior to submission. We recommend that authors do not reach out to the media or respond to inquiries until the paper has been formally accepted for publication and an embargo date has been scheduled.

Appendix C: Editors and Coordinators by Volume

DCP3 Series Editors

Dean Jamison – University of Washington Department of Global Health
Sue Horton – University of Waterloo
Hellen Gelband – Center for Disease Dynamics, Economics and Policy (CDDEP)
Prabhat Jha – Center for Global Health Research
Ramanan Laxminarayan – CDDEP & Public Health Foundation of India
Rachel Nugent – University of Washington Department of Global Health

Volume 1: Disease Control Priorities

Dean Jamison – University of Washington
Sue Horton – University of Waterloo
Hellen Gelband – Center for Disease Dynamics, Economics and Policy (CDDEP)
Prabhat Jha – Center for Global Health Research
Ramanan Laxminarayan – CDDEP & Public Health Foundation of India
Rachel Nugent – University of Washington Department of Global Health

Coordinator: Brie Adderley – University of Washington Department of Global Health
Adderley@uw.edu

Volume 2: Reproductive, Maternal, Newborn and Child Health

Robert Black – Johns Hopkins Bloomberg School of Public Health
Ramanan Laxminarayan – CDDEP & Public Health Foundation of India
Neff Walker – Johns Hopkins Bloomberg School of Public Health
Marleen Temmerman – World Health Organization

Coordinator: Kelsey Walters, Center for Disease Dynamics, Economics and Policy
Walters@cddep.org

Volume 3: Child & Adolescent Development

Don Bundy – World Bank
Nilanthi de Silva – University of Kelaniya
Dean Jamison – University of Washington Department of Global Health
Sue Horton – University of Waterloo
Anthony Seddoh – International Finance Corporation

Coordinator: Janet Holt – World Bank
Jholt1@worldbank.org

Volume 4: AIDS, STIs, TB and Malaria

King Holmes – University of Washington Department of Global Health
Stefano Bertozzi – Bill & Melinda Gates Foundation
Prabhat Jha – Center for Global Health Research
Barry Bloom – Harvard School of Public Health

Coordinator: Varsha Malhotra – Center for Global Health Research
Varshamalhotra@rogers.com

Volume 5: Vascular and Respiratory Disease

Dorairaj Prabhakaran – Center for Chronic Disease Control
Jean Claude Mbanya – International Diabetes Federation
Rachel Nugent – University of Washington Department of Global Health
Tom Gaziano – Harvard School of Public Health
Yangfeng Wu – The George Institute

Coordinator: Shuchi Anand – Center for Chronic Disease Control
Anand@ccdcindia.org

Volume 6: Cancer

Hellen Gelband – CDDEP
Prabhat Jha – Center for Global Health Research
Rengaswamy Sankaranarayanan – International Agency for Research on Cancer
Sue Horton – University of Waterloo

Coordinator: Cindy Gauvreau, Center for Global Health Research
GauvreauC@smh.ca

Volume 7: Environmental Health and Injury Prevention

Charles Mock – University of Washington Department of Global Health
Olive Kobusingye – Makerere Medical School
Rachel Nugent – University of Washington Department of Global Health

Coordinator: Brie Adderley – University of Washington Department of Global Health
Adderley@uw.edu

Volume 8: Mental, Neurological and Substance Use Disorders

Vikram Patel – London School of Hygiene & Tropical Medicine and PHFI
Ramanan Laxminarayan – CDDEP & Public Health Foundation of India
Dan Chisholm – World Health Organization
Theo Vos – University of Queensland
Tarun Dua – World Health Organization
Marina Elena Medina-Mora – National Institute on Psychiatry de la Fuente Muniz

Volume Coordinator: Rachana Parikh – PHFI
Rachana.Parikh@phfi.org

Volume 9: Essential Surgery

Haile Debas – University of California, San Francisco
Atul Gawande – Harvard Medical School
Dean Jamison – University of Washington Department of Global Health
Margaret Kruk – Columbia University Mailman School of Public Health
Charles Mock – University of Washington Department of Global Health
Peter Donkor – Kwame Nhrumah University of Sciences & Technology

Volume Coordinator: Rachel Cox – University of California, San Francisco
CoxR@globalhealth.ucsf.edu

Appendix D: DCP3 Evidence Retrieval Support

The Evidence of Effectiveness (EoE) team for *DCP3* helps gather published evidence on interventions analyzed in the *DCP3* volumes. The EoE team will work with editors and authors to compile the latest evidence on efficacy, effectiveness, and cost of health interventions. For each intervention, the team will conduct systematic searches across all relevant databases and prepare an exhaustive bibliography for information retrieval by experts in the subject area.

This team will work with volume editors and/or chapter authors to construct search strategies, conduct searches on bibliographic databases, and perform initial screening of studies produced by various searches. Once data collection is complete, corresponding authors will receive a database of up-to-date literature with a citation list and abstracts.

Search Team

Evidence of Effectiveness coordinator:
Elizabeth Brouwer (ebrouwer@uw.edu)
DCPN, University of Washington

Consultant Information Retrieval Specialist:
Vittoria Lutje
Cochrane Infectious Diseases Group, Liverpool School of Tropical Medicine and Hygiene

The Process

The process starts with chapter authors, who serve as corresponding authors for the search process. Authors submit the literature search form (which can be found online here), detailing the intervention(s) for which searches are to be conducted. The literature search form asks authors to describe the scoping question(s), provide information and search terms regarding the intervention, and to clearly define additional inclusion/exclusion criteria to improve search results.

The search team will receive many search requests but can only process them for few interventions at a time. The team will process requests in the order they are received and will send a confirmation email to the corresponding author when they have started working on the particular intervention. It will take at least one week after the team starts working on a particular intervention to prepare a bibliography of relevant studies. The information retrieval process will require frequent communication with the volume editors and authors during this process – from constructing search strategies to clarifying inclusion/exclusion criteria and so on.

Intervention Information

Chapter authors are requested to provide comprehensive information on pertinent conditions and interventions of interest when completing the literature search form. For example: What are the effects of the intervention on a set of outcomes for a specific population?

The PICO (Patient, Intervention, Comparison and Outcome) framework, as provided in the form, has four components that guide the formulation of scoping questions.

P: Population and/or patient group under study

I: Which intervention, treatment or exposure is being tested?

C: What are the alternative(s) of the intervention or treatment options? Comparison group(s) may not be applicable in all cases.

O: What are the outcome and effects of the intervention exposure? Outcome measures can include indicators for mortality, morbidity, quality of life, etc.

Search Information

Along with contextual information on the intervention of interest, authors are requested to define appropriate search parameters and the inclusion/exclusion criteria to use when identifying relevant studies. For example:

1. What study designs should be included in the search?

Searches can be conducted for experimental and/ or observational studies. In the literature search form please list all the study designs to be included in the searches. The search domain can include one or more of these domains: randomized controlled trials, quasi-experimental studies, systematic reviews, and recent literature published since one year before the search date of latest systematic review.

2. What geographic areas should the relevant studies cover?

Studies from Low and Middle Income Countries (LMIC), High Income Countries (HIC), or both can be included in these searches. If required, relevant studies can be separated into LMIC and HIC groups.

3. How recent should studies be in order to be included in the results?

By default, searches will be conducted for evidence published since 2000 on various facets of intervention effectiveness but volume teams can request for older publications as well.

4. Should publications in languages other than English be included?

DCP3 volume teams can ask for systematic searches to gather evidence on effectiveness and efficacy of each intervention. Volume teams are requested to carefully decide how many domains to include as broader generic searches can lead to a compromise between sensitivity and specificity of search results.

Deliverables

After the completion of each round of searches, the search team coordinators will perform a pre-assessment of search results based on broad criteria provided by volume authors, such as: select conditions, characteristics of study population, results from particular geographic region, etc.

After preliminary assessment, the search team will provide the following deliverables to the corresponding author of each chapter:

1. Complete search report
2. Exhaustive bibliography of relevant studies (references will be shared on reference manager tool)

Please send any questions to Ms. Brouwer (ebrouwer@uw.edu)

New economic analysis for your chapter may also be performed by the *DCP3* central analytics team at UW. Once you have defined what economic analyses you would like to include and discussed it with volume editors, you may ask your volume coordinator to arrange a discussion with the economics team.

We will forward other guidelines to ensure standardization of methods across chapters and volumes as needed and developed. These will include, where relevant, approaches for describing and assessing how health systems issues relate to your topic, and consideration of health platforms and policies in your analysis.

Appendix E: DCP2 Sample Pages

The following are sample pages from DCP2. You may view full chapters online at www.DCP2.org.

Clinical Guidelines

The diffusion of health technologies usually leads to a widening of the clinical indication beyond the evidence-based scope of the intervention (PTCA is a classic example) (Dravik 1998), corresponding to a decrease not only in the procedure's efficacy, but also in its effectiveness (Anderson and Lomas 1988; Blustein 1993). Several studies suggest that overuse and underuse tend to coexist in the same community and that even severe scarcity of resources does not protect against overuse of cardiological interventions, at least among certain segments of the population (Joorabchi 1979; Soumerai and others 1997).

The consequences of such trends are more dramatic in developing than developed countries. Therefore, the introduction of costly care should be accompanied by a corresponding effort in relation to the provision of formal education to providers and prescribers, complemented by the development of clinical guidelines aimed at avoiding both the overuse and the underuse of procedures.

Clinical guidelines are already numerous, but all have been established in affluent countries. A new, specific effort should be made in developing countries to address local issues, such as problems related to the availability of procedures or drugs or to accessibility of services, and the development and maintenance of these guidelines should follow best available standards.

Clinical Research

In most situations, health care innovations should be introduced as experimental interventions to permit proper monitoring and evaluation. These experiments do not have to address the efficacy of the procedure (many innovations will already have been tested), but rather issues pertaining to their effectiveness and efficiency in the specific context of developing countries.

Another reason for the experimental approach is the rapidity with which the field of CVD is evolving. It is not reasonable, at the local level, to wait until the publication of trial results and meta-analyses, which often takes place years after changes have occurred in everyday practice. For this reason, a new culture of clinical research should be developed in which every innovation should be taken as an opportunity for systematic experimental evaluation.

Among various topics in clinical research, adherence deserves special mention. On average, 50 percent of patients in developed countries do not take their prescribed medicines after one year, despite having full access to medicines. In developing countries, this poor adherence is made worse by poor access to health services and drugs, to lack of education, and to other factors (Bovet and others 2002; WHO 2003a). Options for improving adherence should be designed and experimented with.

Epidemiological Research

A basic task of epidemiological research is to assess geographic and secular trends in the distribution of risk factors. Of special relevance is the movement from regional to country levels and the trend within a country. The impact of poor health status in early life should be assessed from the impact of poor fetal health to the consequence of multiple childhood infections on the risk for CVD. Because of the scarce availability of resources, the development and maintenance of health care should be supported by a comprehensive information system. Simple, affordable health information systems are preferable along the lines of the framework developed by the World Health Organization.

CONCLUSIONS: PITFALLS AND PROMISES

A global CVD epidemic is rapidly evolving, and the burden of disease is shifting. Twice as many deaths from CVD now occur in developing as in developed countries. The vast majority of CVD can be attributed to conventional risk factors. Even in Sub-Saharan Africa, high blood pressure, high cholesterol, extensive tobacco and alcohol use, and low vegetable and fruit consumption are already among the top risk factors for disease. Because of the time lag associated with CVD risk factors, especially in children, the full effect of exposure to these factors will be seen only in the future. Information from more than 100 countries shows that more 13- to 15-year-olds smoke than ever before, and studies show that obesity levels in children are increasing markedly in countries as diverse as Brazil, China, India, and almost all island states (Leeder and others 2004). Populationwide efforts now to reduce risk factors through multiple economic and educational policies and programs will reap savings later in medical and other direct costs as well as indirectly in terms of improved quality of life and economic productivity.

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Chapter **30**

Diabetes: The Pandemic and Potential Solutions

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NATURE AND DISTRIBUTION OF DIABETES

Diabetes is a metabolic disease characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both (American Diabetes Association 2004).

Classification of Diabetes

Diabetes takes three major forms. Type 1 diabetes results from destruction of the beta cells in the pancreas, leading to absolute insulin deficiency. It usually occurs in children and young adults and requires insulin treatment. Type 2 diabetes, which accounts for approximately 85 to 95 percent of all diagnosed cases, is usually characterized by insulin resistance in which target tissues do not use insulin properly. A third type of diabetes, gestational diabetes, is first recognized during pregnancy. Other rare types of diabetes include those caused by genetic conditions (for example, maturity-onset diabetes of youths), surgery, drug use, malnutrition, infections, and other illnesses.

The Burden of Diabetes

Diabetes affects persons of all ages and races. The disease reduces both a person's quality of life and life expectancy and imposes a large economic burden on the health care system and on families.

Secular Trend and Projections. In 2003, the worldwide prevalence of diabetes was estimated at 5.1 percent among people age 20 to 79 (table 30.1). The prevalence of diabetes was higher in developed countries than in developing countries. In the developing world, the prevalence was highest in Europe and Central Asia and lowest in Sub-Saharan Africa. Some of these variations may reflect differences in the age structures and level of urbanization of the various populations. By 2025, the worldwide prevalence is projected to be 6.3 percent, a 24 percent increase compared with 2003. The largest increase in prevalence by 2025 is expected to be in East Asia and the Pacific, and the smallest in Sub-Saharan Africa. In terms of those affected, the biggest increase in the developing countries is projected to take place among adults of working age.

In 2003, 194 million people worldwide ages 20 to 79 had diabetes, and by 2025, this number is projected to increase to 333 million, a 72 percent increase (table 30.1). The developing world accounted for 141 million people with diabetes (72.5 percent of the world total) in 2003. During the same period, the number of people with diabetes is projected to double in three of the six developing regions: the Middle East and North Africa, South Asia, and Sub-Saharan Africa.

Diabetes-Related Mortality and Disability. The death rate of men with diabetes is 1.9 times the rate for men without diabetes, and the rate for women with diabetes is 2.6 times that for women without diabetes (W. L. Lee and others 2000). Premature mortality caused by diabetes results in an estimated 12 to 14 years of life lost (Manuel and Schultz 2004; Narayan and others 2003). Cardiovascular disease

Table 30.1 Estimated Numbers of People Age 20 to 79 with Diabetes, Mortality, DALYs, and Direct Medical Costs Attributable to Diabetes, by Regions

Region	Number of people (thousands)		Prevalence (percent)		Direct medical costs, 2003 (US$ million)		Deaths, 2001 (thousands)	Disability-adjusted life years, 2001 (thousands)
	2003	2025	2003	2025	Low estimate	High estimate		
Developing countries	140,849	264,405	4.5	5.9	12,304	23,127	757	15,804
East Asia and the Pacific	31,363	60,762	2.6	3.9	1,368	2,656	234	4,930
Europe and Central Asia	25,764	33,141	7.6	9.0	2,884	5,336	51	1,375
Latin America and the Caribbean	19,026	36,064	6.0	7.8	4,592	8,676	163	2,775
Middle East and North Africa	10,792	23,391	6.4	7.9	2,347	4,340	31	843
South Asia	46,309	94,848	5.9	7.7	840	1,589	196	4,433
Sub-Saharan Africa	7,595	16,199	2.4	2.8	273	530	82	1,448
Developed countries	53,337	68,345	7.8	9.2	116,365	217,760	202	4,192
World	194,186	332,750	5.1	6.3	128,669	240,887	959	19,996

Source: Number of persons with diabetes, prevalence of diabetes, and direct medical costs of diabetes, International Diabetes Federation 2003b; all other information, WHO 2004.

(CVD) causes up to 65 percent of all deaths in developed countries of people with diabetes (Geiss, Herman, and Smith 1995).

The World Health Organization (WHO) estimates that, in 2001, 959,000 deaths worldwide were caused by diabetes, accounting for 1.6 percent of all deaths, and approximately 3 percent of all deaths caused by noncommunicable diseases. More recent estimates by WHO suggest that the actual number may be triple this estimate and that about two-thirds of these deaths occur in developing countries (WHO 2004). Within the developing regions, most deaths caused by diabetes occurred in East Asia and the Pacific and the fewest in Sub-Saharan Africa (table 30.1).

Diabetes-related complications include microvascular diseases (for example, retinopathy, blindness, nephropathy, and kidney failure) and macrovascular diseases (coronary heart disease, stroke, peripheral vascular disease, and lower-extremity amputation). Those complications result in disability. In the United States, a much higher proportion of people with diabetes than of people without diabetes have physical limitations: 66 percent compared with 29 percent (Ryerson and others 2003). Disabilities are even more pronounced among older people (Gregg and others 2000).

The World Health Organization estimated that, in 2001, diabetes resulted in 19,996,000 disability-adjusted life years (DALYs) worldwide. More than 80 percent of the DALYs resulting from diabetes were in developing countries (table 30.1). East Asia and the Pacific had the largest burden, and the Middle East and North Africa had the smallest burden. DALYs resulting from diabetes increased by 250 percent worldwide from 1990 to 2001 and by 266 percent for low- and middle-income countries (Mathers and others 2000).

Economic Burden of Diabetes

Diabetes imposes large economic burdens on national health care systems and affects both national economies and individuals and their families. Direct medical costs include resources used to treat the disease. Indirect costs include lost productivity caused by morbidity, disability, and premature mortality. Intangible costs refer to the reduced quality of life for people with diabetes brought about by stress, pain, and anxiety.

Direct Medical Costs. Good data on the direct medical costs of diabetes are not available for most developing countries. Extrapolation from developed countries suggests that, in 2003, the direct costs of diabetes worldwide for people age 20 to 79 totaled at least US$129 billion and may have been as high as US$241 billion (table 30.1). In the developing world, the costs were highest in Latin America and the Caribbean and lowest in Sub-Saharan Africa. The direct health care costs of diabetes range from 2.5 to 15.0 percent of annual health care budgets, depending on local prevalence and sophistication of the treatments available (International Diabetes Federation 2003b).

Indirect and Intangible Costs. In developing countries, the indirect costs of diabetes are at least as high, or even higher, than the direct medical costs (Barcelo and others 2003). Because the largest predicted rise in the number of people with diabetes in the next three decades will be among those in the economically productive ages of 20 to 64 (King, Aubert, and Herman 1998), the future indirect costs of diabetes will be even larger than they are now.

Diabetes lowers people's quality of life in many ways, including their physical and social functioning and their perceived physical and mental well-being. With a value of

1 representing the health-related quality of life without illness and 0 representing death, people with type 2 diabetes had a value of 0.77 in the population of the United Kingdom prospective diabetes study (Clarke, Gray, and Holman 2002).

Risk Factors for Diabetes

Risk factors for diabetes vary by disease type.

Type 1 Diabetes. Type 1 diabetes is most likely a polygenic disease, and a number of potential environmental risk factors have been implicated—including dietary factors; breastfeeding; initiation of bovine milk; infectious agents (for example, enterovirus, rotavirus, and rubella); chemicals; and toxins—but the results have been inconclusive (Akerblom and Knip 1998).

Type 2 Diabetes. The risk for type 2 diabetes is higher in monozygotic twins and people with a family history of diabetes (Rich 1990). This finding strongly suggests that genetic determinants play a role, but so far few genes have been associated with type 2 diabetes.

Environmental factors include prenatal factors, obesity, physical inactivity, and dietary and socioeconomic factors (Qiao and others 2004). Exposure to diabetes in utero increases the risk of developing type 2 diabetes in early adulthood (Dabelea and others 2000). Disproportionate growth and low birthweight increase the risk of developing diabetes and insulin resistance. In the postnatal environment, breastfeeding protects against the development of obesity, insulin resistance, and diabetes (Pettitt and others 1997; Young and others 2002).

The strongest and most consistent risk factors for diabetes and insulin resistance among different populations are obesity and weight gain (Haffner 1998): for each unit increase in body mass index, the risk of diabetes increases by 12 percent (Ford, Williamson, and Liu 1997). The distribution of fat around the trunk region, or central obesity, is also a strong risk factor for diabetes (Yajnik 2001). Diabetes risk may be reduced by increasing physical activity. Conversely, a sedentary lifestyle and physical inactivity are associated with increased risks of developing diabetes (Hu and others 2003). Some studies report a positive relationship between dietary fat and diabetes, but specific types of fats and carbohydrates may be more important than total fat or carbohydrate intake. Polyunsaturated fats and long-chain omega-3 fatty acids found in fish oils (Adler and others 1994) may reduce the risk of diabetes, and saturated fats and trans fatty acids may increase the risk of diabetes (Hu, van Dam, and Liu 2001). Sugar-sweetened beverages are associated with an increased risk of diabetes (Schulze and others 2004). High intakes of dietary fiber and of vegetables may reduce the risk of diabetes (Fung and others 2002; Stevens and others 2002).

Increased affluence and Westernization have been associated with an increase in the prevalence of diabetes in many indigenous populations and in developing economies (Rowley and others 1997; Williams and others 2001). Conversely, in developed countries, those in lower socioeconomic groups have a higher risk of obesity and consequently of type 2 diabetes (Everson and others 2002). Surrogates for socioeconomic status, such as level of education attained and income (Paeratakul and others 2002; Robbins and others 2001) are inversely associated with diabetes in high-income countries.

INTERVENTIONS AND DELIVERY MODES

Interventions against diabetes include those for preventing the disease, those for detecting the disease in its asymptomatic stage, and those for managing the disease to reduce its complications.

Preventing Type 1 Diabetes

Not enough scientific evidence is available to indicate that type 1 diabetes can be prevented, although various interventions have been explored. Examples of tested interventions include eliminating or delaying exposure to bovine protein and using insulin or nicotinamide for people at high risk of developing the disease.

Preventing Type 2 Diabetes

Four major trials—in China, Finland, Sweden, and the United States—have demonstrated that intensive lifestyle interventions involving a combination of diet and physical activity can delay or prevent diabetes among people at high risk (Eriksson and Lindgarde 1991; Knowler and others 2002; Pan and others 1997; Tuomilehto and others 2001). In the largest randomized, controlled trial to date, the Diabetes Prevention Program (Knowler and others 2002), the goals of the intensive lifestyle intervention were weight loss of 7 percent of baseline bodyweight through a low-calorie diet and moderate physical activity for at least 150 minutes per week. After 2.8 years of follow-up, the average weight loss was 4.5 kilograms for those in the lifestyle intervention group and less than 0.3 kilograms for those in the placebo group. The lifestyle intervention reduced the incidence of diabetes by 58 percent.

Pharmacological studies of diabetes prevention have been reviewed in detail elsewhere (Kanaya and Narayan 2003). In summary, a variety of specific medications have been tested (for example, metformin, acarbose, orlistat, troglitazone, angiotensin-converting enzyme [ACE] inhibitors, statins, estrogens, and progestins) and have been found to lower diabetes incidence, but the expense, side effects, and cumulative years of drug intervention are practical concerns. Except for the Diabetes Prevention Program (Knowler and others 2002), no trial of medication intervention has directly compared the effectiveness of a drug to that of lifestyle modification.

Screening for People with Diabetes or Prediabetes

The benefits of early detection of type 2 diabetes through screening are not clearly documented, nor is the choice of the appropriate screening test established. Questionnaires used alone tend to work poorly; biochemical tests alone or in combination with assessment of risk factors are a better alternative (Engelgau, Narayan, and Herman 2000).

Managing Diabetes

High-quality evidence exists for the efficacy of several current treatments in reducing morbidity and mortality in people with diabetes. These interventions are summarized in table 30.2.

In addition, a review of previous studies (Norris, Engelgau, and Narayan 2001) found positive effects for short follow-up (less than six months) of self-management training

Table 30.2 Effectiveness and Cost-Effectiveness of Interventions for Preventing and Treating Diabetes in Developed Countries

Strategy	Benefit	Quality of evidence[a]	Cost-effectiveness ratio (US$/QALY)[b]
Preventing diabetes			
• Lifestyle interventions for preventing type 2 diabetes	Reduction of 35–58 percent in incidence among people at high risk	I	1,100 (Diabetes Prevention Program Research Group forthcoming)
• Metformin for preventing type 2 diabetes	Reduction of 25–31 percent in incidence among people at high risk	I	31,200 (Diabetes Prevention Program Research Group forthcoming)
Screening for diabetes			
• Screening for type 2 diabetes in general population	Reduction of 25 percent in microvascular disease	III	73,500 (CDC Diabetes Cost-Effectiveness Study Group 1998)
Treating diabetes and its complications			
• Glycemic control in people with HbA1c greater than 9 percent	Reduction of 30 percent in microvascular disease per 1 percent drop in HbA1c	I	Cost saving (CDC Diabetes Cost-Effectiveness Study Group 1998)
• Glycemic control in people with HbA1c greater than 8 percent	Reduction of 30 percent in microvascular disease per 1 percent drop in HbA1c	I	34,400 (CDC Diabetes Cost-Effectiveness Study Group 1998; Klonoff and Schwartz 2000)
• Blood pressure control in people whose pressure is higher than 160/95 mmHg	Reduction of 35 percent in macrovascular and microvascular disease per 10 mmHg drop in blood pressure	I	Cost saving (CDC Diabetes Cost-Effectiveness Study Group 1998)
• Cholesterol control in people with total cholesterol greater than 200 milligrams/deciliter	Reduction of 25–55 percent in coronary heart diseases events; 43 percent fall in death rate	II-1	63,200 (CDC Diabetes Cost-Effectiveness Study Group 1998)
• Smoking cessation with recommended guidelines	16 percent quitting rate	I	12,500 (CDC Diabetes Cost-Effectiveness Study Group 1998)
• Annual screening for microalbuminuria	Reduction of 50 percent in nephropathy using ACE inhibitors for identified cases	III	47,400 (Klonoff and Schwartz 2000)
• Annual eye examinations	Reduction of 60 to 70 percent in serious vision loss	I	6,000 (Klonoff and Schwartz 2000; Vijan, Hofer, and Hayward 2000)
• Foot care in people with high risk of ulcers	Reduction of 50 to 60 percent in serious foot disease	I	Cost saving (Ragnarson and Apelqvist 2001)
• Aspirin use	Reduction of 28 percent in myocardial infarctions, reduction of 18 percent in cardiovascular disease	I	Not available
• ACE inhibitor use in all people with diabetes	Reduction of 42 percent in nephropathy; 22 percent drop in cardiovascular disease	I	8,800 (Golan, Birkmeyer, and Welch 1999)
• Influenza vaccinations among the elderly for type 2 diabetes	Reduction of 32 percent in hospitalizations; 64 percent drop in respiratory conditions and death	II-2	3,100 (Sorensen and others 2004)
• Preconception care for women of reproductive age	Reduction of 30 percent in hospital charges and 25 percent in hospital days	II-2	Cost saving (Klonoff and Schwartz 2000)

Source: Authors.

Note: mmHg = millimeters of mercury; QALY = quality-adjusted life year.

a. I indicates evidence from at least one randomized, controlled trial; II-1 indicates evidence from a well-designed, controlled trial without randomization; II-2 indicates evidence from cohort or case control studies; and III indicates opinions of respected authorities (U.S. Preventive Services Task Force 1996).

b. We adjusted cost-effectiveness ratios to 2002 U.S. dollars using the consumer price index for medical care. In cases in which multiple studies evaluated the cost-effectiveness of an intervention, we report the median cost-effectiveness ratio.