

Optima HIV   
User Guide

Optima Consortium for Decision Science  
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# Acknowledgements

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The Optima HIV software tool was developed by Cliff Kerr and Robyn Stuart, with substantive contributions by David Kedziora and Romesh Abeysuriya. User interface development was performed by Anna Nachesa, Bosco Ho, Amber Brown, and StarterSquad (Nik Graf, Dmitry Evseev, Jyoti Puri, Emmanuelle Delescolle, and Kristijan Ristovski). Marelize Görgens (World Bank HIV Program Manager) and David John Wilson (World Bank HIV Program Director) provided strategic guidance and leadership during the development of the Optima HIV software tool and this Guide.

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# Preface

After golden age of HIV response funding increases during the first decade of the twentieth century, international funding for HIV responses in low- and middle-income countries has stagnated. Within this context, countries have recognized the importance of allocating available HIV funds as efficiently as possible to maximize impact and minimize wastage. Over the past six years, the Optima Consortium for Decision Science has developed the Optima HIV software tool to address this need. The Optima Consortium has worked directly with the governments of 25 countries in Africa, Asia, Eastern Europe and Latin America, providing analytical support to estimate the optimal allocation of HIV resources and to improve the efficiency and effectiveness of the national HIV response.

Optima HIV a software tool that assists users in determining the optimal allocation optimal allocation of HIV resources and coverage levels across programs in specific HIV epidemic settings. This tool can be used by decision-makers to help achieve maximum impact with the available spending. It incorporates all available epidemiological, behavioral, spending, and coverage data into a mathematical model that describes HIV transmission and disease dynamics, as well as the relationships between program spending and outcome. This model allows an integrated analysis of epidemic, program, and cost data to be performed, which determines an optimal distribution of HIV investments. Optima HIV can improve country HIV and health-policy decision-making through informing domestic and international HIV funding allocations and target program coverage levels.

## The Optima Approach

The Optima Approach is a four-step framework for informing public health investment choices:

#### Step 1: Assess the burden of disease

The assessment of the burden of disease is done through data synthesis and epidemiological modeling. Data inputs include population size (including for key risk populations) and HIV prevalence, as well as data on the HIV treatment cascade (number of people diagnosed, linked to care, on treatment, and virally suppressed) and behavioral measures (such as rates of circumcision and condom usage).

#### Step 2: Assess the response

Additional data synthesis is carried out in order to identify the costs, efficacy, and effectiveness of all the interventions (across different implementations and delivery modes) which may reduce disease burden. This leads to the development of cost functions that link the expenditure on any given intervention delivered in any particular way to the outcome that this intervention has.

#### Step 3: Identify targets for disease mitigation

Identifying or determining the strategic objectives and priority targets for disease mitigation, as well as the logistic, ethical, and/or political constraints around achieving these objectives, is carried out through extensive stakeholder consultation.

#### Step 4: Determine the optimal allocation of resources to best achieve the identified targets

Optima uses a custom-written formal mathematical optimization algorithm to determine the optimal allocation of resources to best achieve the identified targets, subject to any identified constraints.

## Structure of the User Guide

The Optima HIV User Guide is divided into six volumes, linked to here:

[**Volume I: Allocative Efficiency Guidelines**](https://docs.google.com/document/d/18p11T2Gq_xp7sxnA1W-vs2Y56Dt2vAs3YrKp8r6SHBQ/edit) provides an overview of allocative efficiency analyses. Its aim is to provide guidance on how to conduct an allocative efficiency analysis in practice. It describes how and when to conduct an allocative efficiency analysis, what the limitations and potential pitfalls of allocative efficiency analyses are, what data and team members are required, how to plan the scope of work and responsibilities, and how to best disseminate outcomes to impact policy. It also provides a general overview of mathematical modeling, and an introduction to the Optima HIV tool.

[**Volume II: Reference Manual**](https://docs.google.com/document/d/18hGjBb1GO8cR_sZRTjMqBvBb0Fkmsz-DwzslstaqG-Y/edit) describes the Optima HIV interface in detail, including how to create projects, calibrate the model, enter program and spending data, and perform scenario and optimization analyses.

[**Volume III: Case Studies**](https://docs.google.com/document/d/1pVKu_UHdTptj6s3V1ldkTISoUtYyCi6vTQKJmJmLgSQ/edit#) contains a collection of practical examples are presented in order to address some of the most common questions posed by decision makers and planners when using Optima HIV to inform their HIV responses.

[**Volume IV: Indicator Guide**](https://docs.google.com/document/d/1AayY5PmIkmt-rwkjawWjg56omDPZ9Igv7qiNB7wifbo/edit#) provides guidance on how to fill the different sheets in the Optima HIV spreadsheet, including discussion of common problems encountered when translating data collected through standard management and evaluation protocols into the form required by the Optima HIV tool.

[**Volume V: Expenditure Data Guide**](https://docs.google.com/document/d/1f_eLA1pQWqNMf8pT7Z9uub9OHmLNUFBt0OpnHKYlVeQ/edit) provides guidance on how to prepare cost, coverage and expenditure data for use in Optima HIV analyses, including from National AIDS Spending Assessment (NASA) sources.

[**Volume VI: Parameter Data Sources**](https://drive.google.com/open?id=1VIxB08GjnLhUjRwLAKuBJ-To2WXud7krK9CNNu6NwIg) describes the data sources and literature used to determine the values of the parameters that are used in the Optima HIV model.

[**Volume VII: HIV related abbreviations**](https://docs.google.com/document/d/16kaz9OMVHUEsdYH95Zoyo0ylEEKqiDv55zWOwnMCrgE/edit?usp=sharing) lists commonly used abbreviations used throughout the user guide.

## More information

Additional information about Optima HIV can be found from the following sources:

* Our website, [**www.ocds.co**](http://ocds.co), contains detailed information on case studies, country applications, and training materials.
* The Optima HIV software tool itself is described in detail in:

| Kerr CC, Stuart RM, Gray RT, Shattock A, Fraser-Hurt N, Benedikt C, Haacker M, Berdnikov M, Mahmood AM, Jaber SA, Gorgens M, Wilson DP (2015). **Optima: a model for HIV epidemic analysis, program prioritization, and resource optimization.** *JAIDS* **69**(3): 365-376. |
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| A PDF version of the paper is [**available online**](http://optimamodel.com/pubs/optima_methods_paper_JAIDS.pdf). |

* For further information, please contact us on [**info@ocds.co**](mailto:info@ocds.co).

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