

RethinkHIV

Thirty years after the identification of the disease that became known as AIDS, humanitarian organizations warn that the fight against HIV/AIDS has slowed, amid a funding shortfall and donor fatigue. In this book, Bjørn Lomborg brings together research by world-class specialist authors, a foreword by UNAIDS founding director Peter Piot, and perspectives from Nobel Laureates and African civil society leaders to identify the most effective ways to tackle the pandemic across sub-Saharan Africa. There remains an alarming lack of high-quality data evaluating responses to HIV. We still know too little about what works, where, and how to replicate our successes. This book offers the first comprehensive attempt by teams of authors to analyze HIV/AIDS policy choices using cost-benefit analysis, across six major topics. This approach provides a provocative fresh look at the best ways to scale up the fight against this killer epidemic.

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RethinkHIV

Smarter Ways to Invest in Ending HIV in Sub-Saharan Africa

Edited by
BJØRN LOMBORG



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Contents

List of figures vii
List of tables x
List of contributors xiv
Acknowledgements xvi
List of abbreviations and acronyms xvii
Foreword xix
Peter Piot

Introduction 1
Bjørn Lomborg

PART I THE RESEARCH

1 Sexual transmission of HIV 11
Jere R. Behrman and Hans-Peter Kohler
ALTERNATIVE PERSPECTIVES
1.1 *Damien de Walque* 49
1.2 *Alan Whiteside* 61

2 Prevention of non-sexual transmission
of HIV 74
Lori A. Bollinger
ALTERNATIVE PERSPECTIVES
2.1 *Rob Baltussen and Jan Hontelez* 102
2.2 *Mira Johri* 107

3 Treatment 125
Mead Over and Geoffrey P. Garnett
ALTERNATIVE PERSPECTIVES
3.1 *Robert J. Brent* 151
3.2 *John Stover* 178

4 Strengthening health systems 183
*William P. McGreevey, with Carlos Avila
and Mary Punchak*
ALTERNATIVE PERSPECTIVES
4.1 *Till Bärnighausen, David E. Bloom,
and Salal Humair* 213
4.2 *Nicoli Natrass* 226

5	Social policy interventions to enhance the HIV/AIDS response in sub-Saharan Africa	238
	<i>Anna Vassall, Michelle Remme, and Charlotte Watts</i>	
	ALTERNATIVE PERSPECTIVES	
5.1	<i>Tony Barnett</i>	281
5.2	<i>Harounan Kazianga</i>	293
6	Vaccine research and development	299
	<i>Robert Hecht and Dean T. Jamison, with Jared Augenstein, Gabrielle Partridge, and Kira Thorien</i>	
	ALTERNATIVE PERSPECTIVES	
6.1	<i>Steven S. Forsythe</i>	321
6.2	<i>Joshua A. Salomon</i>	328

PART II RANKING THE OPPORTUNITIES

7	Findings of the Nobel laureate economist expert panel	337
	<i>Ernest Aryeetey, Paul Collier, Edward C. Prescott, Thomas C. Schelling, and Vernon L. Smith</i>	
7.1	Findings from African civil society	341
	<i>Bactrin Killingo, Nduku Kilonzo, Christiana Laniyan, Retta Menberu, and Ken Odumbe</i>	
7.2	Conclusion	346
	<i>Bjørn Lomborg</i>	
	Index	350

Figures

1.1	Subnational estimates of HIV prevalence among adults (age 15–59) in sub-Saharan Africa, 2001–2010.	page 14		demographic and health surveys.	82	
1.2	“Investment approach” to HIV prevention that combines community mobilization, synergies between program elements, and benefits of the extension of anti-retroviral therapy for prevention of HIV transmission.			2.4	Percent of donated blood tested for HIV contamination in a quality-assured manner: countries with less than 100 percent coverage.	86
1.3	Allocation of resources to HIV prevention in sub-Saharan Africa.	16		2.5	Number of blood units required per 1,000 population, data from countries attending 2010 UNAIDS-sponsored workshops.	87
1.4	Male circumcision prevalence in sub-Saharan Africa, 2010.	17		2.2.1	Value for money of “component 3” pMTCT interventions in LMICs.	114
1.5	Conceptual framework for the benefit-cost analyses of interventions to reduce the sexual transmission of HIV: Possible sequences for individual <i>i</i> starting at year <i>t</i> .	24		2.2.2	Impact of health system performance on childhood HIV infections.	117
				2.2.3	Innovative “component 3” strategies to prevent mother-to-child transmission.	120
		28		3.1	Schematic diagram of model for projecting the cost of anti-retroviral therapy, accounting for its prevention benefits.	129
1.1.1	Percent condom use in a cohort of sex workers: Nairobi 1985–99.	51		3.2	Meta-analysis of studies of the cost per year of anti-retroviral therapy reveals heterogeneity within and between countries.	133
1.2.1	Incidence by modes of HIV transmission (sexual).	67		3.3	Average unit treatment budgets reported by PEPFAR for 2006–2008 show mild economies of scale.	134
2.1	HIV transmission by selected modes in five sub-Saharan African countries.	75		3.4	Country-specific cost per person-year of treatment assumed in the projection model in 2012.	134
2.2	Schematic of the Goals model.	80				
2.3	Percentage of men and women receiving a medical injection in the last year, by age group, various					

viii List of figures

3.5	The five-year cost of various combinations of uptake rate and median CD4 at initiation.	136	worth \$5,000 and the prevention effect of ART is 70 percent.	143
3.6	Years gained by an individual patient from anti-retroviral therapy by CD4 at treatment initiation defined as the difference between life-expectancy at that CD4 count with and without treatment.	138	3.13 Sensitivity of benefit to cost ratios to the prevention effect of ART, by counterfactual, discount rate, and scenario, assuming the value of a life-year is \$5,000.	144
3.7	Zero uptake is a pessimistic counterfactual which avoids spending on AIDS treatment at the cost of millions of African lives.	139	3.14 Benefit to cost ratios calculated identically to Figure 3.11, except that each year of life gained is valued at \$1,000.	144
3.8	Historical uptake expands treatment rolls and prolongs lives at the cost of an additional \$15 billion per year by 2050, but total deaths rise almost as high as with zero uptake.	140	3.2.1 A model for tracking the effects of ART initiation at different CD4 counts.	180
3.9	The high uptake scenario which costs \$10 billion more than historical uptake greatly reduces unmet need and reduces the number of annual deaths in 2050 by about one million, but leads to an annual expenditure of almost \$80 billion by the year 2050.	141	4.1 NASA-identified total AIDS spending by type of expenditure, health systems strengthening, health sector, and non-health, nine low- and middle-income regions, 2006, percentage distribution.	187
3.10	The universal access scenario increases the number on ART in early years and requires increasing investment by \$30 billion over the next five years, but achieves a 25 percent reduction in people living with AIDS by the year 2050.	142	4.2 Reaching the Abuja goal: by 2008, seven countries had, 38 had not.	204
3.11	Cost per life-year saved at a range of discount rates.	143	4.1.1a Model that does not incorporate feedback due to reduced mortality because of ART.	219
3.12	Benefit to cost ratios for two \$10 billion scenarios and one \$30 billion scenario for two counterfactuals and two discount rates, assuming that a year of life is		4.1.1b Model that does incorporate feedback due to reduced mortality because of ART.	219
			4.1.2 Human resources required to provide universal ART coverage for SSA, expressed as a function of population ART coverage.	220
			4.2.1 Number of HIV-positive people in countries with 1 percent or more of the total sub-Saharan African HIV-positive population in 2009 (percent share indicated for the largest nine).	227
			4.2.2 Responses to the Afrobarometer Survey (2005/6) to Question 66.	231

5.1	Hypothesized relationship between social factors being considered and HIV risk.	240	6.2.1	Components of costs and benefits for a new preventive HIV vaccine.	331
5.2	Steps in analysis.	249	6.2.2	One-way sensitivity analyses on key assumptions and value choices.	331
6.1.1	Benefit to cost ratio based on variations in the unit cost of an AIDS vaccine.	322	6.2.3	Benefit to cost ratios for developing and delivering a preventive HIV vaccine under alternative assumptions about vaccination coverage.	333
6.1.2	Benefit to cost ratio based on variations in the effectiveness of an AIDS vaccine.	323			

Tables

1.1	HIV prevalence, HIV incidence, and number of persons living with HIV in sub-Saharan Africa, 2009.	page 13	2.5	Benefits associated with safe blood transfusions by discount rate, value of life year gained, and ART cost (\$ million).	88
1.2	Cost per DALY and cost per infection averted for selected interventions in sub-Saharan Africa.	22	2.6	Benefit to cost ratios of providing safe blood supply, by value of life year gained, discount rate, and cost of ART (\$ million).	89
1.3	Benefits, costs, and benefit to cost ratios for three possible solutions to reduce sexual HIV/AIDS infections in SSA.	35	2.7	Benefits associated with pMTCT programs, by discount rate, value of life year gained, cost of ART, and different weights for life years gained (\$ million).	91
1.4	Costs per infection averted and costs per DALY for three possible solutions to reduce sexual HIV/AIDS infections in SAA.	38	2.8	Benefit to cost ratios of providing pMTCT programs, by discount rate, value of life year gained, cost of ART, and different life year weights (\$ million).	92
1.5	Application to selected high- and medium-prevalence countries – Botswana and Mozambique.	40	2.9	Benefits associated with IDU interventions, by discount rate, value of life year gained, and cost of ART (\$ million).	94
2.1	Value of lifetime discounted ART and opportunistic infection treatment, \$.	77	2.10	Sensitivity analysis of the benefits associated with IDU interventions, by discount rate, value of life year gained, cost of ART, and infections averted (\$ million).	95
2.2	Value of life saved, by age, value of life year, and discount rate (\$000).	78	2.11	Benefit to cost ratios of providing IDU interventions, by discount rate, value of life year gained, and cost of ART (\$ million).	95
2.3	Benefits associated with safe medical injections by discount rate, value of life year gained, and ART cost (\$ million).	84	2.12	Sensitivity analysis of the benefit to cost ratios of providing IDU interventions, by discount rate, value of life year gained, cost of	
2.4	Benefit/cost ratios for safe medical injections by value of life year gained, discount rate, costs of ART, and unit cost of injection (\$ million).	85			

	ART, and number of infections averted (\$ million).	96			
2.13	Summary of benefits and costs associated with interventions to reduce non-sexual HIV transmission.	96	3.1.7	Benefits and costs when pregnant women are themselves treated and also prevent MTCT to four children.	167
2.2.1	Comparison of recommended therapeutic options in women with CD4 >350 who do not require therapy for their own health.	112	3.1.8	B/C ratios for treating the pregnant mothers themselves with varying numbers of children.	168
2.2.2	Key indicators.	115	3.2.1	Potential reductions in treatment cost per patient.	179
3.1	Cost per person-year in sub-Saharan Africa is modeled as varying by gross national income per capita, by drug regimen, and by scale of the national treatment effort.	135	3.2.2	Years of survival on ART for a person starting treatment at age 35 by CD4 count at initiation.	180
3.2	Alternative scenarios for computing the benefit to cost ratio of additional AIDS treatment expenditure.	137	3.2.3	Discounted years of life gained, costs, and discounted cost per year of life gained by CD4 count at ART initiation.	181
3.3	Parameters used in the AIDSCost projection program.	147	4.1	Overview of solutions with potential impact on supply, demand, and price, and cost-benefit prospects.	186
3.1.1	Benefits and costs for first-line treatment with 2012 costs and no externalities.	157	4.2	Health spending ratios, major world regions, 2000, 2008.	187
3.1.2	B/C ratios by CD4 count initiation and line of treatment with no externalities.	158	4.3	Return on investment in the proposed UNAIDS framework.	188
3.1.3	B/C ratios by CD4 count initiation and line of treatment with externalities.	160	4.4A	Estimated benefits of saving lives, assuming adult DALYs valued at \$1,000, and infant DALYs valued at \$500, with discount rates of 0, 3 percent, 5 percent, and 10 percent, \$000.	190
3.1.4	Differences in life expectancy at birth without and with AIDS for selected sub-Saharan countries in 2006.	162	4.4B	DALYs valued at \$5,000 and infant DALYs valued at \$2,500.	190
3.1.5	B/C ratios for three prevention of MTCT programs.	163	4.5	Disease statistics for HIV/AIDS infected population of South Africa, all sub-Saharan Africa.	200
3.1.6	Unmet need for family planning (FP) in the top 24 countries in SSA in 2009.	165	4.6	Selected health benefits of health system strengthening.	202
			4.7	Solutions with potential impact on supply, demand, b/c, cost per DALY, and cost per death averted.	206

xii List of tables

4.8	Value of lives saved in infancy (where each year of an infant's life = 0.5 of an adult life-year), at age 22, and age 50, when value of current disability-adjusted life-year is \$1,000 and \$5,000, and discounted to present value at 3 percent, 5 percent, and 10 percent, \$000.	207	5.2	Sources of data used on current coverage of interventions: keeping girls in secondary school.	252
4.9	Incremental B/C ratio ranging from 2 to 15, cost per DALY ranging from \$320 to \$444 for spending \$2 billion to test, inform, and counsel all SSA adults on their HIV status, cutting expected new infections by 0.25 million annually to yield benefits of \$6.25 billion (low) or \$32 billion (high).	207	5.3	Sources of data used on current coverage of interventions: participatory gender and HIV training.	253
4.10	Benefits and costs to expand community health workers, \$ billions, cost/DALY (\$).	207	5.4	Sources of data used on current coverage of interventions: community mobilization.	253
4.11	B/C ratio ranging from 4 to 25 for CRAG testing and treatment among 0.72 million in SSA, extending lives by 9 years at cost/DALY beyond age 22, B, C values in \$ billions, C/DALY (\$).	208	5.5	Unit costs used in calculation of policy interventions: increasing alcohol taxes.	254
4.12	Incremental B/C ratios for spending an additional \$29 billion on basic health system strengthening in 2015.	208	5.6	Unit costs used in calculation of policy interventions: keeping girls in secondary school.	255
4.1.1	A framework for thinking about HSS interventions and the challenges they raise for cost-benefit analyses.	221	5.7	Unit costs used in calculation of policy interventions: participatory gender and HIV training.	255
4.2.1	Development indicators for the nine countries highlighted in Figure 4.2.1.	227	5.8	Unit costs used in calculation of policy interventions: community mobilization.	256
4.2.2	Perceived most important problems facing governments (Afrobarometer 2005/6).	232	5.9	Key inputs used to estimate the impact of increases in taxation on HIV incidence.	257
5.1	Sources of data used on current coverage of interventions: increasing alcohol taxes.	251	5.10	Key inputs used to estimate the impact of adding HIV and gender training onto livelihood programs.	259
			5.11	Key inputs used to estimate the impact of community mobilization.	259
			5.12	DALY parameters.	260
			5.13	Benefit to cost ratio of keeping girls in school, excluding HIV impact.	261
			5.14	Parameters used in estimates of deadweight loss for alcohol tax.	262
			5.15	Unit cost (mean/min/max), annual cost, and total cost (3%/5% discount rates) (2010 dollars).	264
			5.16	Infections averted, DALYs averted, and cost savings (3%/5% discount rates) (2010 dollars).	264

5.17	Total cost, cost savings, DALYs averted incremental cost per DALY (2010 dollars).	264	6.3	Costs of AIDS vaccine program for sub-Saharan Africa (\$ billions).	306
5.18	Mean, minimum, and maximum incremental cost and cost per DALY per intervention (2010 dollars).	266	6.4	Benefits of averting 1,000 infections: estimates by year and scenario (in \$ millions).	308
5.19	Total cost, net health benefit, and benefit to cost ratio by intervention, using a 3% discount rate (2010 dollars).	266	6.5	Vaccine beneficiaries and infections averted (in a 25-year period after vaccine becomes available) in millions.	309
5.20	Total cost, net health benefit, and benefit to cost ratio by intervention, 5% discount rate (2010 dollars).	266	6.6	Total benefit of AIDS vaccine introduction in Africa (\$ billion).	309
5.21	List of countries where unrecorded consumption <50%, B/C ratio > 1, and (HIV) CE threshold <3x GDP/cap.	267	6.7	Benefit-cost ratios for AIDS vaccine development.	310
5.22	Coverage by country (persons).	269	6.8	Hypothetical benefit-cost ratios from advancing time of vaccine availability.	311
5.23	Infections averted and DALYs by country (3% discount rate).	271	6.9	Recent research advances.	313
5.24	Unit and total costs by country (2010 dollars).	272	6.10	Ongoing and completed Phase II and Phase III AIDS trials.	314
5.25	Incremental cost per DALY by country (2010 dollars).	274	7.1	Expert economist panel outcome.	338
6.1	Annual investment in HIV vaccine R&D, 2000–2009.	303	7.1.1	ICASA civil society outcome.	341
6.2	Two scenarios for 2030 in sub-Saharan Africa (and globally) – numbers in millions.	305	7.2.1	Global Fund-hosted event prioritization.	346
			7.2.2	Addis Ababa youth forum prioritization.	347
			7.2.3	Overview of prioritizations.	348

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Abbreviations and acronyms

ABCE	Goals and Allocation by Cost-Effectiveness model	FAO	Food and Agricultural Organization
ACT	artemisin combination therapy for malaria prevention and treatment	FP	family planning
		FSW	female sex worker
		GAVI	Global Alliance for Vaccines and Immunization
AGF	Abuja Goals Fund		
AMC	adult male circumcision	GF	The Global Fund to Fight AIDS, Tuberculosis and Malaria
AMI	acute myocardial infarction		
ANC	antenatal care		
ART	anti-retroviral therapy (three-drug combination therapy)	GHI	Global Health Initiative
		GNI	gross national income
		HC	human capital
ARV	any single or dual anti-retroviral drug regimen	HIA	HIV infection averted
		HICs	high-income countries
BCA	benefit-cost analysis	HIPC	Heavily Indebted Poor Countries Initiative of World Bank
BCC	behavioral change communication		
		HLT	High Level Taskforce on International Innovative Financing for Health Systems
B/C ratio	benefit-cost ratio		
CAR	Central African Republic		
CBA	cost-benefit analysis	HSS	health system strengthening = strengthening health systems
CCC	Copenhagen Consensus Center		
CCT	conditional cash transfer	HSV-2	herpes
CEA	cost-effectiveness analysis	HTC	HIV testing and counseling
CHW	community health worker	IAC	International AIDS Congress
CM	cryptococcal meningitis	IC	information campaigns
CMH	Commission on Macroeconomics and Health	ICD	infectious and communicable diseases
COD	cash on delivery	ICER	incremental cost-effectiveness ratio
CRAG	cryptococcal antigen		
DALY	disability-adjusted life year	IDU	injecting drug user
DCP2	Disease Control Priorities in Developing Countries, Second Edition	IHP+	International Health Partnership
DHS	Demographic and Health Surveys	IMAGE	Intervention with Microfinance for AIDS and Gender Equity
DMPPT	Decision Makers' Program Planning Tool	IOM	Institute of Medicine (USA)
		IPV	intimate partner violence
DOTS	directly-observed treatment, short course	IRR	internal rate of return; also, economic rate of return

xviii List of abbreviations and acronyms

LMICs	low- and middle-income countries	QALY	quality-adjusted life year
		RBF	results-based financing
MBB	marginal budgeting for bottlenecks	RCTs	randomized controlled trials
		R4D	Results for Development Institute
MC	male circumcision		
MD	medical doctor	SRH	sexual and reproductive health
MDG	Millennium Development Goal		
MDR-TB	multidrug resistant tuberculosis	SSA	sub-Saharan Africa
MMC	medical male circumcision	STI	sexually transmitted infection
MSF	Médecins Sans Frontières	TAC	Treatment Action Campaign
MSM	men who have sex with men	TB	tuberculosis
MTCT	mother-to-child transmission	TnT	treat and test
NASA	National AIDS Spending Assessment	UNAIDS	Joint United Nations Programme on HIV/AIDS
NCD	non-communicable diseases	UNGASS	United Nations General Assembly Special Session on HIV/AIDS (June 2001)
ODA	official development assistance		
OI	opportunistic infection		
OST	opioid substitution therapy	UNICEF	United Nations Children’s Fund
PBI	performance-based incentives		
PDV	present discounted value	VCT	voluntary counseling and testing
PEPFAR	President’s Emergency Program for AIDS Relief (USA)	VSL	value of a statistical life
		VSLY	value of statistical life year
pMTCT/PMTCT	prevention of maternal to child transmission	WHO	World Health Organization
		WTP	willingness to pay
POC	point-of-care	XDR-TB	extensively drug-resistant tuberculosis
PPP	purchasing power parity		
		YLL	years of life lost

Foreword

PETER PIOT

The emergence of the AIDS epidemic three decades ago represented an historic and unexpected development, upsetting the belief that the era of widespread infectious disease was coming to an end.

Since the beginning of the epidemic, almost 60 million people have been infected with HIV and 25 million people have died of HIV-related causes (UNAIDS and World Health Organization 2009). Yet, in that time an immense amount has been accomplished: scientific breakthroughs, unprecedented increases in global funding, and a new model for human rights and public health policy. Millions of lives have been saved.

At the end of 2010, five million people in sub-Saharan Africa had access to anti-retroviral treatment, whereas at the beginning of the millennium fewer than 100,000 had access (World Health Organization 2011).

The expansion of treatment has been one of several events that have recently changed the AIDS landscape. There have been positive research breakthroughs in demonstrating the effectiveness of male circumcision to prevent acquisition of HIV in men, and of treatment as prevention in serodiscordant couples. On the political side, the June 2011 United Nations Security Council Resolution on HIV/AIDS and General Assembly Political Declaration on HIV/AIDS reflect a promising level of renewed political engagement, as well as a changed strategy to focus on the populations that are at highest risk of HIV.

However, in an environment where aggregate funding is either declining or flat-lining, continuing with a “business-as-usual” approach will not work. The response to HIV needs to draw from lessons gained over the past thirty years, to identify greater efficiencies and establish a longer-term strategy.

We already know a considerable amount about the future of the epidemic. AIDS will remain an enormous global challenge. The disease will undoubtedly remain a major cause of death worldwide for years to come. In the worst affected countries in sub-Saharan Africa, AIDS will continue to undermine national economies, agricultural production, and community cohesion.

But there is much that remains uncertain – and dependent on decisions that we make in the next few years. The aids2031 Modeling Working Group showed (The aids2031 Consortium 2010) that tens of millions of lives can be saved over the next generation if efforts to tackle AIDS become smarter, more focused, more tailor-made, and more community-centered. However, if actions remain static or weaken, there will be millions of preventable new infections and deaths.

Although we talk about the so-called “global AIDS epidemic,” in reality today there is a multitude of local epidemics that often differ markedly from one another among and within countries. While certain principles may apply universally in the fight against HIV – such as the importance of combating stigma, or of engaging affected communities – the variation teaches us that AIDS choices must address the unique settings of differing epidemics.

We must also learn to better reach the marginalized groups who experience the harshest effects of the HIV epidemic. Both globally and in sub-Saharan Africa, adult prevalence is considerably higher among people who inject drugs, men who have sex with men, and sex workers. Stigma, discrimination, and laws that criminalize these behaviors make it difficult for marginalized individuals in too many countries to seek health care, and to access preventative options.

Most importantly, we must acknowledge that AIDS is a generations-long challenge. Facing this reality requires us to adopt a longer-term, proactive mindset. Scaling up is vital, but it must be matched by an equal commitment to ensuring quality, efficiency, and sustainability.

This has profound implications for how we approach HIV. It would see us put more emphasis on investment in local capacity, identify greater synergies with other health and development needs, focus on locally adapted approaches rather than generic approaches, and introduce new prevention interventions in function of local needs.

Much of the knowledge that is needed to create radical reductions in the number of new HIV infections and AIDS deaths over the next generation is already available. The world possesses the research capacity to generate the new preventive and therapeutic tools that will be required.

However, AIDS research needs to evolve and develop. Whereas research for new interventions such as a vaccine microbicide or pre-exposure prophylaxis must continue, research in the real world into population level effectiveness must intensify, taking into account the effects of social marginalization, gender inequality, and management challenges of large-scale programs over a considerable period of time.

In translating new evidence, we should ask ourselves five questions to help to ensure that national strategies are based on more than received wisdom (Piot 2010):

- Does this work in the real world?
- Will people use it?
- What is the best way to deliver it?
- Can we afford it?
- Do the benefits warrant the costs?

RethinkHIV seeks to provide answers to each of those questions, and especially the last one. Prioritization based on establishing value for money is a different approach than the field of AIDS is accustomed to. The findings and implications from this first-ever, comprehensive effort to examine costs and benefits of the major HIV interventions across sub-Saharan Africa can be challenging and even confrontational. But the lessons from this field

should be incorporated into our policy discussions and decisions, along with evidence from other scientific fields.

The *RethinkHIV* research captures human ingenuity and enterprise in the face of HIV, by outlining the considerable number of effective (and cost-effective) ways that have been found to respond to the epidemic. It is striking that the project asked researchers to focus on initiatives with benefit-to-cost ratios greater than one: In other words, each of the responses to the epidemic is, in itself, cost-effective. There are no silver bullets in the fight against HIV. But, as this research shows, there are many effective weapons in our arsenal.

It is also noteworthy that a number of the initiatives explored – such as financial incentives to keep girls in school, and efforts to reduce gender-based violence (Chapter 5) – have positive benefits that flow beyond HIV prevention. HIV does not exist within a vacuum, and responses that have broader impacts are commendable. Identifying areas of potential convergence between investment options will not only save costs, but may help to address other societal problems and strengthen health systems.

These chapters also underscore the considerable need for further intervention evaluation. It is vital that we generate more rigorous effectiveness studies, and engage in more research into structural interventions to reduce vulnerability to HIV.

However, the responsibility for building a sustainable long-term response to HIV does not just rest with the research community. Political courage and commitment need to increase.

As the aids2031 Consortium demonstrates, the magnitude and severity of the HIV pandemic can be reduced dramatically over the next generation if the global community brings the seriousness of purpose to this problem that it deserves. So far, some political leaders have outlined a bold vision. However, they have left an unfinished agenda.

True leadership is required to develop strong, evidence-based national responses. Among other actions, political leaders must prioritize rights-based approaches with respect to marginalized populations.

Globally, AIDS needs to remain high on the global political agenda, even among a proliferating array of challenges and issues – and against the backdrop of the economic crisis and AIDS “fatigue.”

The response to AIDS needs to adapt to the changing environment. Funding demands will grow, but we can lower the long-term cost trajectory if wise policy choices are made today with attention paid to costs and benefits.

In highlighting effective responses, and shining a spotlight on prioritization and evidence-based decision-making, *RethinkHIV* adds to the body of information that can help to ensure smarter, sustainable decisions are made in the ongoing fight against HIV.

References

- Piot, P. (2010). AIDS in Africa: Towards a new era. ICASA 2011 Keynote Speech. Addis Ababa: ICASA 2011.
- The aids2031 Consortium. (2010). *AIDS: Taking a Long-Term View*. New Jersey: FT Press.
- UNAIDS. (2010). *Global Report: UNAIDS Report on the Global AIDS Epidemic 2010*. Geneva: UNAIDS.
- UNAIDS and World Health Organization. (2009). *Global Facts and Figures*. Geneva: UNAIDS.
- World Health Organization. (2011). *Global HIV/AIDS Response: Epidemic Update and Health Sector Progress Towards Universal Access: Progress Report 2011*. Geneva: World Health Organization.