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Quantitative Economic Evaluations of HIV-Related Prevention and Treatment Services: A Review*

David R. Holtgrave, Ronald O. Valdiserri & Gary A. West**

Introduction

A comprehensive national program designed to prevent acquisition/transmission of human immunodeficiency virus (HIV) and reduce the morbidity and mortality associated with HIV infection and acquired immune deficiency syndrome (AIDS) must include and integrate many prevention and treatment activities. These include: public information programs; counseling, testing, referral and partner notification services; health education and risk reduction programs, e.g., street outreach and community level interventions; early intervention medical and psychosocial services for HIV seropositive persons; extended ameliorative medical and psychosocial services for persons living with AIDS; and biomedical and behavioral research to develop new curative and preventive therapies.

The delivery of a comprehensive program is resource intensive. In fiscal year 1992, the U.S. Public Health Service (PHS) budget for HIV and AIDS related activities (including service provision and research) was \$1.96 billion.¹ Of this, 42.9% was directed to the National

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Institutes of Health (NIH), 24.4% to the Centers for Disease Control and Prevention (CDC), 16.1% to the Health Resources and Services Administration (HRSA), 12.0% to the Substance Abuse and Mental Health Services Administration (SAMHSA),² 3.7% to the Food and Drug Administration (FDA) and the rest to other PHS agencies.³ Hellinger has estimated that the 1992 cumulative U.S. cost for treating all persons with HIV infection (including those living with AIDS) was \$10.3 billion.⁴

Although the number of HIV infections and AIDS cases continues to increase, fiscal resources for delivery of prevention and treatment services are necessarily finite. In fact, some HIV-related fiscal resources have recently remained relatively constant; this is true of the HIV budget of the CDC.⁵

Under any circumstances, it would be important to subject these prevention and treatment service programs to formative, process and outcome evaluation.⁶ Formative evaluation helps to ascertain whether the service programs are culturally, linguistically and developmentally appropriate — as well as potentially effective — for the intended priority population being served. Process evaluation determines, in part, whether the programs are delivered as planned. Outcome evaluation determines whether the service programs achieve their stated behavior change and health status goals.⁷

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¹ Centers for Disease Control, *HIV/AIDS Prevention Fact Book 1992* 3–5.

² SAMHSA was formerly the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA).

³ *Fact Book*, *supra* note 1.

⁴ Fred J. Hellinger, *Forecasts of the costs of medical care for persons with HIV: 1992-1995*, 29 *Inquiry* 356 (1992) (in 1991 dollars).

⁵ *Fact Book*, note 1 *supra*.

⁶ *Evaluating AIDS Prevention Programs* 15–33 (Susan L. Coyle, Robert F. Boruch & Charles F. Turner eds., expanded ed. 1991).

⁷ *Id.*; *Evaluating AIDS Prevention: Contributions of Multiple Disciplines* 1–6 (Laura C. Leviton, Andrea M. Hegedus & Alan Kubrin eds. 1990); and Michael Scriven, *Evaluation Thesaurus* 250–251 (4th ed. 1991).

In a constrained fiscal environment, a fourth type of evaluation, economic, becomes especially important.⁸ Drummond et al. define economic evaluation as “the comparative analysis of alternative courses of action in terms of both their costs and consequences.”⁹ In terms of HIV and AIDS prevention and treatment service delivery, economic evaluation means that we must look critically at different programmatic activities, study their costs, estimate or observe their behavioral and health benefits and decide whether the level of resources devoted to programs are justified. In a rapid and emerging response to the HIV epidemic, such decisions must be made by policy makers, program managers and communities whether or not quantitative economic evaluations are available. Presumably, economic evaluation information would augment and improve this decision making process.

Drummond et al. describe several types of economic evaluation analyses.¹⁰ We focus on the three types that deal explicitly with balancing health service costs and consequences: cost-effectiveness analysis (CEA), cost-utility analysis (CUA), and cost-benefit analysis (CBA). CEA refers to a comparison of a service program’s cost with its consequences where the consequences are expressed in some natural units (such as “years of life saved”). CUA involves a comparison of program cost with consequences wherein the consequences are adjusted for their utility or quality. The most commonly measured programmatic consequence in a CUA is the “quality-adjusted life year” or “QALY.” CBA denotes a comparison of program cost with consequences that have been valued in money terms. For example, a CBA might involve estimating the costs of an HIV service program, calculating the potential number of HIV infections to be averted, attaching a dollar value to each averted HIV infection and comparing the programmatic costs with the monetized benefits.

⁸ Allan S. Detsky & I. Gary Naglie, *A Clinician’s Guide to Cost-Effectiveness Analysis*, 113 *Ann. Intern. Med.* 147 (1990) and David Eddy, *Applying Cost-Effectiveness Analysis*, 268 *JAMA* 2575 (1992).

⁹ Michael F. Drummond, Greg L. Stoddart & George W. Torrance, *Methods for the Economic Evaluation of Health Care Programmes* 8 (1987).

¹⁰ *Id.* at 5–17.

Given the extant need to compare the costs and consequences of HIV and AIDS prevention and treatment programs, we reviewed relevant, published CEAs, CUAs and CBAs. Our objectives were to: present a taxonomy of major HIV-related prevention and treatment services — and determine which of those have been subjected to formal economic evaluation; present a taxonomy of the outcome measures that may be used in economic evaluations — and determine which of those have been used in previous analyses; and assess the methodological quality of extant economic evaluations. It should be emphasized that this review focuses only on economic evaluations; a review of all outcome evaluations (that are important and may or may not include economic considerations) is beyond the scope of this paper.

Methods

Taxonomy Development

Before starting a formal literature search, the authors developed a comprehensive taxonomy of HIV and AIDS-related prevention and treatment services. It is presented in Appendix B and contains as a special case the sixteen-category taxonomy of AIDS policy issues developed by Brandeau et al.¹¹ It encompasses, *but is not limited to*, all major types of HIV prevention programs funded by CDC and includes common clinical treatment services. Of course, any taxonomy of HIV and AIDS-related prevention and treatment services should be considered “dynamic” and subject to rapid change as new services and interventions are developed and become available.

Another taxonomy was needed to categorize outcome measures used in the CEA/CUA/CBA studies. In this case, an entirely satisfactory taxonomy already existed. Coyle et al. listed possible evaluation outcome measures for HIV and AIDS-related studies.¹² These included biological, behavioral and psychological outcomes as the three major categories.

¹¹ Margaret L. Brandeau et al., *Policy Analysis of Human Immunodeficiency Virus Screening and Intervention: An Overview of Modeling Approaches*, 5 AIDS & Pub. Pol. J. 119 (1990).

¹² Evaluating AIDS Prevention Programs, *supra* note 6.

Study Identification

Several methods were used to identify candidate studies for inclusion into the literature review. Electronic searches were conducted twice in calendar year 1992 in AIDSLINE. The AIDSLINE searches included all years available in that database. The primary keywords used included "cost-effectiveness" and "cost-benefit analysis." All resultant references were examined. As a secondary check on the primary electronic searches, the more general keyword "evaluation" was also used in AIDSLINE.

Additionally, hand reference tracing was done to determine if the studies found via electronic searching might contain citations to other relevant papers. Hand searching was also done on the published abstracts for the 1991 and 1992 International Conferences on AIDS, as well as for the last five years of Society for Medical Decision Making Annual Conferences. The recency of the International Conferences on AIDS, and the particular publication format of the abstracts from the Society for Medical Decision Making Annual Conferences made them problematic to access via AIDSLINE. Moreover, we hand searched an economic evaluation bibliography¹³ — designed to include many of the health-related economic evaluations published — for any HIV and AIDS-related references. We also examined for relevant references monthly current issues of *ATIN: AIDS Targeted Information*.¹⁴ Finally, we informally queried colleagues working on HIV-related economic evaluations to obtain still more relevant articles.

Study Selection

Studies were included if they met the following four criteria. First, the study was a published abstract, chapter or article. Second, the reference contained a description of an HIV or AIDS-related prevention or treatment service. Third, the paper contained a quantitative statement of the cost of the identified prevention or treatment program and a quantitative statement of the consequences

¹³ Martin E. Backhouse, Rebecca J. Backhouse & Sally A. Edey, *Economic Evaluation Bibliography*, 1(Suppl.) *Health Econ.* S.1–S.236 (1992).

¹⁴ A publication of abstracts and critical commentary taken from recent AIDS literature.

(i.e., effectiveness, utility or benefit of the program). Fourth, the paper contained a direct quantitative comparison of the programmatic cost to the consequences (usually via the reporting of a cost-effectiveness, cost-utility or cost-benefit ratio). We believe that these inclusion criteria constitute a minimal check on the quality of the examined references.

Exclusion criteria were also used. First, if a research team had presented their work at a conference and then published a complete report in a journal, we omitted the original conference abstract. Second, we omitted news articles and letters-to-editors. Third, unpublished papers provided by colleagues were excluded. Fourth, we omitted references that dealt with alternative methods of performing HIV-related laboratory procedures (e.g., methods for pooling sera) because they do not directly evaluate a prevention or treatment service. Last, we omitted papers that dealt with only the estimation of the cost or consequences of a program (but not both)¹⁵.

Data Extraction

The following data were extracted from each study which met inclusion (and did not meet the exclusion) criteria described above: complete bibliographic information; taxonomic service category; method of economic evaluation used and outcome measure used. Information was extracted by the first author and concurrence was obtained with the other authors; however, a quantitative study of reliability was not attempted.

Results

Over 277 references were initially found and examined. This included 115 from primary electronic searches; of these references, 52 referred to meeting abstracts and 63 to articles, news reports or editorial letters. Sixty-one abstracts from the 1991 International Conference on AIDS were hand searched (all abstracts indexed under any keyword related to cost). Over 93 abstracts from the 1992 International Conference on AIDS were hand searched (all abstracts relating to evaluation or cost). Eight more relevant references were

¹⁵ Several of these addressed socioeconomic impacts of HIV and AIDS.

located via secondary electronic searches, hand searches of all abstracts for the Society for Medical Decision Making Annual Conferences for the last five years, other reference tracing and informal professional networking.

Of the references initially examined, 47 met the inclusion (and no exclusion) criteria. Our search was apparently quite comprehensive because a section on "infectious and parasitic diseases" in a recently-published economic evaluation bibliography would have yielded only ten studies for inclusion.¹⁶

The 47 references appear in Appendix A, including 27 CEAs, 15 CBAs and five CUAs. Table 1 shows that 83% of these studies were published in 1990 or later.

Table 1
Annual Reference Counts for Economic Evaluation Efforts

<i>Year</i>	<i>Reference Count</i>
1987	1
1988	2
1989	5
1990	16
1991	11
1992	11
1993	1
Total	47

Table 2 presents the presentation or publication outlet of the references. Only thirteen are meeting abstracts; this may indicate that the inclusion criteria (requiring quantitative statements of costs, consequences, and comparisons of costs and consequences) are biased against the brief nature of abstracts.

¹⁶ *Supra* note 13.

Table 2
Presentation and Publication Outlets

<i>Outlet</i>	<i>Reference Count</i>
Society for Medical Decision Making Conferences	4
International Conferences on AIDS	9
Book Chapters	1
Journal Articles	33
Total	47

All 47 references included (observed or estimated) biological outcomes. That is, none were solely focused on behavioral or psychological outcome measures. Therefore, the biological outcome measures were divided into subcategories to reflect diversity among included references.

Table 3
Outcome Measures

<i>Measure</i>	<i>Reference Count</i>
HIV infections averted	15
HIV infections identified	12
Years of life saved	5
Quality-adjusted life years saved	5
AIDS cases averted	3
Opportunistic infections averted (general)	1
Pneumocystis carinii pneumonia cases averted	1
Pneumocystis carinii pneumonia relapses averted	1
Other	4
Total	47

Table 3 displays the numbers of studies in each biological outcome measure subcategory. The most frequently used, primary outcome measure is "HIV infections averted" as a consequence of the analyzed program. The second most frequent is "HIV infections identified."

Many articles that deal with partner notification or screening programs use this outcome measure as a primary aspect of analysis.

Appendix B displays the HIV and AIDS prevention and treatment service taxonomy developed *a priori*; it also contains relevant reference numbers from Appendix A for each service category. It is readily apparent from Appendix B that only about one-quarter of prevention and treatment services have been subjected to formal economic evaluation. Service categories that have been analyzed are summarized in Table 4. Of these 47 references, 38% deal with some type of HIV screening program, 34% with some type of clinical prevention or medical service and 13% with partner notification programs.

Table 4
HIV Prevention and Treatment Services Subjected to Economic Evaluation
(Summary)

<i>Service</i>	<i>Reference Count</i>
Mandatory counseling and testing, and other screening	18
Partner notification	6
Other counseling, testing, referral and partner notification	2
Pneumocystis carinii pneumonia prophylaxis	5
Anti-retroviral (therapeutic)	4
Anti-retroviral (post-exposure prophylaxis)	2
Other treatment (medical)	4
Other treatment (medical and psychosocial)	1
Condom distribution and promotion	2
Other	3
Total	47

Discussion and Conclusion

The formal economic evaluation of HIV and AIDS prevention and treatment services is reflected in a rapidly expanding literature. Although over 277 references were examined for potential inclusion in this literature review, only 47 met basic inclusion criteria and quality checks. Still, the inclusion criteria used may have reflected a bias against

abstracts which are necessarily brief in nature. Given the large number of abstract references examined but excluded, it may be that many of these abstract authors soon will be publishing their work as more detailed journal articles (the detail of which would make them more likely to meet our inclusion criteria).

It is interesting that no study made behavioral or psychological outcome measures its primary outcome measure. This may be due to the difficulty of developing a behavioral or psychological outcome measure that is appropriate for such evaluations. Brandeau et al. have called for the development of more comprehensive behavioral outcome measures for use in AIDS policy analyses.¹⁷ Alternatively, the lack of psychological or behavioral primary outcome measures may be due to a perceived need to convert behavioral phenomenon into biological measures to justify what are, after all, health-related services programs. Since many of the HIV and AIDS-related prevention and treatment services described in Appendix B aim to *change behavior as a way to influence health status*, the evaluation of such programs takes on an added and difficult dimension that is not present in the economic evaluation of strictly curative medical interventions related to some other health problems.

For most HIV prevention programs, a thorough economic evaluation requires the observation or estimation of the cost of program implementation, an assessment of the behavioral impact, a mapping of the behavioral changes into changes in biological outcomes and health status and a comparison of health status consequences with the cost of program implementation. This can be contrasted with the economic evaluation, in another health-related arena, of two different methods for fluid resuscitation;¹⁸ in such an evaluation, the intermediate steps of behavior change assessment and mapping of behavior change to health outcomes are not needed whatsoever. Although behavior change must be assessed in the economic evaluation of other health-related prevention programs such as the North Karelia Project for the

¹⁷ *Supra* note 11.

¹⁸ Roberto Bissoni et al., *Colloids Versus Crystalloids in Fluid Resuscitation*, 32 J. Fam. Practice 387 (1991).

prevention of cardiovascular disease,¹⁹ HIV-related sexual and drug use behaviors are sensitive in nature and relatively difficult to measure. This makes the economic evaluation of HIV prevention programs particularly challenging.

Appendix B supports the proposition that little is known about the relative cost-effectiveness of several categories of HIV-related service programs. Yet, there are three historically plausible reasons. First, not until the last decade did HIV infection come onto the public health horizon. It has been only in the last few years that many of the services listed in Appendix B came into being. For instance, HIV-related community level interventions have only recently become a priority prevention activity.²⁰ Hence, there simply has not been time to subject some of these programs to rigorous economic evaluation.

Another historical reason is that the collection of detailed cost data on new services is difficult and takes time to implement. Cost analysis studies and data collection systems must be designed, staff trained in cost analytic procedures, and cost data collected and analyzed. Therefore, some of the more recently-developed HIV prevention and treatment services are just now being subjected to basic cost-analyses; more complete economic evaluations (i.e., CEAs, CBAs and CUAs) will follow. As these cost analyses are conducted, they could be published routinely as part of evaluation study reports (however, this would be a new type of publication for many journals).

A third historical reason is that economic evaluation techniques seem to be used once an area of health service delivery has existed for an extended period of time. Indeed, they have long been used in clinical medicine but are only now beginning to see wide-spread popularity in the public health arena. This may suggest a reason why so many of the economic evaluations included in our literature review were focused on clinical AIDS management topics. However, this historically plausible reasoning should not prevent the providers of HIV prevention

¹⁹ Stephen R. Engleman & John F. Forbes, *Economic Aspects of Health Education*, 22 Soc. Sci. Med. 443 (1986).

²⁰ Centers for Disease Control, Cooperative Agreements for Human Immunodeficiency Virus (HIV): Prevention Projects Program Announcement and Availability of Funds for Fiscal Year 1993, 57 Fed. Reg. 40,675 (1992).

services from now performing much needed economic evaluations. Further, economic evaluation modelling techniques can be used even before a health services program is widely implemented to estimate the potential cost-effectiveness of the planned program; hence, there is no theoretical reason why economic evaluation techniques cannot be used throughout the planning, implementation and modification of health services programs.

Besides needing more economic evaluations of the service categories in our taxonomy, policy makers and program managers also need economic evaluations of new categories as they become available (e.g., needle and syringe exchange services; community planning and development efforts; and educational methods that use emerging technologies to deliver services). Further, methods should be developed for determining when a service category has received sufficient economic evaluation. For instance, few would argue the merits of screening programs for donated blood.

In this paper, we have resisted the temptation to provide a table of CEA, CUA, or CBA ratios from the 47 included studies which might be used to state which analyzed services are most "cost-effective." To provide such a table at this point in the development of the HIV and AIDS economic evaluation literature would seem to be a mistake. These 47 papers differ so greatly in terms of particular evaluation methodologies used (e.g., methods to assess quality of life), biological outcome measure subcategories used, and services examined, that comparison among them is problematic. To summarize the base case results of these 47 studies in a table would be analogous to prematurely combining studies in a meta-analysis.²¹ Rather, it is our hope that persons interested in such comparisons will use our review to guide them to relevant literature which they will then dissect carefully in terms of methodological study differences before comparing HIV and AIDS prevention and treatment services to each other.

²¹ K. Dickersin & J. A. Berlin, *Meta-Analysis: State-of-the-Science*, 14 *Epidem. Revs.* 154 (1992).

Used in such a way, the studies cited in this review might inform program management and policy debates on specific decisions. However, it should be stressed again that programmatic and policy decisions about HIV and AIDS-related prevention and treatment programs necessarily are made continually. These decisions must be made in response to an epidemic and cannot wait. Although many programs are based on well-accepted standards for health promotion programs, quantitative economic evaluations can inform, and presumably improve this decision making. Hence, analysts doing HIV and AIDS-related economic evaluations must “catch up” to the urgent decisions which must be made; decision processes (usually) cannot be slowed down to wait for comprehensive economic analyses to be completed.

Another indication that the economic evaluation of HIV and AIDS related services is in its early stages (relative to that for other health problems) is that only five of the 47 included articles incorporated quality of life considerations. The QALY outcome measure is used whenever possible in health-related economic evaluations because it should, in principle, allow for consideration of multiple factors that influence perceived quality of life — and the comparison of multiple health-related programs to each other on a common basis (i.e., cost-per-QALY).²²

A historical explanation for this relative lack of HIV-related CUA studies seems plausible. In order to perform a CUA, one must be able to estimate quality of life for those persons suffering from the particular health problem (here, HIV infection and AIDS). Therefore, quality of life estimation studies are likely to precede CUAs in the literature; only recently have such quality of life estimation studies been seen in the HIV and AIDS literature.²³ So it seems that the relative number of

²² Harold C. Sox et al., *Medical Decision Making* 201-237 (1988).

²³ Albert W. Wu et al., *Quality of Life in a Placebo-Controlled Trial of Zidovudine in Patients with AIDS and AIDS-Related Complex*, 3 *J. Acquir. Immune Defic. Syndr.* 683 (1990); Robert M. Kaplan et al., *The Quality of Well-Being Scale: Applications in AIDS, Cystic Fibrosis, and Arthritis*, 27(3 Suppl.) *Med. Care* S.27 (1989); and Diane Ragsdale & James R. Morrow, *Quality of Life as a Function of HIV Classification*, 39 *Nurs. Resh.* 355 (1990).

CUA economic evaluations of HIV and AIDS service programs is likely to increase as the rather new HIV and AIDS quality of life assessment literature burgeons. These CUAs are important for comparing the HIV and AIDS-related services to other health care programmes since the quality-adjusted life year is an outcome often used to compare the cost-utility of programs across health arenas.

In summary, review of the rapidly expanding literature revealed that: most HIV prevention and treatment service categories have not yet been subjected to economic evaluation; behavioral outcome measures have not been the sole focus of any examined economic evaluation; and the majority of references examined lacked formal quantitative analyses. Much greater effort is needed in conducting and publishing rigorous economic evaluations of HIV and AIDS prevention and treatment programs — in the timely fashion required for urgent policy and program management decisions (especially concerning resource allocation) attempting to halt the HIV epidemic.

Appendix A

References Included in Literature Review

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Appendix B

Taxonomy of HIV Prevention and Treatment Services²⁴

1. Counseling, testing, referral and partner notification [A6]
 - A. HIV counseling and testing
 - i. non-voluntary testing
 - a. military
 - b. Job Corps
 - c. prisons (where required by law)
 - d. insurance
 - e. sexual assault (where required by law)
 - f. pre-marital (where required by law) [A3, A7, A8, A9, A10, A37]
 - g. blood bank screening [A5, A27, A28]
 - h. hospital patients (where required by institutional policy) [A19, A29, A30]
 - i. general "screening" [A32, A42]
 - j. immigrants [A35]
 - k. job applicants (where required by institutional policy) [A36]
 - ii. voluntary testing
 - a. determine own serostatus (personal risk assessment) [A26]
 - (1) clinic setting
 - (a) persons in STD clinics
 - (b) persons in drug treatment
 - (c) persons in TB clinics
 - (d) persons in family planning clinics
 - (e) other clinic setting (e.g., private physician)
 - (2) community setting (e.g., the street; community organizations)
 - b. perinatal screening [A33, A46]
 - c. enhanced/repeated post-test counseling in any setting
 - d. enhanced efforts at increasing rate of return for post-test counseling in any setting

²⁴ References are to Appendix A.

- iii. alternative methods of testing
 - a. saliva testing
 - b. urine testing
 - c. dried blood spot testing
 - d. rapid testing, other
 - iv. alternative methods of pre- and post-test counseling
 - B. Referral
 - i. referral verification systems
 - ii. staff assisted referrals
 - iii. decentralized vs centralized case management
 - iv. linking outreach programs to clinic-based CT services
 - C. Partner notification
 - i. provider referral [A14, A31]
 - ii. patient referral
 - iii. mixed strategies [A12, A20, A38, A39]
 - iv. couples counseling
 - v. special referral systems for partners
 - D. Other
 - i. staff training
 - ii. quality assurance programs
 - iii. STD treatment as a strategy for HIV prevention
 - iv. condom distribution in STD clinics
- 2. Health education /risk reduction
 - A. Individual counseling
 - i. peer counselor
 - a. skills training
 - (1) condom use training
 - (2) negotiation of safer sexual behaviors
 - b. other psychosocial issues
 - ii. non-peer counselor
 - a. skills training
 - (1) condom use training
 - (2) negotiation of safer sexual behaviors
 - b. other psychosocial issues
 - B. Group counseling
 - i. peer mediated
 - a. skills training
 - (1) condom use training
 - (2) negotiation of safer sexual behaviors
 - b. other psychosocial issues
 - ii. non-peer mediated
 - a. skills training
 - (1) condom use training
 - (2) negotiation of safer sexual behaviors
 - b. other psychosocial issues
 - C. Street and community outreach
 - i. peer led
 - ii. non-peer led
 - iii. street counseling
 - iv. condom distribution and promotion [A4, A13]
 - v. bleach distribution

- D. School-based programs
 - i. peer led
 - ii. teacher (or other non-peer) led
 - iii. as part of comprehensive health education program
 - iv. condom distribution
- E. Worksite health promotion
 - i. peer led
 - ii. non-peer led
 - iii. as part of comprehensive health promotion program
- F. Other
 - i. community-level interventions
- 3. Public information
 - A. Mass media
 - i. print mass media
 - ii. electronic mass media
 - B. Other printed media
 - i. small media
 - C. Endorsements/testimonials by opinion leaders
 - D. Hotlines/clearinghouses
- 4. Treatment [A47]
 - A. Psychosocial services
 - B. Medical treatment
 - i. prophylaxis for *Pneumocystis carinii* pneumonia (PCP) [A17, A18, A22, A24, A40]
 - ii. anti-retroviral therapy
 - a. post-exposure prophylaxis [A1, A34]
 - b. therapeutic [A16, A23, A25, A43]
 - iii. treatment of opportunistic infections other than PCP [A41, A44]
 - iv. treatment of HIV-associated malignancies
 - v. treatment of other conditions [A11, A15]
- 5. Minority/youth/womens' initiatives (See substantive programmatic areas above)
- 6. Other
 - A. Community development (including private/public ventures)
 - B. Multi-year funding of projects
 - C. Formula grants
 - D. Funding national organizations to provide technical assistance
 - E. Occupational transmission (not related to AZT) [A21]
 - F. Other [A2, A45]



