

CHAPTER 4

Research Support and Dissemination

Training, Infrastructure, and Capacity Building
Information Dissemination

Training, Infrastructure, and Capacity Building

AREA OF EMPHASIS

Training, Infrastructure, and Capacity Building

SCIENTIFIC OBJECTIVES AND STRATEGIES**OBJECTIVE–A**

Provide training domestically and internationally in biomedical, social, and behavioral research on HIV, with an emphasis on multidisciplinary research in racially and culturally diverse settings domestically, and with attention to the needs of marginalized communities domestically and in developing countries with high incidence and/or high prevalence of HIV infection.

STRATEGIES

- Increase predoctoral, doctoral, postdoctoral, and advanced research training across a broad range of AIDS-related disciplines with emphasis on racial and ethnic minority populations in the United States.
- Support multidisciplinary training and mentoring programs to strengthen AIDS intervention research including behavioral interventions, vaccines, microbicides, therapeutics, coinfections (e.g., tuberculosis [TB]), sexually transmitted diseases, interventions to interrupt mother-to-child transmission (MTCT), nutritional interventions, and substance abuse prevention and treatment, all in the context of HIV infection.
- Expand the NIH AIDS Loan Repayment Program to increase the number of U.S. scientists and physicians from disadvantaged backgrounds trained as AIDS researchers.
- Expand programs for AIDS research to develop culturally appropriate and relevant training and mentoring models to be applied to HIV-affected minority communities.
- Establish and promote dual mentorship research training programs where interdisciplinary and translational AIDS-related research guidance is provided to trainees by more than one preceptor with differing areas of expertise, encompassing basic, clinical, behavioral, and services disciplines.
- Establish a national mentoring network of senior, experienced investigators devoted to the training of AIDS investigators to help them transition to the next level of their career development.

- Through existing funding mechanisms, provide incentives and support for senior investigators to identify, develop, and mentor new intramural and extramural investigators in AIDS-related research, domestically and internationally.
- Through existing funding mechanisms, provide incentives for the development, recruitment, and retention of new intramural and extramural investigators in AIDS-related research, including the provision of scholarship support to attend scientific meetings.
- Develop and implement programs at U.S. institutions to provide precollege training to attract students from diverse backgrounds interested in behavioral and biomedical sciences related to AIDS research.
- Support AIDS research planning and organizational programs that develop and strengthen partnerships between academic institutions and the community.
- Enhance opportunities through all Institutes and Centers (ICs) and programs to improve mechanisms for recruiting, training, mentoring, and retaining biomedical, behavioral, and social scientists in the conduct of interdisciplinary sex and gender analyses in AIDS research.
- Provide new opportunities and programs to attract newly trained investigators and established researchers from other fields to pursue AIDS research.
- Develop funding mechanisms to promote interdisciplinary research across AIDS-related scientific disciplines, including basic, clinical, epidemiologic, statistical, social, and behavioral science.
- Support the development of equal and productive partnerships between U.S. majority institutions and institutions serving diverse populations at risk for AIDS.
- Facilitate the establishment of research partnerships between minority institutions and the communities they serve by enhancing and expanding initiatives that support research in diverse communities.
- Increase training to strengthen local capacity to conduct multidisciplinary AIDS-related prevention, vaccine, microbicides, and therapeutic research in developing countries and emerging democracies by scientists from these countries.
- Strengthen cultural competency training and ethical training for the conduct of AIDS prevention, vaccine, microbicides, and therapeutic clinical trials in domestic and international vulnerable populations.
- Support training programs for the diagnosis, prevention, and treatment of HIV infection and/or disease in resource-poor countries.
- Support training programs for the diagnosis, prevention, and treatment of nosocomial infections control, including TB, in resource-poor countries.

- Provide support for all HIV and AIDS training materials such as CD-ROM- and Web-based training and training sessions; all training materials must be adapted for local languages.
- Provide training in Good Laboratory Practices (GLP)/Good Clinical Practices (GCP) for translational processes and in product development in both domestic and international settings conducting AIDS clinical trials or research.
- Implement new programs to provide research training to allied health professionals (e.g., physician assistants and nurse practitioners).
- Develop collaborative evaluation research efforts to assess the efficacy of strategies to shift HIV care tasks from higher-intensity to lower-intensity trained individuals in resource-limited settings.
- Support the training of biomedical and behavioral scientists in both developed and developing countries in the use of advanced computer and information technologies for HIV-related research, and ensure access to appropriate tools and equipment at the end of training.
- Support veterinary residency training programs in primate medicine at National Primate Research Centers (NPRCs) or other primate facilities to help to increase the number of highly trained veterinarians who can manage the increasing needs for AIDS nonhuman primate (NHP)-dedicated colonies.
- Support the training of veterinarian scientists who contribute to the growing need for interdisciplinary-trained researchers who help to understand both the microbial/infectious disease aspects and the animal model side of AIDS research in NHPs.
- Develop new models of integrated training that focus on the protection of human and animal subjects enrolled in AIDS clinical trials and on ethical issues of clinical trial design and implementation of vaccine and other prevention modalities in at-risk populations, in both domestic and international settings.
- Expand training programs in the areas of clinical, operational, and health services research to assess the effectiveness and efficiency needed to implement improved prevention, therapy, and care in resource-poor countries.
- Support training programs for personnel in resource-poor-setting institutions to strengthen the administrative and financial management capacity needed to conduct AIDS-related research.
- Expand programs to increase opportunities for scientists from developing countries and emerging democracies trained through the NIH to conduct AIDS research in their home countries (e.g., reentry grants).
- Develop new funding mechanisms and expand existing grant mechanisms to link U.S. AIDS research scientists, industry partners, and relevant institutions with each other and with investigators and institutions in both developed and developing countries.

- Take advantage of existing AIDS clinical trial infrastructures to develop specific training programs in clinical trials methodology, including issues related to the design, recruitment, retention, target population dynamics, and analysis of data, domestically and internationally.
- Expand training programs on the effective use of AIDS antiretroviral drugs and prophylactic and therapeutic interventions for coinfections/opportunistic infections as well as adequate monitoring for patient safety.
- Develop training to prevent transmission of HIV and hepatitis C virus (HCV) in resource-poor health care facilities, including recruitment and retention of appropriate blood donors, predonation counseling of all blood donors, improvement of blood-screening strategies and technologies, and appropriate use of transfusion.
- Support training opportunities for HIV prevention researchers interested in adding specific methodological skills to their research expertise (e.g., methods to conduct cost-effectiveness analyses, measurement of biologic outcomes in behavioral intervention studies, appropriate use of behavioral and social science measures in clinical trials, ethnographic and other qualitative methods, and network analysis).
- Support the training of members of AIDS-affected communities, to strengthen their ability to be informed partners in biomedical and behavioral science research.

OBJECTIVE–B

Establish and maintain the appropriate infrastructure needed to conduct HIV research domestically and internationally with emphasis on populations of high prevalence.

STRATEGIES

- Increase research infrastructure in U.S. institutions to improve their capacity to conduct AIDS research in diverse racial and ethnic communities.
- Enhance, improve, and maintain research capacity and infrastructure in resource-poor settings with high HIV incidence, with particular emphasis on construction and operation of facilities for research on HIV prevention, including the development of vaccines and microbicides, as well as clinical trials for therapies and behavioral interventions.
- Enhance and improve basic and clinical trial research infrastructure for the conduct of prevention, vaccine, microbicides, and therapeutics trials in domestic and foreign sites, including laboratory capacity, trained scientists and other personnel, appropriate participant cohorts, and mechanisms to address ethical issues such as the implementation of ethical committees and translated human rights documents.
- Increase the number of institutional partnerships between AIDS high-incidence resource-poor institutions and U.S. institutions conducting AIDS-related research and interested in developing AIDS infrastructure and capacity in those institutions.
- Enhance and improve research capacity and infrastructure to advance research on AIDS-associated coinfections (HCV, Kaposi's sarcoma-associated herpesvirus or human herpesvirus type 8, human papillomavirus, Epstein-Barr virus, TB, and malaria) and associated malignancies.
- Support an adequate infrastructure for producing AIDS vaccine candidates, for preventive and therapeutic vaccine trials, under Good Manufacturing Practices (GMP).
- Support and expand adequate facilities and resources as well as appropriate ethical and procedural training to conduct HIV-related research in animal models.
- Expand the production of genetically defined specific pathogen-free (SPF) NHP, with emphasis on Indian-origin rhesus macaques.
- Develop and characterize appropriate reagents for use in HIV-related research conducted in different species of macaques and also other NHPs.
- Maintain programs that enhance the current research infrastructure, particularly the trans-NIH infrastructure, such as the Centers for AIDS Research (CFARs), the Animal Facilities Improvement Program, the NPRCs, and the Clinical and Translational Science Awards.

- Provide support for and awareness of the Biomedical Technology Resources Program for structural studies of HIV proteins and host proteins in the context of HIV infection.
- Provide support for and awareness of the need for developing highly sensitive and specific molecular imaging techniques to evaluate/monitor *in vivo* HIV-infected cells.
- Provide for the long-term support of advanced in-country research in resource-poor settings participating in priority AIDS-related intervention research, such as methods to interrupt mother-to-child, sexual, or parenteral transmission, or trials of candidate HIV vaccines.
- Enhance community-academy partnership by the use of community-based organizations (CBOs), NIH investigators, and other Government-supported service providers (such as those funded through the Health Resources and Services Administration [HRSA], the U.S. Department of Veterans Affairs, and the Centers for Disease Control and Prevention [CDC]), to enhance the relevance of AIDS-related research questions and improve uptake of findings.
- Establish and support quality-controlled repositories for, and ensure access by, qualified scientists of human samples (e.g., serum, peripheral blood mononuclear cell, plasma, patient-derived cell lines, cerebrospinal fluid, semen, breast milk, lymphoid tissues, and other key patient samples) and HIV strains from clinical trials and natural history and epidemiological studies, especially in complex study settings (e.g., MTCT studies).
- Improve and adequately disseminate the process of requesting, prioritizing, and receiving HIV and AIDS laboratory samples, so that access is as timely and equitable as possible.
- Develop, maintain, and effectively utilize domestic and international cohorts, repositories, and nested studies among populations experiencing emerging and ongoing HIV epidemics to establish databases that support analyses of host and viral characteristics.
- Maintain the present AIDS-related tumor registries, and ensure linkages between AIDS and cancer registries, for both domestic and international studies.
- Promote Internet connections and availability of pertinent information technology at health science centers, hospitals, outpatient clinics, CBOs, and other access points, both domestically and internationally, for HIV-related research and patient care.
- Develop statistical sampling methodologies, data collection protocols, and statistical analysis tools that are easy to use and adaptable to different settings; facilitate efficient statistical analysis and report generation and enhance standardization, when appropriate, in the context of AIDS research.
- Promote research in, and application of, medical informatics (e.g., high-performance computing) for AIDS research and clinical practice in resource-poor settings, both domestically and internationally.

- Foster coalitions and partnerships to build capacity among NIH-supported investigators, other U.S. Department of Health and Human Services agencies, and international agencies conducting AIDS research in the same developing countries.
- Develop efficient and effective systems for collecting and managing HIV/SIV (simian immunodeficiency virus)/SHIV (chimeric simian/human immunodeficiency virus) multiple-center and single-site clinical and animal model trial data; ensure timely and accurate dissemination of clinical and animal model trial information.

Information Dissemination

AREA OF EMPHASIS

Information Dissemination

SCIENTIFIC OBJECTIVES AND STRATEGIES**OBJECTIVE—A**

Support the effective dissemination, communication, and utilization of HIV and AIDS information to all constituent communities of the NIH, domestically and internationally.

STRATEGIES

- Rapidly disseminate new research findings, including information on the potential implications for prevention, care, and treatment of HIV-infected individuals, using existing and innovative methods.
- Facilitate the development of HIV prevention and treatment guidelines based on the latest clinical research findings.
- Utilize computer and other information dissemination technology (including the Internet) to disseminate up-to-date HIV and AIDS information; information about HIV therapeutic, vaccine, microbicide, and prevention trials; and information about HIV training programs.
- Expand access to and education about current state-of-the-art treatment and patient management guidelines, including information on clinical trials, using multiple technologies such as online access and voice access (AIDSinfo).
- Improve current techniques and develop and evaluate new techniques for the two-way communication of information to scientific and lay audiences, particularly to hard-to-reach populations, including information about clinical trials.
- Improve outreach and support access to AIDS information resources (including computers) by community groups, health care providers, and community-based AIDS service organizations, including those serving minority communities.
- Work with community-based organizations (CBOs) and nongovernment organizations (NGOs) to develop and promote effective methods of information dissemination in target populations.
- Work with CBOs, NGOs, professional organizations, and local agencies to promote the use of current, high-quality information on treatment, prevention, and research.
- Support dissemination of information, including to constituent communities, in culturally and linguistically appropriate ways.

- Develop and disseminate educational information to enhance understanding of HIV and basic and clinical research processes by health care providers, community-based AIDS service organizations, social service organizations, policymakers, and persons with HIV and AIDS.
- Develop and disseminate information resources about HIV prevention, vaccine, and treatment clinical trials to increase awareness about research in these areas and the importance of supporting and participating in clinical studies.
- Evaluate the effectiveness of communication efforts by appropriate means, including obtaining feedback from target audience members through such methods as usability testing of paper and computer interfaces (see www.usability.gov) and information dissemination intermediaries, such as journalists and health educators.
- Promote wide dissemination of the annual *Trans-NIH Plan for HIV-Related Research* and other HIV-related reports as they become available.
- Promote and enhance the exchange of scientific information and communication between public and private research enterprises, such as enhancing communication with the pharmaceutical industry concerning research on the development of therapeutics, vaccines, and microbicides, and working with industrial scientists to make information concerning basic science and HIV protein structures available to the general scientific community.
- Communicate and exchange information internationally on topics such as prevention and treatment, patient management guidelines, and research results that improve the care of HIV-infected individuals, including those in developing countries.
- Support the exchange of basic and applied research information at community, regional, national, and international conferences and workshops.
- Support the cross-collaborations of HIV and AIDS information providers to develop more integrated and comprehensive information dissemination approaches.
- Provide online access to presentation materials, including full text of abstracts and other information (e.g., slides, graphics, plenary presentations) from scientific meetings.
- Collect, archive, and promote use of existing data from NIH-supported basic and applied research for secondary data analysis, including rapid development of public use data sets that can be used for secondary data analysis in NIH-supported studies, especially baseline survey and HIV/STD (sexually transmitted disease) incidence data.
- Widely disseminate information concerning specimen repositories, including existing repositories, specimens available, and relevant information concerning cohorts, contact information, and the process for obtaining access to samples.

OBJECTIVE–B

Support research to identify existing gaps in communication approaches, identify and evaluate existing strategies, and develop and test new and innovative communication strategies that will improve access to and use of state-of-the-art HIV information by all relevant target audiences, domestically and internationally.

STRATEGIES

- Assess the information needs and resources used by various audiences, including biomedical and behavioral research communities, health care providers, service providers, persons living with HIV and their advocates, at-risk populations, scientific and lay media, and the general public.
- Identify obstacles to information dissemination and develop, test, and evaluate possible ways to overcome these obstacles.
- Develop, test, and evaluate innovative strategies for effectively reaching specific audiences (e.g., minority communities, adolescents, drug users, other hard-to-reach populations, and health care providers) with relevant HIV information.
- Investigate how and under what circumstances different communication and dissemination strategies influence the adoption of scientifically based HIV behavior-change interventions and clinical practices in specific audiences.
- Promote use of new technologies and evaluate their effectiveness for disseminating basic and clinical research findings.
- Work to reduce communication gaps between academic researchers and treatment providers so that research results are more effectively disseminated to providers and that research agendas reflect the needs of practicing clinicians.