Overview

Overview

THE GLOBAL HIV/AIDS PANDEMIC

The AIDS pandemic will continue to wreak devastating consequences around the world for decades to come for virtually every sector of society. The pandemic affects the future of families, communities, military preparedness, national security, political stability, national economic growth, agriculture, business, health care, child development, and education in countries around the globe. AIDS is the deadliest epidemic of our generation. The United Nations General Assembly's Declaration of Commitment on HIV/AIDS states: "...the global HIV/AIDS epidemic, through its devastating scale and impact, constitutes a global emergency and one of the most formidable challenges to human life and dignity, as well as to the effective enjoyment of human rights, which undermines social and economic development throughout the world and affects all levels of society…."[1] Laurie Garrett, in *Foreign Affairs*, states: "First, HIV/AIDS is the most complex disease humanity has ever faced and presents it with unprecedented challenges of research and analysis. Second, new threats to stability and security may emerge as the pandemic escalates. Third, a well-conceived campaign to curtail the virus, particularly through the development of an effective HIV vaccine, could short-circuit the attendant security concerns."[2]

GLOBAL AIDS PANDEMIC

As of the end of 2006

- Approximately 40 million people worldwide are living with HIV/AIDS.
- Approximately 2.3 million are children under the age of 15 years.
- About half of the infected adults are women.
- An estimated 4.3 million people (adults and children) acquired HIV in 2006.
- The global HIV/AIDS epidemic killed approximately 3 million people in 2006.
- More than 25 million people have died since the beginning of the epidemic.

Source: UNAIDS

THE EPIDEMIC IN THE UNITED STATES

The HIV/AIDS epidemic in the United States continues to expand.[3] HIV infection rates are continuing to climb among women, racial and ethnic minorities, young men who have sex with men, individuals with addictive disorders, and people over 50 years of age.[4] In addition, use of antiretroviral therapy

1 The Impact of AIDS, Department of Economic and Social Affairs, United Nations (2004).

2 Garrett, L., The Lessons of HIV/AIDS, *Foreign Affairs*, July/August 2005.

3 Cases of HIV Infection and AIDS in the United States, 2004, CDC HIV/AIDS Surveillance Report (2005).

4 A Glance at the AIDS Epidemic, CDC (2005).

is now associated with a series of side effects and long-term complications that may have a negative impact on mortality rates. The appearance of multi-drug-resistant strains of HIV presents an additional serious public health concern.[5] In addition, CDC has reported increased cases of HIV-tuberculosis (TB) coinfection and an increase in cases of drug-resistant TB. This is a major public health concern because of the highly contagious nature of TB. According to CDC reports, approximately one-quarter of the HIV-infected population in the United States also is infected with hepatitis C virus (HCV). HCV progresses more rapidly to liver damage in HIV-infected persons and may also have an impact on the course and management of HIV infection, and HIV may change the natural history and treatment of HCV.[6] These data forebode an epidemic of even greater magnitude in the coming years.

THE NIH AIDS RESEARCH PROGRAM

The NIH is the world's leader in AIDS research. The NIH supports a comprehensive program of basic, clinical, and behavioral research on HIV infection and its associated coinfections, opportunistic infections, malignancies, and other complications. This represents a unique and complex multi-Institute, multidisciplinary, global research program with the ultimate goals to better understand the basic biology of HIV, develop effective therapies to treat and control HIV disease, and design interventions to prevent new infections from occurring. Perhaps no other disease so thoroughly transcends every area of clinical medicine and basic scientific investigation, crossing the boundaries of the NIH Institutes and Centers (ICs). This diverse research portfolio demands an unprecedented level of scientific coordination and management of research funds to identify the highest priority areas of scientific opportunity, enhance collaboration, minimize duplication, and ensure that precious research dollars are invested effectively and efficiently. It is the unique role of the Office of AIDS Research (OAR), part of the Office of the Director, to: coordinate the scientific, budgetary, and policy elements of the NIH AIDS program; prepare an annual comprehensive trans-NIH strategic plan and budget for all NIH-sponsored AIDS research; evaluate the AIDS research portfolio; identify and facilitate multi-Institute participation in priority areas of research; and facilitate NIH involvement in AIDS research activities in international settings. As such, OAR represents the roadmap for NIH AIDS research, allowing the NIH to pursue a united research front against the pandemic.

THE OAR TRANS-NIH PLANNING AND BUDGET DEVELOPMENT PROCESS

OAR develops an annual Trans-NIH Plan for HIV-Related Research that is based on the most compelling scientific priorities that will lead to better therapies and prevention strategies for HIV infection and AIDS. The Plan serves several important purposes:

- As the framework for developing the trans-NIH AIDS research budget.
- For determining the use of NIH AIDS-designated dollars and for tracking and monitoring those expenditures. The Plan thus defines those research areas for which AIDS-designated funds may be allowed.

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[5] World Health Report on Infectious Diseases: Overcoming Antimicrobial Resistance (WHO, 2000).

[6] NIH Consensus Conference Statement: Management of Hepatitis C: 2002, pp. 76-77.

- As a document that provides information to the public, the scientific community, Congress, and AIDS-affected communities about the NIH AIDS research agenda. OAR distributes the annual comprehensive Plan to a wide audience, and it appears on the OAR Web site: http://www.nih.gov/od/oar.

OAR develops the annual trans-NIH strategic plan for all HIV/AIDS research activities through a unique and effective model. OAR has established trans-NIH Coordinating Committees, chaired by senior OAR scientific staff, for each of the major scientific areas of the plan. These committees, comprising representatives of the ICs with major research portfolios in that area, provide an ongoing mechanism for collaboration, coordination, and information exchange. To develop the FY 2008 Plan, the Coordinating Committees prepared the first draft of the Plan, reviewing and updating the previous year's Plan based on their knowledge of the science and the progress made during the course of the past year. They eliminated those strategies where research is no longer necessary, added new strategies where research has uncovered new questions, and reprioritized the objectives as necessary where the science has moved or changed. In this way, the planning process serves to monitor and assess scientific progress on an annual basis.

OAR then sponsored a series of planning workshops to seek the input of non-NIH experts from academia, foundations, industry, and the community in each of the scientific areas. These experts participated with the NIH Coordinating Committees to further refine and amend the Plan and reach consensus on key scientific priorities. Participants in each Planning Group were asked to review and revise the draft objectives and strategies of the Plan, based on the state of the science, and to identify a set of priorities for their area. All groups were asked to address needs in Information Dissemination, and in Training, Infrastructure, and Capacity Building, as related to their scientific areas.

The resulting draft Plan was then provided to each IC Director and designated IC AIDS Coordinator for additional recommendations and comments from the IC perspective. Finally, the draft Plan was reviewed by the Office of AIDS Research Advisory Council (OARAC). A list of all the members of the Planning Groups can be found behind a tab at the back of this document.

TRANS-NIH AIDS RESEARCH PORTFOLIO ANALYSIS

OAR continues to reassess the planning process and make refinements in order to better capture the broadest range of scientific expertise and community participation and to facilitate the identification of specific scientific priorities. Since FY 2006, OAR has instituted a unique, innovative, and essential multitiered comprehensive trans-NIH review of all grants and contracts supported with AIDS-designated funds scheduled to recompete in that planning year. This process has now been implemented as an integral component of the annual OAR strategic planning and budget processes, providing a new model to ensure that research dollars support the highest priority science.

This portfolio analysis: (1) establishes a new model to ensure that AIDS research dollars support the highest priority science; (2) allows OAR to direct the transfer of funds to better manage the AIDS research portfolio; (3) ensures that resources are focused on the highest scientific priorities in an era of limited budget increases, taking into account the ever-changing domestic and international AIDS epidemic

as well as the evolving scientific opportunities; and (4) assists OAR in developing the trans-NIH AIDS research budget from the commitment base.

Each of the OAR staff who chairs a scientific Coordinating Committee initiates a grant-by-grant review of all NIH extramural projects within that scientific area supported with AIDS dollars, concentrating on those grants eligible for recompetition in the fiscal year of the strategic Plan. Working with relevant IC program staff, OAR staff identify grants that are now of lower priority than when they were originally funded. This does not mean that these grants should not have been funded or were not of high priority at the time. However, as the science has evolved, and the priorities of the epidemic have shifted, these areas no longer represent the highest priorities within the current budget. For example, many grants were awarded to address basic research on then-common opportunistic infections. Over the past few years, with the advent of combination antiretroviral therapy, these infections are no longer common among HIV-infected individuals, and thus are now deemed of lower priority for AIDS-designated funding.

OAR then convenes a meeting of a small group of eminent non-Government scientists to provide their expert advice, review each scientific area and all of the grants now deemed of lower priority, and provide recommendations for redirecting funds to catalyze future initiatives and multidisciplinary endeavors. OAR notifies each IC of those grants identified as too low a priority for support with AIDS dollars. Each IC has an opportunity to reinvest those dollars in higher priority AIDS programs in their portfolio. For those ICs that cannot identify higher priority projects, those dollars are shifted to other ICs with higher AIDS research priorities needing additional support. The determination of "low priority for AIDS funding" is not related to the scientific or technical merit of the projects, but only to their relevance within the current AIDS research agenda as it relates to the changing demographics of the epidemic, scientific advances, and new opportunities. Should the investigator choose to submit a renewal application that is determined to be highly meritorious in the peer review process, the IC may choose to fund the project with non-AIDS dollars.

Through the Trans-NIH AIDS Research Portfolio Analysis process, OAR determined that the highest priorities in FY 2008 are in the area of prevention research, including development of microbicides and vaccines. The experts who assisted in the portfolio analysis recommended that OAR redirect funds to support new innovative "second generation" prevention strategies, providing seed funds to newer areas of promising investigation to prevent HIV transmission, such as circumcision, early treatment of coinfections, use of antiretroviral therapy as prevention, cervical barrier methods, addiction treatment/substitution therapy, and combination prevention strategies. The process also provided the impetus to restructure the Plan to better reflect the highest priorities in AIDS research in a time of fiscal constraints.

TRANS-NIH COMPREHENSIVE AIDS RESEARCH BUDGET

The law provides that OAR shall allocate all appropriated AIDS research funds to the Institutes and Centers according to the Plan. The Plan initiates the annual budget development and allocation process. Based on the priorities and objectives established in the Plan, the ICs submit their AIDS-related research budget requests to OAR, focusing on new or expanded program initiatives for each scientific area. OAR reviews the IC initiatives in relation to the Plan, the OAR priorities, and to other IC submissions

to eliminate redundancy and/or to ensure cross-Institute collaboration. The NIH Director and the OAR Director together determine the total amount to allocate for AIDS research within the overall NIH budget, as required by law. Within that total, OAR allocates the AIDS research budget levels to each IC, based on the scientific priority of the proposed initiatives, at each step of the budget development process up to the time of the final congressional appropriation. This involves consulting regularly with the IC Directors and maintaining knowledge of the ongoing scientific research programs and planned initiatives supported by each IC. This process allows OAR to ensure that NIH AIDS-related research funds will be provided to the most compelling scientific opportunities, rather than distributed simply by a formula.

STRUCTURE OF THE PLAN

Areas of Emphasis: The Plan is structured to comprehensively describe the biomedical and behavioral research and training activities that are needed to address the AIDS pandemic, define specific research priorities, and reflect mutual reinforcement among the scientific and crosscutting areas. Since the development of the first strategic plan in 1993, the Plan has been divided into a series of Scientific Areas of Emphasis: Natural History and Epidemiology; Etiology and Pathogenesis; Therapeutics; Vaccines; Behavioral and Social Science; Training, Infrastructure, and Capacity Building; and Information Dissemination. All AIDS-designated dollars are coded and tracked by the Objectives of these Scientific Areas of Emphasis. Over the years, OAR has changed the structure of the Plan to address new scientific priorities and the shifting demographics of the pandemic. For example, crosscutting sections have been added to address Microbicides, Prevention Research, Racial and Ethnic Minorities, Women and Girls, and Research Conducted in International Settings. Funding for these areas has been tracked in the aggregate, but not by Objective, as the dollars are captured within the scientific areas.

Objectives and Strategies: Each Area of Emphasis of the Plan includes a comprehensive list of Objectives, in priority order, that address the many needs and challenges within the field of HIV/AIDS research. As mentioned above, all NIH expenditures with AIDS-designated funds are coded and tracked to these Objectives. Each Objective includes a set of Strategies that provides examples of approaches that might be taken to fulfill each Objective. To underscore the interrelationships among areas, some Strategies may be found under more than one Area of Emphasis.

The organization of the FY 2008 Plan includes a number of structural changes, in response to advances in science and the priorities identified through the planning and portfolio analysis processes. These include:

- **Areas of Emphasis Divided Into Chapters:** The Areas of Emphasis are now grouped into functional chapters to more clearly define the relationship among them and their function within the overall research agenda. Chapter 1 is Foundational Research, the basic science and building blocks upon which the rest of the research agenda is based, including the areas of Natural History and Epidemiology; and Etiology and Pathogenesis. Chapter 2 highlights the Prevention Research agenda, including Microbicides (see below); Vaccines; and Behavioral and Social Science. Chapter 3 is devoted to Therapeutics research. Chapter 4, Research Support and Dissemination, provides the crosscut-

ting areas of Training, Infrastructure, and Capacity Building; and Information Dissemination, relevant to all of the scientific areas of the Plan. Chapter 5 groups together Research Related to Specific Populations, including sections on Women and Girls; Racial and Ethnic Minorities; and Research in International Settings. Funding for the areas in this final Chapter is not tracked by Objective.

- **Elevation of Microbicides Research:** Microbicides research has been a crosscutting section of the annual Plan for many years. This FY 2008 Plan elevates Microbicides research to a Scientific Area of Emphasis within the new Prevention chapter. The development of a safe and effective microbicide is a high priority for NIH research, and this reorganization reinforces the importance of this area of research. This change will have important implications for budget development, coding, and tracking of NIH investments and expenditures on microbicide research. All microbicide research awards now will be coded by the Objectives of the Microbicides section, and no longer captured within Therapeutics, Etiology, or Behavioral research spending, providing a more accurate picture of expenditures. OAR has taken a number of other important steps to improve NIH management and support for this crucial area of science. A separate division of OAR now will be dedicated to microbicides research and other issues relevant to women. OAR is convening a newly constituted NIH Microbicides Research Coordinating Committee with members from the ICs with significant microbicide portfolios. The Committee will assist in the development of the Microbicides section of the Plan, foster information-sharing and trans-NIH coordination, and help identify scientific opportunities and gaps for increased attention. A Microbicides Research Working Group also will be established with non-Government experts to advise the NIH, OAR, the National Institute of Allergy and Infectious Diseases (NIAID), and other Government and non-Government entities in this priority area. In addition, the NIAID Division of AIDS is establishing a new Prevention Sciences Program, which will include a Microbicides Research Branch.

- **Consolidation of All the Plan Priorities in the Overview Section:** The Planning Groups for each area of the Plan are asked to identify and prioritize the Objectives and Strategies for their Area of Emphasis. In addition, they are asked to identify critical research priorities in those Areas that more narrowly define key areas deemed most worthy of additional funds, if they were available. These priorities can help to guide the development of the FY 2008 AIDS budget and to adjust the FY 2007 AIDS budget as needed. This year, the priorities from all of the Planning Groups have been consolidated into a unified list, as follows.

RESEARCH PRIORITIES

Foundational Research

UNDERSTANDING HIV TRANSMISSION AND ACQUISITION

- Elucidate the biologic determinants of HIV transmission between individuals, and define the mechanisms by which host factors, viral factors, and cofactors may influence the process of HIV transmission and dissemination.
- Elucidate new and changing patterns, contexts, and kinds of drug and alcohol use and their implications for HIV transmission and acquisition, either directly or as mediators of sexual behavior.
- Facilitate the translation of new insights into HIV biology to develop novel interventions for the prevention and treatment of HIV infection. Identify and validate cofactors for viral genes as new targets capitalizing on novel technologies.
- Develop and evaluate comprehensive predictive models for risk of HIV transmission and acquisition that reflect the complex, multidetermined nature of sexual behavior and the influences that factors distal from the immediate risk behavior have on HIV transmission and acquisition.
- Study the biology of the reproductive tract and mucosal surfaces of HIV-infected and HIV-uninfected women and girls, integrating studies of physiology, pharmacology, immunology, microbiology, development, and anatomy in order to clarify mechanisms of HIV transmission, acquisition, and disease progression.
- Facilitate understanding of mechanisms to prevent mother-to-child and horizontal transmission in U.S. and international settings.

PATHOGENIC MECHANISMS OF HIV INFECTION

- Understand the dynamic of virus-host interaction through the course of HIV infection.
- Investigate the mechanisms of persistence of HIV infection.
- Develop innovative technologies in human and nonhuman primate (NHP) immunology to guide HIV prevention and immune reconstitution efforts in HIV-at risk/infected individuals.
- Elucidate a range of innate and acquired host characteristics and viral interactions through the course of HIV infection (in particular, during primary HIV infection and response to treatment) across the life cycle in women and girls.
- Advance the understanding of the mechanisms responsible for the toxicities and long-term complications of antiretroviral therapy (ART) as well as the factors that underlie changes in the causes of morbidity and mortality in HIV-infected patients in an era of increasingly effective therapies.

EPIDEMIOLOGIC ISSUES

- Sponsor domestic and international epidemiologic investigations into viral, host, and environmental factors that have a major impact upon morbidity, mortality, and response to ART among individuals with HIV infection. Conduct studies on genetics, impact of increasing age, comorbidities, and exposure to different antiretroviral therapy regimens and patterns of use.

- Support research on the interactions among factors that contribute to the cooccurrence of HIV/AIDS and other medical disorders (e.g., infectious diseases, substance abuse) and social problems (e.g., homelessness), and develop interventions to address the cooccurring conditions.

- Address the differential impact of HIV infection upon racial and ethnic minority communities, including the unique and specific aspects of HIV infection in Native American and Alaska Native communities. Identify epidemiologic, sociocultural, and psychosocial aspects of the epidemic that are unique to racial and ethnic minorities and their effect upon the acquisition, transmission, and progression of HIV infection within these communities.

- Develop, maintain, and effectively utilize domestic and international cohorts and cohort collaborations, repositories and trial data, and nested studies of populations experiencing emerging and ongoing HIV epidemics, with particular emphasis on: assessing the short- and long-term effects of preventive and therapeutic interventions at the individual, family, and community levels, and establishing collaborative networks facilitating common analyses of large datasets to address new or unresolved scientific questions.

- Explore hypotheses regarding the possibility of differential selection into the transmission and pathogenesis of HIV infection; more fully integrate observational studies with simulation modeling among HIV-infected individuals and appropriate controls in order to inform, monitor, evaluate, and determine cost-effectiveness of interventional strategies, including initiation of treatment programs, in domestic and international settings.

- Encourage development and evaluation of late-generation laboratory assays, including accurate, reproducible, and affordable virologic, immunologic, pharmacologic, and genetic assays; measures of adherence to therapy; and markers of toxicity and comorbidity for use in domestic and international settings.

RESEARCH PRIORITIES

Prevention

MICROBICIDES

- Foster the development of microbicides that block HIV transmission and dissemination from the vaginal mucosa by targeting viral and/or cellular elements that are needed for HIV transmission.
- Identify and standardize relevant, practical, and accessible methodologies to assess preclinical/clinical safety and efficacy of microbicides.
- Foster the development of microbicide combinations containing multiple active compounds of different chemical classes, specificities, and mechanisms of action in formulations that are acceptable, and prevent acquisition of HIV and sexually transmitted infections that may enhance susceptibility to HIV infection.
- Promote innovative methods to develop and assess acceptable formulations and modes of delivery for microbicides against HIV, bridging knowledge and applications from multiple scientific disciplines.
- Expand capacity (infrastructure and human resources) and strengthen coordination to transition from preclinical to clinical studies and to conduct Phase I/II/III microbicides clinical trials.
- Conduct social and behavioral research in concert with microbicides clinical trials, including research on initiation and sustained use, decisionmaking in the face of partially efficacious products, impact of microbicide availability on sexual risk behaviors, and the identification and development of reliable and valid behavioral tools and measurement techniques for use in trials.
- Explore factors, including reproductive decisionmaking, that influence development, adoption, use, and effectiveness of women-controlled methods (including physical and chemical barrier methods), alone or in combination, for preventing HIV transmission and acquisition.
- Continue to promote multidisciplinary research on microbicides discovery and development.

VACCINES

- Support innovative immunogen design, discovery, preclinical evaluation, and introduction of improved vaccine candidates and immunization concepts.
- Support/conduct studies in mucosal immunity. Evaluate vaccine concepts that induce mucosal immune responses capable of curtailing the early establishment and dissemination of virus from the mucosal sites of entry.

- Evaluate and disseminate new tools for studies of neutralizing antibody responses. Develop other methods to assess other functions of antibody and apply to samples from trials of candidate vaccines. Continue emphasis on novel approaches to induce high-titered neutralizing antibody responses that are broadly cross-reactive with diverse HIV clades and circulating recombinant forms of HIV.

- Support research on the identification of correlates of immune protection: study the development and maintenance of effective immune responses to HIV antigens, particularly those able to provide protection at mucosal surfaces, address issues related to improvement in the duration of potentially protective immune responses, and develop shared resources for comparative analysis of vaccine candidates.

- Conduct clinical trials of HIV vaccine candidates in appropriate human populations using the most efficient and cost-effective designs. If possible, implement direct "head-to-head" comparative studies of vaccine candidates. Conduct expanded assessments of cellular immunity and neutralizing antibodies in central laboratories using validated assays and broader access to specimens for both academic and industrial investigators.

- Improve the linkage of vaccine design efforts with the clinical trial networks and cohorts/populations being identified for clinical trials to better integrate preclinical data into human vaccine trial planning and to inform and educate all stakeholders. Ensure that adequate numbers of women and at-risk adolescents are enrolled in vaccine trials. Conduct appropriate preparative work in trial sites, particularly in international sites and domestic communities of racial and ethnic minorities, to provide critical virological and immunological information to inform vaccine trial design while helping to develop strong, sustainable research infrastructure.

BEHAVIORAL AND SOCIAL SCIENCE RESEARCH

- Develop and evaluate methods of intervening to reduce HIV acquisition and transmission associated with sexual behavior as well as drug and alcohol use, using methods that recognize the contributions and interactions of individual, dyadic, group, community, and societal level (structural) variables, as well as the role of the environment and behavioral implications of technological advances in medicine and changes in medical practice.

- Integrate basic behavioral and social science research (theoretical and methodological) on gender construction, maintenance, dynamics, and consequences—including stigma and discrimination—into the design and evaluation of HIV prevention and care interventions.

- Identify those factors that maintain as well as perpetuate health disparities in HIV infection, including sociocultural, psychosocial, and structural determinants.

- Develop and test innovative models, research methods, and measures of risk behavior that reflect the cultural and social context of the lives of racial and ethnic minorities, especially Native Americans and Alaska Natives.

RESEARCH PRIORITIES

Therapeutics

PRECLINICAL DEVELOPMENT AND CLINICAL EVALUATION

- Advance the discovery and validation of new viral and cellular targets.
- Develop and evaluate new therapeutic agents that target drug-resistant virus, have activity in viral reservoirs and cellular compartments, and have improved pharmacologic and toxicologic properties.
- Determine optimal therapeutic strategies, including when to start (early versus late), change, or sequence therapies, and evaluate therapeutic drug-monitoring strategies.
- Enhance capabilities for long-term followup, and evaluate the long-term effects of therapy and the implications of these findings on public health.
- Identify immunologic correlates of effective viral suppression in the setting of clinical therapeutic intervention trials.
- Develop and evaluate therapeutic approaches, including vaccines that will improve and sustain immune function and prevent transmission of HIV infection.
- Identify and validate immunologic determinants to predict the efficacy of immune-based therapies.
- Conduct studies that permit evaluation of potential differences in response to therapy and its complications due to gender, age, and/or racial/ethnic differences.
- Develop safe, effective, feasible, and conveniently administered strategies to interrupt mother-to-child transmission of HIV with a focus on resource-limited settings and a special emphasis on breastfeeding.
- Evaluate interventions, including antiretroviral and immunotherapeutic, in clinical trials to reduce horizontal transmission during both acute and chronic HIV infection.
- Examine the impact of treatment adherence within the social and cultural framework of racial and ethnic minority communities, including traditional health and healing practices.
- Identify more effective care, treatment, and operational strategies to reduce HIV-related morbidity and mortality in international settings.

DRUG RESISTANCE/DRUG TOXICITY

- Conduct studies to evaluate and reduce short- and long-term toxicity of antiretrovirals to prevent HIV transmission in women during pregnancy, and in their offspring who were perinatally exposed.
- Evaluate the risk of resistance to HIV acquisition and transmission during interventional studies designed to reduce horizontal transmission.

COINFECTIONS AND COMORBIDITIES

- Evaluate the effects of coinfection, especially with HBV, HCV, TB, Epstein-Barr virus (EBV), human papillomavirus (HPV), or malaria, on the management of HIV. Determine the bidirectional effects of coinfection and treatments on disease progression and drug interactions.
- Develop new agents for the treatment and prevention of HBV, HCV, TB, EBV, herpes simplex virus (HSV), HPV, and malaria in the setting of HIV infection, with specific attention to pharmacologic drug interactions and nonoverlapping toxicity.
- Develop optimal therapeutic approaches for the management and treatment of HIV-related cancers, particularly those resulting from coinfections of HPV, HHV-8, HCV, HBV, and EBV.

RESEARCH PRIORITIES

Training and Infrastructure

- Enhance opportunities and mechanisms for recruiting and training biomedical, behavioral, and social scientists in the conduct of interdisciplinary and multidisciplinary HIV/AIDS research in women and girls, addressing women's health issues and analyzing sex and gender differences, and facilitate development of the infrastructure to support such research.
- Enhance the capacity of minority investigators, minority institutions, and minority community-based organizations to conduct multidisciplinary research. Evaluate and enhance successful existing mechanisms to identify, train, mentor, develop, and retain minority investigators, especially those of Native American and Alaska Native descent.
- Develop HIV/AIDS research training and research infrastructure in international settings in collaboration with other partners.