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# HIV policy: the path forward--a joint position paper of the HIV Medicine Association of the Infectious Diseases Society of America and the American College of Physicians.

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# HIV Policy: The Path Forward—A Joint Position Paper of the HIV Medicine Association of the Infectious Diseases Society of America and the American College of Physicians

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## EXECUTIVE SUMMARY

The American College of Physicians (ACP) and the Infectious Diseases Society of America (IDSA) have jointly published 3 policy statements on AIDS, the first in 1986 [1], the second in 1988 [2], and the third in 1994 [3]. In 2001, the IDSA created the HIV Medicine Association (HIVMA), and this updated policy paper is a collaboration between the ACP and the HIVMA of the IDSA. Since the last statement, many new developments call for the need to reexamine and update our policies relating to HIV infection. First, there have

been major advances in treatment for HIV infection that have transformed HIV/AIDS from a terminal illness to a chronic disease for many of those who have access to potent therapies and expert medical care [4]. Second, there has been a profound expansion and intensification of the global HIV pandemic, particularly in sub-Saharan Africa, coupled with significant US leadership and resources aimed at providing prevention and care services to affected populations in developing countries. Third, the concerns that were prevalent in the mid-1990s regarding the possibility of HIV transmission in health care settings have ultimately proven to be unfounded as the result of the adoption of universal precautions in those settings.

In this article, we emphasize the public health and clinical imperatives for earlier identification of persons with HIV infection; the urgent need to expand access to state-of-the-art HIV care and treatment for infected individuals; the need for access to comprehensive prevention and education for those living with and those at risk for HIV infection; and the need for stronger national leadership to respond to the HIV epidemic in the United States and in the developing world.

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In December 2008, the ACP and HIVMA released a guidance statement on screening for HIV infection in health care settings that recommended that clinicians adopt routine screening for HIV infection and encourage patients to be tested. Also included in the guidance statement is a recommendation that clinicians determine the need for additional screening on an individual basis.

## EPIDEMIOLOGY

Since the first AIDS cases were reported in 1981, ~1.7 million people have become infected with HIV in the United States [5]. Of these individuals, >550,000 have died, and nearly 1.2 million people are estimated to be living with the disease today [6, 7]. Of these, 415,000 are estimated to be living with AIDS, and 417,000 are estimated to be living with HIV infection. Another 252,000–312,000 people are estimated to be living with HIV infection or AIDS in the United States and to be unaware of their status. In August 2008, the Centers for Disease Control and Prevention (CDC) revised the annual HIV infection incidence rate to 56,300 cases per year and asserted that this number has remained stable for more than a decade [8].

In 2006, the largest estimated proportion of HIV/AIDS diagnoses in the United States were among men who have sex with men [9], and a majority of those women who contracted HIV infection did so through heterosexual contact [10]. HIV/AIDS continues to disproportionately impact racial and ethnic minorities, who now account for 65% of new AIDS cases [6]. During the mid-to-late 1990s, advances in treatment slowed the progression of HIV infection to AIDS and dramatically reduced the number of deaths among people living with AIDS. Regionally, the South has had the greatest numbers of people estimated to be living with AIDS, AIDS deaths, and new AIDS diagnoses, followed by the Northeast, West, and Midwest [5, 6].

The number of pediatric AIDS cases has decreased considerably in the United States, with only 38 cases diagnosed in 2006 (a considerable decrease from the ~745 cases diagnosed in 1995) [11]. Among children and adolescents, teenaged girls and minorities have been particularly affected. Similar to the adult population, children and adolescents have experienced a dramatic decrease in morbidity and mortality due to HIV infection in the United States since the advent of combination antiretroviral therapy [12, 13].

Although the United States has seen a drastic decrease in the number of AIDS-related deaths since the early 1990s, AIDS remains a global epidemic and affects an estimated 33 million people worldwide. The Joint United Nations Programme on HIV/AIDS has estimated that, in 2007, 2.7 million persons were newly infected with HIV, and there were 2 million AIDS-related deaths globally. Sub-Saharan Africa continues to be the region most affected by the AIDS pandemic and accounted for 67%

of all people living with HIV infection and 75% of AIDS-related deaths in 2007. Although women represent 50% of people living with HIV infection globally, they account for nearly 60% of infections in sub-Saharan Africa, where transmission is primarily through heterosexual contact. Nearly 90% of the 2 million children <15 years of age living with HIV infection worldwide are in sub-Saharan Africa, and >90% of the 270,000 deaths due to AIDS among children in 2007 were in Africa [14].

## HIV TREATMENT AND COMBINATION ANTIRETROVIRAL THERAPY

More than a decade ago, combination antiretroviral therapy was widely introduced in the United States and Europe, constituting a medical breakthrough that revolutionized the treatment of HIV infection in the developed world. The approval of the first protease inhibitors in late 1995 and early 1996 shifted medication strategies from monotherapy to combination therapy with at least 2 different drug classes, and standardized combination antiretroviral therapy came to be regarded as the best clinical practice in treating HIV/AIDS. The effective suppression of HIV through combination antiretroviral therapy resulted in an 80% decrease in AIDS-related mortality in the United States and in dramatic reductions in the prevalence of the debilitating opportunistic infections that had been commonly associated with an AIDS diagnosis. It has been estimated that combination antiretroviral therapy has saved 3 million life-years [4].

For women with HIV infection, the availability of combination antiretroviral therapy has meant that they may become pregnant and have children at virtually no risk to the baby if there is appropriate administration of HIV treatment during pregnancy and delivery and postnatal treatment for the infant [15, 16]. Furthermore, in a recent study [17], pregnancy was not associated with an increased risk for disease progression in women who received combination antiretroviral therapy and were not severely immunosuppressed. Such observations highlight the remarkable impact of antiretroviral treatment and contribute to the evidence in support of the right of women with HIV infection to bear children.

There are now 32 US Food and Drug Administration–approved antiviral medications in 5 major drug classes [18]. More recently, therapeutic breakthroughs have come in the form of new classes of drugs with new methods of action against HIV infection, as well as more potent medications in existing classes, including combination products. For the patient, the toxicity and adverse effects of many of the newer medications are reduced, compared with those of older drugs, and the pill burden has also been substantially reduced, which promotes better adherence to drug regimens.

Nonetheless, the development of drug resistance has become a serious problem for long-term survivors of HIV infection,

and a significant percentage of individuals with newly diagnosed infection have contracted virus that is resistant to at least 1 major class of HIV medication. Drug resistance testing and medication changes in response to the development of infection with drug-resistant virus are an integral part of HIV care and treatment. In addition to drug resistance, many patients who receive antiviral treatment experience toxicities associated with the long-term use of certain HIV drugs, including metabolic changes, such as abnormal fat distribution, abnormal lipid and glucose metabolism, and bone loss [19]. Finally, increases in longevity have meant that many persons who are living with HIV infection and are now middle aged are vulnerable to chronic conditions that are associated with aging, some of which are exacerbated by the presence of HIV infection.

In developing countries, access to combination antiretroviral therapy is still a challenge, and when it is available, most individuals have access to only 1 drug regimen. A proliferation of generic medications and deep discounts by pharmaceutical companies have dramatically reduced the cost of first-line regimens, but second-line therapies and common diagnostic tools are still prohibitively expensive for many developing countries and are not widely available in the public sector, where most people receive their care. Opportunistic infections in HIV-infected patients are common in developing countries, with tuberculosis being the leading cause of death among patients with HIV infection in sub-Saharan Africa and in much of the developing world [20].

## ACCESS TO CARE

HIV disease in the United States increasingly and disproportionately affects low-income and minority populations that are less likely to have reliable access to care and that face many other life challenges in addition to HIV infection, including addiction and mental illness, as well as poverty, violence, homophobia, and racism. Early and reliable access to care is critical to successful treatment of HIV disease, but it is not well supported by the fragmented US health care system. Moreover, nearly 40% of newly diagnosed infections occur in persons who are already severely immunosuppressed, which makes their treatment more costly and less effective [21]. Recent studies have estimated the annual cost of care for a person with a CD4<sup>+</sup> cell count >350 cells/ $\mu$ L to be \$13,885, compared with \$36,533 for an individual with a CD4<sup>+</sup> cell count <50 cells/ $\mu$ L [22].

Treatment advances have resulted in a shift in medical resource utilization for patients with HIV infection from the hospital to the outpatient setting. Early in the epidemic, many HIV physicians were drawn to HIV medicine as interns and residents when they cared for patients with HIV infection in urban hospitals. Today, medical residents are far less likely to be exposed to a large number of patients with HIV infection during their training. In addition to this lost opportunity for

engagement, HIV medicine now requires expertise in primary and specialty care, in addition to expertise in managing HIV disease. The expanded knowledge base is necessary to manage the serious coexisting conditions that people with HIV are developing as they live longer, such as diabetes, cardiovascular disease, chronic pulmonary and renal disease, and hepatitis B and C. In addition to an extensive medical knowledge base, HIV medicine requires a special commitment to working in a field that is poorly reimbursed and with a disease that largely affects low-income and disenfranchised populations. All of these factors have important implications for medical training and for ensuring an adequate HIV clinician workforce.

The availability of experienced HIV clinicians is critical to ensuring access to state of the art HIV treatment, and there are already concerns about clinical capacity in many areas of the United States—concerns that will only grow as the generation of physicians, physician assistants, and nurse practitioners who entered the field of HIV medicine in the early days of the epidemic begin to retire. Steps must be taken nationally to ensure that an adequate number of trained HIV clinicians continue to be available to care for the growing numbers of HIV-infected individuals who are in need of care. It is particularly important to support minority physicians who are interested in HIV medicine to reduce access and treatment disparities for the black and Hispanic populations, which are disproportionately affected by the disease [23].

## PREVENTION IS CRITICAL

The HIV epidemic will not be eradicated by treatment alone, but prevention efforts continue to lag far behind treatment successes. We must focus on preventing new HIV infections before they occur among our patients and on identifying patients with HIV/AIDS much earlier in the disease process. Primary care physicians may be in a unique position to identify people with HIV/AIDS very early during the acute infection stage. Within 2–4 weeks after exposure, 40%–90% of people with acute HIV infection will experience symptoms similar to those associated with other viral infections, such as infectious mononucleosis or influenza [18]. Persons with acute HIV infection are highly infectious. Nearly 50% of new HIV infections can be attributed to people who transmitted the virus during the acute infection stage [24]. Increasing the number of patients who receive a diagnosis during the acute HIV infection stage will help to connect them with treatment earlier and could play an important role in reducing the number of new infections in the community.

## STIGMA PERSISTS

For too many in the United States, a diagnosis of HIV infection still carries a significant stigma and can lead to discrimination that impedes access to health insurance and health care pro-

viders, jeopardizes employment, contributes to the high rates of clinical depression among people with HIV/AIDS, and results in people not entering care until their illness has advanced to the point at which it is too late for them to fully benefit from treatment [25–30]. Surveys confirm that prejudice and discrimination associated with HIV infection are common, particularly among certain populations, such as African Americans [31]. The stigma associated with HIV infection itself is compounded by the racism and homophobia already experienced by many of the most-affected populations. Strengthened basic education efforts and campaigns are needed, along with leadership from community, political, and medical authorities at the local, state, and federal levels. Information on HIV transmission and how it can be prevented must be accurate, honest, and frequently communicated. Community and political support for scientifically proven prevention tools is imperative, not only to prevent transmission, but also to reduce the stigma associated with the behaviors that put people at increased risk for HIV infection. Legal protections, such as health care coverage for people with HIV/AIDS under the Americans with Disabilities Act and antidiscrimination laws, together with special programs, such as the Ryan White HIV/AIDS Treatment Modernization Act (which provides access to HIV care throughout the United States), are critical and still necessary to mitigate the impact of the stigma still pervasive in many communities across the United States.

Many patients with HIV/AIDS continue to feel that they experience discrimination from health care providers, including physicians [32]. These findings are supported anecdotally by HIV medical providers, who have reported challenges obtaining medical services outside of the HIV clinic for their patients. It is important that we restate a policy from our previous policy statements. All physicians, health care workers, and hospitals have an ethical obligation to provide all patients, including those with HIV/AIDS, with humane and competent care and treatment.

## **POSITIONS OF THE HIVMA AND ACP**

### **1. Federal and state governments should work to support routine HIV testing for sexually active adults, pregnant women, and newborns (when appropriate) through (1) coverage and reimbursement by federally supported health care programs and (2) elimination of requirements for a separate informed consent for HIV testing.**

In December 2008, the ACP and HIVMA released a guidance statement on screening for HIV infection in health care settings that recommended that clinicians adopt routine screening for HIV infection and encourage patients to be tested. The statement recommended that clinicians determine the need for additional screening on an individual basis. In September 2006, the CDC updated its recommendations for HIV testing in

health care settings to recommend routine HIV screening, and yet federally supported health care programs have been slow to support routine HIV screening through program and reimbursement policies. Routine HIV testing should be covered as a preventive service under Medicare, and Medicaid programs should be encouraged by the Centers for Medicare and Medicaid to add routine HIV screening to their state plans. Routine HIV screening also should be encouraged and supported with adequate resources through other federal programs, such as community health centers, the Federal Bureau of Prisons, and the Department of Veterans Affairs, as well as in the context of health care reform.

HIV infection remains a serious concern among adolescents and young adults, particularly among young men who have sex with men, because of increases in new HIV infection diagnoses among this population [33]. HIV-infected adolescents often have delayed entry into the health care system, but those who receive a diagnosis at a medical site are more likely to enter HIV care in a timely fashion [34]. Adolescents are more likely to agree to be tested for HIV infection if it is recommended by a physician [35]. There are a number of states that allow minors to consent to screening and treatment, particularly in the case of sexually transmitted infections. We support modifications in state laws and regulations that would allow minors to request or accept an offer of an HIV test without parental consent.

### **2. Public health officials and others in public leadership should promote evidence-based interventions, including ensuring access to comprehensive sex education for children and adolescents, wide availability of condoms and education about their proper use, and broad availability of syringe exchange programs and drug treatment interventions, to minimize the risk of HIV transmission.**

More than 25 years after the first cases of AIDS were reported in the United States, we know a great deal about the behaviors that put individuals at risk for contracting HIV infection and about evidence-based interventions that reduce these risks. Physicians bear a special responsibility to assist persons in public leadership positions to understand the basic facts about how HIV can be transmitted, as well as the interventions that have been demonstrated to reduce risky sexual or drug use behaviors. Public education should include an emphasis on activities and behaviors that do not transmit HIV, as well as those activities that do.

For more than a decade, the federal government has provided funding to states for abstinence-only education in public schools that focuses on delaying sexual activity until marriage, rather than on providing sound scientific information about contraception and condom use as part of a comprehensive sex education program [36–38]. These programs continue to be funded, despite studies that have demonstrated that such pro-



grams are unsuccessful in delaying sexual activity and provide little sound information (and in some cases, provide misinformation) about how to reduce risky sexual activity that may lead to unintended pregnancies or sexually transmitted infections, including HIV infection [39, 40].

Furthermore, interventions that have been shown to be effective in reducing HIV transmission among injection drug users, including syringe and needle exchange or provision programs and drug treatment programs, should be funded by federal, state, and local government and be made widely available [41–43]. With injection drug use still accounting for a significant number of new HIV infections, funding for drug treatment interventions, especially in the public sector (and including drug-free programs, as well as methadone, buprenorphine, and overdose-prevention programs) should be enhanced [44].

**3. The US federal government should increase funding for evidence-based HIV prevention activities through the CDC to fund community-based programs aimed at populations at high-risk and at groups with intermittent access to care, as well as to enhance surveillance activities.**

In fiscal year 2008, the CDC received \$692 million for domestic HIV/AIDS prevention activities [45]. There have been no substantial increases in HIV prevention funding for domestic programs in a number of years. This is despite the CDC's estimate that the number of new infections occurring annually in the US has remained steady for a decade at 56,300 infections per year. Although the CDC has developed new initiatives to reduce HIV transmission rates—including a new emphasis on ongoing prevention messages for HIV-positive patients, initiatives to target minority populations that are disproportionately burdened with new infections, and recommendations to make HIV testing routine and more widely available in medical settings—more needs to be done [46–49]. In addition to these new initiatives, HIV prevention funds are used for a wide range of activities, including surveillance, prevention research, program evaluation and policy development, and intervention activities, including testing programs performed by state and local governments and community-based organizations [50]. We believe that increased funding to support a comprehensive strategy to reduce the incidence and prevalence of HIV infection domestically is urgently needed.

**4. Physicians and other health care professionals should educate patients about all behaviors that put them at risk for HIV infection and other sexually transmitted infections. Physicians who treat patients with HIV infection should educate their patients about eliminating behaviors that might contribute to transmitting HIV infection to sexual and drug use partners.**

Physicians are in a unique position to influence the behaviors of their patients and have a responsibility to incorporate ac-

curate and timely information on HIV infection and other sexually transmitted infections into their clinical practices. Discussions with patients should convey an understanding of the nature of the transmission of HIV infection and other sexually transmitted infections; behaviors that might result in HIV transmission and those that will not; the significance of a test result positive for HIV antibodies; and guidelines for risk reduction, including the concept of “safer sex.”

Physicians should obtain complete sexual histories of their adolescent and adult patients and should query them about alcohol and other drug use. The need to modify sexual practices to prevent transmission of infection should be discussed with all patients, regardless of HIV infection status. Although some studies have suggested that there is a decrease in high-risk behavior following knowledge of one's HIV infection status, this finding has not been consistent for all populations. Other studies have reported that the initial decrease in high-risk behavior may wane over time, which suggests that HIV infection prevention for individuals who are HIV positive needs to be reinforced throughout their lifetime [51, 52].

**5. All people living with HIV/AIDS in the United States should have access to HIV care provided by or in consultation with individuals who are skilled in providing care for HIV/AIDS. Physicians, hospitals, and other health care professionals are obligated to provide state-of-the-art and humane care to patients with HIV infection or to arrange for referral to an HIV expert. Adequate resources should be dedicated to addressing the unique psychosocial needs of newly identified patients in the health care setting. Funding for HIV care should be adequate to maintain a competent workforce. The Federal government should evaluate the adequacy and capacity of the HIV clinical workforce.**

As treatments and diagnostic methods have evolved over the past decade, transforming HIV/AIDS from a terminal to a chronic illness for many patients, clinical management of HIV infection has become more complex. Thirty-two US Food and Drug Administration–approved antiviral medications are available in 5 major drug classes and are prescribed in combination drug regimens. Clinicians also must maintain knowledge about the complex tests required to identify drug resistance patterns and be prepared to address drug toxicities and manage comorbidities. The federal government maintains 17 HIV-related guidelines and some, such as the HIV antiretroviral guidelines, are updated frequently [18, 53].

Since the early days of the AIDS epidemic in the United States, studies have demonstrated improved health outcomes for those patients who are treated by clinicians who have larger panels of patients with HIV infection and more experience in treating HIV disease [54, 55]. Physicians who specialize in HIV care and treatment come from the ranks of primary care medicine and infectious diseases sub-specialists.

Many physicians who provide HIV care today were introduced to HIV/AIDS during their residencies in major metropolitan areas during the early days of the epidemic. As HIV disease has moved from the hospital to the outpatient setting, fewer young physicians are exposed to HIV medicine during their internships and residencies. One study of medical residents from academic medical centers found that 58% of family practice residents and 22% of internal medicine residents felt “very unprepared” or “somewhat unprepared” to care for patients with HIV infection [56]. Moreover, reimbursement for HIV care and treatment is generally poor. In a 2008 survey conducted by HIVMA of clinics funded by the Ryan White HIV/AIDS program, 69% of clinics reported difficulty recruiting HIV clinicians and identified the top 2 challenges to recruitment as lack of HIV clinicians and reimbursement issues [57].

Resources are particularly needed to attract more minority physicians to HIV medicine. With 3.3% of US physicians identifying as black and 2.8% identifying as Hispanic/Latino [58], increasing physician diversity is an issue that requires serious attention. This problem is not specific to HIV care, but to medicine generally, as has been noted by the Institute of Medicine (IOM) and many others [59]. Special policies and programs are warranted to support minority physicians in pursuing HIV medicine, given the disease’s significant impact on minority communities and the improved outcomes documented for patients who are racially concordant with their physicians, both for patients in general [60] and for patients with HIV infection [61]. Because of the large federal investment in HIV care and treatment and the move to routinize HIV testing in health care settings [46], we call on the federal government to evaluate the adequacy and capacity of the HIV clinical workforce, both nationally and regionally.

**6. The US government should work with states to assure access to care for all patients with HIV/AIDS in the United States by establishing a program that would provide comprehensive medical care and prescription drugs to all low-income persons with HIV infection, as recommended by the IOM. At a minimum, Congress should increase funding for programs funded under the Ryan White Treatment Modernization Act of 2006 and enact legislation that would allow state Medicaid programs to expand eligibility to low-income persons with HIV infection before such individuals experience progression to AIDS.**

In fiscal year 2008, federal support for HIV care and treatment was \$11.6 billion, with 74% of these expenditures going for the federal share of Medicaid and for Medicare [62]. Nevertheless, HIV care and treatment is not accessible to all persons living with HIV infection in the United States, and the availability of care and services varies significantly from state to state. In 2004, the IOM conducted a Congressionally mandated

study of the financing and delivery of HIV care and treatment for low-income uninsured and underinsured individuals with HIV disease. They issued a report finding that nearly 50% of individuals with HIV infection have no access or limited access to HIV care and that the fragmentation of coverage from multiple funding sources was impeding sustained access to HIV care [63]. The IOM recommended creating a new, federally funded entitlement program to provide all low-income persons with HIV infection access to a uniform set of primary care benefits [63].

Despite evidence from HIV clinics across the country that they are struggling to meet the medical needs of their patients [64], Congress has neglected to adequately fund programs authorized under the Ryan White Treatment Modernization Act of 2006 or to pass federal legislation that would facilitate state Medicaid coverage of low-income persons with HIV infection [65, 66]. Under current Medicaid rules, in addition to having a low income, eligible persons must be part of a specific category of beneficiaries (i.e., must be a child, >65 years of age, disabled, or a single parent). HIV infection itself is not an eligibility category, and most persons with HIV/AIDS do not qualify until they are disabled as a result of AIDS [67]. The last several Congresses have failed to act upon federal legislation, referred to as the Early Treatment for HIV Act, that would allow and encourage states, through enhanced federal matching payments, to provide Medicaid coverage to single adults and adolescents with HIV infection before they experience progression to AIDS [68].

In the absence of universal access to health care services for all Americans, we support policies that ensure that all low-income persons with HIV/AIDS have access to the standard of care for HIV disease. The IOM proposal to create a federal entitlement for the treatment of HIV infection would be the most efficient and straightforward method to accomplish this in the United States. In the absence of political will and adequate federal revenues, we believe that Congress should respond to the disparity in access to HIV care by increasing funding for programs authorized under the Ryan White Treatment Modernization Act of 2006 and enacting the Early Treatment for HIV Act.

**7. Confidentiality of HIV-positive individuals should be protected to the greatest extent possible, consistent with the duty to protect others and to protect the public health.**

Health care professionals must protect the confidentiality and privacy of patients living with HIV disease. The confidentiality of health care professionals who are themselves HIV-infected must also be protected, and their HIV status should not be a factor in evaluating job suitability or performance. Despite improvements in the public’s view of persons with HIV/AIDS and laws and regulations outlawing discrimination, HIV/AIDS is still a stigmatized disease, and public disclosure can have severe



ramifications for individuals, including discrimination and violence [69, 70]. In addition to laws that protect the privacy of all medical records, many states and localities have special confidentiality laws and regulations that are relevant to HIV infection.

Physicians must balance their responsibility to protect the confidentiality of their patients with their duty to preserve the health and welfare of their patient's sexual or drug use partners. In virtually all of the states and territories of the United States, there are laws requiring health care professionals to report cases of HIV infection to local or state health departments. Health departments also assist health care professionals in counseling patients about their duty to notify their sexual and drug use partners about their potential HIV risk, and in many cases, health department officials will actually provide the partner with counseling and referral services. Partner counseling and referral services are voluntary and confidential [71].

**8. The US government should continue to support a comprehensive portfolio of research into the causes, prevention, and treatment of HIV infection and AIDS, including research aimed at identifying a vaccine, prevention technologies (including barrier methods) to prevent HIV acquisition, the development of improved antiretroviral therapies, and therapeutic and prophylactic regimens for opportunistic infections and malignancies that affect persons with HIV infection. Additional research that evaluates the behavioral and cultural aspects of prevention and treatment of HIV infection in the US and the associated comorbidities should also be well represented in the research agenda.**

The National Institutes of Health is the global leader in AIDS research, representing the largest and most significant public investment in AIDS research in the world. The key themes of the current AIDS research agenda at the National Institutes of Health are a strong foundation in basic science, research to prevent and reduce HIV transmission (including research into vaccines, microbicides, and behavioral interventions), research to develop better therapies for those who are already infected, international research to address the pandemic in developing countries, and biomedical and behavioral research to target the disproportionate impact of AIDS on minority populations in the United States [72]. In federal fiscal years 2007 and 2008, the budget for AIDS research was \$2.9 billion [73, 74].

US-supported AIDS research has accomplished a great deal, from enhancing our understanding of the natural history of HIV infection to catalyzing therapeutic developments that have resulted in dramatic gains in life expectancy for infected individuals. A great deal more needs to be done. Prevention research is vital, as is continuing research attention to the development of medications with increased potency, better resistance profiles, and less toxicity.

**9. The US government should continue to devote substantial resources to respond to the global pandemic, with a particular focus on developing countries. Resources should be devoted to evidence-based prevention interventions, such as risk-reduction programs for sexual transmission, condom distribution, syringe and needle exchange, drug treatment programs, and programs to prevent perinatal transmission; antiretroviral treatment and comprehensive medical care and support services for infants, children, and adults; and programs to provide care and services to children who have been orphaned as a result of HIV. The US government should also remain a major contributor to the Global Fund to Fight HIV, Tuberculosis, and Malaria. US scientists, physicians, and other experts should continue to assist and be supported in the assistance of developing countries to address the operational, scientific, and training issues surrounding implementation of new programs.**

Since 2003, the United States has played a major role in addressing the global AIDS pandemic with the passage of the President's Emergency Program for AIDS Relief, which authorized \$15 billion over a 5-year period to battle HIV infection, primarily in 15 focus countries [75]. In addition to providing funding for prevention, treatment, and care programs, as well as services for children orphaned by AIDS, the United States also contributes to the Global Fund to Fight HIV, Tuberculosis and Malaria.

From 2003 through March 2008, the number of individuals who were receiving antiretroviral therapy in the 15 focus countries increased from 50,000 to >1.64 million [76]. We strongly supported passage of the United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Act in July 2008, which reauthorized the US global AIDS program and authorized \$48 billion in funding over a 5-year period for HIV, tuberculosis, and malaria programs [77]. We urge the US government to continue its robust commitment to global health by funding the program at the levels recommended in the legislation and maintaining and enhancing the US financial support to the Global Fund to Fight HIV, Tuberculosis, and Malaria.

**10. Visitors with HIV infection should be able to enter the United States, and otherwise qualified immigrants with HIV infection should be able to obtain permanent residency status or citizenship.**

We are pleased that the statutory ban on persons with HIV disease entering the United States as visitors or immigrants ended with the signing of the United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Act [77]. We now urge the Secretary of Health and Human Services to move expeditiously to remove HIV disease from the list of communicable diseases of public health significance and to end this

long-standing discriminatory practice against visitors and immigrants with HIV infection.

## CONCLUSIONS

There has been major progress in addressing the HIV epidemic, both domestically and globally, but significant challenges exist, and a great deal of work remains to be done. Continued support is needed from both the public and private sectors for prevention, education, basic and applied research, health services research, and health care delivery. Federal, state, and local governments must fill the leadership gaps in these areas. History will judge us all by our individual and collective responses to one of the worst pandemics the world has ever seen.

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