Impact of Changing Demographics of HIV/AIDS on Role of Primary Care

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Because widespread use of highly active antiretroviral therapy has made it possible for persons with HIV infection to live longer, the epidemiology of HIV/AIDS has shifted in several ways. The number of persons 50 years and older living with HIV/AIDS has risen in recent years, and there has been a substantial increase in common comorbidities associated with aging in this population. These changes place new emphasis on the important role of primary care in HIV/AIDS management.

WHAT ARE SOME OF THE KEY CHANGES IN HIV/AIDS EPIDEMIOLOGY?

In the United States, the estimated number of persons with HIV/AIDS 50 years and older increased by 77%, from 65,445 in 2001 to 115,871 in 2005.1 Persons in this age group accounted for 15% of newly diagnosed cases of AIDS in 2005, an increase from 12% in 2001.1 Other changes include the decrease in mortality rates among persons with HIV infection and the causes of death (Table).2 In a study of mortality trends in a cohort of HIV-positive US military beneficiaries, Crum and colleagues2 found a statistically significant increase in the proportion of non–HIV-related causes of deaths between the pre-HAART era (8.8% from 1990 to 1996) and the late HAART era (32% from 2000 to 2003). During these same time frames, deaths caused by AIDS-defining opportunistic infections and conditions accounted for almost 80% and 56% of deaths, respectively.

WHAT ARE THE PRINCIPAL CAUSES OF DEATH IN PERSONS WITH HIV INFECTION TODAY?

In New York City, for example, among HIV-infected persons aged 13 to 64 years, the number of deaths caused by non–HIV-related conditions increased from 19.8% in 1999 to 26.3% in 2004 (P = .015).3 Sackoff and colleagues3 determined that 75.6% of deaths that were caused by non–HIV-related conditions could be attributed to substance abuse (31.0%), cardiovascular disease (23.8%), and cancer (20.8%). The findings were similar across black, Hispanic, and white populations.

A notable finding was that lung cancer accounted for between 6.0 and 12.6 deaths per 10,000 patients in all racial and ethnic groups.3

WHAT INTERVENTIONS ARE RECOMMENDED IN VIEW OF THESE CHANGES IN HIV/AIDS EPIDEMIOLOGY?

Interventions are recommended in 2 broad areas: (1) HIV care and (2) primary and preventive health care. In terms of HIV care, we need to continue to focus on testing persons aged 13 to 64 years who come to medical attention in primary care settings, emergency departments, and urgent care.
settings.\(^4\)

The aging baby-boomer population and young adults should be tested even if they may not perceive themselves to be at risk for HIV infection so they can be referred for clinical care promptly if they are HIV-positive.\(^4\)

The CD4\(^+\) T-cell count continues to be the strongest predictor of both HIV-related and non–HIV-related deaths.\(^3\) Therefore, prompt referral for HIV care is an essential component of efforts related to universal HIV testing.\(^4\) Once patients are started on an antiretroviral regimen, adherence to treatment is essential for good outcomes. To reduce the risk of cardiovascular disease in persons with HIV infection, a combination of lifestyle changes and lipid-lowering agents is a priority. Addressing modifiable risk requires special attention and includes the standards of care for primary care, such as smoking cessation efforts, dietary changes, and exercise. While the use of lipid-lowering agents will play a role in reducing this risk, the importance of lifestyle changes cannot be overemphasized.\(^5,6\)

**WHO SHOULD PROVIDE CARE FOR PERSONS WITH HIV INFECTION?**

This has been a point of discussion since the earliest days of the HIV/AIDS epidemic. There is no one correct answer. The best answer is "It depends"—on the patient, provider resources and capacity, and access to care.

The ideal solution is an experienced HIV care provider who also offers primary care. Collaboration between primary care providers and specialists in HIV care is another option. With the new paradigm of persons with HIV infection living longer and in whom common age-related conditions develop, both primary and specialty care need to be addressed.\(^7\) Regardless of the treatment model, continuity of care and communication among providers are essential.

**WHAT ARE SOME DIFFERENCES RELATED TO THESE NEWLY ASSOCIATED DISEASES BETWEEN HIV-POSITIVE AND HIV-NEGATIVE PERSONS?**

Manfredi\(^8\) was most likely the first person to report that the life expectancy of HIV-positive persons who receive highly active antiretroviral therapy approximates that of HIV-negative persons. Other researchers think that metabolic complications associated with HIV infection and antiretroviral therapy are different from metabolic diseases (eg, diabetes, hyperlipidemia) in the noninfected population.\(^5,6\) For example, responses to lipid-lowering agents in persons with HIV/AIDS appear to be less predictable than in noninfected persons, highlighting the importance of lifestyle modifications, such as diet and tobacco cessation.\(^5\) In one study, compared with the diets of non–HIV-infected controls, the diets of HIV-infected persons contained higher than recommended amounts of saturated fat, which contributed to hypertriglyceridemia.\(^6\)

**HOW HAVE THESE CHANGES IN HIV/AIDS EPIDEMIOLOGY AFFECTED ANTIRETROVIRAL SELECTION?**

To date, no antiretroviral agent or regimen has been shown to be more effective in older persons than in younger adults, and treatment recommendations are the same for both age groups. However, when choosing an antiretroviral regimen, we need to consider potential toxicities as well as pill count, convenience, and tolerability. For example, the thymidine analogues zidovudine and stavudine are no longer recommended as first-line therapy in the United States because of their association with mitochondrial toxicity.\(^9\) Instead, other agents, such as tenofovir and abacavir, are now recommended for nucleoside analogue–backbone regimens.

Anecdotally, most providers have developed their own strategies to assess patients for antiretroviral therapy and select regimens, based on their experience and preferences. The critical issue is to ensure close follow-up of patients to monitor adverse events and adjust regimens accordingly. Clinical judgment still plays a pivotal role in treatment decisions.

**HOW DOES ADVANCING AGE AFFECT IMMUNE SYSTEM FUNCTION?**

This debatable point is the focus of much research. The goals of antiretroviral therapy remain the same regardless of patient age: restoring immune function as measured by increased CD4\(^+\) T-cell counts and viral load suppression. Equally important is the management of comorbidities such as lipid-level abnormalities, diabetes, and hypertension.

Two studies are often cited to highlight the differences in treatment response among younger and older adults.\(^10,11\) Results from the AIDS Clinical Trials Group (ACTG) 384 study showed that younger age (40 years or younger), female sex, higher baseline viral load, and virological suppression were associated with greater increases in CD4\(^+\) T-cell count at 48 weeks of treatment.\(^10\) When stratified by age, patients 40 years and younger had significantly higher CD4\(^+\) T-cell counts while receiving treatment than those older than 40 years.

The converse was shown by Silverberg and colleagues.\(^11\) Within 1 year of starting highly active
antiretroviral therapy, patients 50 years and younger were more likely to achieve an HIV RNA level of fewer than 500 copies/mL after adjusting for comorbidities than those older than 50 years. These results appeared to be determined more by greater level of adherence in older patients rather than by immune system function alone.

Thus, if immune system reconstitution is better in younger patients, as suggested by ACTG 384, than in older patients, this disparity may be overcome by improved adherence in older patients.

**SHOULD THE USE OF CERTAIN ANTIRETROVIRAL DRUGS BE AVOIDED IN OLDER PATIENTS?**

There is no reason to withhold antiretroviral therapy in older patients, especially if they are able to adhere to treatment. The critical issues are proper regimen selection and follow-up.

**ARE THERE DIFFERENT DOSING RECOMMENDATIONS FOR OLDER PATIENTS?**

There are no data on antiretroviral dosing adjustments for older patients. The standard recommendations for selecting antiretrovirals or making dose adjustments based on renal or hepatic function determine treatment.

**ARE THERE GUIDELINES FOR OPTIMIZING MANAGEMENT OF OLDER PERSONS WITH HIV INFECTION?**

There are no guidelines that are age-specific. However, in addition to the guidelines cited above the Infectious Diseases Society of America (IDSA) has issued 2 sets of guidelines worth mentioning: (1) guidelines for the management of lipid disorders and cardiovascular risk in persons with HIV infection who receive antiretrovirals and (2) guidelines for the management of chronic kidney disease in HIV-positive patients.

For lipid management, the IDSA recommends that HIV-infected adults should undergo evaluation and treatment on the basis of the National Cholesterol Education Program (NCEP) Adult Treatment Panel III guidelines. The NCEP recommends that nonpharmacological interventions be given a thorough trial before consideration of drug therapy. The recommendations also stipulate that intensive therapy with lipid-lowering medications should be used in persons with the metabolic syndrome. This includes aggressive treatment of hypertension, diabetes, and dyslipidemia. The NCEP also emphasizes the importance of smoking cessation, weight reduction, increased physical activity, and a salubrious diet. The fundamental message still is that physicians must treat HIV infection first. The choice of antiretroviral therapy depends on many patient-specific factors, of which cardiovascular risk is only one.

The IDSA renal guidelines are quite specific in terms of their recommendations that all patients at time of HIV diagnosis be assessed for existing kidney disease with a screening urine analysis for proteinuria and a calculated estimate of renal function (creatinine clearance or glomerular filtration rate). This renal function estimate also allows the caregiver to properly prescribe antiretroviral agents and other commonly used medications that require renal adjustment. Therapy for HIV-associated renal diseases should be individualized to the patient's clinical circumstances and to the underlying renal histology findings. These guidelines also recommend ongoing evaluation of renal function, for example, measuring baseline renal function with serum creatinine and urinalysis, during antiretroviral therapy.

**CONCLUSION**

The epidemiology of HIV/AIDS is changing as patients live longer and are at risk for more common age-related comorbidities. In the era before potent antiretroviral therapy was the standard of HIV care, primary care needs were shorter-term because most HIV-positive persons did not live long enough for diabetes or cardiovascular disease to develop. In the current era, these shifts reinforce the important role of primary care in addition to the specialty management of HIV/AIDS.

At a minimum, patients who have HIV infection need primary and specialty care. There are many options for ensuring that patients have both. The ideal is a seamless model of primary care and HIV/AIDS care by the same providers in the same setting. However, this will not always be possible for many reasons, including patient preference, provider expertise and resources, and reimbursement constraints.

When patient care is divided between a primary care provider and an HIV/AIDS care provider, both providers need to establish a communication path to share such information as progress notes, medication lists, and reports from consultants and laboratories. In the end, this approach can help manage costs, prevent duplication of effort and, most important, contribute to better patient outcomes.

**References:**

References
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