

HIV Now Firmly Established in the Middle Ages

Michael S. Saag

Center for AIDS Research, University of Alabama at Birmingham

Monty Python's hit Broadway musical *Spamalot* (based on their earlier movie *Monty Python and the Holy Grail*) is cast in medieval England at the time of transition from the Dark Ages to the Middle Ages. The second song of the show highlights one of the play's most famous lines, "I'm not dead, yet," uttered by a character who was presumed to have died from plague. In today's world, owing to breathtaking advances in medical science, many patients who surely would have died due to the AIDS plague in the 1980s are still alive, thriving, and transitioning from the Dark Ages of AIDS to the "Middle Age."

In this issue of *Clinical Infectious Diseases*, Hasse et al [1], from the Swiss HIV Cohort, clearly document the number of human immunodeficiency virus (HIV)-infected patients who have entered "middle age" over the past 2 decades. Just a cursory glance at Figure 1 in their report tells the story: From 1990 to 2010, the proportion of patients in their cohort who were 50–64 years of age increased from <3% to nearly 25%. If the trend demonstrated in that figure continues

over the next decade, up to 50% of patients in their cohort will be >50 years of age. Such an outcome was unimaginable 30 years ago, when AIDS was first described.

Hasse and colleagues [1] describe the emerging medical conditions associated with the middle-aged patients in their cohort. Remarkably, there were relatively few HIV-related events ($n = 195$), compared with non-AIDS comorbidities ($n = 994$), during the period of observation, underscoring the success of treatment against the virus. Not surprisingly, the non-AIDS comorbidities are the conditions encountered in normal healthy populations of aging individuals: myocardial infarctions, strokes, malignancies, diabetes mellitus, and osteoporosis. Their study could not address, however, the relative frequency of these conditions in HIV-infected patients, compared with age-matched HIV-uninfected control subjects. However, this was not the point of their report. Rather, their study reveals the remarkable success of the modern treatment era of AIDS care and raises a question to both providers and health care policy makers: What's next?

PUTTING THE "PRIMARY" BACK INTO PRIMARY CARE

Recent studies have underscored the emerging workforce shortage in HIV care (reviewed in [2]). At the beginning of

the epidemic in the 1980s, the provider workforce was composed of individuals trained in oncology, infectious diseases, obstetrics, pediatrics, internal medicine, and family medicine. For them, the practice of HIV medicine addressed an emerging crisis, was on the cutting edge of science, and was a "cause." They needed to be well versed in the diagnosis and treatment of a myriad of AIDS-related diseases, several of which had no effective therapies. They embraced and celebrated the diversity of their patient population. But ultimately, they became all too expert at managing end-of-life issues and "orchestrating a good death". Most primary care providers avoided engaging in HIV medicine owing to the complexities and nuances of disease management, rapidly emerging treatment paradigms, and, in too many situations, antipathy for the patients affected by HIV and their lifestyles.

In the 1990s and early 2000s, the antiretroviral treatment revolution ensued, leading to the remarkable changes in the survival and advancing age of HIV-infected persons described in the article by Hasse et al [1]. However, the expansion of HIV care did not penetrate into the primary care mainstream, primarily because of the speed of development and the complexity of antiretroviral therapy. Patients were followed up mostly at clinics that specialized in HIV care, such as Ryan White clinics in the United States, which provided both HIV specialty care

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Correspondence: Michael S. Saag, MD, Center for AIDS Research, University of Alabama at Birmingham, 845 19th St S, BBRB 256, Birmingham, AL 35294-2170 (msaag@uab.edu).

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and overall primary care. The Ryan White clinics emerged as medical homes for HIV-infected patients and, in many ways, are prototypic medical homes [4].

Over the past decade, at least 60%–75% of patients in care and receiving antiretroviral therapy have had undetectable levels of HIV in their bloodstream [1]. The frequency of their clinic visits are often stretched to every 6 months, and the discussion of issues related to HIV infection and its treatment is de-emphasized. Instead, most of the focus at these visits is on issues of routine primary care: smoking cessation, weight loss, hypertension, glucose and lipid level management, reduction in substance abuse, and treatment of depression and/or other mental health conditions. The majority of time at these visits is devoted to health maintenance and health promotion. It is as if the patients do not have HIV infection, except for their taking some specific anti-HIV medications. They are, in essence, patients in need of primary care.

One of the challenges in treating patients as they age is balancing the number of coexistent conditions. As Hasse et al [1] report, as the patients in the Swiss Cohort aged, the number of non-HIV-specific comorbidities increased proportionately (see Figure 2 in their article). Primary care providers are very comfortable with management of and, in many ways, are better equipped to manage the myriad of multiple comorbidities that naturally occur in patients as they age.

TIME FOR A NEW PARADIGM?

Because the majority of successfully treated HIV-infected patients living near-normal lifespans and the incidence of newly infected patients remaining at levels similar to that in the mid-1980s, the overall prevalence of patients needing care is increasing dramatically. However, funding for HIV-specific clinical care in the United States has plateaued for more than a decade despite the number of

patients in care more than doubling during this same period [4]. As a result, most Ryan White clinics are at or beyond capacity to absorb new patients at a time when universal opt-out testing is being used and will hopefully identify and link to care the estimated 20%–25% of patients who are infected with HIV and do not know their status. This 20%–25% of patients is responsible for >55% of new infections each year [5]. With the recent findings of a HIV Prevention Trials Network study (HPTN 052) that showed 96% protection of transmission through use of antiretroviral therapy [6], it is both a personal health and public health imperative that universal testing efforts are redoubled and newly identified HIV-infected patients are linked to care.

WHERE WILL THESE NEWLY IDENTIFIED PATIENTS BE SEEN?

One answer is suggested from the data presented in the article by Hasse et al [1]. With the aging of the HIV-infected patient population, the relative complications related directly to HIV infection are quite low, compared with the proportion of ordinary medical needs managed routinely in primary care settings. Perhaps it is time to expand the medical home into a medical neighborhood whereby HIV specialists provide HIV-specific care and primary care is provided by mainstream primary care providers. Newly identified HIV-infected patients would be treated primarily by HIV specialists until their HIV-related issues are substantially controlled, at which time their primary care is transferred to primary care providers. This might happen after 3–4 years of successful HIV treatment and perhaps be accelerated for older individuals.

WORKFORCE SHORTAGES GO BEYOND HIV

In most other resource-rich countries besides the United States, including

Canada, Japan, Australia, and all of Europe (including Switzerland where the study was performed), this approach is feasible owing to nationalized health care and universal access to primary care. Unfortunately, in the United States, there is a major stumbling block: In addition to a shortage of HIV providers, there is a shortage of primary care providers. Part of the reason for this shortage is simple economics. Primary care providers in the United States are paid substantially less than procedural specialists. This results in medical students, who often have up to \$200 000 in debt at the time of graduation, choosing more lucrative practices than primary care. As the Institute of Medicine report indicates [2], the solution to the workforce shortages requires delivery system changes, such as task shifting, comanagement, and, of importance, the use of nurse practitioners and physician assistants who are well versed in the delivery of high-quality primary care. In many states, these professionals practice under unreasonable restrictions that significantly limit their ability to help resolve the growing primary care delivery crisis in the United States. Ironically, many of the states with the most significant constraints on nurse practitioners' and physician assistants' practices are the same ones with the most significant gaps in primary care.

CONCLUSION

Taken together, there is a convergence of HIV care and routine primary care as both HIV-infected and HIV-uninfected patients are aging and in need of primary care. This is occurring at a time of significant shortages of primary care providers in the United States. The solution to this emerging crisis is to adjust the rewards to encourage providers to enter into primary care, enlist the help of nurse practitioners and physician assistants in providing routine primary care, and changing the system of health care delivery to be more uniform and accessible.

If we fail to do this, we will actualize the prophecy from the other character in the famous scene from *Spamalot*, who in response to the declaration “I’m not dead yet,” promised, “You will be soon!”

Notes

Potential conflicts of interest. Author certifies no potential conflicts of interest.

The author has submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant

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