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Topics in Antiviral Medicine™

A publication of the IAS–USA

Perspectives CME

Topics in Antiviral Medicine™

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Perspectives

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Learning Objectives

On completion of this activity, participants will be able to:

- List barriers to engagement and retention in care for hard-to-reach, HIV-infected populations and strategies to remove such barriers
- Identify lessons learned from the recent outbreak of HIV infection in Scott County, Indiana
- Describe the cost-effectiveness of, barriers to obtaining insurance coverage for, and ways in which practitioners can assist patients in obtaining treatment for hepatitis C virus (HCV) infection
- Describe the history and implications of the Patient Protection and Affordable Care Act in the United States

Intended Audience

This enduring material is designed for physicians and other health care practitioners who are actively involved in the medical care of people with HIV or HCV infection.

This activity is also relevant for other practitioners, including nurse practitioners, nurses, physician assistants, pharmacists, and others.

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Financial affiliations with commercial entities: Dr del Rio has served as a consultant for InnaVirVax. Dr Richman has been a consultant to Antiva Biosciences, Chimerix, Gilead Sciences, Inc, and Monogram Biosciences, Inc. Dr Benson serves on a data and safety monitoring board for GlaxoSmithKline/ViiV Healthcare. She has received research grants awarded to the University of California San Diego from AbbVie, Gilead Sciences, Inc, and ViiV Healthcare. Her spouse, Robert T. Schooley, MD, was awarded research grants, paid to his institution, from Boehringer Ingelheim Pharmaceuticals, Inc, and Bristol-Myers Squibb. His institution has received payment for his consultative advice or data monitoring committee service from GlobeImmune, Gilead Sciences, Inc, and Monogram Biosciences. He serves as a consultant to CytoDyn, Hera Therapeutics, and Farmak. He has stock options from CytoDyn, Hera Therapeutics, and GlobeImmune. Drs Hirsch, Janowicz, Linas, and Westmoreland have no relevant financial affiliations to disclose. Ms Jacobsen has no relevant financial affiliations to disclose.

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Full-day and half-day CME courses and workshops continue to focus on cutting-edge, scientifically rigorous issues presented by leading experts in the field of HIV and hepatitis C virus (HCV) medicine. Visit the IAS–USA website for updated information on live CME activities. This fall, IAS–USA live activities focusing on the management of HCV infection will be held in the following cities:

Chicago, Illinois, HCV Workshop—September 16, 2016

San Francisco, California, HCV Workshop—September 30, 2016

Atlanta, Georgia, HCV Course—October 20, 2016

New York, New York, HIV/HCV Workshop—November 4, 2016

Interactive Webinars With IAS–USA Faculty

Live, interactive CME in the comfort of your home or office, free of charge. Participants can ask questions and receive responses in real time. Visit the IAS–USA website for more on past and upcoming webinars. Upcoming webinars include:

HIV Resistance Testing in 2016: The Role of Archive DNA Testing
Presenter: Charles B. Hicks, MD, University of California San Diego—August 30, 2016

Update on New Biobehavioral Approaches to HIV Prevention
Presenter: Kenneth H. Mayer, MD, Harvard Medical School, Boston, Massachusetts—September 1, 2016

Pediatric and Adolescent HIV Infection
Presenter: Ellen G. Chadwick, MD, Northwestern University—September 6, 2016

What's New in HIV Prevention
Presenter: Susan P. Buchbinder, MD, San Francisco Department of Public Health—September 27, 2016

60 Minutes With the IAS–USA Volunteer Board of Diretors: Hot Topics and Emerging Data
Presenters: Members of the IAS–USA Volunteer Board of Directors—October 7, 2016

HIV and the Epidemic of Syphilis
Presenter: Charles B. Hicks, MD, University of California San Diego—October 18, 2016

Caring for the Person Aging With HIV
Presenters: Harjot K. Singh, MD, ScM, Weill Cornell Medical College; Eugenia L. Siegler, MD, Weill Cornell Medical College—November 15, 2016

Coming Soon

Cases on the Web

A series of web-based, case-driven CME activities, created to offer convenient online access to top-quality professional education. Visit the IAS–USA website for more information. Coming soon from Cases on the Web:

Ending the Epidemic in New York City: From Blueprint to Implementation
Author: Demetre C. Daskalakis, MD, MPH, New York City Department of Health and Mental Hygiene

***Pneumocystis jirovecii* Pneumonia in the HIV-Infected Patient**
Authors: Anuradha Ganesan, MBBS, MPH, Uniformed Services University of the Health Sciences; Marc Siegel, MD, George Washington University School of Medicine; Henry Masur, MD, George Washington University School of Medicine

Initial Antiretroviral Therapy in the HIV-Infected Patient
Authors: Jameela J. Yusuff, MD, MPH, FACP, State University of New York; Katharine Kuntz, MD, State University of New York

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Dates above may be subject to change. IAS–USA announcements are paperless, so please watch for e-mail updates or visit www.iasusa.org for course information, agendas, and online registration, or to access archives of educational resources from past activities. Early registration for live courses is strongly recommended. These activities have been approved for *AMA PRA Category 1 Credit*™.

Perspective

HIV Infection in Hard-to-Reach Populations

HIV disproportionately impacts populations that have traditionally suffered from health disparities; thus, it is unsurprising that health disparities are a major driver of the ongoing HIV epidemic in the United States. High rates of HIV prevalence and incidence are now seen in the Southern United States and among black men who have sex with men, transgender women, and individuals in low-income settings. In addition, substance use continues to be a major driver of the HIV epidemic and impacts care outcomes. Efforts at reducing HIV transmission must include focus on engagement and retention in care among individuals at risk of being lost to care. This requires particular emphasis on understanding and addressing patient needs and removing structural barriers to engagement in care. This article summarizes a presentation by Carlos del Rio, MD, at the IAS–USA continuing education program, Improving the Management of HIV Disease, *held in New York, New York, in March 2016.*

Keywords: HIV, HIV care, HIV transmission, retention, men who have sex with men, MSM, substance use, engagement

The HIV epidemic in the United States disproportionately affects populations that have historically suffered from health disparities. Thus, addressing HIV prevention and care requires that practitioners consider health disparities and social determinants of health as major drivers of outcomes.

In the United States, there are approximately 50,000 new HIV infections per year, with men who have sex with men (MSM) accounting for approximately 62% of infections and black and Hispanic persons accounting for more than 50% of new infections. National Health and Nutrition Examination Survey (NHANES) data from 2007 to 2012 indicate an HIV prevalence of 0.39% in the general adult population, with HIV prevalence being higher among men than women (0.61% and 0.16%, respectively; $P < .01$), among non-Hispanic black individuals than other racial or ethnic groups combined (1.6% and 0.23%, respectively; $P < .001$), and among MSM than men who have sex with women (7.7% and 0.17%, respectively; $P < .01$).

The goals of the National HIV/AIDS Strategy (NHAS) for the United States through 2020 are to: 1) reduce the rate of new HIV infections; 2) increase access to care and improve health outcomes for HIV-infected persons; 3) reduce HIV-related disparities and health inequities; and 4) achieve a more coordinated national response to the HIV epidemic. Indicators for the NHAS include increasing the percentage of HIV-infected persons who are aware of their HIV serostatus to 90%, of persons who are linked to care within 30 days of HIV diagnosis to 85%, of persons with diagnosed HIV infection who are retained in care to 90%, and of persons with diagnosed HIV infection who are virally suppressed to 80%.

Dr del Rio is Professor of Global Health at Rollins School of Public Health and Professor of Medicine at Emory University School of Medicine in Atlanta, Georgia.

Rates of HIV Infection in Hard-to-Reach Populations

Centers for Disease Control and Prevention (CDC) data for 2014 indicate that the highest rate of HIV infection among racial or ethnic groups occurs among black populations, with rates among adults and adolescents of 64.7 per 100,000 in the Southern United States, 64.3 per 100,000 in the Northeastern United States, 47.0 per 100,000 in the Midwestern United States, and 48.8 per 100,000 in the Western United States (Figure 1). The incidence of new HIV infections declined between 2002 and 2011 in all risk groups except MSM (figure 2).[1] The CDC now estimates that the lifetime risk of HIV infection is 1 in 20 for black men, 1 in 48 for black women, 1 in 48 for Hispanic men, 1 in 227 for Hispanic women, 1 in 132 for white men, and 1 in 880 for white women.[2] Lifetime risks are 1 in 6 for MSM, 1 in 23 for women who inject drugs, 1 in 36 for men who inject drugs, 1 in 241 for heterosexual women, 1 in 473 for heterosexual men, 1 in 2 for black MSM, 1 in 4 for Hispanic MSM, and 1 in 11 for white MSM.[2]

Although the HIV epidemic disproportionately affects black MSM in the United States, there are in fact a similar number of new HIV transmissions per year among black compared with white MSM (9833 and 9710, respectively) but within a smaller overall population. As a result, the incidence of HIV infection per 100 persons per year is estimated at 0.32 among white MSM and 2.57 among black MSM, and the prevalence is much higher among black MSM. Given the greater prevalence of HIV infection among black MSM, the likelihood of transmission per sexual encounter for black MSM is 5.8 times higher than that for white MSM.[3]

There are also racial disparities across the HIV care continuum. Among black MSM with HIV infection, it is estimated that 75% have been diagnosed, 24% are retained in care, 20% are on antiretroviral therapy, and 16% are virally suppressed. Among white MSM with HIV infection, it is estimated that 84% have been diagnosed, 43% are retained in care, 39% are on antiretroviral therapy, and 34% are virally suppressed. Thus, in addition to being more likely to have HIV infection, black MSM are less likely to be on antiretroviral therapy and less likely to be virally suppressed, increasing the risk of HIV transmission. This calls for greater scale up of preexposure prophylaxis to uninfected black MSM and better retention in care for black MSM with HIV infection.

Since the early years of the HIV epidemic in the United States, the geographic impact of the infection has also changed. Although early in the epidemic most new cases of HIV infection were in the West and Northeast, most new HIV infections today occur in the Southern United States. For example, in 2011, there were 23,988 HIV infections

diagnosed in the Southern United States, 8765 in the Northeastern United States, 7956 in the Western United States, and 6061 in the Midwestern United States. The Southern United States now has the greatest proportion of HIV-infected persons: 43% compared with 26% in the Northeastern United States, 19% in the Western United States, and 12% in the Midwestern United States, according to 2013 data. In addition to the greater burden of the epidemic in the Southern United States, there is also a greater impact on rural communities.[4]

The epidemic continues to impact cities, but even in cities it is concentrated within particular areas within cities. In New York City, for example, an estimated 115,000 people were living with HIV infection in 2012, with 2832 new diagnoses in 2013. Among those diagnosed with HIV infection in New York City in 2012, 72% were men, 28% were women, 45% were black, 32% were Hispanic, and 21% were white. Of the new HIV diagnoses in New York City in 2012, 51% were attributed to sexual contact with MSM, 14% to injection drug use, and 3% to injection drug use and sexual contact with MSM; 52% of HIV infections among women were attributed to sexual contact and 17% to injection drug use.[5] The highest concentrations of HIV-infected persons live in zip codes with higher concentrations of black residents and higher levels of poverty. The higher concentration of HIV diagnoses in low-income areas holds true for black, Hispanic, and white individuals in New York City and other cities. In fact, when poverty is taken into account, some of the racial and ethnic disparities are less apparent. For example, 1 study showed a similarly high HIV prevalence (approximately 1.9%-2.4%) among black, Hispanic, and white individuals in census tracts in which 20% or more of residents had household incomes below the US poverty level in 24 cities.[6,7]

There is also a high burden of HIV infection among transgender women. Globally, data from 2000 to 2011 indicate an HIV prevalence of 19% in this population, with more recent data indicating a prevalence of 2% among youths and 45% among sex workers and women of color.[8,9] Improved engagement and retention in care are crucial for this population to reduce stigma and prevent secondary trauma (eg, racism, transphobia, economic disadvantage), to address concerns about the impact of HIV medications on hormones, to provide mental health and substance use treatment, and to improve practitioner knowledge about medical issues specific to transgender individuals.

Substance use is a major driver of the ongoing HIV epidemic. Up to 50% of HIV-infected persons in the United States have a co-occurring substance use disorder. Substance use is associated with reduced viral suppression and accelerated disease progression, and up to 50% of persons hospitalized for an HIV-related condition have a substance use disorder. Controlled prescription drugs have become an increasingly common driver of the substance use epidemic in the United States. The outbreak of HIV infection among persons who injected prescription opioids in Indiana was a wakeup call about this emerging public health problem.[10,11] The CDC recently conducted a county-level analysis to identify areas at risk of experiencing a similar outbreak of HIV or hepatitis C virus infection and concluded that 220 counties in 26 states are most at risk.[12]

Improving the HIV Care Continuum

The biggest challenges in the HIV care continuum are engagement and retention in care. Data from 2011 indicate that among all HIV-infected persons, 86% have been diagnosed, 80% of those diagnosed are linked to care, 40% are engaged in care, 37% have been prescribed antiretroviral therapy, and 30% have achieved viral suppression.[13] Consistent retention in care has been associated with faster time to virologic suppression, lower cumulative viral load burden, improved immune function, decreased mortality, and decreased engagement in behaviors associated with HIV transmission. Available data indicate that today the highest number of HIV transmissions are from individuals who have been diagnosed with HIV infection but are not retained in care.[14] A study by Mugavero and colleagues showed that in addition to failure to achieve Institute of Medicine or US Department of Health and Human Services core indicators for retention in care, increased number of missed clinic visits was associated with statistically significantly increased risk of mortality. Increased risk of mortality was associated with increased missed visits, even among individuals who met indicators for retention in care.[15]

Longitudinal retention in care is also important. A disparity in retention in care between black and nonblack individuals became evident at approximately 24 months in 1 study, with retention rates of 84% and 85%, respectively, at 12 months; 60% and 70%, respectively, at 24 months; and 46% and 63%, respectively, at 36 months.[16] Such data indicate that retention in care and maintenance of viral suppression should be viewed as long-term commitments.

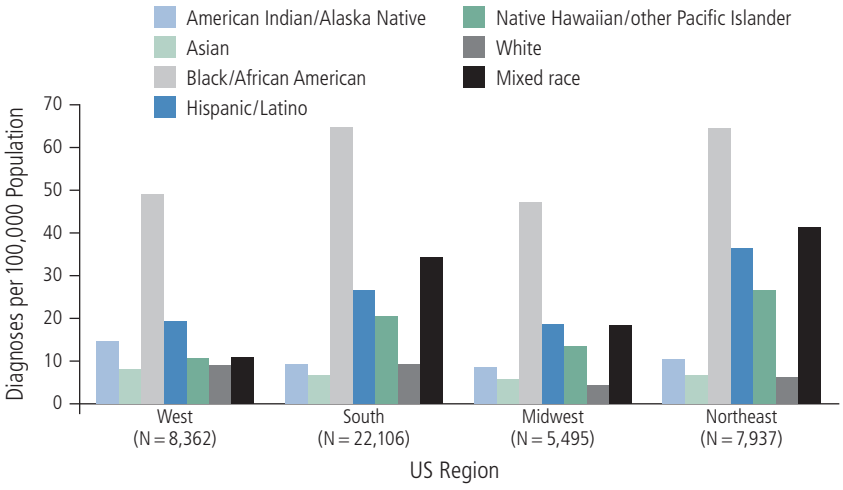

Figure 1. Diagnoses of HIV infection in the United States in 2014, by region. Adapted from the Centers for Disease Control and Prevention.[20]

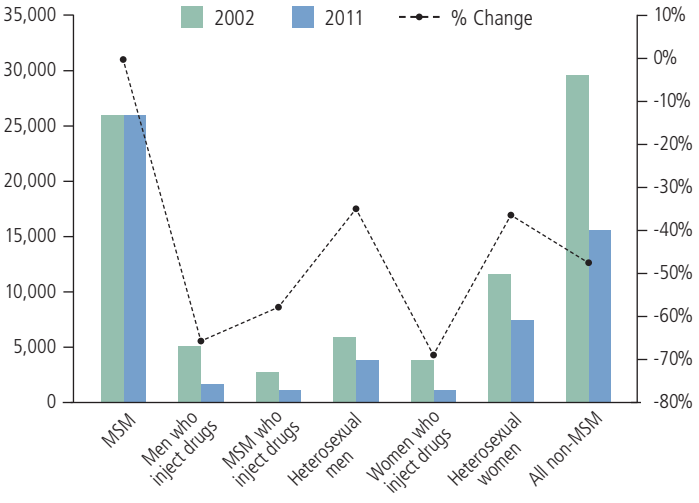

Figure 2. New HIV infections by risk group in 2002 and 2011. MSM indicates men who have sex with men. Adapted from Johnson et al.[1]

Metsch and colleagues examined whether patient navigation could improve rates of retention in care and of viral suppression.[17] In the study, 801 hospitalized individuals who were not virologically suppressed were randomly assigned to receive patient navigation for 6 months (n = 266), patient navigation and contingency management for 6 months (n = 271), or treatment as usual (n = 264). Patient navigators were assigned to help coordinate treatment and care; provide health education; assist patients in overcoming such barriers as lack of transportation, childcare, or insurance; and provide psychosocial and emotional support. Participants in the 2 groups that received patient navigation attended 11 meetings with a patient navigator. Contingency management consisted of financial incentives for patients, whereby a patient could earn up to $1160 by meeting specific goals, including attending 11 meetings with a patient navigator, completing paperwork, having 4 HIV care visits, receiving substance use treatment, providing substance-negative urine specimens, undergoing 2 blood draws, taking HIV medications, having a 2 $\log_{10}$ copies/mL drop in HIV RNA level, and achieving viral suppression.

At 6 months, virologic suppression had been achieved in 46.2% of the group that received patient navigation and con tingency management, 39.1% of the group that received patient navigation only, and 33.6% of the group that received treatment as usual ($P = .04$); however, at 1 year, 6 months after the interventions ended, rates of virologic suppression did not differ among these groups (38.6%, 35.7%, and 34.1%, respectively; $P = .68$). Overall, these findings suggest that such interventions may improve outcomes but should be continued for longer periods during treatment. Subgroup analysis indicated that black individuals were less likely to achieve virologic suppression than white individuals (odds ratio [OR], 0.53; 95% CI, 0.36-0.78) and that stimulant use (eg, cocaine or methamphetamine) was associated with reduced likelihood of achieving virologic suppression compared with opiate use (OR, 0.73; 95% CI, 0.55-0.97).

It remains unclear whether contingency management can be successful in the setting of HIV care. Data from the HIV Prevention Trials Network (HPTN) 065 study indicated that financial incentives did not increase rates of linkage to care or virologic suppression, although these outcomes were improved in hospital clinics, smaller sites, or sites with lower rates of virologic suppression, suggesting that targeting such interventions to these settings may be beneficial.[18] In a pilot study reported by Marconi and colleagues, financial incentives given as part of a commitment contract did increase adherence to antiretroviral therapy and rates of virologic suppression, suggesting that such incentives coupled with individual choice may sustain behaviors that would otherwise dissipate when incentives are removed.[19]

Structural issues are a major barrier to engagement and retention in care. Not much is done to improve the socioeconomic dimension of care outside an HIV clinic. As a result, individuals are provided much support in the clinic but are then left to face a multiplicity of problems, including poverty, joblessness, food insecurity, unstable housing, depression, and substance use when they leave the clinic. Clinicians face the difficult task of balancing needs from the health care perspective and the patient perspective. Medical care is a high priority for a clinic, whereas an individual may be more concerned with factors such as cigarettes, recreational drugs, housing, transportation, sex, phone availability, benefits, and more.

How can the likelihood that individuals will remain in care be optimized? Shared needs that must be satisfied include mental health services, substance use treatment, benefits advocacy, childcare, transportation, food, housing, companion services, and respite care. Substance use treatment is a priority, given the high association between ongoing substance use and ongoing transmission of HIV. At the patient level, care must focus on changing behavior by improving trust and communication, reducing stigma, and removing structural barriers to engagement in care. At the practitioner and system levels, practical strategies that may help in accommodating patients at risk of being lost to care include changes in appointment scheduling systems (eg, open access), extended clinic hours, consolidation of health insurance and health care systems, and reorganization of clinical practices and structures to be able to support decades of HIV care for every patient. Appropriate staffing and resources are required for such strategies to be successful.

Conclusion

Finding hard-to-reach populations and linking them to and retaining them in HIV care should be prioritized if NHAS goals are to be reached. Not just HIV-related issues but all medical (eg, mental health and substance use) and nonmedical issues that are barriers to achieving engagement in care and virologic suppression must be addressed. Practitioners should know their patients and their patients' needs. Social services, case management, patient navigation, contingency management, and motivational interviewing can be important tools

and strategies to address some of the needs of hard-to-reach populations.

Presented by Dr del Rio in April 2016. First draft prepared from transcripts by Matthew Stenger. Reviewed and edited by Dr del Rio in August 2016.

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Top Antivir Med. 2016;24(2):86-89.

2016 Recommendations of the IAS–USA Antiretroviral Guidelines Panel Now Available!

Recommendations on the use of antiretroviral drugs for treatment and prevention of HIV infection in adults, by the IAS–USA Antiretroviral Guidelines Panel, were published in the *Journal of the American Medical Association* in July 2016 (Gunthard HF, Saag MS, Benson CA, et al. Antiretroviral drugs for treatment and prevention of HIV infection in adults: 2016 recommendations of the International Antiviral Society–USA panel. *JAMA*. 2016;316[2]:191-210).


Clinical Review & Education

Special Communication

Antiretroviral Drugs for Treatment and Prevention of HIV Infection in Adults

2016 Recommendations of the International Antiviral Society-USA Panel

Huldrych F. Günthard, MD; Michael S. Saag, MD; Constance A. Benson, MD; Carlos del Rio, MD; Joseph J. Eron, MD; Joel E. Gallant, MD, MPH; Jennifer F. Hoy, MBBS, FRACP; Michael J. Mugavero, MD, MHSc; Paul E. Sax, MD; Melanie A. Thompson, MD; Rajesh T. Gandhi, MD; Raphael J. Landovitz, MD; Davey M. Smith, MD; Donna M. Jacobsen, BS; Paul A. Volberding, MD

IMPORTANCE New data and therapeutic options warrant updated recommendations for the use of antiretroviral drugs (ARVs) to treat or to prevent HIV infection in adults.

Editorial page 151

Supplemental content at jama.com

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The paper includes updated recommendations for the use of antiretroviral therapy in adults with established HIV infection, including when to start treatment, initial regimens, and changing regimens, along with recommendations for using antiretroviral drugs for preventing HIV among those at risk, including as preexposure and postexposure prevention. Visit the IAS–USA home page (www.iasusa.org) for a link to the full paper.

Perspective

HIV Transmission and Injection Drug Use: Lessons From the Indiana Outbreak

A recent outbreak of HIV infection centered in the rural town of Austin in Scott County, Indiana, was associated with widespread injection drug use and a socioeconomically depressed population. Control of the outbreak required coordinated efforts by state, federal, local, and academic institutions to implement and maintain on-site programs and services that included contact tracing, HIV and hepatitis C virus testing, insurance enrollment, syringe exchange, rehabilitation services, care coordination, preexposure prophylaxis, and HIV treatment. This article summarizes a presentation by Diane M. Janowicz, MD, at the IAS–USA continuing education program, Improving the Management of HIV Disease, *held in Los Angeles, California, in April 2016.*

Keywords: HIV, Indiana outbreak, injection drug use, contact tracing, syringe exchange, HIV transmission

Many clinicians and researchers in the field of HIV medicine are aware of the outbreak of HIV infection that occurred in the rural town of Austin in Scott County, Indiana. It is fortunate that, to date, this outbreak has not been a harbinger of future outbreaks as many had predicted. For now, it is a cautionary tale, given the epidemic of injection drug use occurring in the United States today.

The Evolution and Characteristics of the Indiana Outbreak

At the end of 2014, just as the HIV outbreak in Indiana was beginning, an estimated 12,500 people were living with HIV/AIDS in the state, the majority of whom resided in urban areas, including the northwest part of the state (adjacent to Chicago) and Indianapolis (in the central part of the state). The outbreak occurred in Scott County, a small rural county approximately 80 miles southeast of Indianapolis. Over the prior 10 years, only 5 persons in Scott County were diagnosed with HIV infection. The epicenter of the outbreak was Austin, a small town with a population of approximately 4200. The town has a 10% unemployment rate, with 19% of the population living below the federal poverty line and 21% who did not graduate from high school. Scott County ranks last in life expectancy out of 92 counties in Indiana.

It is estimated that there were more than 500 syringe-sharing partners in Scott County as of 2015. Injection practices were multigenerational and injection equipment was commonly shared. Individuals diagnosed with HIV infection during the outbreak had an average of 9 high-risk syringe-sharing, sex, or social partners who needed to be tested for infection. The drug most commonly used was oxymorphone, in a reformulation available since 2012, which was crushed and injected. Oxymorphone produces a fixed but short-lived high, and individuals may inject the substance as many as 20 times per day.

The outbreak was first identified in December 2014, when a physician in a town neighboring Austin observed within a short time frame that 2 individuals were HIV seropositive on screening. Another individual was soon diagnosed with HIV infection, and an astute disease intervention specialist was able to connect these cases with an additional 8 infected contacts by January 23, 2015. The Centers for Disease Control and Prevention (CDC) was alerted in February 2015 by the Indiana State Department of Health, and in March a large number of disease intervention specialists were deployed door to door to trace the contacts who had so far been identified, in order to offer HIV testing. A public health emergency was declared on March 26, 2015, by which date there were 55 confirmed cases and 13 preliminary cases of HIV infection (all subsequently confirmed). The numbers of HIV diagnoses per week are show in the Figure.

By the end of the public health emergency order in June 2015, 170 individuals had been diagnosed with HIV infection. A total of 444 of 513 contacts had been located and offered HIV testing during the emergency order, and point-of-care rapid testing and a simultaneous blood draw for syphilis and hepatitis C virus (HCV) infection testing were provided. The overall rate of positive HIV test results among tested contacts in Scott County was 38%. Surveillance of high-risk individuals has continued, and by April 2016 there were 188 confirmed cases of HIV infection. Based on the estimate that 80% of the people diagnosed with HIV infection lived in Austin, the HIV prevalence rate in that town would be nearly 5%. The HIV-infected individuals had a median age of 34 years (range, 18-60 years), 58% were men, 100% were of white race, 92% (160/174) had HCV coinfection, and 95% had an annual income of less than $10,000; very few had private health insurance, with all others being enrolled in the expanded Indiana Medicaid program.

Phylogenetic analysis of HIV polymerase sequences from the first 57 samples, performed by Galang and colleagues from the CDC, showed approximately 98% identity.[1,2] Subsequent analysis of 157 isolates by these investigators showed 98.7% identity, confirming that it was the introduction of a single case of HIV infection into this large, tight network of persons who inject drugs that precipitated this outbreak.[3] Avidity testing indicated that all of the initially identified HIV infections had occurred within the previous 6 months, consistent with clinical and laboratory data from the first 73 individuals seen in the HIV clinic. Many individuals reported

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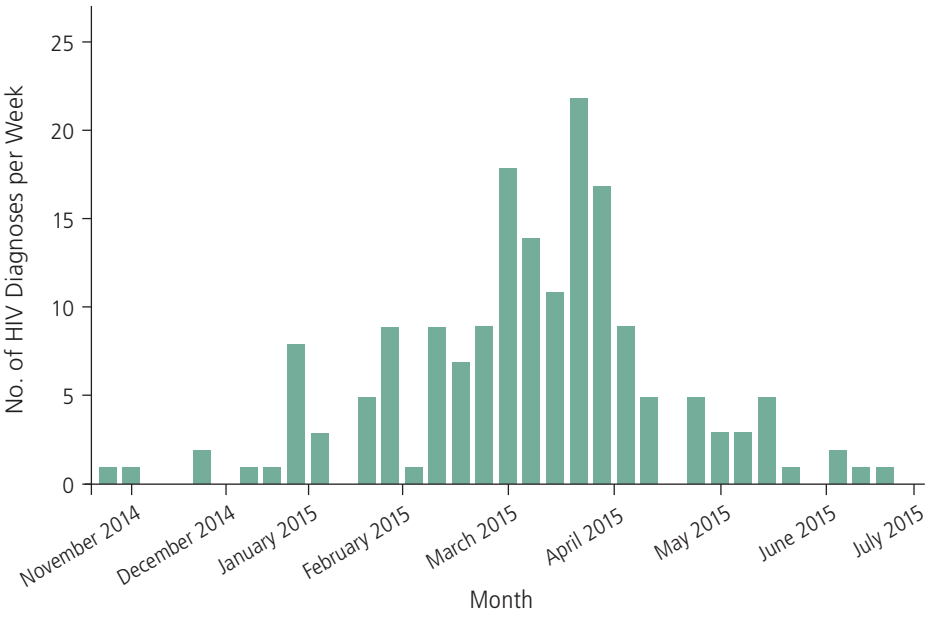

Figure. HIV diagnoses per week from November 2014 through July 2015 in Scott County, Indiana. Additional cases have been diagnosed since then. Adapted with permission from Brooks.[6]

symptoms consistent with acute HIV infection in the past 1 to 2 months prior to being evaluated in the clinic, and the elevated average CD4+ cell count (approximately 650/μL) and plasma HIV RNA level (approximately 272,000 copies/mL) were consistent with early infection.

Containing the Outbreak

Many services were initiated and maintained to contain the HIV outbreak in Indiana, including community-wide surveillance, contact tracing and door-to-door testing, targeting of high-risk populations, and outreach programs for transient populations. The county jail system implemented universal HIV screening at the start of the epidemic, which was instrumental in engaging otherwise difficult-to-reach individuals. Truck drivers working with the local canning industry who might be exposed through needle sharing or contact with sex workers were tested in an attempt to prevent the spread of HIV infection beyond county borders. Addiction treatment and harm-reduction services, including a syringe-exchange program and a program to administer preexposure prophylaxis (PrEP) were set up. No on-site, permanent addiction treatment services existed in Austin prior to the outbreak. Further, an HIV treatment program was implemented.

Setting up these services was a multipronged effort coordinated by the Indiana State Department of Health, involving other state partners, federal partners (eg, the CDC, the Substance Abuse and Mental Health Services Administration, and the Health Resources and Services Administration), academic partners (eg, the Indiana University Schools of Medicine and Public Health), and local partners (eg, faith-based organizations).

The effort allowed for construction of what became known as the "One-Stop Shop," located in a warehouse building in which the Community Outreach Center was established. The services offered at this site included HIV and HCV testing, vital records, drivers' license and state ID services, insurance enrollment, immunizations, rehabilitation and mental health services, care coordination, the Department of Workforce Development, and a syringe-exchange program. Individuals were offered free transportation to the site, which was open 7 days per week with extended evening hours. Participants in the syringe-exchange program were issued unique ID cards and could complete exchanges weekly, during which they received sterile syringes, a wound kit, and referrals to health and substance use services. More than 28,000 needles were dispensed.[4] The syringe-exchange program also featured a mobile unit, comprising 2 nurses tasked to drive through neighborhoods and offer clean syringes. In a study among the first 100 participants in the syringe-exchange program, the proportion who shared syringes decreased from 34% to 5% over 3 months, with the median frequency of reuse declining from 4 times to 1 time; the proportion who shared syringes to divide drugs dropped from 38% to 10%; and the proportion who shared other injection equipment dropped from 44% to 11%.[5] A key to the success of the syringe-exchange program was the involvement of the community and of local law enforcement early in the process.

Rehabilitation services offered included behavioral and drug rehabilitation and mental health services, including inpatient and outpatient services. Outpatient services are now available at a permanent site in Austin in a location that adjoins areas with the highest incidence of drug use. Additional services implemented during the emergency order included medication-assisted therapy (eg, increased access to naloxone and training programs for buprenorphine and naltrexone prescribing).

During HIV testing, HIV-seronegative persons were informed about the needle-exchange program, referred for behavioral health services, and encouraged to undergo repeat HIV testing based on ongoing exposure risks. Individuals found to be HIV infected began care coordination in the field and were referred for antiretroviral therapy.

The Clinic

Before the HIV outbreak in Austin, the nearest provider offering HIV care, a Ryan White HIV/AIDS Program–funded clinic, was 20 miles away. As the scope of the outbreak became apparent, the Indiana State Department of Health requested assistance

from the Indiana University School of Medicine. Within 6 days, the Indiana University School of Medicine had set up a free clinic staffed with 2 infectious disease specialists in a borrowed space to provide HIV testing, treatment, education, and PrEP.

Collaboration with local health care practitioners provided invaluable community-specific knowledge that facilitated locating difficult-to-find individuals, follow-up, and identifying individuals' distinct needs. Local practitioners adopted unique roles in care, as not all wished to be involved in direct HIV treatment, instead opting to focus on testing, counseling, or behavioral or mental health rehabilitation programs. Through such collaboration, an effective paradigm for local treatment and care was established.

In the HIV clinic, in the absence of an electronic medical record system, paper intake forms were developed to obtain comprehensive medical histories. HIV treatment was prioritized and other aspects of care, such as pneumococcal vaccination and treatment of other medical issues, were staggered; the primary goals were to initiate antiretroviral treatment for as many HIV-infected individuals as possible as quickly as possible in order to reduce risk of continued HIV transmission. Educational materials were designed specifically for each visit, with emphasis on consistent messaging regarding treatment for all patients. Efforts to educate local pharmacists were also undertaken to ensure that they were knowledgeable with regard to antiretroviral treatment and associated adverse effects that might threaten adherence.

At the clinic, individuals underwent insurance enrollment, basic laboratory testing, and physician assessment and counseling. Individuals with wild-type HIV genotypes and normal serum creatinine levels were prescribed 1 of 2 regimens: abacavir/lamivudine/dolutegravir (slash indicates a coformulation) for those who tested negative for the HLA-B*5701 allele or tenofovir/emtricitabine plus dolutegravir for those who tested positive for the HLA-B*5701 allele or were coinfected with hepatitis B virus. These regimens were selected for use on the basis of their tolerability and efficacy and to reduce the chances of drug-drug interactions with oxymorphone, medication-assisted treatment, and anti-HCV therapies. Individuals were asked to return to the clinic in 2 weeks to assess adherence and adverse effects and to address any barriers to treatment or ongoing care.

Prominent themes that emerged during the effort to curtail the HIV outbreak and link infected individuals to care included the need for a wide range of knowledge (including local knowledge about the residents and community) and the need to address stigma, ensure privacy, and emphasize long-term care. Every effort was made to provide a welcoming, nonjudgmental, and respectful environment for individuals to access HIV care, and this was instrumental in the success of the clinic and related programs. Word of mouth was important in bringing HIV-infected individuals into the clinic. Coordination with the jail system to provide treatment, evaluation, and follow-up was also an important component of the community interventions; at any given time, an estimated 10% to 20% of the HIV-infected population in Austin is in short-term incarceration.

Continuity of care remains challenging. At the end of 2015, among 176 individuals who were eligible for HIV treatment, 86% had been engaged in care, 74% had undergone care coordination, 59% had been prescribed antiretroviral therapy, and 32% had achieved virologic suppression. As of April 2016, including incarcerated individuals receiving directly observed therapy, 52% of HIV-infected individuals had achieved virologic suppression. To date, cases of transmission are still being observed, indicating the need for amplification of harm-reduction measures. These efforts include an emphasis on increasing the availability of PrEP and improving uptake of PrEP in the community, which has been suboptimal thus far.

Lessons Learned

Community and practitioner awareness of the realities of injection drug use and HIV infection within the community is essential. Efforts of community programs and health care practitioners are crucial to engagement and retention in multidisciplinary HIV care. Treatment as prevention is fundamental to reducing HIV transmission. Program sustainability at the local level is vital and requires commitment and planning.

The battle against the HIV outbreak in Indiana is ongoing. Not all HIV-infected individuals have been engaged in or retained in care; therefore, not all HIV-infected individuals have achieved virologic suppression. Ongoing efforts include coordination with the local jail system and inpatient and outpatient rehabilitation services. It remains a constant challenge to obtain resources for the local efforts and services necessary for a sustainable HIV care infrastructure.

Presented by Dr Janowicz in April 2016. First draft prepared from transcripts by Matthew Stenger. Reviewed and edited by Dr Janowicz in July 2016.

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Perspective

Understanding Cost and Value in Hepatitis C Therapy

Access to newer therapies for the treatment of hepatitis C virus (HCV) infection is limited by the costs of these treatments. Newer HCV regimens have been shown to be cost-effective in early stages and late stages of the disease, but payers in the United States may refuse to reimburse for treatment of early disease because of budget constraints. Approaches that can maximize patients' access to appropriate therapy include having dedicated staff to handle prior authorizations and appeals, keeping records of successful approaches to prior authorizations and appeals and sharing these approaches with colleagues, and communicating with patients so that they will not be lost to appropriate health care. This article summarizes a presentation by Benjamin P. Linas, MD, MPH, at the IAS–USA continuing education program, Management of Hepatitis C Virus in the New Era: Small Molecules Bring Big Changes*, held in Atlanta, Georgia, in September 2015.*

Keywords: HIV, HCV, hepatitis C, HCV therapy, payers, insurance, cost-effectiveness, early HCV disease

Practitioners are becoming experienced with the high cost of newer treatments for hepatitis C virus (HCV) infection and with payers limiting access to therapy. However, practitioners can be advocates for patients in their care in this environment.

The illustrative case below is likely familiar to many who treat individuals with HCV disease. A 45-year-old man is infected with HCV genotype 1a. He does not have cirrhosis and has not been treated for his HCV infection before. He has a history of injection drug use but does not report any recent drug use. He has an HCV RNA level of 4.5 million IU/mL, a platelet count of 250 x 10^3/μL, and a serum albumin level of 3.8 g/dL. His alanine aminotransferase and aspartate aminotransferase levels are each approximately 90 U/L. He has an international normalized ratio of 1.1 and a transient elastography score of 2.1 kPa. His physician recommends an oral, interferon alfa–free therapy, with no preference among the appropriate treatment options, and requests prior authorization.

The payer denies authorization of treatment on the basis of early stage disease, and an appeal is unsuccessful. This individual and his physician may assume they have no alternative but to wait and perhaps follow-up with annual transient elastography evaluation. The physician might argue that the treatment is medically appropriate for this individual, that the American Association for the Study of Liver Diseases (AASLD)/Infectious Diseases Society of America (IDSA) HCV Guidance recommends treatment, or that treatment for HCV during the early stages of the disease is less costly than treatment at later stages.[1] However, arguing with payers about the rationale for therapy may not affect their decision. Payers are familiar with these arguments, and their approach to authorization of treatment incorporates sophisticated thought and strategy regarding costs and markets.

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Insurance Payers

The landscape of payers includes pharmaceutical manufacturers who develop and market drugs, pharmacy benefit managers who are often intermediaries between pharmaceutical manufacturers and insurance companies, private insurance companies, and government health programs (eg, Medicaid, Medicare).

Pharmaceutical companies in the United States determine the list price of their products based on proprietary information. Negotiations about price come thereafter. Pharmacy benefit managers are large, stand-alone companies that recruit payers (health insurers) and gather large groups of patients. With these groups as leverage, pharmacy benefit managers negotiate with pharmaceutical manufacturers for price discounts on treatments in exchange for exclusivity. Thus, pharmacy benefit managers may be negotiating on behalf of insurance companies and government health programs. Not all Medicaid programs use pharmacy benefit managers. Medicare is prohibited by law from negotiating drug prices. Private insurers may but are not required to work with pharmacy benefit managers.

Thus, there is great heterogeneity in how payers decide on the final cost of medicines. In the United States, there is no single person or entity that determines the price of treatment, and there is generally no single price. Pricing is the end product of negotiations and is dependent on who does the negotiating, how much leverage the negotiator has, and the personalities in the room at the time of negotiation. For example, among pharmacy benefit managers who represent numerous payers, one representative may express excitement over the negotiated price for a medication while their counterpart negotiates for 20% lower cost; both may be happy to receive a "good" price, although they are paying vastly different costs.

Negotiated price discounts are typically characterized by nondisclosure agreements. In exchange for exclusively offering their product, pharmaceutical manufactures agree to sell the medications to representatives at a discounted price. However, representatives cannot reveal the initial price of the medication to others. This strategy, which eliminates transparency, allows manufacturers to extract the best possible price out of each pool. From a purely business perspective, nondisclosure agreements are rational and can maximize profit.

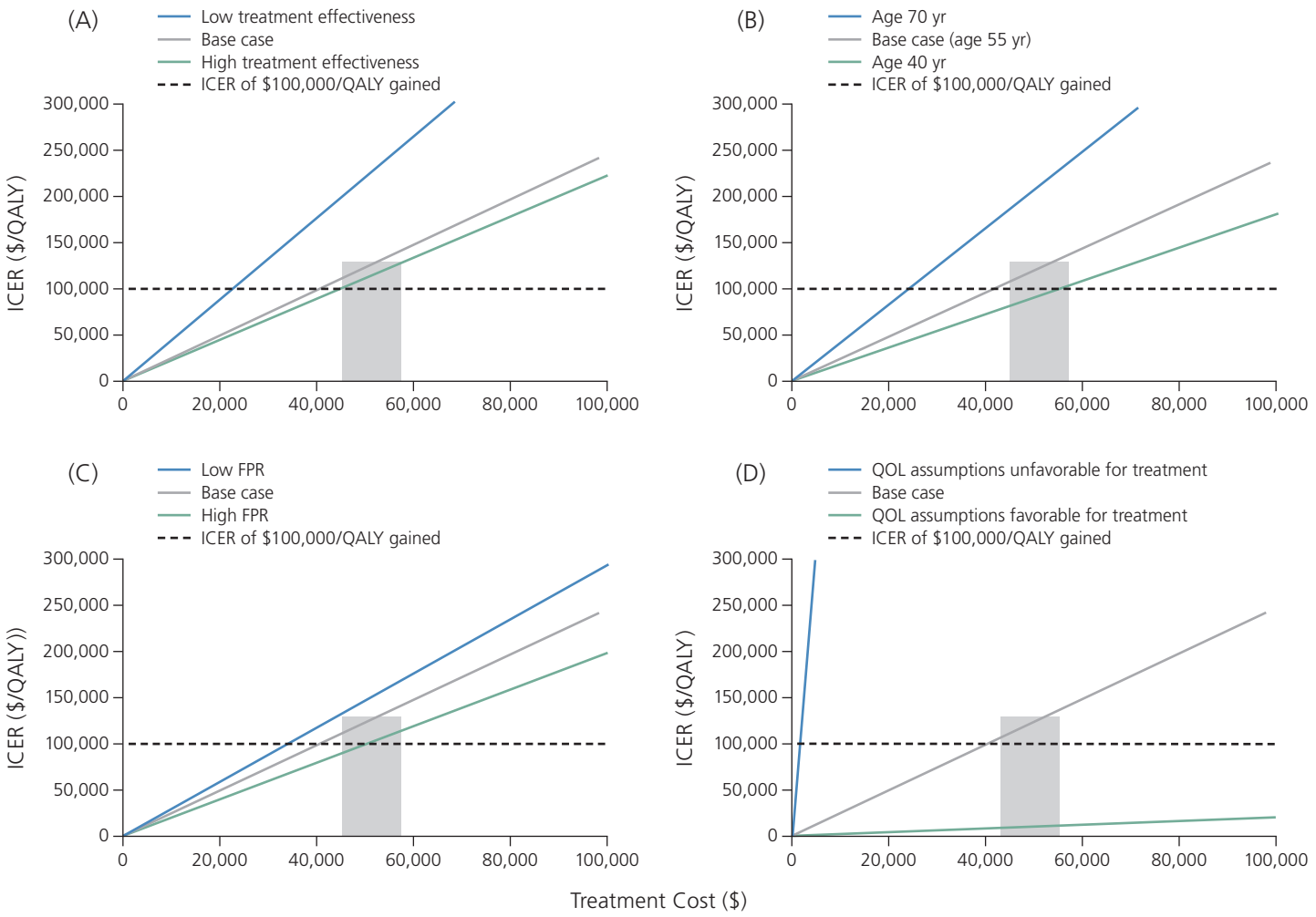

Figure 1. Incremental cost-effectiveness ratios (ICERs) for hepatitis C therapy in early stage disease according to treatment effectiveness (A), age (B), fibrosis progression rate (FPR) (C), and quality of life (QOL) (D). The y axis in each graph is the ICER for treating an individual with early stage disease compared with waiting for later-stage disease. The dashed black line indicates an ICER of $100,000 per quality-adjusted life-year (QALY) gained, posited as a reasonable cost-effectiveness threshold. The grey boxes represent a range of prices that most payers are paying for a new hepatitis C regimen. The solid grey lines in each graph represent a base-case assumption about the 4 parameters shown. The base case generally intersects $100,000 per QALY gained within or near the grey box, indicating that treatment is cost-effective at current prices in base cases of early disease. However, the assumptions regarding QOL include a nearly vertical line, representing almost no effect of early disease. Adapted from Leidner et al.[6]

Are Newer HCV Therapies a Good Use of Resources?

A cost-effectiveness analysis quantifies the value of treatment, seeks to maximize the impact of treatment, and aims to improve public health. The goal in determining cost-effectiveness is not to save money. Cost-effectiveness analysis first asks how much money is available to set a budget. The goal is to spend all of the budget, but also to spend it well in order to benefit most from the available resources. Cost-effectiveness analysis is aimed at maximizing population-level benefits of medical therapies in that, although it does not seek to minimize cost, it requires an explicit decision about willingness to pay.

Cost-effectiveness analysis uses 2 outcomes: cost (eg, in US dollars) and effectiveness. Effectiveness is often denominated in terms of quality-adjusted life-years (QALYs) gained, although it can also be quantified as simple life-expectancy gains. QALYs are an attempt to integrate some measure of quality of life and duration of life, recognizing that both are important. Measures of cost and effectiveness are used to derive the incremental cost-effectiveness ratio (ICER), a measure of additional resources used to pay for newer versus older treatments divided by the additional benefit (eg, in QALY gained) expected with newer versus older treatments. An ICER might be, for example, $42,000 per QALY gained, meaning that the cost of an additional QALY is $42,000. Society must determine what it is willing to pay to extend QALYs.

The concept of willingness to pay may be controversial in cost-effectiveness analysis, because willingness to pay requires an explicit valuation of a QALY, which may imply that life is not infinitely valuable. In truth, however, resources are always limited and society routinely makes decisions

about the value of saving a life. Whenever a safety policy or intervention, such as expanded emergency response systems or improved roads, is deferred for cost reasons, the implication is that society cannot afford to pay to potentially save the life of the next person who would benefit from those services. Cost-effectiveness analysis highlights this kind of decision making about willingness to pay.

Cost-effectiveness analysis typically identifies society's willingness to pay to save a QALY by assessing ICERs for health care interventions that are routinely performed in the health care system. For example, if the ICER for a routinely used radiologic procedure is $75,000 per QALY gained, then society is willing to pay at least $75,000 per QALY gained, as evidenced by the fact that the procedure is routinely used. Reported estimates of ICERs in the United States, inflated to the 2015 currency year, include $31,500 per QALY gained for antiretroviral therapy for HIV infection,[2] $47,700 per QALY gained for statin treatment in primary prevention of cardiovascular events,[3] $81,900 per QALY gained for implantable defibrillators,[4] and $187,000 per QALY gained for dialysis in seriously ill adults.[5] Some may conclude that approximately $50,000 per QALY gained is the maximum amount that those in the United States are willing to pay. Others believe that the acceptable ICER threshold is approximately $100,000 per QALY gained. However, an argument can be made that the ICER threshold in the United States is or should be higher, incorporating ICERs such as those noted for dialysis.

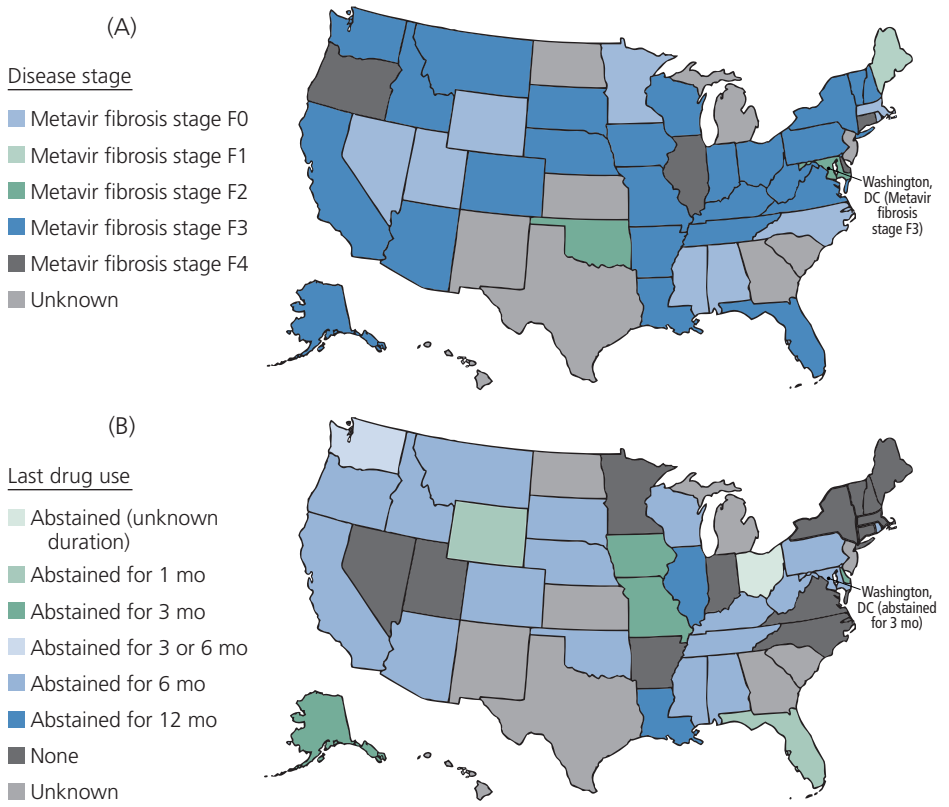

Figure 2. Medicaid restrictions on reimbursement for treatment with sofosbuvir, by disease stage (A) and time since last recreational drug use (B). These maps reflect policy current in late 2015. Ongoing litigation is changing Medicaid policy on a state-by-state basis. Adapted from Barua et al.[7]

[a]Recent negotiation or litigation has resulted in Washington, Massachusetts, and Connecticut dropping all treatment restrictions.

Numerous studies of the cost-effectiveness of the newer treatments for HCV infection have been published. ICERs for interferon alfa–free regimens have an estimated range of $9700 to $79,000 per QALY gained for individuals with HCV genotype 1 disease, with cirrhosis and without cirrhosis; $34,000 to $238,000 per QALY gained and $27,000 to $281,000 per QALY gained for individuals with HCV genotype 2 disease, with cirrhosis and without cirrhosis, respectively; and $51,000 to more than $383,000 per QALY gained and $51,000 to more than $500,000 per QALY gained for individuals with HCV genotype 3 disease, with cirrhosis and without cirrhosis, respectively. The wide range in ICERs partly reflects that the approach to determining drug cost varies between analyses. Some use the list price as their base-case analysis, and others use some negotiated discount price. All of these cost-effective analyses, however, include sensitivity analyses on drug cost.

Thus, ICERs for treating HCV genotype 1 disease and the lower range of estimates for treating HCV genotypes 2 and 3 disease are within the $100,000 per QALY gained threshold that may be considered cost-effective. It should be noted that the reported estimates for HCV genotype 2 disease reflect drug prices that have been markedly reduced in the recent past (eg, from $84,000 per year to $50,000-$60,000 per year).

Figure 1 shows a cost-effectiveness study sensitivity analysis of the relationship between ICERs for treatment in early HCV disease and assumptions in the parameters of treatment effectiveness, patient age, fibrosis progression rate, and quality of life.[6] The ICER of HCV treatment for patients with early stage HCV disease is dependent on quality-of-life assumptions. If early stage HCV disease has very little or no impact on quality of life, then the ICER of therapy for patients with early stage disease far exceeds $100,000 per QALY. More so than other factors, quality of life leads payers to conclude that early stage treatment is not cost-effective. For late-stage disease, quality of life is more clearly affected by treatment, and ICERs are lower.

Overall, interferon alfa–free regimens increase cost, but they also increase quality-adjusted life expectancy. Thus, interferon alfa–free treatments are cost-effective in early and late-stage HCV disease.

Barriers to Coverage of Cost-Effective Treatment

Cost limits access to HCV treatments, despite the cost-effectiveness of these medications. Figure 2 shows Medicaid restrictions on reimbursement of treatment with sofosbuvir in the United States, according to fibrosis stage and duration of abstinence from recreational drug use.[7] Recently, several states announced that they would lift all restrictions for HCV treatment. It is possible that the trend will continue and that limited access to treatment will become a historical artifact, but at this time the large majority of states limits access to HCV treatment. Many Medicaid programs limit treatment to individuals with Metavir stage F3 fibrosis or worse. In many states, a period of abstinence from recreational drug use of up to 1 year is required and must be confirmed through documented urine test results before HCV treatment can be initiated. This restriction may be applied to marijuana and alcohol use in addition to injection drug use by some. Restrictions on type of practitioner are also being used to limit access to HCV treatment. In some states, only subspecialists (eg, hepatology or infectious diseases specialists) are permitted to treat HCV infection, although many treatment-naive individuals without cirrhosis could be treated by physicians other than subspecialists. Many individuals may also be limited to one-time access to treatment, with no retreatment permitted in the case of later reinfection.

The primary reason that cost limits access to treatment is that cost-effectiveness does not equal cost-savings or affordability. Cost-effectiveness indicates that the best possible out come has been achieved using the available resources. Affordability is concerned with budget impact—quantification of the cost to a specific budget over the short term—and is unconcerned with epidemiologic or clinical outcomes. Assessment of budget impact includes no explicit consideration of outcomes other than impact on cost of treatment.

There are core differences between cost-effectiveness and budget impact and affordability. Budget impact and affordability are what policymakers use to set budgets and access (eg, the cost of treating all HCV-infected individuals under their plan). Budget impact analysis is done from the payer's perspective, has a short time horizon, and incorporates poor outcomes only with regard to their impact on cost within that short time horizon. In contrast, cost-effectiveness analysis takes a societal perspective, uses a lifetime horizon in estimates, and directly incorporates poor outcomes into calculation of the ICER. It can take into account all costs important to society (eg, for medicines, hospitalization, productivity, and patient expenses), and estimates can include costs that would be avoided by curing HCV infection (eg, an expensive liver transplant that an HCV-infected individual might need in 20 years).

What is the budget impact of treating HCV infection with newer regimens? Taking a simple approach, a 5-year budget impact analysis on the cost of treating all patients with HCV genotype 1 infection used feasible assumptions for how quickly people would seek care and arrived at a figure of approximately $120 billion.[8] Assumptions included list (nondiscounted) prices of the newer regimens, and it is likely that prices being paid now are discounted due to a more competitive market place. Thus, a more realistic estimate may be substantially lower. However, discounted prices vary and, along with the budget impact, are not well known. Cost of care is subject to location, insurance carrier, and coverage plan. However, the disparities in access to treatment owing to cost and budget impact are clear.

One example of this comes from the Massachusetts Department of Corrections (DOC). Most DOC facilities do not routinely screen for HCV infection, although it is widely known that there is a high prevalence of infection within the corrections system. In the Massachusetts DOC, there are approximately 1500 confirmed cases of HCV infection in the system, but in actuality there are likely 3000 cases. Not all of the 1500 individuals with confirmed HCV infection will be able to initiate treatment with new regimens immediately; thus, a conservative approach would be that 10% of these individuals will be treated each year, with the price of treatment likely discounted to approximately $50,000 per treatment course. Thus, in the first year, treatment costs would total $7.5 million (150 individuals at $50,000 per individual). Although the cost may not seem high in the context of government spending, the entire yearly pharmacy budget for the system is $11 million. Thus, even with the assumptions that only half of HCV-infected individuals will be treated, that only 10% will be treated each year, and that cost of treatment is highly discounted, the system would still be spending two-thirds of its entire annual budget on HCV treatment.

Navigating the Current Coverage Landscape

Insurance companies consider budget impact. Thus, cost-effectiveness and prevention of cirrhosis are insufficient motivation for insurance companies to cover treatment.

To best link individuals to treatment, a dedicated person should be assigned to process and manage prior authorizations (eg, a nurse, physician assistant, pharmacist, or case manager). The prior authorization process is designed to limit access to treatment and can be exhausting; thus, someone within the clinic should be dedicated to handling this process. Working with a specialty pharmacy can be helpful. Tracking data (ie, monitoring successes and failures) is important. If a good success rate is not achieved, then the process for obtaining prior authorizations should be reassessed. Also, if a particular insurer is routinely rejecting coverage, presenting them with data showing that they reject coverage more frequently than other insurers may motivate them to reconsider their decision.

Practitioners should share successful approaches to appeals with their colleagues. Appeals may be based on factors such as extrahepatic manifestations, HIV/HCV coinfection, potential pregnancy, and AASLD/IDSA HCV Guidance.[1] Practitioners must decide how much effort they will put into an appeal if success seems unlikely. In some cases, such as those in which an individual has Metavir stage F0 fibrosis and the payer is

known to deny all such cases without consideration of compelling mitigating factors, it may be prudent for practitioners to allocate time to other cases for which appeals may have a better chance of success.

Communicating with individuals about coverage and denial or deferral of coverage is crucial, and the difference between a denial and a deferral should be made clear. It should also be made clear that if treatment cannot be initiated it is because of lack of coverage, not because the physician has decided against treatment. Patients should be made aware that the practitioner's goal is to provide appropriate treatment and that such treatment will be provided as soon as possible. For all individuals, and particularly those who will not be able to initiate treatment immediately, a focus on liver health is important. One goal of HCV treatment is to keep an individual's liver healthy, to prevent cirrhosis and liver cancer. Individuals who are denied treatment because their disease is in the early stages should be reminded that disease is in its early stages and assured that they will be closely monitored.

Currently, there are no guidelines on management options for those who are waiting for disease progression that meets payer criteria for coverage. Practitioners may follow up with patients every 6 months to ensure they do not become lost to follow-up. Some practitioners perform frequent staging with various staging modalities to increase the likelihood of obtaining results that will convince payers to approve treatment coverage.

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Perspective

The Affordable Care Act in the United States and HIV Disease: Past, Present, and Future

From its beginning, the AIDS epidemic crystallized some of the major flaws of the American health care system. Most private health insurance was associated with employment, and job loss meant insurance loss. Private insurers refused new coverage for people with HIV infection. Medicaid, an important program for uninsured people with low income, was limited to only those in certain categories (eg, pregnant women or children), and although people who had progressed to AIDS were categorized as eligible (ie, "disabled"), those with early stage HIV disease were not. The Patient Protection and Affordable Care Act is a landmark change in health care law in general and for people with HIV infection in particular. Its provisions offer dramatic improvements in health coverage, although a Supreme Court ruling that limited the expansion of Medicaid poses ongoing problems in some states. This article summarizes a presentation by Timothy M. Westmoreland, JD, at the IAS–USA continuing education program Improving the Management of HIV Disease, *held in Washington, DC, in May 2015.*

Keywords: HIV, Affordable Care Act, ACA, Medicaid, insurance

Health Care Prior to the Affordable Care Act

Since the late 1970s, several attempts have been made to reform health care in the United States, including those by the Carter, Clinton, and Obama administrations. These proposed reforms were crucial to persons with HIV infection. In the 1980s, the US Food and Drug Administration began to approve drugs for the treatment of HIV and associated opportunistic infections, drugs that would potentially prevent death and disability. However, these drugs were expensive. Because most private insurance in the United States is provided through employment, when some people with AIDS became too sick to work or others lost their jobs owing to discrimination based on their HIV serostatus, they also lost their insurance. Moreover, many individuals held jobs that did not offer insurance or were unemployed. Consequently, people with HIV/AIDS were often uninsured, and many with low income did not have access to needed treatments. Although some of these individuals qualified for Medicaid, a public program that provides insurance for persons with low income, many did not.

Many Americans think that Medicaid is simply a program for persons with low income. However, it is not available to all of these individuals. It is a program for persons with low income who are also in some specific category (eg, women who are pregnant, persons aged >65 years or <18 years, or those who are disabled and unable to work). Many people with HIV infection did not meet the standard for full disability because they had not yet progressed to AIDS. As research improved treatment, this created a particularly ironic conundrum: drugs were available to prevent disability caused by HIV infection but the only people who could generally qualify for Medicaid coverage were those who were already categorized as disabled by the disease. Since the late 1980s, Congress attempted to amend the Medicaid program to broaden access to treatment for HIV-infected persons with low income, but political support was not wide enough to find the budget resources that would be needed to do so.

The Ryan White Comprehensive AIDS Resources Emergency (CARE) Act was created as an alternative to expanding insurance for everyone with HIV infection. The Ryan White CARE Act has helped many people, but as a grant program instead of a true insurance program it has limited funding and consequently offers limited care in some places. It cannot reach all HIV-infected persons in low-income settings; it is simply not that well funded.

For persons with HIV infection, the Obama administration's health care reform program represents a comprehensive attempt at health care reform, because one of the principal goals of the Patient Protection and Affordable Care Act (referred to as the Affordable Care Act; ACA) was to expand health care coverage for persons with low income who did not fit into existing Medicaid categories for coverage eligibility.[1]

Passing the Affordable Care Act

The ACA has been continually in danger of political collapse or dismantlement. During the consideration of the legislation, southern Democrats advocated for the cost of the proposal to be lower but for payments to rural hospitals in their home states to be higher. Some members of Congress supported including prohibition of abortion in the statute, and others supported including guaranteed access to abortion services. Some wanted to abolish the existing employer-based insurance system and create single-payer coverage for all, and others wanted to provide vouchers for individuals to buy whatever insurance was available in the market.

In addition, the support of each of the 60 Senate Democrats was needed to avoid a filibuster under Senate rules, effectively giving each senator veto power. This created

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Box. Status of the US Health Care System Before the Affordable Care Act

- Not having health insurance has a substantial impact on a person's life. It is the single largest cause of personal bankruptcy in the United States. Because uninsured persons frequently postpone getting preventive services, they are diagnosed for serious conditions, including AIDS, much later than those who have health insurance.
- By 2009, only 5% of Americans had individual insurance (ie, coverage that was not provided to a group), because the quality of coverage had been in decline for the past 20 years; most insurance plans would cover little beyond emergency situations and would not cover preexisting conditions.
- In addition to the employer-based system, small group markets, and the individual insurance market, there were a variety of public programs for persons who were excluded from the health care system. These public programs covered approximately one-third of the population and cost approximately $800 billion per year, or 20% of the federal budget. Medicare was available for the elderly and disabled and Medicaid was accessible to individuals with low income who were also in one of the specified categories. These Medicaid programs received 50% to 80% of their support from the federal government, with minimum federal standards and maximum state flexibility. However, these programs did not cover HIV-infected persons with low income unless they fit into one of the traditional categories, which many did not.
- Additional health care programs included the Child Health Insurance Program, TRICARE (formerly the Civilian Health and Medical Program of the Uniformed Services) for the individuals in the military and their families, insurance provided by the US Department of Veterans Affairs for veterans and their families, and the Federal Employees Health Benefits Program for federal civil servants and their families.
- In 2009, approximately 50 million persons in the United States (15%) were uninsured. Many uninsured were persons who had low-wage jobs that did not provide employer-based health insurance. The number of uninsured increased as employers discontinued private health insurance.
- The Affordable Care Act was created to supplement and amend the health care system. Some provisions went into effect in 2012 and 2013; most were not available until 2014.

a bidding war for what each senator needed before giving his or her approval. Yet, by December 24, 2009, there was a bill, and every Senate Democrat voted for it. It was a different version than had passed the House of Representatives, but it was expected to be the first step of a House-Senate compromise that could be enacted and sent to the President for signature.

In 2010, Congress began working on this House-Senate compromise legislation. However, Senator Kennedy died in August 2009. His Democratic replacement would only serve temporarily, until a special election was held. In January 2010, Senator Kennedy's empty seat was filled by a Republican, and a filibuster seemed inevitable. It was assumed that a House-Senate compromise could never pass the Senate and that the ACA would not be passed. Another attempt at national health reform seemed to have failed. However, the bill was reinvented as a budget bill, the only type of bill that Senate rules exempt from a filibuster. As such, the bill had to be fully paid for by offsetting revenues and reductions in other spending. The bill raised taxes on some employer-based health insurance plans, some medical devices, and even some tanning parlors to pay for the program. The bill was created within the estimates of the Congressional Budget Office, which works in such detail that it estimated how much each section and paragraph of legislation would cost or save. The constraints were tight, and some of the policies in the final law are driven by these budget concerns.

The Structure of the ACA as Enacted

The ACA is a patchwork, covering holes and gaps in the existing private and public insurance systems without ending any of the underlying systems. Aspects of the health care system that have remained the same or changed as a result of the ACA are outlined below (the status of these programs before the ACA is outlined in the Box).

- Large, employment-based group health insurance remains essentially unchanged. Large employers routinely provide health insurance as a benefit, and more than half of people living in the United States are projected to be insured through their employers.
- Medicare, the insurance program for individuals older than 65 years, is largely unchanged. Reimbursement levels for hospitals will be somewhat lower in the future, but hospitals agreed to this in order to allow enactment of other coverage expansions that would minimize debt from uncompensated care. There is also some improvement in Medicare coverage: for the first time, there is substantial coverage of preventative health services and better reimbursement for prescription drugs.
- Insurance provided by the US Department of Veterans Affairs, TRICARE (formerly the Civilian Health and Medical Program of the Uniformed Services), and the Federal Employees Health Benefits Program remains largely unchanged.
- For Medicaid, the ACA made all persons with low incomes eligible, not just persons with low income who fit in a specific category. The ACA expanded Medicaid by creating a new category for persons whose income is below 138% of the poverty level but who are not members of another category. If a state expands its Medicaid program, the federal government will pay 100% of Medicaid costs for states in the first few years of the ACA, which

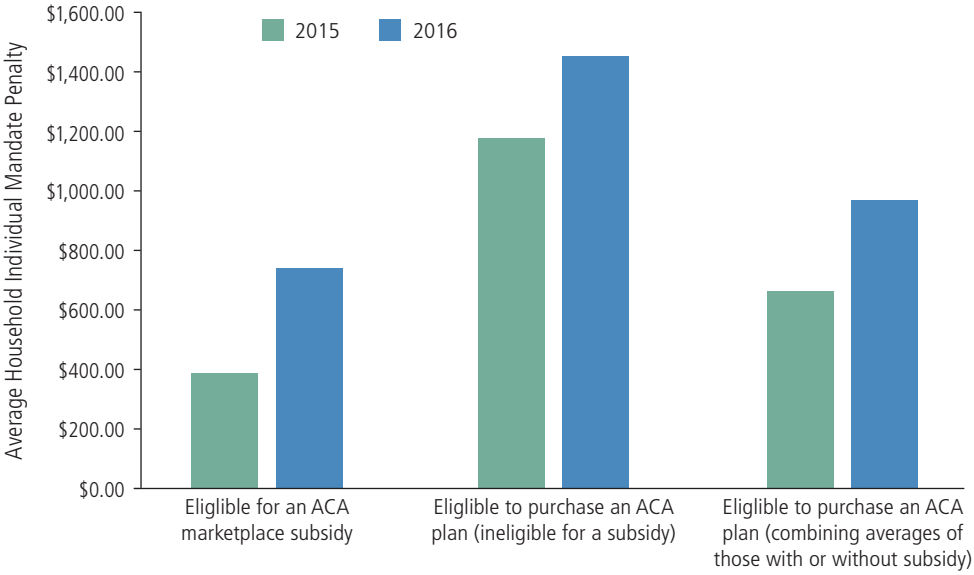

Figure 1. The average household individual mandate penalty among uninsured individuals eligible for Affordable Care Act (ACA) insurance plans, 2015 to 2016. Adapted from Jeter et al.[2]

will reduce to 90% matching by 2020 and in perpetuity. As will be discussed, the Supreme Court has complicated this change a great deal, but in more than half of states, the ACA has expanded Medicaid.

Exchanges were created for persons who did not have large group health insurance and who were not enrolled in Medicare, Medicaid, or other public programs. These are state-based marketplaces with a fallback system that the federal government oversees if states choose not to create a health care exchange. Subject to limitations of citizenship, individuals without health insurance from other sources can purchase health insurance in these exchanges. Health care exchanges are used for small business or individual coverage and operate like employer-based insurance, in that the risks of catastrophic expenses are pooled among all participants.

Private commercial insurers voluntarily offer to sell private policies through these insurance exchanges. Such policies provide essentially the same benefit structure as employer-based plans, offering preventive services, prescription drugs, women's health services (including contraception), maternity care (which was often omitted from private health insurance), and mental health services. The main variations in the exchange plans involve the level of premiums and cost sharing. The lower the monthly premium, the higher the cost sharing that comes with services.

The ACA includes a mandate that requires employers to provide health insurance or to contribute money to health insurance exchanges. The ACA also includes a mandate requiring all individuals to have insurance or pay a penalty. This mandate is an effort by the US government to make the insured group large enough to support the cross-subsidies that are intrinsic to all insurance pooling systems (ie, that everyone pays a set amount in advance so that they have insurance if they later need expensive care). The individual mandate acts to avoid having people wait until they are seriously ill and in need of expensive care before they buy health insurance. The penalty for not purchasing health insurance is currently small, but it will grow over time until it is a substantial enough penalty to persuade most persons to comply with the mandate.[2] In order to make this health coverage affordable, tax subsidies on a sliding scale are provided to persons with incomes from 100% of the poverty level to up to 400% of the poverty level, amounting to an income of approximately $45,000 per year for a single person or approximately $80,000 per year for a family of 3.[2]

In addition, the ACA requires long-overdue fundamental reforms for private insurance, including eliminating waiting periods or exclusions for pre-existing conditions, annual and lifetime limits on health care coverage, retroactive cancellations of policies (called "rescissions"), and price discrimination based on diagnosis (eg, HIV infection). Under the ACA, all individuals, even those with HIV infection, pay essentially the same insurance premiums; variations in cost are still allowed by age and geographic location but not by diagnosis or need. All insurance plans provide preventive and screening benefits (such as HIV testing) without cost sharing, as well as "minimum essential benefits" (eg, physician visits, hospital stays, and prescription drugs, including those used to treat HIV infection).

Recent Challenges to the Affordable Care Act

Actual ACA enrollment faced many workability obstacles in the beginning. For example, Oregon was unable to enroll participants, even after spending a large sum of money on its software system; ultimately, the state turned the running of its exchange over to the federal government. However, in other states, exchanges went smoothly and well. For example, in Kentucky, more than 400,000 individuals were newly insured in private plans or Medicaid in the first year, taking the number of uninsured individuals in the state from 20% to 11%. Currently, 34 states have chosen not to establish their own health care exchanges and have let the federal government do so for them. Despite several obstacles, there are now 7 million insured individuals who were not insured before the ACA.

In 2012, the Supreme Court was asked to rule that the mandate requiring all individuals to purchase health insurance was unconstitutional. Those challenging the mandate argued that the federal government cannot force individuals into commerce for the purpose of regulating commerce. Debate ensued, with serious legal scholars on each side of the issue.

In addition, there was a secondary claim that the required Medicaid expansion was unconstitutional, that it amounted to coercion and violated states' rights under the Tenth Amendment to the US Constitution. This was a surprising argument to most because there had not been a limit placed on what the federal government could require of states as a condition of receiving federal money. Experience with the federal Medicaid program during the Clinton administration demonstrated that, although the government rarely enforced requirements to withdraw federal funding from states, it was able to require that states expand or change their Medicaid programs. It had never been in question that the federal government could expand Medicaid.

The Supreme Court decision came as a surprise to most legal observers. First, Supreme Court justices ruled that the individual mandate was indeed constitutional. As a matter of legal doctrine, some people believe that the Supreme Court ruled it was an unconstitutional exercise of the federal authority to regulate commerce (although this is still debated). However, the Supreme Court clearly ruled that mandating that all individuals purchase health insurance could be enacted as a permissible tax provision, in which individuals may receive a tax penalty if they do not enroll in a health insurance program.

Second, to almost everyone's surprise, the justices ruled that states cannot be required to expand their Medicaid programs. By ruling that Medicaid expansion was allowed but could not be required, the Supreme Court effectively made ACA expansion a state-by-state choice. This decision dramatically affected persons with HIV infection in states that chose not to expand their Medicaid program.

Since the ruling, a majority of states have expanded their Medicaid program, although many have not. States that have not expanded Medicaid are left with what is referred to as a "coverage gap." Many individuals are ineligible for Medicaid but are also ineligible for subsidies to purchase insurance from state exchanges because their income is below the 100% federal poverty level. Without exchange subsidies, insurance plans are unaffordable for most of these individuals. Before the Supreme Court opinion, it was anticipated that these people would be in the expanded Medicaid program, but instead they are left in the gap between Medicaid and exchanges.

An estimated 40% of uninsured, HIV-infected individuals reside in states that chose not to expand Medicaid. Where Medicaid expansion does not occur, those affected most are individuals with low income who do not have children, those of black race, and those who live in the Southern United States. Thus, individuals with HIV infection are directly affected by their state's decision regarding Medicaid expansion.

Even with the 2012 Supreme Court ruling, there are substantially more people enrolled in Medicaid than there were before the ACA. The rate of uninsured individuals in the United States has decreased dramatically. It is estimated that 16 million Americans were insured in 2015 who would be uninsured without the ACA. More than 80% of people in exchanges receive subsidies.[3] In a June 2015 ruling, the Supreme Court rejected yet another challenge to the ACA regarding the legality of these subsidies.

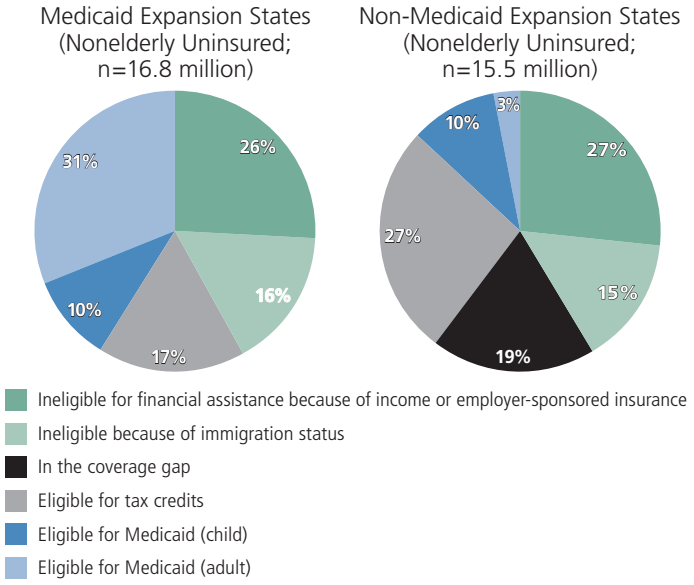

Figure 2. Eligibility status for Affordable Care Act (ACA) coverage among nonelderly uninsured individuals as of 2015, by state Medicaid expansion status. Because of rounding, totals may not equal 100%. Adapted from Garfield et al.[3]

The ACA has faced obstacles but has still been effective. New problems are arising with narrow physician networks, as insurance companies are competing in exchanges. Ideally, these would be addressed by quality assurance measures so that consumers and regulators alike would be able to see who is cutting back on insurance, but such measures are currently inadequate, especially in the context of HIV care. Other obstacles include limited drug formularies, although this is not a new problem and is not solely attributable to the ACA. Issues related to limited drug formularies, drug tiering, and requirements of prior authorization have arisen in private managed care and in Medicare and Medicaid over the last 10 years. Closed formularies are historically used as a tool to control cost of treatments, but they are also a tool for risk avoidance by insurance companies. Most obviously, health insurance companies in some states are beginning to assign HIV drugs to their top tier of cost sharing and restrictions, functionally discouraging individuals with HIV infection from choosing these health plans. This raises the legal question of whether having limited formularies or assigning HIV drugs to the top tier of cost sharing constitutes illegal discrimination.

All of these developments have implications for the current Ryan White HIV/AIDS Program. The Program is still very much needed for people living in states that have chosen not to expand Medicaid and those living anywhere in the United States who are undocumented and, therefore, ineligible for any public programs. Moreover, even for people who qualify for Medicaid, Medicare, or private insurance, the Ryan White HIV/AIDS Program will continue to act as a safety net for benefits that are not provided or are too thinly provided by traditional health care systems.

Conclusion

The Supreme Court opinion notwithstanding, progress will be made regarding Medicaid. Last year marked the 50th anniversary of Medicare and Medicaid, programs that are now accepted as standard to the US health care system. It must be remembered that when these government programs were created, they were litigated all the way to the Supreme Court as well, and that the last state to join the Medicaid program did not do so until 16 years after the program's creation (Arizona, in 1981). It should be noted that Medicare and Medicaid are still being improved. Similarly, the ACA should be monitored with patience and conviction. It is a dramatic improvement, but it can be made better.

Presented by Professor Westmoreland in May 2015. First draft prepared from transcripts by Patricia Edmonds. Reviewed and edited by Professor Westmoreland in May 2016.

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