Integrating Viral Hepatitis Prevention into Public Health Programs Serving People at High Risk for Infection: Good Public Health

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Viral hepatitis caused by infection with hepatitis A virus (HAV), hepatitis B virus (HBV), and hepatitis C virus (HCV) is a major public health problem in the United States. In 2005, there were an estimated 19,000 new cases of hepatitis A, 15,000 new cases of hepatitis B, and 20,000 new HCV infections.[1] In addition, at least 1.25 million people have chronic HBV infection and 3.2 to 4 million people are estimated to have chronic HCV infection, which can cause liver cirrhosis, liver cancer, liver failure, and death.[1–3] By comparison, about 1 million people in the United States have human immunodeficiency virus (HIV) infection.[4]

WHY INTEGRATE?

With overlapping risk factors for transmission of viral hepatitis and HIV infections and limited public health resources, integrating services makes good public health sense.

Overlapping transmission risk factors

The risk factors for sexual and blood-borne transmission of HBV, HCV, and HIV infection overlap substantially. For example, injection drug users (IDUs) consistently account for 15% to 20% of reported acute HBV infections,[5–7] approximately 10% of HIV infections,[8] and approximately 60% of HCV infections.[9] Incidence of HBV infection among susceptible IDUs ranges from 10 to 31 per 100 person-years,[7,10] and incidence of HCV infection among young IDUs ranges from 9 to 34 per 100 person-years.[11,12]

Among heterosexuals, high-risk sex (e.g., multiple partners) has consistently been reported by 30% to 35% of people with acute HBV infection who reported risk factors.[5,6] Although sexual transmission of HCV appears to be inefficient compared with HBV and HIV, between 15% and 20% of prevalent HCV infections are thought to have resulted from sexual transmission.[13] However, among men who have sex with men (MSM)—who accounted for about 24% of acute HBV infections from 2001 to 2005[7] and an estimated 51% of HIV/aquired immunodeficiency syndrome (AIDS) cases from 2001 to 2005[8]—HCV seroprevalence is no greater than among heterosexual men.[9,14]

Many opportunities exist to prevent HIV and viral hepatitis infections in

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public health settings, such as HIV counseling and testing sites, sexually transmitted disease (STD) clinics, substance abuse treatment programs, and jails and prisons. Unfortunately, many of these opportunities are missed. For example, among STD clients, evidence of past HBV infection ranges from 10% to 40%;[7,15] serologic evidence of past or present HCV infection in one STD clinic was 5% for all clients and 50% for IDU clients, most of whom had not received follow-up medical care.[15,16] In addition, although hepatitis B vaccination has been recommended for MSM since the early 1980s,[7] vaccination rates among MSM remain low and infection rates high, despite reported visits to private medical care providers or to public health programs for HIV counseling and testing and STD services.[17] Finally, in a study of adults with reported acute HBV infection from 2001 to 2004, 61% reported a history of incarceration, drug treatment, or STD treatment, but they were not vaccinated in these settings, despite recommendations.[7]

Consider this hypothetical case, where hepatitis services are not integrated into an STD clinic program:

> *Mary, a 27-year-old sex worker, goes to a public STD clinic because she has a purulent vaginal discharge. The clinician asks Mary about risk factors for HIV. Mary discloses that her boyfriend is an IDU and she occasionally injects drugs. She has not been vaccinated against hepatitis A or B. Mary tests positive for gonorrhea and is treated for this infection. She accepts a rapid HIV test, and the result is negative. The clinician refers Mary to the immunization clinic for hepatitis vaccination and recommends that she see her private physician for an HCV antibody (anti-HCV) test. Mary thought about going to the immunization clinic the next day but was too busy. Because Mary did not have a primary care doctor or health insurance and she was concerned about cost, she did not make an appointment for an anti-HCV test.*

Integration is good public health

Integrating viral hepatitis prevention and control activities into existing public health programs serving people at high risk for infection makes good public health sense, especially with decreasing resources for public health programs and services. Integration, beginning with HIV and STD programs, has been advocated by many public health providers, agencies, and national organizations.[18–20] In 1998, the Association of State and Territorial Health Officials advocated integrating overlapping and/or duplicated services "into a seamless system . . . to improve service delivery to populations who are experiencing related diseases such as HIV/AIDS, sexually transmitted diseases, and tuberculosis."[21] In part because of concerns about increasing STD/HIV co-infection among MSM, in 2002, the national organizations of AIDS and STD directors stated that the "lack of integration between STD and HIV prevention services is one of the barriers to more effective programs."[20] Others extended this approach to integrating viral hepatitis services (primarily hepatitis C testing) and HIV counseling and testing to improve services for clients with multiple risk factors seen in drug treatment and addiction service programs.[22,23]

With the benefit of an integrated approach, reconsider our hypothetical case, Mary, the 27-year-old sex worker, described earlier:

> *After receiving the prescribed treatment for gonorrhea, Mary receives the first doses of hepatitis A vaccine and hepatitis B vaccine and has blood drawn for an anti-HCV test. Mary returns a month later for her anti-HCV test result, at which time the counselor tells her that she is anti-HCV positive, explains the test result, and provides counseling about alcohol risk, substance abuse treatment, and the use of sterile syringes and safer injection techniques, in case Mary is not ready to stop injecting or enter a treatment program. She receives a second dose of hepatitis B vaccine. However, plans for medical/health-care evaluation and follow-up of Mary's positive anti-HCV test could not be made because no doctor or clinic is accepting uninsured patients.*

CDC SUPPORT FOR INTEGRATING VIRAL HEPATITIS SERVICES

An early milestone of the Centers for Disease Control and Prevention (CDC) support for program integration was the formation in 1995 of a National Center for HIV, STD, and TB Prevention, one goal of which was to promote collaboration across STD and HIV programs.[24] Although CDC's viral hepatitis program was in a separate center until 2006, increasing awareness of and concern about hepatitis C in the late 1990s provided new momentum for viral hepatitis prevention. CDC published recommendations for HCV prevention and control in 1998,[9] followed by a national strategy in 1999.[25]

Although some CDC funding supported viral hepatitis education and training, surveillance, and evaluation research, the bulk of hepatitis funds through the Division of Viral Hepatitis (DVH) have supported Hepatitis C Coordinators[26] and integration of viral hepatitis services into state and local programs. The first program funds were awarded to the San Diego County STD Program in 1997 to support a demonstration project to integrate hepatitis B vaccination into STD clinic services.[27] In 1999, DVH funding for hepatitis activities supported three city/county public health departments to integrate viral hepatitis services into STD and/or HIV programs. In 2000, additional DVH funding for three to four years to catalyze integration of viral hepatitis services into existing programs was

awarded to 15 state or large city/county health departments and to several Indian Health Service supported programs. These funds were used to expand program activities in staff training, data collection and tracking, patient education and outreach, and direct services for hepatitis A and B vaccination and for hepatitis C counseling, testing, and referral. CDC's Division of HIV/AIDS Prevention (DHAP) supported DVH in these initiatives, in part to help combat complacency about HIV/AIDS, and to help HIV prevention efforts by attracting people at risk who were interested in viral hepatitis services, particularly hepatitis C testing.

The peak annual funding for program services, which did not include funds to purchase adult hepatitis A and B vaccine, was $2.5 million (2001). Although DVH funding for integrated viral hepatitis prevention services ended in 2004, DVH has continued to support Hepatitis C Coordinators since 1999 and currently supports 52 coordinators based in state and local health departments, who serve as a focal point for integrating viral hepatitis prevention and control activities in public health programs.

In the past two years, additional efforts across CDC program areas have begun to address viral hepatitis prevention. For example, in 2005, DHAP began to allow grantees to request using HIV funds for anti-HCV testing, and in 2006,[24,28] CDC's National Immunization Program encouraged use of existing immunization program funds to purchase adult hepatitis A and B vaccines for use in high-risk settings.[29]

LESSONS LEARNED FROM INTEGRATING VIRAL HEPATITIS SERVICES

For this supplement, successful viral hepatitis integration is defined as the implementation of recommended viral hepatitis prevention services (e.g., vaccination, counseling, testing, referral) by well-trained and supportive health professionals serving people at high risk for infection, with high acceptance rates by clients, and little or no adverse impact on existing core services (e.g., STD/HIV services). Many state and local health departments have mounted successful viral hepatitis prevention service initiatives. For example, at its peak, the San Diego County STD hepatitis B vaccination project provided a first dose of hepatitis B vaccine to nearly 80% of eligible clients.[27] Other successful integration efforts documented in this supplement include (*1*) six STD clinics administering a median of 28 vaccinations per 100 client visits;[30–32] (*2*) widespread hepatitis A and B vaccination of adults by local health departments in New York State;[33] (*3*) statewide integration of hepatitis A and B vaccination and hepatitis A, B, and C counseling and testing in Florida public health clinics;[34] (*4*) statewide integration of hepatitis C counseling and testing in HIV/STD programs in Texas;[35] (*5*) a New York State program to improve continuity of hepatitis C antiviral therapy for inmates released from state prisons;[36] and (*6*) integration of hepatitis A and B vaccination for drug treatment program clients in Hartford, Connecticut.[37]

Other reports in this supplement describe strategies to efficiently target and/or attract high-risk people for recommended services, including (*1*) a California HIV program wherein hepatitis C testing was shown to increase acceptance of HIV testing;[38] (*2*) a New York City STD clinic where IDUs accessing STD clinic services to get hepatitis C testing also accepted STD and HIV services, and new STDs and HIV infections were diagnosed and treated or referred;[39] (*3*) a study of positive anti-HCV tests among MSM who did not inject drugs compared with other men in three urban city STD and HIV programs;[14] and (*4*) an economic analysis of targeted anti-HCV testing in STD clinics.[40]

Keys to success

Experience in viral hepatitis integration identified the following keys to success: (*1*) availability of low-cost or free hepatitis vaccines and anti-HCV testing on-site to clients during a single encounter; (*2*) ability to offer hepatitis B vaccination to all clients, eliminating the need to screen for risk factors; (*3*) clinic and program staff recognition of the importance and value of adding hepatitis services for at-risk adults; (*4*) staff training in viral hepatitis; (*5*) local and state funding of viral hepatitis integration activities; and (*6*) strong leadership support of integration efforts at the state and local levels.

Barriers and challenges

Lack of adequate or sustained funding and resources for on-site viral hepatitis activities was identified as a barrier by most programs reporting in this supplement. Additional barriers to integration included (*1*) categorical CDC funding, i.e., separate program funding for STD, HIV, viral hepatitis, and immunization;[41] (*2*) limited sources of health care for low-income or uninsured/underinsured people testing anti-HCV positive;[31,32,34,35] (*3*) inability of program data systems to adequately and efficiently track services and client data for multiple relevant infections and vaccinations;[30–32,34] and (*4*) the recent move to finger-stick-based rapid HIV testing, which requires an additional blood draw for anti-HCV testing and a client return visit several weeks later to receive test results.

Other factors that challenged efficient and effective

integration included (*1*) staff offering anti-HCV testing to clients without documented risk factors;[31,32,34,35] (*2*) low rate of completion of the hepatitis A or hepatitis B vaccine series;[30–32,34] (*3*) increased stress and demand on staff, especially counseling for the large number of clients testing anti-HCV positive;[37] and (*4*) recent local and state government budget crises leading to substantial cutbacks in viral hepatitis services.[30,32,35]

This supplement includes viewpoints and commentaries that address many of these barriers and challenges, including (*1*) access to and models for care of people identified with positive anti-HCV test results in the public sector;[42,43] (*2*) vaccination of high-risk adults;[29] and (*3*) data systems and other infrastructure barriers, such as categorical funding.[24,41] In addition, CDC describes progress in bringing together related prevention programs on a national level and promoting a comprehensive approach to prevention of HIV, STD, and viral hepatitis;[24] and the Substance Abuse and Mental Health Services Administration (SAMHSA) describes several new federal programs to advance integration of viral hepatitis prevention into drug treatment programs.[44]

CONCLUSIONS

Reports in this supplement add to the growing evidence that viral hepatitis prevention services can be successfully integrated into existing public health programs serving at-risk adults. The tremendous (96%) decline in reported incidence of acute hepatitis B among children and adolescents under age 19 from 1990 to 2005 is likely due to the successful implementation of universal infant (1991) and childhood and adolescent (1996) hepatitis B vaccination recommendations.[7] Even with limited implementation of high-risk adult hepatitis B vaccination recommendations, there has been a 76% decline in reported acute hepatitis B among adults aged 19 or older during this period, and young adults are increasingly reporting having already been vaccinated.[45] This, and an increase in STD clients also reporting already having been vaccinated,[30,31] are indicators that the demand for resources to implement high-risk adult hepatitis B vaccination is likely to decrease over the next decade.

In contrast, the burden of chronic HCV infection is predicted to increase over the next decade, as more of the large number of people who were infected more than 20 years ago develop complications of long-term hepatitis C.[46,47] With increased anti-HCV testing in public health settings serving high-risk adults, it is possible that many of the estimated 50% of people who are currently infected and do not know it[48] will be identified. It is also likely that many people identified with positive anti-HCV test results in these settings will be uninsured or underinsured and thus unable to access medical evaluation and follow-up.[42,43] To meet these and future needs, U.S. policy makers will need to consider creating systems for training more health providers to deliver care for people with hepatitis C,[43] as well as funding and reimbursement systems modeled on or expanding such programs as the AIDS Education and Training Centers and Ryan White CARE Act.[49,50]

Some promising initiatives from CDC and SAMHSA[24,28,29,37,44] are underway to promote the integration of adult hepatitis A and B vaccination and hepatitis C counseling and testing in STD, HIV, and other public health programs. However, the challenge now is to overcome existing barriers to integration at all levels: federal, state, and local.

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