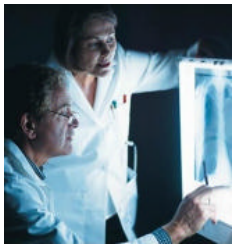
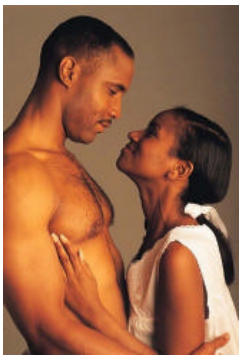
National Hepatitis C Prevention Strategy

2001







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National Hepatitis C Prevention Strategy

A Comprehensive Strategy for the Prevention and Control of Hepatitis C Virus Infection and its Consequences

Division of Viral Hepatitis

National Center for Infectious Diseases

Centers for Disease Control and Prevention

Summer 2001

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Executive Summary

On January 22, 1998, the Secretary of the Department of Health and Human Services concurred with the Advisory Committee on Blood Safety and Availability and indicated that persons who may have acquired hepatitis C virus (HCV) infection from blood transfusion be identified through lookback notifications, and that other people at risk for HCV infection also should be identified. The Secretary requested the Centers for Disease Control and Prevention (CDC) to develop a comprehensive plan to address the prevention and control of HCV infection and its consequences.

The ***National Hepatitis C Prevention Strategy*** is CDC's response to this request, and includes partnerships and coordination with the Agency for Healthcare Research and Quality (AHRQ), Food and Drug Administration (FDA), Health Care Financing Administration (HCFA), Health Resources and Services Administration (HRSA), National Institutes of Health (NIH), Substance Abuse and Mental Health Services Administration (SAMHSA), and other federal, state, and private sector agencies. This CDC strategy serves to protect the public's health by preventing and controlling HCV infection; enhancing health decisions by providing credible information on hepatitis C; and promoting healthy living through strong partnerships with national, State, and local organizations in both the public and private sectors.

The goals of the ***National Hepatitis C Prevention Strategy*** are to lower the incidence of acute hepatitis C in the United States and reduce the disease burden from chronic HCV infection. Achievement of these goals requires: 1) harm reduction programs directed at persons at increased risk for infection to reduce the incidence of new HCV infections; 2) counseling, testing, and medical evaluation and management of infected persons to control HCV-related chronic liver disease; 3) surveillance to evaluate the effectiveness of prevention activities; and 4) research to provide answers to questions pertinent to the prevention and control of hepatitis C.

The principle components of the ***National Hepatitis C Prevention Strategy*** are:

- *education* of health care and public health professionals to improve the identification of persons at risk for HCV infection and ensure appropriate counseling, diagnosis, medical management, and treatment;
- *education* of the public and persons at risk for infection about risk factors for HCV transmission, and the need for testing and medical evaluation;
- *clinical and public health activities* to identify, counsel, and test persons at risk for HCV infection, and medical evaluation or referral for those found to be infected;
- *outreach and community-based programs* to prevent practices that put people at risk for HCV infection, and to identify persons who need to get tested;
- *surveillance* to monitor acute and chronic disease trends and evaluate the effectiveness of prevention and medical care activities; and
- *research* to better guide prevention efforts.

Hepatitis C prevention activities must be accessible to persons receiving health care services in both the public and private sectors. The most effective means to prevent HCV infection and its consequences is to integrate hepatitis C prevention activities into existing clinical services and public health programs, such as those for the prevention and treatment of human

immunodeficiency virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS), sexually transmitted diseases (STDs) and drug abuse. Similar risk factors place persons at risk for transmission of the major bloodborne viral infections – HIV, HCV, and hepatitis B virus (HBV). Effective implementation of the ***National Hepatitis C Prevention Strategy*** should reduce the number of new HCV infections, further reduce other bloodborne virus infections, and prevent the projected increase in chronic liver disease due to hepatitis C.

Hepatitis C Virus Infection in the United States

Hepatitis C virus (HCV) infection is the most common chronic bloodborne viral infection in the United States. First identified in 1988, HCV is the causative agent for what was formerly known as non-A non-B hepatitis, and is estimated to have infected as many as 242,000 Americans annually during the 1980's. Since 1989, the annual number of new infections has declined by more than 80 percent to approximately 41,000 by 1998. A national survey (the third National Health and Nutrition Examination Survey [NHANES III]) of the civilian, non-institutionalized U.S. population found that 1.8 percent of Americans (3.9 million) have been infected with HCV, of whom most (2.7 million) are chronically infected with HCV. These estimates of prevalence are likely conservative, because the survey excluded incarcerated and homeless persons, groups that have high prevalences of HCV infection. Most infected persons were aged 30-49 years when the survey was done in the early 1990s (Figure 1).

Many of these individuals are not aware of their infection and are not clinically ill. However, the consequences of chronic liver disease from hepatitis C do not become apparent until 10 to 20 years after infection.

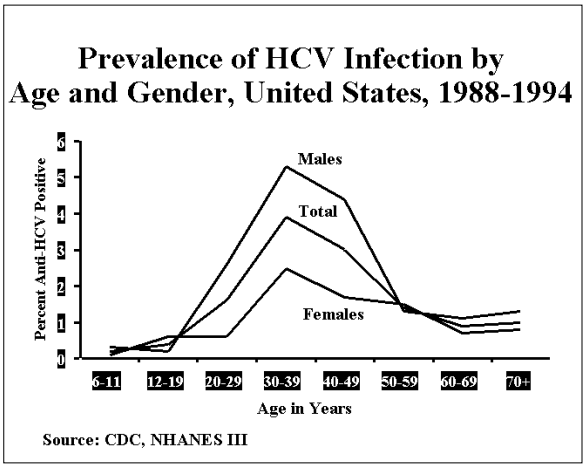

Figure 1.

Risk factors for infection. Individuals who injected drugs, even if they did so on only one occasion many years ago, are at highest risk for HCV infection (Figure 2). HCV infection is rapidly acquired following the initiation of injection drug use and occurs from the sharing of needles, syringes, or other equipment associated with drug use. Of persons injecting drugs for at least 5 years, 60 percent to 80 percent are infected with HCV compared to about 30 percent infected with HIV. The high rate of HCV infection among injection drug users is also reflected in the high rates (15 percent to 40 percent) of HCV infection found among incarcerated persons. More than 80 percent of the nation's estimated 1.7 million current injecting drug users have been incarcerated.

Prior to the mid-1980's there was a 7 percent to 10 percent risk of non-A, non-B hepatitis (hepatitis C) from blood transfusion. This risk declined by more than 50 percent between 1985 and 1990 as a result of implementation of blood donor screening for HIV and surrogate testing for non-A, non-B hepatitis. In 1990, specific donor screening for HCV was implemented and by 1992 the risk of HCV infection from a unit of transfused blood was reduced to one in 100,000. As of 2001, the risk of HCV infection from a unit of transfused blood is less than one per million transfused units.

Clotting factor concentrates, which are plasma-derived products used to treat individuals with hemophilia, posed a high risk for HCV infection prior to the use of virus inactivation procedures that were introduced in 1985 and 1987. Except for one outbreak of hepatitis C from a single type

of contaminated intravenous immunoglobulin, other plasma-derived products, including immune globulin for intramuscular administration, have not been associated with the transmission of HCV in the United States. Currently, all immune globulin products undergo a virus inactivation procedure or test negative for HCV prior to release.

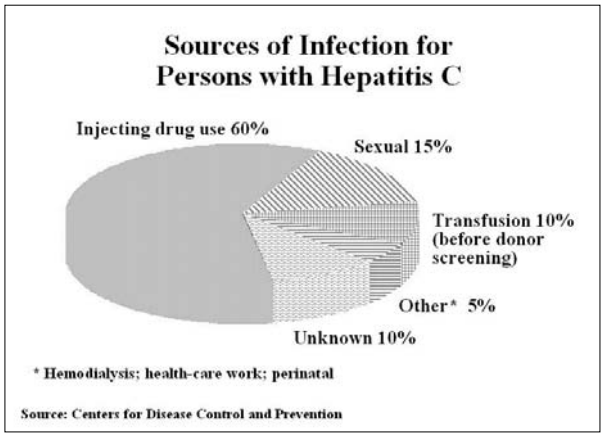

Figure 2.

Sexual exposures account for about 15 percent of cases of hepatitis C. Although the risk for transmitting HCV infection through sexual intercourse is low, sex is a common behavior in the general population, a substantial proportion of the adult population has had unprotected sex with multiple partners, and there are a large number of persons with HCV infection. While other types of exposures are more likely to transmit HCV (e.g., transfusion from an infected donor), they account for a smaller proportion of infections because of the relatively small proportion of the population in whom these exposures have occurred.

HCV is most efficiently transmitted by exposures that involve direct passage of blood through the skin, i.e., a percutaneous exposure.

Exposures resulting from hemodialysis, employment in the health care field, and birth to an HCV-infected mother together account for about 5 percent of cases. About 10 percent of people with HCV infection have no recognized source for their infection.

While it is possible for HCV to be transmitted from any percutaneous exposure to blood, exposures such as tattooing, body piercing, or acupuncture have not been shown to place people at increased risk for infection. Higher rates of HCV infection are not found among persons with these exposures alone and these exposures are rarely reported among new cases of hepatitis C.

Consequences of HCV infection. About 15 percent to 25 percent of persons with acute hepatitis C resolve their infection without further problems. The remainder develop a chronic infection and about 60 percent to 70 percent of these persons develop chronic hepatitis. Cirrhosis of the liver develops in 10 percent to 20 percent of persons with chronic hepatitis C over a period of 20-30 years, and hepatocellular carcinoma (liver cancer) in 1 percent to 5 percent. For individuals with cirrhosis, however, the rate of development of liver cancer might be as high as 1 percent to 4 percent *per year*.

Lower rates of complications have been reported from studies of persons who acquired infection as children. However, longer term follow-up studies are needed to assess lifetime consequences of chronic HCV infection in different populations, especially among children.

Chronic liver disease is the tenth leading cause of death among adults in the United States. It is estimated that 40 percent to 60 percent of chronic liver disease is due to hepatitis C and another

10 percent to 15 percent is due to chronic hepatitis B. HCV-associated chronic liver disease is the most frequent indication for liver transplantation among adults. Additionally, because alcohol use is one of the most important contributing factors to progression of chronic liver disease among persons with hepatitis C, it is important to identify infected individuals as early as possible so that they can be counseled to limit alcohol consumption and be offered treatment if appropriate.

Treatment for hepatitis C. In 1997, an NIH Consensus Development Conference established guidelines for the medical management of hepatitis C[1], which have since been updated to reflect the evolving nature of antiviral therapy. A combination of alpha-interferon and ribavirin currently is the most effective therapy and achieves the sustained elimination of HCV infection for at least 6 months in 30 percent to 40 percent of patients.

However, 10 percent to 20 percent of treated patients do not complete therapy because they experience significant side effects. In addition, some patients may have conditions, such as severe cirrhosis which prohibit treatment. Current antiviral therapy is not licensed for patients below age 18 years.

HCV-associated chronic liver disease is the most frequent indication for liver transplantation among adults.

Persons with chronic hepatitis C who continue to abuse alcohol are at risk for ongoing liver injury and antiviral therapy may be ineffective. In addition, interferon therapy can be associated with relapse in people with a previous history of alcohol abuse; therefore, abstinence from alcohol is recommended during antiviral therapy. Interferon therapy should be considered with caution for patients who recently stopped alcohol abuse, and these patients require the support of alcohol treatment programs.

Patients with hepatitis C on methadone treatment have been successfully treated with interferon. However, there is limited experience with treatment of persons who are recovered injection drug users or who are active injection drug users. In addition, there is the concern that active injection drug users are at risk for reinfection with HCV. When patients with past or continuing substance abuse are considered for antiviral treatment, such patients should receive drug treatment or care from substance abuse specialists or counselors.

Drug treatment is an important adjunct to care for many persons with hepatitis C.

Persons with HCV-related liver disease should be vaccinated against diseases that may produce further complications or increase their risk of death. Susceptible persons with chronic liver disease should receive hepatitis A vaccine since they are at increased risk of death from liver failure if they get hepatitis A. All persons with chronic liver disease should be vaccinated

[1] National Institutes of Health. (1997) Management of Hepatitis C. March 24-26;15(3):1-41. http://odp.od.nih.gov/consensus/cons/105/105_statement.htm

annually against influenza and should receive pneumoccocal vaccine. In addition, persons with continued risk factors for HBV infection should receive hepatitis B vaccine.

Co-infection. Coinfection with HCV, HIV and/or HBV is currently recognized as a serious problem and is more likely to be found among injection drug users and persons treated for hemophilia before the availability of inactivated clotting factor concentrates. Deaths from chronic hepatitis C among patients with HIV are expected to increase as advances with antiretroviral therapy extend the life span of these patients. Management of HIV infection in HCV co-infected patients generally is similar to that for patients with HIV alone, although there is some risk of liver toxicity from the antiretroviral drugs. HCV coinfected patients should be evaluated to determine if they are candidates for antiviral treatment of their chronic liver disease. Because treatment and medical management of co-infected patients is complicated and rapidly evolving, such patients are best managed by health care providers with experience in treating both HIV and HCV infection. More research is needed to determine the ideal management and treatment of co-infected individuals.

Deaths from chronic hepatitis C among patients co-infected with HIV are expected to increase as antiretroviral therapy extends their life spans.

Prevention and Control

The goals of hepatitis C prevention and control efforts are: 1) to reduce the incidence of new infections by reducing HCV transmission; and 2) to reduce the risk of chronic liver disease in HCV-infected individuals through appropriate medical management and counseling.

These goals can be achieved by identifying persons at risk for infection and providing them with education, risk reduction counseling, HCV testing, and appropriate medical services including substance abuse treatment. Preventing or changing behaviors and activities that place persons at risk for HCV infection should reduce disease transmission. Appropriate testing, medical management and substance abuse counseling and treatment should reduce the risk of chronic liver disease. Implementation of the following activities is required to achieve these prevention goals.

Persons for whom routine HCV testing is recommended:

- Persons who ever injected illegal drugs, including those who injected once or a few times many years ago.
- Persons who received a blood transfusion or organ transplant before July 1992.
- Persons who received clotting factor concentrates produced before 1987.
- Persons who were ever on long-term dialysis.
- Children born to HCV-positive women.
- Healthcare, emergency medical, and public safety workers after needlesticks, sharps, or mucosal exposures to HCV-positive blood.

Identifying persons at risk for infection. Because of the large number of Americans infected with HCV, identification of these persons through testing is a high priority. Testing should be routinely offered to persons most likely to be infected with HCV. In addition, anyone who wishes to know their HCV infection status should be provided the opportunity for testing. In all instances, testing should be accompanied by appropriate counseling and referral for medical follow-up.

To identify persons who should be counseled and tested for HCV, health care professionals in primary care, specialty, and public health settings should routinely question patients about risk factors for infection, including history of injecting drug use. Current injecting drug users are often not seen in primary care or other traditional health care settings. However, targeted outreach in other settings may be particularly effective in reaching this population. These settings include correctional institutions, drug treatment programs, programs for high risk youth, HIV counseling and testing sites, and STD clinics.

Health care professionals in primary care, specialty, and public health settings should routinely question patients about risk factors for HCV infection.

Persons infected with HCV because of medical risk factors (e.g., transfusion, hemophilia, chronic hemodialysis) should be identified by health care professionals and through educational efforts provided by patient organizations. Many of these persons have been tested for HCV and testing should be encouraged for those not previously tested.

Health Education and Communication. Achieving high levels of awareness concerning hepatitis C prevention and maximizing the number of infected persons identified require education and communication directed at health care and public health professionals, persons in groups at risk for infection, and the general public.

Health care professionals

Education of health care professionals requires:

- Continuing medical education programs such as found at www.cdc.gov/ncidod/diseases/hepatitis and development of clinical and public health practice guidelines to facilitate the incorporation of recommendations for the prevention of HCV infection and its consequences[2] into clinical and public health practice.

- Development and dissemination of materials to aid health care professionals in identifying persons at risk for HCV infection during primary and specialty health care visits, at clinics that provide public health services, in drug outreach and substance abuse treatment programs, and in correctional health programs.

- Periodic updates of guidelines for the diagnosis, treatment and prevention of hepatitis C and continuing medical education programs to disseminate this information at the local and national level.

At-Risk Populations

Development and distribution of educational messages for groups of persons at increased risk for infection should include persons transfused prior to July 1992; incarcerated populations; substance abusers including those in treatment and outreach programs; persons at risk for HIV/AIDS and STDs; and persons attending other community health programs.

HCV prevalence among prison inmates is 3-5 times greater than in the general population.

Recent data indicate that prevalence of HCV infection among incarcerated populations is 3-5 times greater than prevalence in the general population. In addition, messages need to be developed for individuals who may have experimented with injecting drug use only in the distant past, since these persons may not regard themselves as being at risk for infection because they did not become long-term or habitual users.

General Public

Culturally-sensitive, multimedia advertising and education in English, Spanish and other languages are needed to increase public awareness about HCV infection; risk factors for

[2] Centers for Disease Control and Prevention. (1998) Recommendations for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease. MMWR;47 (No. RR-19). ftp://ftp.cdc.gov/pub/Publications/mmwr/rr/rr4719.pdf

infection; the need for counseling, testing, and medical management to prevent chronic liver disease; and how to differentiate hepatitis C from other types of hepatitis.

These include:

- Materials for use in clinic and other health care waiting rooms, correctional settings, drug treatment and prevention programs, and outreach programs for persons at risk for HIV/AIDS.

- A full-time, national hepatitis hotline and information line (1-888-4HEP-CDC) that provides both recorded information and interactive counseling.

- A web site (www.cdc.gov/hepatitis) that provides information about frequently asked questions, patient and provider educational materials, and hyperlinks to other sites which provide information on viral hepatitis.

- Regional or local sources that provide accurate information to concerned persons or groups in a culturally sensitive manner and in the language that is best understood by the requestor.

Figure 3: Public service messages directed to persons at risk for HCV infection from a transfusion.

Counseling, Testing, and Medical Referral.
Identification of persons at risk for HCV infection should initiate both counseling and testing, however, counseling can be performed without testing. Counseling services must be available in a wide variety of settings, including those that provide primary and specialty health care services in the private and public sectors. Because injection drug use is the primary risk factor for infection, counseling and testing

must be available for clients of programs for the prevention and treatment of substance abuse, HIV/AIDS, and STDs and for persons in correctional settings.

Individuals with ongoing risk factors for HCV infection should receive client-centered education and counseling which concentrates on changing behaviors that place them at risk for infection. These behaviors include substance abuse, sharing of injection drug use equipment, and high risk sexual practices. In addition to risk reduction counseling, at-risk persons should be referred to appropriate harm reduction programs, including treatment for substance abuse and syringe and

needle exchange sites. In addition, these persons should receive hepatitis A and hepatitis B vaccination.

At-risk persons should be immunized with hepatitis A and hepatitis B vaccine, as appropriate.

HCV testing is required to identify infected persons at risk for chronic liver disease and for transmitting HCV to others. When testing is performed, *HCV positive individuals* require: 1) counseling to reduce the risk of HCV transmission to others; 2) medical referral to determine the extent of their liver disease; and, if appropriate, 3) counseling to limit their alcohol intake, antiviral treatment, immunization with hepatitis A, hepatitis B, pneumococcal and influenza vaccines, and treatment for alcohol or drug abuse. *HCV negative persons with ongoing risk factors* require counseling concerning ways to reduce their risk for infection, referral to substance abuse treatment if appropriate, and immunization with hepatitis A and hepatitis B vaccines.

Hepatitis C counseling should be performed in a consistent, client-centered structure. Counseling materials are currently being developed and have not been extensively evaluated for effectiveness.

Integration of HCV counseling and testing into existing programs may enhance identification of persons at risk for HIV and HBV infection.

Based on current experience in counseling persons at risk for HCV infection or with hepatitis C, a wide variety of information must be available to the counselor. This includes information on harm reduction for persons at continued risk for infection, the meaning of positive test results, the importance of medical evaluation for chronic liver disease, the health outcomes of HCV infection and hepatitis C, the risk of transmission to family members or other contacts, and immunization to prevent infection with hepatitis A, hepatitis B, and other diseases.

Staff training is required for effective hepatitis C counseling and health education.While many hepatitis C prevention messages are similar to those for HIV, several aspects of hepatitis C prevention are different and must be integrated into counseling and testing activities to best meet the needs of the client.

In addition, culturally appropriate health education materials will be required for use by health care providers, and patient support groups.
While the capacity for HCV (antibody) testing exists in all blood banks and most hospital and private diagnostic laboratories, a recent survey[3] showed that less than 50 percent of state and local public health laboratories have the capacity to perform any type of HCV testing. As with HIV testing, HCV antibody testing requires the laboratory capacity to perform supplemental testing to
confirm that the initial test result represents a “true positive” and that the client does not receive incorrect information concerning his or her HCV infection status. To determine whether a person has chronic HCV infection requires nucleic acid testing for HCV RNA (‘PCR testing’). While this type of testing was only available in research laboratories several years ago, it is now becoming better standardized and available in many diagnostic laboratories.

[3]Association of Public Health Laboratories. (unpublished data)

Less than 50 percent of state and local public health laboratories have the capacity to perform HCV testing.

Counseling and testing sites should provide referral for the medical evaluation of persons who test HCV-positive. The initial medical evaluation of an HCV positive individual does not require a specialist (e.g., hepatologist, gastroenterologist).

However, the referral physician should be familiar with the interpretation of the diagnostic work-up required to ascertain whether a patient has chronic HCV infection and evidence of liver disease. In addition, the physician should have contact with specialists expert in the treatment and management of chronic hepatitis C.

Integration of Hepatitis C Prevention into Other Prevention Services. The similar modes of transmission of HIV, HBV and HCV present a unique opportunity to provide prevention services at a single client visit. Integration of services to prevent bloodborne viral infections is a relatively new concept. There is limited experience with combining counseling, testing, prevention, immunization, and treatment services for these diseases in HIV/AIDS prevention sites, STD clinics, drug treatment sites, and correctional health programs. However, data from several demonstration projects indicate that integration of HCV counseling and testing into existing public health programs is feasible and may enhance identification of persons with risk behaviors for other bloodborne virus infections, such as HIV and HBV.

Surveillance and Research

Surveillance. Surveillance is essential to determine the effectiveness of national, state, and local hepatitis C prevention efforts. However, surveillance for hepatitis C is complicated by the absence of a laboratory test that can differentiate newly acquired infections from infections acquired in the past. Although acute hepatitis (i.e., clinical illness) is reportable in all states, only a few states conduct surveillance for acute cases of hepatitis C to monitor disease incidence. However, approximately 30 states have requirements for reporting of HCV positive laboratory tests, most of which represent persons with resolved or chronic HCV infection.

The current challenge is to determine how to utilize HCV positive laboratory reports to monitor trends in new infections, evaluate the effectiveness of testing and counseling efforts, and identify missed opportunities for hepatitis C prevention. Only a few states maintain a database of laboratory reports, and most do not collect patient-specific information concerning risk factors for infection or medical follow-up.

The challenge is how to use laboratory-based reports of HCV to monitor disease trends and the effectiveness of prevention programs.

Development and maintenance of confidential state databases of persons with HCV infection, which contain information on risk factors for infection and medical follow-up, could provide a means to determine the effectiveness of prevention programs. Such surveillance could determine whether persons with certain risk factors for infection are more or less likely to be identified and tested, and whether HCV positive persons have received counseling and medical referral. Making surveillance systems in all states comparable with respect to data quality and case definitions would greatly facilitate targeting and assessment of prevention programs.

National trends in new cases of infectious disease are monitored by CDC's National Notifiable Disease Surveillance System (NNDSS). However, for hepatitis C, the data reported by states are not reliable because most reports to NNDSS represent persons with chronic or resolved HCV infection and not acute disease. To determine national trends in disease incidence and risk factors for infection, CDC has relied on intensive sentinel surveillance conducted in 6 counties[4] -- the Sentinel Counties Study of Viral Hepatitis. Until such time that persons with acute HCV infection can be identified either through a single diagnostic test or some combination of tests (e.g., antibody testing and liver enzyme levels), estimates of HCV infection incidence will primarily depend on data from the Sentinel Counties Study.

CDC uses several other surveillance systems to monitor trends in HCV infection. NHANES III identified the high prevalence of HCV infection in the United States and showed that African-Americans had a higher prevalence of HCV infection than other racial/ethnic groups. Testing of subsequent NHANES will be used to monitor infection prevalence in different populations of Americans. Surveillance for chronic liver disease has been established in several of CDC's Emerging Infections Program sites. This chronic liver disease surveillance system will enhance

[4]Alter MJ, Hadler SC, Judson FN, et al. (1990) Risk factors for acute non-A, non-B hepatitis in the United States and association with hepatitis C virus antibody. JAMA; 264: 2231-2235.

understanding of the natural history of HCV infection, monitor national trends in chronic hepatitis C, and provide estimates of the contribution of HCV infection to chronic liver disease in the United States.

Epidemiologic and Laboratory Investigations. A number of unanswered questions significantly impact the direction of hepatitis C prevention and control activities. Priority areas in which studies are underway or in the planning stages include those that determine: 1) incidence and risk factors for HCV transmission among household contacts of infected persons; 2) risk factors for transmission from mother to infant at birth; 3) risk of infection from intranasal cocaine use, tattooing, and body-piercing; 4) prevalence and incidence of infection in incarcerated populations; 5) risk of infection among steady heterosexual partners of HCV-infected persons; 6) risk factors for infection among persons on chronic hemodialysis; 7) risk for infection among persons with occupational exposure to HCV and effectiveness of therapy during acute infection; 8) the dynamics of HCV acquisition among injection drug users and the effectiveness of harm reduction strategies in preventing infection; 9) the frequency and consequences of infection with multiple HCV strains among injection drug users; and 10) development and performance of rapid screening tests for HCV infection.

Implementation of the *National Hepatitis C Prevention Strategy*

CDC's implementation plan for the *National Hepatitis C Prevention Strategy* comprises the following elements:

- *Communication of information about hepatitis C* to health care and public health professionals and education of the public and persons at risk for infection;
- *Integration of hepatitis C prevention and control activities into State and local public health programs* to identify, counsel, and test persons at risk for HCV infection; provide referral for medical evaluation of those found to be infected; and conduct outreach and community-based activities to address practices that put people at risk for HCV infection;
- *Surveillance to monitor* acute and chronic disease trends and evaluate the effectiveness of prevention and medical care activities; and
- *Epidemiologic and laboratory investigations* to better guide prevention efforts.

Timely implementation of these prevention activities at the national, state, and local levels can be expected to achieve a reduction in hepatitis C mortality and morbidity.

Communication of Information about Hepatitis C.

Education of health care professionals: Because hepatitis C was only recently described, health care professionals are often not aware of current information concerning diagnosis, medical management, and prevention of this disease. Education of health care professionals about hepatitis C -- pathogenesis, diagnosis, medical management, epidemiology, and prevention -- was the first activity undertaken as part of the *National Hepatitis C Prevention Strategy*. Because knowledge about hepatitis C is complex and rapidly evolving, ongoing access to the latest information must be provided and requires commitment of resources for development and distribution of continuing education programs and materials for physicians, nurses, and other health care professionals. A wide range of educational materials must continue to be developed and distributed by CDC in partnership with other governmental, non-governmental, professional and voluntary health organizations. These materials include brochures and monographs; articles in professional journals; web-based and other distance learning formats; and symposia, grand rounds, and workshops.

Good clinical and public health practice is based on the availability of recommendations and guidelines from professional organizations, CDC, or other government agencies. Consultants meetings will be held to develop and update recommendations for the prevention and management of
hepatitis C in various populations and settings, including correctional institutions, hemodialysis units[5], and drug treatment and prevention programs.

Because hepatitis C was only recently described, health care professionals often are not aware of current information concerning diagnosis, medical management, and prevention.

State-funded programs have requested technical assistance from CDC for materials to train

[5] Centers for Disease Control and Prevention. (2001) Recommendations for preventing transmission of infections among chronic hemodialysis patients. MMWR;50 (No. RR-5): 28-29. http://www.cdc.gov/mmwr/PDF/rr/rr5005.pdf

counselors. These materials are in the final stages of development, along with a hepatitis training curriculum for the national STD Prevention and Training Center network. There is need for the further development and distribution of a wide range of client-centered counseling materials for use in settings where persons at risk for HCV infection are identified (e.g., HIV/AIDS counseling and testing sites, STD clinics, drug treatment facilities, correctional facilities).

Education of the general public and groups at increased risk for infection:
CDC has joined with a number of non-governmental organizations to ensure widespread distribution of hepatitis C health education and prevention messages.

Providing resources to these and other partners will continue to ensure that health education materials and messages consistent with CDC's recommendations are distributed to the public as well as to persons in groups at increased risk for infection. Public service advertising and media outreach in various formats are needed to increase public awareness of the importance of hepatitis C prevention and control. Continued formative research is needed to determine what messages and formats might best reach intended audiences, such as past and present injecting drug users and individuals with high-risk sexual activity. Print materials and public service advertising for persons at risk for transfusion-acquired HCV infection have been developed and are being distributed, but their effectiveness remains to be evaluated. Education and advertising materials and campaigns will be developed to reach persons in other risk groups. CDC's hepatitis website regularly provides updated information for both health professionals and the public and links with partners for additional information. In addition, CDC's Hepatitis Information Line and HotLine provide both "live" and recorded information in both English and Spanish.

CDC Partners in Viral Hepatitis Prevention, 1997-2001

American Liver Foundation
www.liverfoundation.org
American Social Health Association
www.ashastd.org
Council of State and Territorial Epidemiologists
http://www.cste.org/
Health Care Education and Training
www.hcet.org
Hepatitis Foundation International
www.hepfi.org
Immunization Action Coalition
www.immunize.org
JSI Research & Training Institute
www.jsi.com
National Alliance of State/Territorial AIDS Directors
www.nastad.org
National Association of City/County Health Officials
www.naccho.org
National Commission on Correctional Health Care
www.ncchc.org
National Minority AIDS Council
www.nmac.org
Parents of Kids w/ Infectious Diseases
www.pkids.org

State-based Hepatitis C Prevention and Control Programs. Hepatitis C counseling and testing programs need to be implemented at the state and local levels. Although a recent survey of local health officers showed that 87 percent of city and county health departments provide education about HIV/AIDS and 77 percent provide HIV testing, less than 50 percent provide

hepatitis C counseling and only 23 percent provide HCV testing[6].
Currently, no federal funding is available to support nationwide establishment of hepatitis C counseling and testing services at the state or local level. In response to this lack of federal funding, a number of state and local health departments have funded hepatitis C counseling and testing projects.

Most of these local programs have relied heavily on technical support and materials developed by CDC. However, prevention services need to be expanded, especially for disenfranchised populations and populations with health disparities (e.g., African-Americans, Native Americans), which can only be assured by a national program.

Less than 50 percent of local health departments provide hepatitis C counseling and only 23 percent provide HCV testing.

A major goal of the ***National Hepatitis C Prevention Strategy*** is funding of a 'Hepatitis C Coordinator' for every state and large metropolitan health department to meet the expressed needs of state and local public health officials. The Hepatitis C Coordinator provides the management, networking, and technical expertise required for successful integration of hepatitis C prevention and control activities into existing public health programs (Figure 4). Coordinators assist state or local health departments in: 1) identifying public health and clinical activities in which HCV counseling and testing should be incorporated; 2) ensuring training of health care professionals in effective hepatitis C prevention activities; 3) developing the capacity to provide HCV testing through public health or private diagnostic laboratories; 4) identifying sources for appropriate medical referral of HCV positive persons; 5) ensuring appropriate surveillance for HCV infection; and 6) evaluating the effectiveness of HCV prevention activities.

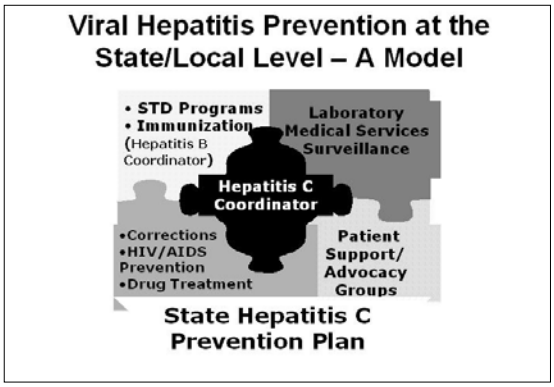

Figure 4.

Broad implementation of hepatitis C prevention activities has been greatly facilitated by the development of a State hepatitis C/viral hepatitis prevention plan. These plans have provided the road map for prioritizing development of prevention activities, integrating hepatitis prevention activities into existing public health programs, and obtaining resources to achieve implementation of prevention activities. A number of approaches have been used to develop such plans, including convening special commissions or consensus meetings, or using consultants. Key to development of a successful plan is inclusion of stakeholders and experts involved in viral hepatitis prevention and control from fields which include: public health, infectious disease, immunization, correctional health, drug and substance abuse treatment, HIV/AIDS counseling and testing, STD prevention and treatment, mental health, public health nursing, clinical medicine (primary care, hepatology, gastroenterology), laboratory medicine,

[6] National Association of City and County Health Officers. (submitted for publication) Hepatitis C/HIV Needs Assessment. http://www.naccho.org/project4.htm

patient support and advocacy, health communication and education, health care financing, and public health policy. Although a number of States have now developed such plans, technical assistance and resources are needed to assist those States without plans.

While prevention of all bloodborne virus infections (HIV, HCV, HBV) is a major goal of the ***National Hepatitis C Prevention Strategy***, there is limited experience with the integration of hepatitis C and hepatitis B prevention activities into public health programs for persons at risk for bloodborne viral infections, including incarcerated persons[7]. Demonstration projects to examine the feasibility and operational aspects of integrating hepatitis C prevention into existing public health and correctional health programs were first funded by CDC in FY 1999, were expanded to include several county and city health departments in FY 2000, and should be further expanded to include state-wide projects. Demonstration projects include activities to prevent HCV, HBV, and HIV infection, such as counseling, testing, and medical referral for infected persons, and hepatitis B and hepatitis A immunization. Critical to the implementation of integrated prevention activities is funding for public health laboratories to provide HCV testing for persons served in the public sector and for immunization with hepatitis B and hepatitis A vaccines of at-risk persons.

CDC's annual National Hepatitis Coordinator meeting, which previously has brought together persons involved with the prevention of HBV infection at the state and local levels (e.g, hepatitis B coordinators, state immunization directors, STD program managers), will be expanded to facilitate the sharing of information gained from federally and locally funded hepatitis C prevention activities.

Surveillance

States that require reporting of persons who test HCV positive need resources to establish, maintain, and analyze information on infected persons for purposes of disease surveillance. These resources would support use of state surveillance databases to evaluate the effectiveness of prevention programs by determining: 1) the proportion of the population with hepatitis C that has been identified; 2) missed opportunities for identification of persons with selected risk factors for HCV infection; and 3) whether persons reported to state surveillance systems have received counseling, medical referral, and appropriate medical management. For states without HCV surveillance, CDC would offer assistance in establishing surveillance systems for evaluating the effectiveness of their hepatitis C prevention programs.

In addition to state-based surveillance, CDC must continue to maintain several other surveillance systems including: 1) the Sentinel Counties Study of Viral Hepatitis to determine trends in incidence of acute hepatitis C and other types of viral hepatitis, and risk factors for infection; 2) testing of participants in NHANES to determine age-specific trends in prevalence of HCV infection; and 3) sentinel surveillance for chronic liver disease to determine trends in chronic hepatitis C.

[7]Association of State and Territorial Health Officers. (2000) Hepatitis C & Incarcerated Populations: The Next Wave for Correctional Health Initiatives.

Epidemiologic and Laboratory Investigations

Research to answer questions which impact hepatitis C prevention and control is an important component of the ***National Hepatitis C Prevention Strategy*** and prevention of new HCV infections probably is the greatest challenge. The majority of new HCV infections occur among persons who inject illegal drugs and the risk of HCV infection among this group is several-fold greater than the risk of HIV infection. High priority must be given to studies that determine those activities among active injection drug users which facilitate HCV transmission and the development of interventions which interrupt transmission. In addition, prevention of HCV infection must become the marker of success of community-based interventions to prevent drug use among persons at high risk for this behavior.

Priority also must be given to studies which answer questions related to other risk factors for HCV infection in order to improve counseling messages and to devise effective prevention activities. These include studies to quantify risk for infection following sexual exposure, the risk of transmission from tattoos or body piercing obtained in various settings, risk from non-injection drug use (e.g., cocaine use), risk of infection following occupational needlestick exposure, and risk of perinatal HCV infection following obstetric interventions or complications. Laboratory tests that differentiate acute from chronic HCV infection or rapid diagnostic tests that could be used in outreach settings would greatly improve identification of persons with HCV infection and improve prevention and control activities.