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Chronic Viral Hepatitis: Screening Recommendations for Primary Care Clinicians Serving American Indians and Alaska Natives

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In January 2010, the Institute of Medicine (IOM) released a report entitled *Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C*, which called for increased awareness and use among primary care clinicians of the Centers for Disease Control and Prevention (CDC) viral hepatitis screening, prevention, and clinical management guidelines.[1] This year, the US Department of Health and Human Services (HHS) released a national hepatitis action plan to implement recommendations in the IOM report entitled *Combating the Silent Epidemic of Viral Hepatitis*.[2] Together, these documents provided a critical roadmap for health care providers serving American Indians and Alaska Natives (AI/AN), including IHS providers, to prevent, diagnose, and clinically manage viral hepatitis in their patients.

Chronic viral hepatitis is a significant contributor to liver disease-related morbidity and mortality in AI/AN populations, highlighting the need for early screening, diagnosis, and clinical management in these groups. A cross-sectional study at medical centers serving AI/AN populations in California found that 5.7% of patients had chronic liver disease (CLD).[3] While alcohol accounted for the etiology of CLD in 16.6% of patients, more than one-third of CLD cases were attributable to hepatitis C alone (24.1%) or in combination with other causes (12.2%).

The overall prevalence of chronic hepatitis B virus (HBV) and chronic hepatitis C virus (HCV) infection among AI/AN populations is unknown. A prospective screening study in an urban clinic serving AI/ANs in Nebraska found that 11.5% of individuals tested showed evidence of past or present hepatitis C infection.[4] Studies of ANs with HCV infection have found risk factors similar to the general US HCV-infected population, including past or present injection drug use and having received a blood transfusion prior to July 1992.[5]

Hepatitis A and hepatitis B can be prevented by a vaccine; however, there is no vaccine against hepatitis C. If not diagnosed and treated promptly, chronic HBV and chronic HCV can cause serious complications, such as cirrhosis, hepatocellular carcinoma, and death.

Chronic HBV and chronic HCV also have enormous human and economic costs. One in four people with chronic hepatitis B infection will die of liver disease or liver cancer. Hepatitis C is the leading reason for liver transplants

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nationwide and the leading cause of non-AIDS death among HIV-infected individuals. By 2030, annual hepatitis C-related Medicare costs alone are expected to increase 600 percent, from $5 billion to $30 billion per year.[6] These costs and complications can be prevented by early detection and treatment, and lifestyle changes.

Many adults with chronic hepatitis B were infected at birth via perinatal transmission from infected mothers or as children via horizontal transmission from infected household contacts. Asian Americans and Pacific Islanders comprise more than half of all persons living with chronic HBV in the US[1] Hepatitis C prevalence is highest among individuals born between the years 1945 and 1965, many of whom were infected with hepatitis C through blood transfusions conducted prior to 1992 or through past injection drug use.[7]

Unprotected sex with an infected individual is the leading cause of hepatitis B transmission among adults, while sharing syringes and other equipment used for injection drug use is the leading cause of hepatitis C transmission. For these reasons the CDC recommends screening for hepatitis B and hepatitis C in clinical settings serving adults at risk for viral hepatitis.

Primary care providers play an important role in prevention, diagnosis, and management of chronic viral hepatitis infection. With health care reform implementation under way, primary care settings will soon see an influx of new patients, many of whom have chronic diseases, including viral hepatitis. Recognizing which patients should undergo serologic testing for chronic viral hepatitis is crucial, as infected persons are often asymptomatic. Both the CDC and the American Association for the Study of Liver Disease (AASLD) have recommendations to guide providers in identifying appropriate patients for chronic hepatitis B and hepatitis C screening. Content from CDC and AASLD recommendations are incorporated into the easy-to use, pullout chart guidance developed by the California Department of Public Health that follow on pages 223–228.

References

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4. Neumeister AS, Pilcher LE, Erickson JM, et al. Hepatitis C prevalence in an urban Native-American clinic: A prospective screening study. *Journal of the National Medical Association*. 2007;99(4):389-392.
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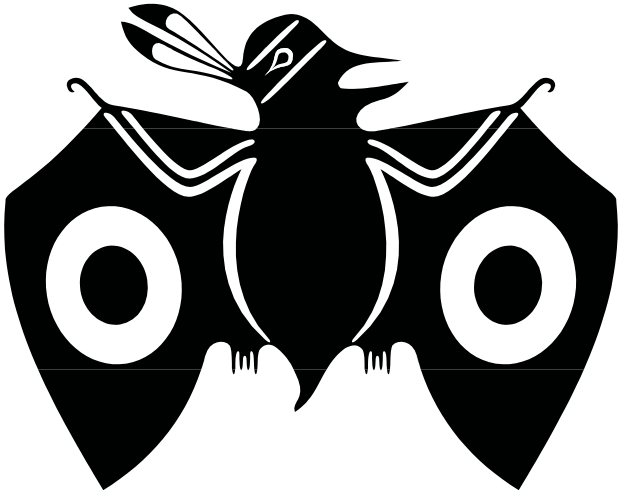

Hepatitis B and Hepatitis C: Whom to Test

Most people with chronic viral hepatitis do not know they are infected. Chronic hepatitis B infection and chronic hepatitis C infection are associated with cirrhosis, liver cancer, and liver failure. These complications can be prevented by early detection, treatment, and education. Serologic testing is the means for identifying persons with chronic viral hepatitis.

I. Populations recommended for hepatitis B testing[1]
- All pregnant women
- Infants born to hepatitis B surface antigen (HBsAg)-positive mothers
- Persons born in geographic regions with HBsAg prevalence ≥2 percent[2]
- U.S.-born persons not vaccinated as infants whose parents were born in geographic regions with HBsAg prevalence of ≥8 percent[3]
- Household contacts, sex partners, and needle-sharing partners of hepatitis B-infected persons
- Persons with behavioral exposures to hepatitis B
  - Injection drug users
  - Men who have sex with men
- Persons with selected medical conditions
  - Elevated liver enzymes of unknown etiology
  - Renal disease requiring hemodialysis
  - HIV infection
  - Any disease requiring immunosuppressive therapy
- Persons who are the source of blood or body fluid exposures that might warrant postexposure prophylaxis (e.g., needlestick injury to a healthcare worker)

II. Populations recommended for hepatitis B vaccination, without pre-vaccination serology[1]
- Persons under 19 years of age who have not been vaccinated against hepatitis B
- Persons having more than one (>1) sexual partner in the past six months
- Persons seeking evaluation or treatment for a sexually transmitted disease
- Health care or public safety workers with reasonably anticipated occupational exposures to blood or infectious body fluids
- Persons with select medical conditions:
  - Chronic (long-term) liver disease
  - End-stage renal disease
- Persons planning to travel to a country where at least two percent of the population has hepatitis B (Asia, Africa, the Amazon Basin in South America, the Pacific Islands, Eastern Europe or the Middle East)
- Persons who live or work in a facility for developmentally disabled persons
- Anyone who wishes to be protected from hepatitis B infection

III. Populations recommended for hepatitis C testing[1]
- Persons who have ever injected illegal drugs, including those who injected only once many years ago
- Persons with selected medical conditions
  - All persons with human immunodeficiency virus (HIV) infection
  - Patients with signs or symptoms of liver disease (e.g., abnormal liver enzyme tests)
  - Recipients of clotting factor concentrates made before 1987
  - Recipients of blood transfusions or solid organ transplants before July 1992
  - Recipients of blood or organs from a donor who later tested hepatitis C virus (HCV)-positive
  - Patients who have ever received long-term hemodialysis
- Children born to HCV-positive mothers (to avoid detecting maternal antibody, these children should not be tested before age 18 months)
- Persons with known HCV exposures (e.g., healthcare workers after needlesticks involving HCV-positive blood)

[1] Source: Centers for Disease Control and Prevention (CDC). Access CDC recommendations and other clinical guidelines for viral hepatitis prevention, testing, management, and care as well as patient education materials at www.cdc.gov/hepatitis or www.cdph.ca.gov/programs/Pages/ovhp.aspx.

[2] Regions with ≥2 percent HBsAg prevalence include the regions described below as well as South, Central, and Southwest Asia, Japan; Russia; Eastern and Southern Europe; Honduras; Guatemala; North America (Alaska Natives and indigenous populations of Northern Canada); and the areas surrounding the Amazon River basin. (A complete list is available at wwwnc.cdc.gov/travel/destinations/list.aspx.)

[3] Regions with ≥8 percent HBsAg prevalence include Southeast Asia; South and Western Pacific Islands; Africa; the Middle East (except Israel); Haiti; the Dominican Republic; and the interior Amazon River basin. (A complete list is available at wwwnc.cdc.gov/travel/destinations/list.aspx.)

Prepared by the California Department of Public Health, August 2011

Hepatitis B and C: Patient Self-Administered Risk Assessment

Hepatitis B and C are transmitted in different ways. Most people do not know they are infected until they are tested. Hepatitis vaccination and testing are available at this clinic. Please check if these statements apply to you.

I. Have you been exposed to hepatitis B?

- Were you born in an area of the world where at least two percent of the population has hepatitis B (Asia, Africa, the Amazon Basin in South America, the Pacific Islands, Eastern Europe, or the Middle East)?
- Were you not vaccinated for hepatitis B as infants?
- Was your mother infected with hepatitis B when you were born?
- Are you pregnant?
- Are you HIV-positive, have an HCV infection, or on immunosuppressive therapy?
- Did you have abnormal liver enzyme test results for an unknown reason?
- Have you ever been on hemodialysis?
- Have you had a sexual partner who was infected with hepatitis B?
- Have you lived in the same house with someone infected with hepatitis B?
- Are you a man who has sex with men?
- Have you ever injected illicit drugs or shared drug injection equipment?
- Have you shared needles with someone infected with hepatitis B?
- Are you a health care or public safety worker with a known, recent occupational exposure to hepatitis B-infected blood or bodily fluids (e.g., through an accidental needle stick)?

____ None of the above ____ Yes, at least one of the above applies to me

II. Do you need to be vaccinated against hepatitis B?

- Are you under 18 but have not been vaccinated against hepatitis B?
- Have you had more than one sexual partner in the past six months?
- Are you seeking evaluation or treatment for a sexually transmitted disease?
- Are you a health care or a public safety worker with reasonably anticipated occupational exposures to blood or infectious body fluids?
- Do you have chronic (long-term) liver disease?
- Do you have end-stage renal disease?
- Are you planning to travel to a country where at least two percent of the population has hepatitis B (Asia, Africa, the Amazon Basin in South America, the Pacific Islands, Eastern Europe or the Middle East)?
- Do you live or work in a facility for developmentally disabled persons?
- Do you wish to be protected from hepatitis B infection?

____ None of the above ____ Yes, at least one of the above applies to me

III. Have you been exposed to hepatitis C?

- Have you ever injected illicit drugs, even once, many years ago?
- Did you receive donated blood or donated organs before 1992 and/or blood clotting products before 1987?
- Have you ever been on hemodialysis?
- Are you a health care or public safety worker with a known, recent occupational exposure to hepatitis C-infected blood or bodily fluids (e.g., through an accidental needle stick)?
- Are you HIV-positive?
- Have you had signs or symptoms of liver disease (e.g., abnormal liver enzyme tests, jaundice)?
- Was your mother infected with hepatitis C when you were born?

____ None of the above ____ Yes, at least one of the above applies to me

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For administrative use only:

If yes to I, order test for HBV (HBsAg and anti-HBs) ☐

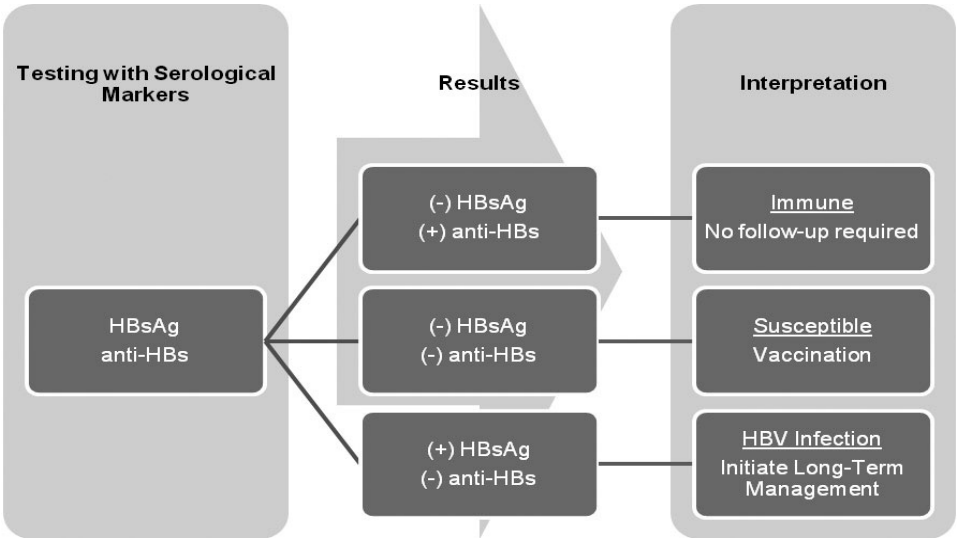
If yes to II, administer first dose of HBV vaccine ☐

If yes to III, order test for HCV (anti-HCV) ☐

Prepared by the California Department of Public Health, August 2011

Hepatitis B: Testing and Serology

Hepatitis B is an infection caused by the hepatitis B virus (HBV). Chronic infection with HBV is associated with cirrhosis, liver cancer, and liver failure. These complications can be prevented by treatment and patient education (e.g., regarding alcohol use and liver self-care). Serologic testing is the primary means for identifying persons with chronic HBV infection. An effective vaccine is available to prevent HBV infection.



Serologic Markers*

HBsAg:
Hepatitis B surface antigen

Anti-HBs:
Antibody to HBsAg

* Note: Another HBV test is total antibody to hepatitis B core antigen (anti-HBc), which can be used to distinguish whether immunity is due to past infection (anti-HBc-positive) or to previous vaccination (anti-HBc-negative). In patients with chronic HBV infection, anti-HBc is also present. In the absence of HBsAg or Anti-HBs, an anti-HBc-positive test result has one of four interpretations: 1) recovering from acute HBV infection; 2) distantly immune, test not sensitive enough to detect very low level of anti-HBs in serum; 3) susceptible with a false positive anti-HBc; or 4) chronically infected with an undetectable level of HBsAg in serum.

Hepatitis B Vaccination

- 3 doses are administered at 0, 1, 6 months; a combination hepatitis A/hepatitis B vaccine is available and follows the same dosing schedule
- If partially vaccinated, the patient does not need to restart the series
- Vaccine is safe for pregnant and HIV-infected persons
- Post-vaccine serology testing (anti-HBs) is recommended for household, needle-sharing, and sexual contacts of HBsAg-positive persons, HIV-positive persons, and healthcare workers
- Booster doses may be indicated for hemodialysis patients, HIV-infected persons, and other immunocompromised persons

Principles of Long-Term Hepatitis B Management

- Provide patient with culturally and linguistically appropriate educational materials (see links below)
- Report case to local health department within seven days
- Vaccinate against hepatitis A unless immune
- Encourage patient's sex partners, household members, and injection-drug sharing contacts to seek HBV testing, medical evaluation, and vaccination
- Counsel patient to minimize alcohol consumption and other liver toxins
- Counsel patient to avoid sharing razors, toothbrushes or personal injection equipment
- Seek a hepatitis B-experienced clinician to evaluate for, manage, and treat chronic HBV infection
- Access clinical guidelines for HBV prevention, testing, management, and care as well as patient education materials at www.cdc.gov/hepatitis or www.cdph.ca.gov/programs/Pages/ovhp.aspx.

Prepared by the California Department of Public Health, August 2011

Hepatitis B: Billing and Diagnosis Codes

CPT Codes		
90632	Monovalent hepatitis A vaccine for adult dosage	Vaccine Codes
90633	Monovalent hepatitis A vaccine for pediatric/adolescent use (2-dose schedule)	
90634	Monovalent hepatitis A vaccine for pediatric/adolescent use (3-dose schedule)	
90746	Monovalent hepatitis B vaccine for adult dosage	
90743	Monovalent hepatitis B vaccine for adolescent use (2-dose schedule)	
90745	Monovalent hepatitis B vaccine for pediatric use (3-dose schedule)	
90636	Combination hepatitis A/hepatitis B vaccine for adult dosage	
90740	Hepatitis B vaccine for dialysis or immunosuppressed patient (3-dose schedule)	
90747	Hepatitis B vaccine for dialysis or immunosuppressed patient (for 40 mcg dosing and 4-dose schedule)	
86706	Hepatitis B surface antibody (HBsAb)	Testing Codes
87515	Infectious agent detection by nucleic acid (DNA or RNA); hepatitis B virus, direct probe technique	
87516	Infectious agent detection by nucleic acid (DNA or RNA); hepatitis B virus, amplified probe technique	
87517	Infectious agent detection by nucleic acid (DNA or RNA); hepatitis B virus, quantification	
87340	Infectious agent antigen detection by enzyme immunoassay technique, qualitative or semiquantitative, multiple-step method; hepatitis B surface antigen (HBsAg)	
87341	Infectious agent antigen detection by enzyme immunoassay technique, qualitative or semiquantitative, multiple-step method; hepatitis B surface antigen (HBsAg), neutralization	
90741	Immunization administration (includes percutaneous, intra-dermal, subcutaneous, intramuscular and jet injections, one vaccine (single or combination vaccine/toxoid)	Administration Codes
90472	Each additional vaccine (single or combination vaccine); (list separately in addition to the code for primary procedure)	

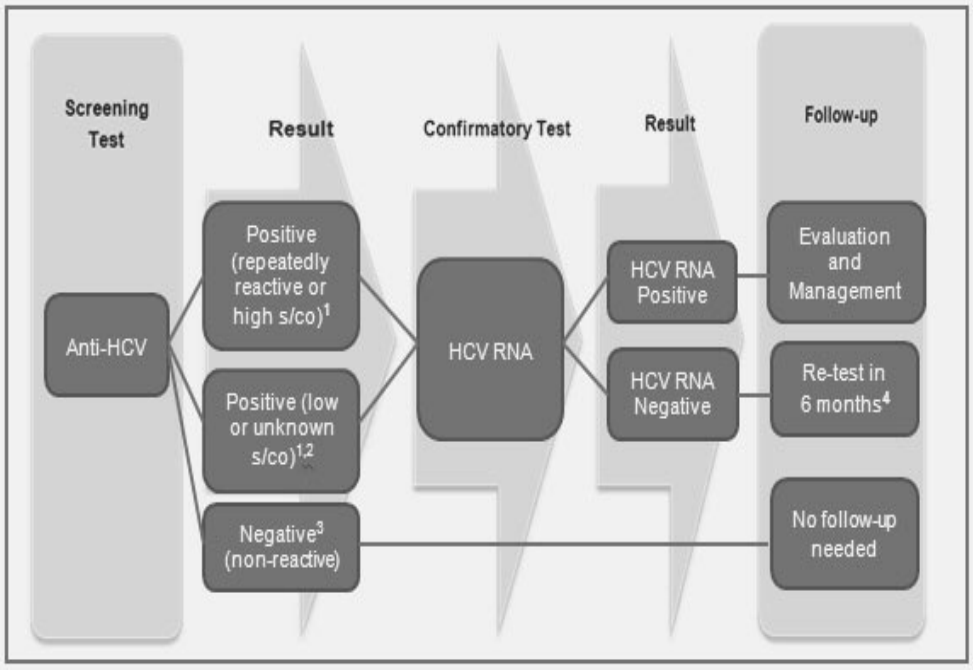
ICD-9 Diagnosis Codes	
V01.7	Contact with or exposure to communicable diseases, other viral diseases
V05.3	Need for prophylactic vaccination and inoculation against single disease: viral hepatitis
V69.2	High-risk sexual behavior
571.8	Other chronic nonalcoholic liver disease
571.9	Unspecified chronic liver disease without the mention of alcohol
070.3	Chronic hepatitis B without mention of hepatic coma

CPT Codes		
90201-99205	Office or outpatient visit for the evaluation or management of a new patient	E M Codes
36415	Collection of venous blood by venipuncture	

Prepared by the California Department of Public Health, August 2011

Hepatitis C: Testing and Serology

Hepatitis C is an infection caused by the Hepatitis C virus (HCV). Chronic infection with HCV is associated with liver failure, cirrhosis, and liver cancer. These complications can be prevented by treatment and lifestyle changes (i.e., by reducing or eliminating alcohol use and practicing other forms of liver self-care). Serologic testing is the primary way to identify persons with chronic HCV infection. Currently, no vaccine is available to prevent HCV.



Serologic Markers

Anti-HCV: Test used to detect the presence of antibodies to the virus, indicating exposure to HCV

HCV RNA: Test used to detect the presence (qualitative) or amount (quantitative) of virus and to diagnose current infection

[1] 95% of samples with a high signal-to-cutoff (s/co) ratio will be predictive of a true antibody positive result, regardless of the anti-HCV prevalence or characteristics of the population being tested. A list of the s/co ratios (or threshold values) that are predictive of a true positive for available commercial assays can be retrieved from the Centers for Disease Control and Prevention (CDC) at www.cdc.gov/hepatitis/HCV/LabTesting.htm.

[2] If a false positive test result is suspected, supplemental HCV testing should be conducted. Options for supplemental testing include repeating the initial HCV antibody test, conducting a recombinant immunoblot assay (RIBA) HCV antibody test, or reflexing to an HCV RNA test. A positive repeat antibody or RIBA test confirms the presence of HCV antibody and should be followed up by HCV RNA testing. A negative repeat HCV antibody or RIBA test rules out the presence of HCV antibody. (Given the high specificity of third generation anti-HCV testing, the need for RIBA testing has declined.)

[3] Patients with recent (< 6 months) exposure who test anti-HCV negative may not have yet developed detectable antibodies. HIV-infected persons and other immunocompromised individuals may not develop hepatitis C antibodies. HCV RNA testing should be considered for immunocompromised persons when suspicion of exposure to HCV is high.

[4] A single negative HCV RNA test result cannot exclude a diagnosis of chronic HCV, as persons may have intermittent viremia. Two positive HCV RNA tests six months apart are needed to diagnose a case of chronic HCV infection. Conversely, two negative HCV RNA tests six months apart are needed to rule out chronic HCV infection.

Prepared by the California Department of Public Health, August 2011

Hepatitis C: Billing and Diagnosis Codes

CPT Codes		
86803	Hepatitis C antibody	Testing Codes
86804	Hepatitis C antibody; confirmatory test (e.g., immunoblot or RIBA)	
87520	Infectious agent detection by nucleic acid (DNA or RNA); hepatitis C, direct probe technique	
87521	Infectious agent detection by nucleic acid (DNA or RNA); hepatitis C, amplified probe technique	
87522	Infectious agent detection by nucleic acid (DNA or RNA); hepatitis C, quantification	
90201-99205	Office or outpatient visit for the evaluation or management of a new patient	E M Codes
36415	Collection of venous blood by venipuncture	

ICD-9 Diagnosis Codes	
V01.7	Contact with or exposure to communicable diseases, other viral diseases
V05.3	Need for prophylactic vaccination and inoculation against single disease: viral hepatitis
V69.2	High-risk sexual behavior
571.8	Other chronic nonalcoholic liver disease
571.9	Unspecified chronic liver disease without the mention of alcohol
070.51	Acute hepatitis c without hepatic coma
070.54	Chronic hepatitis C without hepatic coma
070.7	Unspecified viral hepatitis C
070.70	Unspecified viral hepatitis C without hepatic coma

Evaluation and Management

- Counsel patient on the meaning of the test results: a positive hepatitis C antibody test result indicates exposure to HCV (past or present infection); HCV RNA testing is needed to diagnose current HCV infection
- Report case to local health department within 7 days – forms and contact information for reporting cases to the local health department can be accessed at www.cdph.ca.gov/healthinfo/Pages/ReportableDiseases.aspx
- Vaccinate patients against hepatitis A and B unless immune
- Advise patients to reduce or eliminate intake of alcohol and other liver toxins
- Counsel patients to practice safer injection, follow infection control guidelines in healthcare and in settings such as tattoo parlors, and avoid sharing personal items that might have blood on them, such as razors
- Counsel patients to practice safer sex when engaging with multiple sex partners or infected with HIV
- Provide patient with culturally and linguistically appropriate educational materials (see link below)
- Seek a hepatitis C experienced clinician to evaluate for, manage, and treat chronic HCV infection, either by referral or through clinical consultation
- Access clinical guidelines for HCV prevention, testing, management, and care at the CDPH, Office of Viral Hepatitis Prevention website: www.cdph.ca.gov/programs/Pages/HepatitisCGuidelines.aspx

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Hepatitis B and C in Alaska Native and American Indian Persons: The Patient Care Perspective

Lisa Townshend-Bulson, ANP, Alaska Native Tribal Health Consortium, Anchorage, Alaska

As a nurse practitioner in a liver disease program serving Alaska Native and American Indian persons in Alaska, I see a lot of patients with hepatitis B and C. In our program, there are more than 1,300 persons with chronic hepatitis B and 2,000 with chronic hepatitis C. I coordinate our hepatitis C treatment program. The saddest part of my job is seeing someone who has advanced cirrhosis and liver cancer from hepatitis that went undiagnosed for many years.

Many patients could have changed their habits to prevent the advancement of their liver disease – if only they had known that they had hepatitis B or C. Others could have benefitted from treatment, but now it is too late – their livers are too sick or their cancers are too far advanced for treatment. Unfortunately, there are few treatment options available for these individuals.

Screening for hepatitis B and C is the first step to successful clinical management of these diseases and to preventing the development of cirrhosis and hepatocellular carcinoma (HCC) later in life. In this issue of *The IHS Provider*, Dr. Adler's article describes the CDC screening, diagnosis, and serology guidelines for hepatitis B and C, which are critical for identifying individuals who are unaware of their infection. The article also refers to the Institute of Medicine report on chronic hepatitis B and C and the US Department of Health and Human Services Action Plan to address these important infectious diseases. Both reports underscore the importance of knowing one's viral hepatitis status.

Once people are aware of their status, brief interventions to encourage lifestyle changes can have a huge impact on the sequelae of liver disease from hepatitis B and C. Obesity and concurrent use of alcohol are potent co-factors in the risk of progression to cirrhosis and HCC. Treatment is more likely to be successful in patients with only moderate liver fibrosis (scarring) and may not be needed as urgently in those with mild disease. Thus evaluation of the clinical phase of liver disease and careful monitoring are useful in prevention of adverse outcomes. Surveillance for HCC in those with advanced disease can begin sooner by knowing that someone has hepatitis B or C and assessing the stage of disease.

Treatment is available and improving over time. Hepatitis B medications are successful at viral suppression, decrease the risk of cirrhosis and HCC, and are generally well tolerated. Hepatitis C treatment can be difficult for many patients but can lead to virologic clearance and prevention of HCC or liver disease-related death in a significant proportion of patients who successfully complete treatment. This year, two new oral protease inhibitors, telaprevir and boceprevir, became available to treat hepatitis C genotype 1. When either of these medications is combined with peginterferon and ribavirin, the cure rate is significantly increased. With this breakthrough, treatment duration frequently can be shortened from 48 weeks to 24 - 28 weeks. In addition, there are several dozen new drugs in development. These could result in further improvement in treatment efficacy and tolerability and decrease in treatment duration.

The diagnosis of a chronic disease such as hepatitis B and C is a serious and often traumatic event for a patient, but it also can provide positive opportunities. Early detection of these diseases, evaluation of the stage of liver involvement, institution of a management plan, and treatment when indicated will provide long-term benefits. Finally, pertinent patient education can have a great impact in helping patients make important decisions about their lifestyle and treatment.

Help! I can't get this to work!

CDR David Ransom, Staff Pharmacist, US Public Health Service, Northern Navajo Medical Center; LT J. Garrett Sims, PharmD, BCPS, Clinical Pharmacist, US Public Health Service, Northern Navajo Medical Center; and CDR Mark N. Strong, PharmD, MT (ASCP), Chief of Outpatient Pharmacy Services, US Public Health Service, Northern Navajo Medical Center, Shiprock, New Mexico

We have all heard it. We have all said it. At Northern Navajo Medical Center (NNMC) we use a Microsoft Office Access®[1] database for quality assurance and performance improvement in our Coumadin Clinic.

A recent upgrade to our computers meant transitioning almost entirely from Microsoft Office®[2] versions 2003 and 2007 to version 2010. Not surprisingly, such upgrades are rarely problem free. This resulted in an error message when opening the Coumadin Clinic database and, in general, we could not get it to work right.

Steps were taken to address this problem and enhance the database:

1. Find the problem. In this case, the error message was regarding the built-in calendar function used for assigning dates. This was relatively easy to address, as the calendar just needed to be changed to one tested in version 2003, 2007, and 2010.

2. Clean it up. Often solving one problem will reveal another. Looking into the data revealed several years of data containing repeat entries for things like the patient's name, the indication for therapy, or the previous International Normalized Ratio (INR) test value. Although this currently wasn't a problem, it could cause difficulties in our quality assurance and performance improvement. New tables were then created to include the same data, but only once for each item. Separate tables were made for patient demographics, indications, INR tests and results, and for appointments. Transferring the data to the new tables was not technically difficult, but since nobody re-enters the same data 100% accurately, there were a few dozen misspellings and typographical errors in entries that did not match up. The original data were left in the database in case they were needed. Later, even more data were imported from Resource Patient Management System (RPMS). After the import, there were more than 200 patients and more than 6000 INR test values (past and current).

3. Increase efficiency.

A) Fixing and cleaning up the data revealed an opportunity to make the database better. In order to make the database more user friendly, a patient centered form was created (see Figure 1). The purpose of this was to create a form where everything that needed to be entered or accessed could be done with one click. The form contained patient demographics, the indication for therapy, the INR tests, In/Out of range report access, and an appointment counter (kept vs. missed). The patient could be selected with a "Find" function that was attached to the chart number and the last name. Drop-down boxes were placed throughout the form to standardize entries. Information that didn't change from one patient to the next, such as indication for anticoagulation, was attached to the profile and would automatically populate in the form when the patient was accessed. This information could be changed if needed, but this prevented information being entered multiple times.

B) Reports were added that produced and listed the number of days "in" and "out" of range calculations for both individual patients and the clinic as a whole. This could be viewed as a summary report and/or a graph.

C) The Coumadin Clinic had been using an Excel®[3] workbook for appointments. To further streamline processes in the clinic, appointments were added to the Access® database, eliminating the need for an Excel® workbook. This was added to the patient form. Appointment identifiers were added to track whether or not the appointment was booked in RPMS, was a double-book, if the patient kept the appointment, and a comment field to note such things as "first appt." The appointments for the whole clinic could be displayed in both a simple listing of rows with the date, time, name, comments, and the appointment identifiers, and also in a customized view designed to look like the original Excel® workbook. The original Excel® workbook showed appointments by a single day, with all of the days' time slots for appointments with the names of and comments on those patients with appointments.

4. Increase functionality.

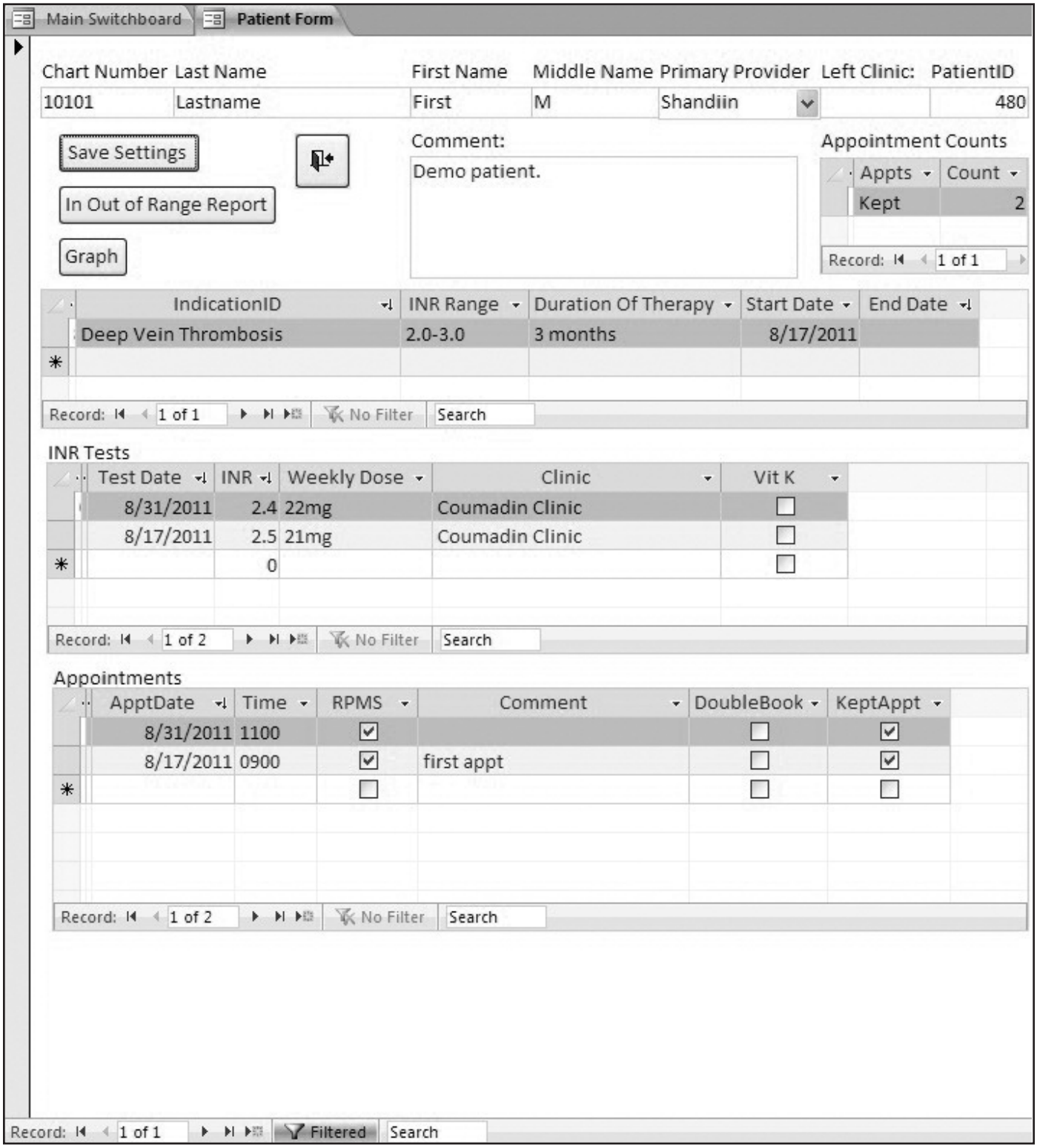
A) A report was designed to find which patients were lost to follow up. Another searched for patients that did not have a primary care provider assigned. Another found INR values at or above a user entered value within a user entered date range.

B) New forms were created. One included a selected provider's patient list; selecting any patient from this form would bring up that patient's form.

C) Three scrollable lists — active, inactive, and all patients — were made. Any of these lists, when selected, could also call up the patient in the patient form.

The NNMC Coumadin Clinic data base has gone from, "Help! I can't get this to work…" to a system that is both more efficient and more functional than the original. This development is a feedback-driven, responsive, transitional process. Additional improvements continue to be integrated into, monitored, and systematized to this and other databases at NNMC.

Figure 1. Coumadin Clinic patient form



1. Microsoft Access is a registered trademark of Microsoft Corporation in the US and other countries.
2. Microsoft Office is a registered trademark of Microsoft Corporation in the US and other countries.
3. Microsoft Excel is a registered trademark of Microsoft Corporation in the US and other countries.

Telluride Midwinter Conference
On Women's and Children's Healthcare
February 3-5, 2012

Winter's coming! And planning for this year's Telluride Conference is underway. The planning committee is working on a program of topical continuing education for providers caring for Native American women and children. As in past years, we will provide speakers on subjects that will be useful for family physicians, obstetricians, pediatricians, CNMs, NPs, PAs, and clinical nurses working in IHS, tribal, and urban Indian facilities. As always, there will be plenty of time to network with colleagues from other service units and enjoy one of America's most spectacular mountain playgrounds. And the price is right! The tuition in past years has ranged from $9 - $15 for 2 ½ days of education.

NEW THIS YEAR--We have been offered discounted rooms for conference attendees at the Victorian Inn. Call 800-611-9893 and identify yourself as being with the Indian Health Group. (If the reservationist on duty doesn't know what you're talking about, ask to speak to Karyn, the manager.)

So save the dates! Share this with a colleague who might not be on our mailing list. Keep an eye out for future announcements with agenda, faculty, etc. coming in early December.

Put it on your calendar and submit your leave slip, and we'll see you in Telluride February 3.

Planning Committee:

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SAVE THE DATES!

This is a page for sharing "what works" as seen in the published literature, as well as what is being done at sites that care for American Indian/Alaskan Native children. If you have any suggestions, comments, or questions, please contact Steve Holve, MD, Chief Clinical Consultant in Pediatrics at sholve@tcimc.ihs.gov.

IHS Child Health Notes

Quote of the month

"A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."

Max Planck

Articles of Interest

Practice parameter: The diagnosis, treatment, and evaluation of the initial urinary tract infection in febrile infants and young children. *Pediatrics*. 2011;128:595-610 *http://aappolicy.aappublications.org/cgi/reprint/pediatrics;103/4/843.pdf*

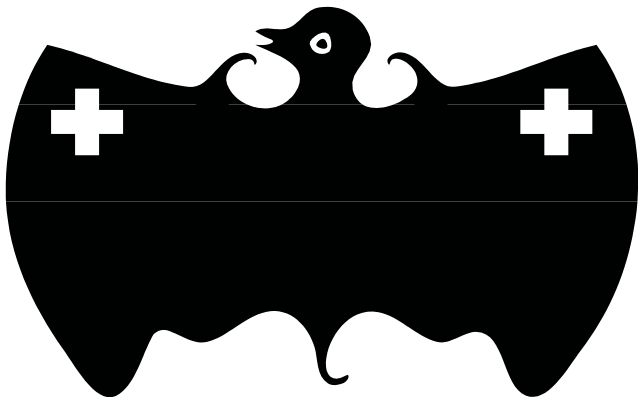
This is the first update of the guideline on diagnosis and treatment of the initial UTI in febrile infants since 1999. The previous guideline strongly encouraged imaging studies, including a voiding cystourethrogram (VCUG). The new guideline "reflects more recent evidence demonstrating antimicrobial prophylaxis not to be as effective as presumed previously. Moreover, prompt diagnosis and effective treatment of a febrile UTI recurrence may be of greater importance regardless of whether reflux is present or the child is receiving antimicrobial prophylaxis."

Highlights include:

1. Obtain the right specimen, as in a catheterized specimen, not one from a bag collection
2. Pyuria and bacteriuria must be present in the urinalysis. This applies to infants > 2 months of age. Urine cultures in the absence of pyuria are considered asymptomatic bacteriuria and do not need treatment or work up.
3. Children may be treated with oral medication. IV antibiotics are not required unless a child is toxic in appearance or unable to take oral medication
4. Do not get a VCUG unless certain conditions are present. These include presence of hydronephrosis or high grade reflux on a renal ultrasound or a recurrent febrile UTI
5. Routine antimicrobial prophylaxis is not needed except for grade V reflux, which occurs in < 1% of initial febrile UTIs.

Editorial Comment

These guidelines will markedly reduce the number of VCUGs needed in the evaluation of first time febrile UTIs. This is a change that will be welcomed by parents, physicians, and radiology technicians who were previously performing these studies in crying infants.



POSITION VACANCIES

Editor's note: As a service to our readers, The IHS Provider *will publish notices of clinical positions available. Indian health program employers should send brief announcements as attachments by e-mail to* john.saari@ihs.gov. *Please include an e-mail address in the item so that there is a contact for the announcement. If there is more than one position, please combine them into one announcement per location. Submissions will be run for four months and then will be dropped, without notification, but may be renewed as many times as necessary. Tribal organizations that have taken their tribal "shares" of the CSC budget will need to reimburse CSC for the expense of this service ($100 for four months). The Indian Health Service assumes no responsibility for the accuracy of the information in such announcements.*

Licensed Clinical Social Worker
Medical Clinic Manager
Consolidated Tribal Health Project, Inc.; Calpella, California

Consolidated Tribal Health Project, Inc. is a 501(c)(3) non-profit, ambulatory health clinic that has served rural Mendocino County since 1984. CTHP is governed by a board comprised of delegates from a consortium of nine area tribes, eight of which are federally recognized, and one that is not. Eight of the tribes are Pomo and one is Cahto. The campus is situated on a five-acre parcel owned by the corporation; it is not on tribal land.

CTHP has a Title V Compact, which gives the clinic self governance over our Indian Health Service funding allocation. An application for either of these positions is located at *www.cthp.org*. Send resume and application to Karla Tuttle, HR Generalist, PO Box 387, Calpella, California 95418; fax (707) 485-7837; telephone (707) 485-5115 (ext. 5613). (10/11)

Mid-Level Providers: Nurse Practitioners/Physician Assistant
Aleutian Pribilof Islands Association (APIA); St. Paul and Unalaska, Alaska

This is a renowned bird watcher's paradise! Provide health care services to multiple generations of families. We are recruiting for mid-level providers for both sites: St. Paul and Unalaska, Alaska. Duties include primary care, walk-in urgent care, and emergency services; treatment and management of diabetes a plus. Must have the ability to make independent clinical decisions and work in a team setting in collaboration with referral physicians and onsite Community Health Aide/Practitioners. Sub-regional travel to other APIA clinics based on need or request. Graduate of an accredited NP or PA program. Requires a registration/license to practice in the State of Alaska and current ACLS and PALs. Minimum experience: 2 - 3 years in a remote clinical setting to include emergency care services and supervisory experience. Indian Health Service experience a plus. Will be credentialed through Southcentral Foundation. Positions available immediately. Clinic hours 8 am - 4:30 pm, Monday through Friday, and rotations scheduled and/or shared for on-call during evenings and weekends. Salary DOE, plus benefits. Contractual two-year commitment with hiring bonus, housing allowance, and continuing education to keep license current. Job description available upon request. Please send your *curriculum vitae* to Nancy Bonin, Human Resources Director, via e-mail to *nancyb@apiai.org*. (7/11)

Registered Nurse
Wassaja Memorial Health Center; Fort McDowell Yavapai Nation, Arizona

The Wassaja Memorial Health Center is currently seeking a registered nurse with a pay rate of $43,766 to $52,519 per annum (DOE). The registered nurse will provide direct patient care to patients of the Wassaja Memorial Health Center, an outpatient facility. This position requires a current active license as a registered nurse in the state of Arizona with at least two years experience in a clinical environment. Current Arizona driver's license and meet FMYN insurance standards.

The Wassaja Memorial Health Center is an outpatient facility located on the Fort McDowell Yavapai Nation in Arizona. Fort McDowell Yavapai Nation is located within Maricopa County about twenty-three miles northeast of Phoenix. The Wassaja Memorial Health Center provides care to all IHS eligible patients with proof of membership. The clinic operates Monday through Thursday from 7:30 am to 5:30 pm. The full-time medical staff includes a physician, a nurse practitioner, a physical fitness specialist, and a pharmacist. The facility offers the following clinical services: family medicine, dietician, podiatry, eye, community health, and on-site pharmacy.

The Fort McDowell Yavapai Nation offers a highly competitive compensation program ranging from medical and life insurance to disability and retirement plans. Some benefit programs require contributions from the employee, but most are fully paid by the company. If you are interested in applying, please contact Sarah Gonzales, HR, at (480) 789-7219; e-mail *sgonzales@ftmcdowell.org*, or submit application/resume to recruiter@ftmcdowell.org. To view the job description and print the application, please visit *www.ftmcdowell.org*. (7/11)

Family Practice Physician (4)
Physician Assistant (1)
Dentist (2)
Pharmacist (2)
Nurse (4)
Standing Rock Service Unit; Fort Yates, North Dakota

The Standing Rock Service Unit is a fully accredited 12-bed hospital and outpatient services facility located along the Missouri River in Fort Yates, North Dakota. In addition to inpatient, outpatient, emergency, dental, behavioral health, and optometry services, a dialysis unit (eight stations) is also available to serve our patients' needs. Indeed, through strong partnerships with health care providers in nearby Bismarck, North Dakota (approximately 60 miles away) and extension outpatient centers in Cannonball, North Dakota, McLaughlin, South Dakota, Bullhead, South Dakota, and Wakpala, South Dakota, the Standing Rock Service Unit provides comprehensive services to over 9,000 American Indians in North and South Dakota. If you are interested in a position or would like more information, please contact Kim Lawrence at (605) 226-7532; e-mail *kim.lawrence@ihs.gov* or Kara Todd-Iwen at (605) 226-7808; e-mail *kara.todd-iwen@ihs.gov*. (7/11)

Family Practice Physician (2)
Physician Assistant (1)
Pharmacist (2)
Nurse (4)
Cheyenne River Service Unit; Eagle Butte, South Dakota

Inpatient, emergency room and outpatient services including specialty care for obstetrics, physical therapy, and optometry services are provided. Hospital and emergency room services are the only services within 90 miles of Eagle Butte. A new six-bed short stay facility is under construction and due for completion in 2011. Five providers staff this 13-bed unit. The Cheyenne River Service Unit provides comprehensive services to over 9,000 American Indians in South Dakota. If you are interested in a position or would like more information, please contact Kim Lawrence at (605) 226-7532; e-mail *kim.lawrence@ihs.gov* or Kara Todd-Iwen at (605) 226-7808; e-mail *kara.todd-iwen@ihs.gov*. (7/11)

Family Practice Physician (2)
Pharmacist (1)
Spirit Lake Service Unit; Fort Totten, North Dakota

The Spirit Lake Nation in North Dakota is served by a four-physician ambulatory care facility as well as a dental clinic and a diabetes program, a pharmacy with three pharmacists, a radiology department with state-or-the-art ultrasound imaging, a complete clinical laboratory, in addition to a mental health department. The Spirit Lake Service Unit provides comprehensive services to over 6,000 American Indians in North Dakota. If you are interested in a position or would like more information, please contact Kim Lawrence at (605) 226-7532; e-mail *kim.lawrence@ihs.gov* or Kara Todd-Iwen at (605) 226-7808; e-mail *kara.todd-iwen@ihs.gov*. (7/11)

Family Medicine Physician
Internal Medicine Physician
Emergency Medicine Physician
Nurse Practitioner
Physician Assistant
Sells Service Unit; Sells, Arizona

The Sells Service Unit (SSU) in southern Arizona is recruiting for board certified/board eligible emergency room/family physician to join our experienced medical staff. We are also looking for a family/pediatric nurse practitioner or physician assistant for our school health program, and a family nurse practitioner for the Sells Hospital outpatient department.

The Sells Service Unit is the primary source of health care for approximately 24,000 people of the Tohono O'odham Nation. The service unit consists of a Joint Commission accredited 34-bed hospital in Sells, Arizona and three health centers: San Xavier Health Center, located in Tucson, Arizona, the Santa Rosa Health Center, located in Santa Rosa, Arizona, and the San Simon Health Center located in San Simon, Arizona with a combined caseload of approximately 100,000 outpatient visits annually. Clinical services include family medicine, pediatrics, internal medicine, prenatal and women's health care, dental, optometry, ophthalmology, podiatry, physical therapy, nutrition and dietetics, social work services, and diabetes self management education.

Sixty miles east of the Sells Hospital by paved highway lies Tucson, Arizona's second largest metropolitan area, and home to nearly 750,000. Tucson, or "The Old Pueblo," is one of the oldest continuously inhabited sites in North America, steeped in a rich heritage of Indian and Spanish influence. It affords all of southern Arizona's limitless entertainment, recreation, shopping, and cultural opportunities. The area is a favored tourist and retirement center, boasting sunbelt attributes and low humidity, with effortless access to Old Mexico, pine forests, snow sports, and endless sightseeing opportunities . . . all within a setting of natural splendor.

We offer competitive salary, relocation/recruitment/retention allowance, federal employment benefits package, CME leave and allowance, and loan repayment. For more information, please contact Peter Ziegler, MD, SSU Clinical Director at (520) 295-2481 or by e-mail at *Peter.Ziegler@ihs.gov*. (7/11)

Associate Director for Tribal Support, Office for State, Tribal, Local, and Territorial Support
Centers for Disease Control and Prevention; Atlanta, Georgia

The Office for State, Tribal, Local, and Territorial Support (OSTLTS) is **currently seeking exceptional candidates for the position of** Associate Director of Tribal Support. The

position requires knowledge of the unique cultural, environmental, social, economic, political, and other interrelated factors that impact the health of American Indian/Alaska Native (AI/AN) populations. The **salary range is $118,846 to $154,501 per year.**

The OSTLTS serves as the primary link between the Centers for Disease Control and Prevention (CDC), the Agency for Toxic Substances and Disease Registry (ATSDR), and Tribal governments. OSTLTS has responsibility for coordinating public health programs and policies that focus on AI/AN communities.

To apply, visit *www.usajobs.gov*. Candidates external to the federal government may apply to job announcement HHS-CDC-DE-11-487758. Federal government merit promotion job announcement number is HHS-CDC-MP-11-487665. The closing date for this job announcement is Wednesday, July 20, 2011. Questions may be directed to Dr. Melanie Duckworth at (404) 498-0300 or *mhd1@cdc.gov*. Please do not submit resumes to this e-mail address. (7/11)

Family Practice Physician
Family Nurse Practitioner
Physician Assistant
Psychiatrist
Bay Mills Health Center/Bay Mills Indian Community; Brimley, Michigan

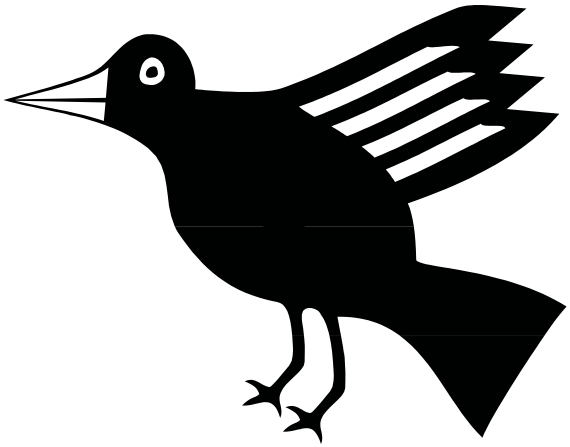
The Bay Mills Health Center is seeking a family practice physician, MD/DO, board certified. Must have completed a residency program and have a Michigan license or able to obtain one. New graduates are welcome to apply. We are also seeking a full time psychiatrist who is board certified, able to obtain a Michigan license and who has completed a residency program. The primary focus is on the adult population with some children in the patient case load. We are in need of a certified mid-level, an FNP or a PA-C with a background in family practice.

The health center is located in the beautiful eastern Upper Peninsula of Michigan on the Bay Mills Indian Reservation. We are located on the shores of Lake Superior, bordering Canada, and are rich in culture. The area is the outdoor enthusiast's dream.

We are an outpatient facility open 8 am to 4:30 pm, Monday through Friday. We have an onsite laboratory, pharmacy, x-ray, behavioral health, dental, community health, and social service departments. Physicians see between 18 - 21 patients per day, with adequate time to be acclimated to the facility and procedures. There are no nights or weekends on call. The Bay Mills Health Center was established in 1976 and is a Federally Qualified Health Center. The health center is open to the general public and is Joint Commission accredited. Our patient focus is geared toward prevention. We are striving to become a Patient Centered Medical Home. We offer a competitive salary, student loan repayments options, CME leave and allowance, a generous leave policy, and comprehensive benefits. If you are interested, please contact Audrey Breakie at (906) 248-8327 daytime, (906) 437-5557 evenings, or e-mail *abreakie@baymills.org*. (7/11)

Family Practice Physician
Menominee Tribal Clinic; Keshena, Wisconsin

Join seven experienced primary care physicians in beautiful wooded north central Wisconsin 45 miles from Green Bay. We provide comprehensive primary care for Wisconsin's longest residing residents at a large, established clinic on the banks of the pristine Wolf River. Practice in an efficient setting with committed colleagues, your own nurse, and a robust electronic health record. Inpatient and obstetrical care is provided at a 25 bed community hospital nine miles away, where family doctors do C-sections, colonoscopies, and EGDs. Live in a safe town of 8,000 with great schools and endless recreational opportunities. Competitive compensation available along with loan repayment (NHSC and State of Wisconsin). Contact Kevin Culhane, MD at (715) 799-5786; or e-mail at *kevinc@mtclinic.net*. (7/11)



MEETINGS OF INTEREST

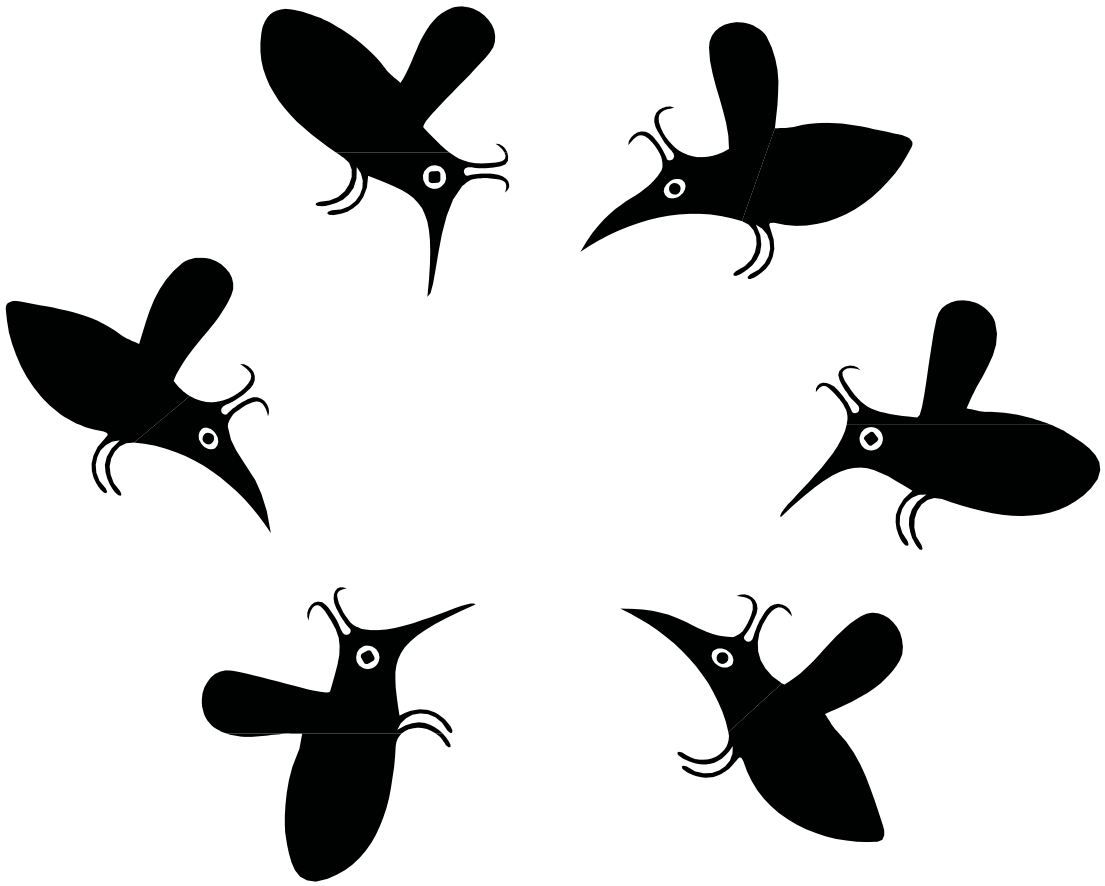
Advancements in Diabetes Seminars
Monthly; WebEx

Join us monthly for a series of one-hour WebEx seminars for health care program professionals who work with patients who have diabetes or are at risk for diabetes. Presented by experts in the field, these seminars will discuss what's new, update your knowledge and skills, and describe practical tools you can use to improve the care for people with diabetes. No registration is necessary. The accredited sponsors are the IHS Clinical Support Center and IHS Nutrition and Dietetics Training Program.

For information on upcoming seminars and/or previous seminars, including the recordings and handouts, click on this link and see Diabetes Seminar Resources: *http://www.diabetes.ihs.gov/index.cfm?module=trainingSeminars*

Available EHR Courses

EHR is the Indian Health Service's Electronic Health Record software that is based on the Resource and Patient Management System (RPMS) clinical information system. For more information about any of these courses described below, please visit the EHR website at *http://www.ihs.gov/CIO/EHR/index.cfm?module=rpms_ehr_training*. To see registration information for any of these courses, go to *http://www.ihs.gov/Cio/RPMS/index.cfm?module=Training&option=index.*



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THE IHS PRIMARY CARE PROVIDER
A journal for health professionals working with American Indians and Alaska Natives

THE IHS PROVIDER is published monthly by the Indian Health Service Clinical Support Center (CSC). Telephone: (602) 364-7777; fax: (602) 364-7788; e-mail: *the.provider@ihs.gov.* Previous issues of THE PROVIDER (beginning with the December 1994 issue) can be found on the CSC Internet home page *(http://www.ihs.gov/Provider).*

Opinions expressed in articles are those of the authors and do not necessarily reflect those of the Indian Health Service or the Editors.

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Publication of articles: Manuscripts, comments, and letters to the editor are welcome. Items submitted for publication should be no longer than 3000 words in length, typed, double-spaced, and conform to manuscript standards. PC-compatible word processor files are preferred. Manuscripts may be received via e-mail.

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