May is Hepatitis Awareness Month!

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According to the Centers for Disease Control and Prevention (CDC), "hepatitis" is an inflammation of the liver and also refers to a group of viral infections that affect the liver. In the US, the most common types of viral hepatitis are hepatitis A, hepatitis B, and hepatitis C.

Hepatitis A virus (HAV) is spread when a person ingests fecal matter — even in microscopic amounts — from contact with objects, food, or drinks contaminated by the feces, or stool, of an infected person. Symptoms occur within 15-50 days of exposure, and the infection clears usually within 2 months, although some persons have prolonged or relapsing disease for up to 6 months. HAV is preventable with a safe, effective vaccine.

Hepatitis B virus (HBV) is spread through contact with infected blood and body fluids, primarily through sexual contact, intravenous drug use or sharing needles, and vertical transmission from infected mother to baby. HBV infection can be acute or chronic. Acute HBV infection is a short-term illness that occurs within six months after someone is exposed to HBV. Although most people fully recover and are immune, acute infection can — but does not always — lead to chronic infection. Chronic HBV infection is a long-term infection that occurs when HBV remains in a person's body. About 6-10% of adults will develop chronic infection, while infants and children have higher rates of developing chronic infection. Chronic HBV infection can lead to serious liver problems, including cirrhosis (scarring of the liver) or liver cancer. Hepatitis B is preventable with a safe and effective vaccine.

Hepatitis C virus (HCV) is spread through contact with blood or body fluids of an infected person, primarily through sharing of contaminated needles, syringes and other injection drug equipment, similarly to HBV. Like hepatitis B, hepatitis C can also be acute or chronic. Many persons infected with hepatitis can remain asymptomatic for decades. Unlike hepatitis B, for most people, acute infection leads to chronic infection (75-85 percent of the time). HCV infection can lead to serious liver problems, including cirrhosis (scarring of the liver) or liver cancer, and is the number one reason for liver transplantation in the U.S. Hepatitis C is not vaccine preventable.

While each viral hepatitis infection is a different disease, the different types of viral hepatitis share many signs and symptoms including jaundice, fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, joint pain, gray-colored bowel movements and dark colored urine. Therefore, laboratory testing is necessary to confirm cases of viral hepatitis.

As of 2010, the CDC reported that nationwide, an estimated 1.2 million people had chronic hepatitis B infections, with 38,000 new infections that year.

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The CDC also reported that nationwide, as of 2010, an estimated 3.2 million people had chronic hepatitis C infection, with 17,000 new infections that year. That's a total of 4.4 million people infected with hepatitis in the U.S. alone! The Indiana State Department of Health (ISDH) reported and investigated 351 acute cases of hepatitis B in 2011 and 376 acute cases of hepatitis B in 2012 (provisional data). The number of acute cases of hepatitis B has increased over time. In Indiana, as well as nationally, higher rates of hepatitis B disease continue among adults, particularly among males 30-39 and 40-49 years of age. In 2011, the ISDH investigated 87 acute hepatitis C cases and 5,640 chronic hepatitis C cases. Rates of hepatitis C infection were highest among adults ages 50-59 years followed by the 40-49 year age group. In 2012, the ISDH investigated 112 acute cases and 5,680 chronic cases of hepatitis C (provisional data). Rates of hepatitis C infection were highest among adults age 50-59 followed very closely by those younger than 30 years of age. Again, this data shows an increase in the number of cases of hepatitis C in the state.

In response to this rising problem, the CDC has designated May as Hepatitis Awareness Month. The ISDH will join the CDC in observing Hepatitis Awareness Month by providing valuable information regarding viral hepatitis infections each week including web site prevention messages and social media postings. Visit the ISDH Viral Hepatitis Prevention webpage at http://www.in.gov/isdh/25797.htm to take a free hepatitis risk assessment developed by the CDC.

For more information on viral hepatitis and Hepatitis Awareness Month, visit the CDC's website http://www.cdc.gov/hepatitis/ or contact Brittany Gross at bgross@isdh.in.gov or 317-233-7627.

Type 2 Diabetes

Jim Ignaut, MA, MPH, MCHES

Diabetes is a group of diseases "that occurs when the pancreas is no longer able to make insulin, or when the body cannot make good use of the insulin it produces" (International Diabetes Federation). Insulin is a hormone that enables glucose to enter cells and provide energy to the body. Diabetes is a major cause of heart disease and stroke and is the seventh leading cause of death in Indiana and the United States. Diabetes can lead to serious complications and premature death, but people with diabetes can take actions to control the disease and decrease the risk of complications.

The types of diabetes are:

- Type 1 diabetes, where the pancreas does not produce insulin. It accounts for approximately 5% of all cases of diagnosed diabetes. Type 1 is usually first diagnosed in children and young adults, but can occur at any time.
- Type 2 diabetes, where the body is not able to effectively use the insulin it produces and accounts for about 95% of diagnosed diabetes in adults.
- Gestational diabetes, which is a form of glucose intolerance diagnosed during pregnancy, and occurs in 2-10% of pregnancies. Women who have gestational diabetes have a higher risk of developing type 2 diabetes in the future.
- Other types consist of various causes and may result from specific genetic conditions, surgery, medications, malnutrition, pancreatic disease, infections and other illnesses (Centers for Disease Control). These causes make up 1-5% of all diabetes cases.

According to the International Diabetes Federation (IDF) , risk factors for type 2 diabetes include family history of diabetes, overweight, unhealthy diet, physical inactivity, increasing age, high blood pressure, ethnicity, impaired glucose tolerance, history of gestational diabetes, and poor nutrition during pregnancy.

Health and Economic Burden: Diabetes has been growing at alarming rates over the past several decades; the prevalence of diagnosed diabetes in the U.S. increased by 128% from 1988 to 2008. According to the American Diabetes Association (ADA) 2011 National Diabetes Fact Sheet, 25.8 million people, or 8.3% of the population, have diabetes. This includes 25.6 million (11.3%) people aged 20 years or older and 10.9 million, (26.9%) of people aged 65 years or older. In terms of prevalence of diagnosed by race and ethnicity (after adjusted for population age differences, 2007-2009) for people aged 20 years and older, 7.1% of non-Hispanic whites, 8.4% of Asian Americans, 12.6 % of non-Hispanic blacks, 11.8% of Hispanics, and 16.1% of the total adult American Indian and Alaskan Native population have been diagnosed. Seven million Americans have undiagnosed diabetes.

According to the Indiana 2012 Behavioral Risk Factor Surveillance Survey, 10.9% (approximately 540,000) of adults ages 18 years and older reported having diabetes. Almost 23% of adults aged 65 years and older reported having diabetes. Diabetes prevalence by race and ethnicity was 10.6% for non-Hispanic white adults, 13.5% for non-Hispanic black adults, and 9.9% for Hispanic adults.

In terms of co-morbid conditions, people with diabetes have heart disease death rates and risk of stroke 2-4 times higher than people without diabetes. It is also the leading cause of new cases of blindness among adults ages 20-74 years and the leading cause of kidney failure. In addition, 60% to 70% of people with diabetes have varying degrees of neuropathy (nervous system disease). Diabetes is also the leading cause of lower limb amputations (ADA Fast Facts, revised 2013).

In terms of the financial burden, the ADA (2012) describes that the total estimated cost of diagnosed diabetes in the United States has increased 41% from 2007 ($174 billion) to 2012 ($245 billion). Of the $245 billion in 2012, direct medical costs accounted for $176 billion and reduced productivity accounted for $69 billion. Medical expenditures for people with diabetes are 2.3 times higher than for those without diabetes.

Research: The Diabetes Prevention Program (DPP) was “a clinical research study led by the National Institutes of Health and supported by the Centers for Disease Control and Prevention. Studies subsequent to the DPP determined how best to implement the program where people live and work” (CDC.gov). The primary question posed by the DPP Research Group was “does a lifestyle intervention or treatment with metformin (an oral anti-diabetic drug) prevent or delay the onset of type 2 diabetes?” The DPP was a double-blinded, randomized, placebo-controlled, three-armed study (placebo, metformin, and lifestyle-including goals of 7% weight loss, 150 minutes of physical activity weekly, and nutrition related goals) that enrolled 3,234 study participants at risk for type 2 diabetes at 27 centers throughout the United States. (NEJM, 2002).

Study results, per the DPP Research Group (NEJM, 2002), indicated that “lifestyle changes and treatment with metformin both reduced the incidence of diabetes in persons at high risk. The lifestyle intervention was more effective than metformin.” The Research Group reported that “the average follow-up for study participants was 2.8 years and the incidence of diabetes was 11.0, 7.8, and 4.8 cases per 100 person years in the placebo, metformin, and lifestyle group, respectively.” They further reported that “the lifestyle intervention reduced the incidence by 58 percent (95% confidence interval, 48-66 percent), and metformin by 31 percent, (95% confidence interval, 17-43 percent) as compared with placebo.” The DPP Research Group noted that it would

also be possible to delay or prevent the development of complications, substantially reducing the individual and public health burden of diabetes.

Hope for the Future: It is well established by research that lifestyle changes have proven to be effective in delaying or even preventing type 2 diabetes. If inspiration can be driven by knowledge of disease process, and an understanding of the benefits of engaging in increased activity and nutrition, then population health could be served well. If individuals can determine the pace of their own course towards even fundamental changes, changes that are not wholesale but significant enough to elicit better health trends, then individual health could be served well.

Research indicates that small changes can lead to steady and longer term healthy lifestyle trends. The DPP confirmed that activity and nutrition can make a difference. These changes do take some effort to sustain over time. Although it is not an all or nothing proposition (*i.e.* from a cognitive-behavioral perspective), periodic failure to reach goals does not connote total failure, but rather presents opportunity to renew efforts that can lead to assimilating a healthier lifestyle long term.

McKenzie and Smeltzer (2001), in their primer on health promotion programs, described that the Health Belief Model (HBM) was developed by a group of psychologists in the 1950s based on Social Psychologist Kurt Lewin's (1890-1947) decision making model. Elements of the HBM were integral for the DPP Lifestyle participants in that they were sufficiently motivated by relevance of health issues, susceptibility to type 2 diabetes, and the belief that a health strategy could be beneficial in reducing those health threats.

Hope for the future may spring from individual choices that include improved nutrition and increased activity. Realizing benefits of these changes early could enhance movement from only contemplating lifestyle changes into taking action and maintaining long term healthier trends, as framed in the Transtheoretical Model (Patterson, 2001). Ultimately, the decision to make lifestyle advances in activity, nutrition, and weight loss is dependent on each individual's choice.

For additional information, visit the ISDH Diabetes Prevention and Control Program at http://www.in.gov/isdh/24966.htm.

References

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Bioterrorism Surveillance

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Bioterrorism is the deliberate release of viruses, bacteria, or other agents that cause illness or death in people, animals, or plants. Healthcare providers, clinical laboratories, and health departments play critical roles in recognizing and responding to illnesses caused by the intentional release of biologic agents. Biological agents are mainly zoonotic, except for smallpox, botulism bacteria/toxin, and agents involving plants. The bacterial and viral zoonotic diseases occur naturally and transmit from animals to humans. The successful characteristics of biological agents are low infective dose, high infectivity by aerosol exposure, the ability to grow high concentrations in culture, environmental stability, high morbidity and/or mortality, the potential to be contagious, natural occurrence, and the potential to cause anxiety in public and healthcare workers. The Centers for Disease Control and Prevention (CDC) groups agents into three categories (A-C) by priority of risk. Many of these agents are encountered on a routine basis through normal detection and investigations.

Category A agents are highest priority and include organisms that pose a risk to national security because they can be easily disseminated or transmitted from person to person, result in high mortality rates, have the potential for major public health impact, might cause public panic and social disruption, and require special action for public health preparedness. These agents/diseases are anthrax (Bacillus anthracis), botulism (*Clostridium botulinum* toxin), plague (*Yersinia pestis*), smallpox (variola major), tularemia (*Francisella tularensis*), and viral hemorrhagic fevers (filoviruses [e.g., Ebola, Marburg] and arenaviruses [e.g., Lassa, Machupo]).

Category B agents are the second highest priority and include those diseases that are moderately easy to disseminate, result in moderate morbidity rates and low mortality rates, and require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance. These disease/agents include brucellosis (*Brucella* species), epsilon toxin of *Clostridium perfringens*, food safety threats (e.g., *Salmonella* species, *Escherichia coli* O157:H7, *Shigella*), glanders (*Burkholderia mallei*), melioidosis (*Burkholderia pseudomallei*), psittacosis (*Chlamydia psittaci*), Q-fever (*Coxiella burnetii*), ricin toxin from Ricinus communis (castor beans), staphylococcal enterotoxin B, typhus fever (*Rickettsia prowazekii*), viral encephalitis (alphaviruses [e.g., Venezuelan equine encephalitis, eastern equine encephalitis, western equine encephalitis]), and water safety threats (e.g., *Vibrio cholerae, Cryptosporidium parvum*).

Category C agents are the third highest priority and include emerging pathogens that could be engineered for mass dissemination in the future because of availability, ease of production and dissemination, and potential for high morbidity and mortality rates and major health impact. These agents include emerging infectious diseases such as Nipah virus and Hantavirus.

There are limited detection methods that can identify biological agents in time to warn of their occurrence. Detection will likely occur after the fact by identification of signs and symptoms in victims. Most biological agents will not cause victims to be symptomatic for hours to several days, even weeks, so no immediate signs are apparent that a biological incident has occurred. Surveillance is important to assist in a more rapid detection of an event. Public health surveillance and notification of unusual occurrences is the responsibility of everyone: emergency responders, hospital emergency departments, health care providers, infection control, clinical laboratories, and state and local health departments. Unusual occurrences are symptoms that are out of season, out of range, out of sequence, out of context, and out of geographic area.

Health care providers should be alert to illnesses and diagnostic clues that might be a sign of an unusual infectious disease outbreak and should report any findings immediately to their local or state health department. Public health surveillance programs include vital statistics, disease reporting, sentinel surveillance, zoonotic disease surveillance, adverse event surveillance, syndromic surveillance, and laboratory findings. Vital statistic surveillance is used as an indicator of overall population health. Health care providers, hospitals, and laboratories are required to report diagnoses and laboratory reports of certain diseases to local health departments and the Indiana State Department of Health for further investigation (410 IAC 1-2.3). Trends for reportable diseases in the state are monitored with this information. Sentinel surveillance is population based and involves collecting disease data and laboratory specimens at designated reporting sites. Zoonotic disease surveillance systems detect illness in animals that can affect humans. Syndromic surveillance collects signs and symptoms of disease before a diagnosis is determined. Electronic data from emergency department visits, poison center intake calls, and school absenteeism rates can signal early notification of an unusual occurrence. Laboratories conduct tests for viruses, bacteria, and other pathogens. Laboratory personnel may be alerted to an outbreak if an unusually high number of positive results are received from the same geographic area or if unusual disease agents are detected. Serotyping and genetic sequencing can help determine if cases are linked.

References:

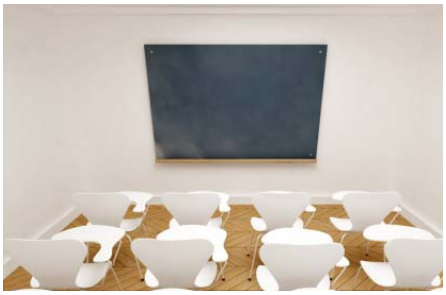
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5041a2.htm

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2289981/

http://www.bt.cdc.gov/agent/agentlist-category.asp

Emergency Response to Domestic Biological Incidents PER-220 Guide v.3.1

http://emergency.cdc.gov/bioterrorism/



Training Room

INDIANA STATE DEPARTMENT OF HEALTH IMMUNIZATION PROGRAM PRESENTS: Immunizations from A to Z

Immunization Health Educators offer this FREE, one-day educational course that includes:

- Principles of Vaccination
- Childhood and Adolescent Vaccine—Preventable Diseases
- Adult Immunizations—Pandemic Influenza
- General Recommendations on Immunization
  - Timing and Spacing
  - Indiana Immunization Requirements
  - Administration Recommendations
  - Contraindications and Precautions to Vaccination
- Safe and Effective Vaccine Administration
- Vaccine Storage and Handling
- Vaccine Misconceptions
- Reliable Resources

This course is designed for all immunization providers and staff. Training manual, materials and certificate of attendance are provided to all attendees. Please see the Training Calendar for presentations throughout Indiana. Registration is required. To attend, schedule/host a course in your area or for more information, please visit http://www.in.gov/isdh/17193.htm.

ISDH Data Reports

The following data reports and the *Indiana Epidemiology Newsletter* are available on the ISDH webpage: http://www.IN.gov/isdh/

HIV/STD/Viral Hepatitis Semi-Annual Report (June 2007 - December 2012)	Indiana Mortality Report (1999–2011)
Indiana Cancer Reports: Incidence; Mortality; Facts & Figures	Indiana Linked Infant Birth/Death Report (1999, 2002, 1990-2003)
Indiana Health Behavior Risk Factors Report (1999–2011)	Indiana Natality Report (1998–2011)
Indiana Health Behavior Risk Factors (BRFSS) Newsletter (2003–2013)	Indiana Induced Termination of Pregnancy Report (1998–2012)
Indiana Hospital Consumer Guide (1996)	Indiana Marriage Report (1995, 1997-2004)
Public Hospital Discharge Data (1999–2012)	Indiana Infectious Disease Report (1997-2011)
Assessment of Statewide Health Needs (2007)	Indiana Maternal & Child Health Outcomes & Performance Measures (1989-1998 through 2002–2011)

HIV Disease Summary

Information as of March 31, 2014 based on 2010 population of 6,483,802

HIV - without AIDS:

95	New HIV cases from January 1, 2014 thru March 31, 2014	12-month incidence	1.46 cases/100,000
5,205	Total HIV-positive, alive and without AIDS on March 31, 2014	Point prevalence	80.27 cases/100,000

AIDS cases:

70	New AIDS cases from January 1, 2014 thru March 31, 2014	12-month incidence	1.08 cases/100,000
6,056	Total AIDS cases, alive on March 31, 2014	Point prevalence	93.40 cases/100,000
12,324	Total AIDS cases, cumulative (alive and dead) on March 31, 2014		

Disease	Cases Reported in January-March MMWR Weeks 1-13	
	2013	2014
Animal Bites	1363	1182
Brucellosis	0	0
Campylobacteriosis	58	58
Chlamydia	7700	7379
Cryptococcus neoformans	12	3
Cryptosporidiosis	23	14
Dengue	1	0
E. coli, shiga toxin-producing	17	3
Giardiasis	39	23
Gonorrhea	1951	1847
Haemophilus influenzae, invasive	32	24
Hansen's Diseases (Leprosy)	0	0
Hemolytic Uremic Syndrome (HUS)	3	1
Hepatitis A	5	4
Hepatitis B	20	31
Hepatitis C (acute)	24	15
Hepatitis D	1	0
Hepatitis E	2	0
Histoplasmosis	25	19
Influenza Deaths (all ages)	59	57
Legionellosis	14	18
Listeriosis	1	0
Lyme Disease	3	0
Malaria	3	5
Measles (rubeola)	1	0
Meningitis, other	12	2
Meningococcal, invasive	6	1
Mumps	1	13
Pertussis (Whooping Cough)	73	87
Rabies, Animal	0	0
Rocky Mountain Spotted Fever	0	0
Rubella	0	0
Salmonellosis	95	84
Shigellosis	14	29
Severe *Staphylococcous aureus* Infection in Previously Healthy Person	4	2

Reported cases of selected notifiable diseases (cont.)		
Diseases	**Cases Reported in January - March**	
	2013	**2014***
Group A Streptococcus, invasive	48	66
Group B, Streptococcus, Invasive (All ages)	83	77
Group B, Streptococcus, invasive Newborn	6	5
Streptococcus pneumoniae (invasive, all ages)	269	160
Streptococcus pneumoniae (invasive, drug resistant)	0	0
Streptococcus pneumoniae (invasive, <5 years of age)	8	7
Syphilis (Primary and Secondary)	54	43
Toxic Shock Syndrome, streptococcal (STSS)	4	0
Tuberculosis	14	19
Tularemia	0	0
Typhoid Fever	3	0
Typhus/Rickettsial disease	0	0
Varicella (Chickenpox, confirmed and probable)	38	21
Varicella (Hospitalization or Death)	1	5
Vibriosis (non-cholera Vibro species infections)	1	0
West Nile Virus neuroinvasive disease	0	0
Yersiniosis	3	0
*Provisional		
For information on reporting of communicable diseases in Indiana, call the *ERC Surveillance and Investigation Division* at 317.233.7125.		

Recreational Water Illness and Injury Prevention Week – May 19-25.

For more information visit the CDC website:

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6319a1.htm?s_cid=mm6319a1_w

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The *Indiana Epidemiology Newsletter* is published quarterly by the Indiana State Department of Health to provide epidemiologic information to Indiana health care professionals, public health officials and communities.

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http://www.in.gov/isdh/25154.htm

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Social Media

The Indiana State Health Department is on social media! Check out our social media pages for the latest health information, updates, event information and photos. Like us on Facebook at www.facebook.com/ISDH1. Follow us on Twitter @StateHealthIN. Watch videos on YouTube.

Check out the new apps from CDC: