

Houston Health

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HDHHS' Laboratory crucial during calm, calamity

The weeks immediately after the first cases of anthrax infection surfaced last fall proved one of the busiest time periods ever for the Houston Department of Health and Human Services' Laboratory.

At that time, late October, Houston like the rest of the country agonized over the possibility of either receiving mail cross-contaminated with anthrax or coming across an ominous powdery substance meant as a bioterrorism attack. The lab ultimately tested close to 500 samples for anthrax spores from the numerous suspicious items submitted by law-enforcement agencies and the city's Hazardous Materials response team.

The period may have been the most hectic and demanding in the lab's history. The facility continued the routine microbiological testing that the department and numerous other medical institutions depend upon to deliver the region's health care, and at the same time, stepped up to take care of a situation that put a significant strain on its resources — and those of many other laboratories nationwide.

"We now have experience that will be extremely helpful in the unfortunate event we ever have a real anthrax case," said Dr. Vern Juchau, Chief, Bureau of Laboratory Services for the past 11 years. The lab continues to receive suspect items and the number of samples tested



Jane O'Brien, HDHHS microbiologist, prepares a sample from a substance mailed in a threatening letter to test it for the presence of anthrax. Since the anthrax attacks occurred late last year, the lab has analyzed nearly 600 samples, none of which tested positive for the bacteria.

soon will reach 600.

Bioterrorism experts believe the agents that terrorists most likely will try to manipulate into a biological weapon are anthrax and, to a lesser degree, the smallpox virus, long-feared because of its ease of transmission and higher fatality rate.

Despite the large quantities of suspicious items — everything from talc, sand and flour to moldy bread — submitted to the lab after the anthrax letters, staff members were able to speedily provide test results on objects deemed a possible threat. After

receiving an item, the department could ascertain the likelihood of the presence of anthrax. The fast turnaround enabled the department to quickly reassure the local community of its safety.

Ruling out an anthrax case required that the lab perform three tests on each of the samples. The sequence involved a gram stain, spore stain and culture test, resulting in a grueling overtime schedule for microbiologists and other lab staff.

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Lab functions as regional reference laboratory

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any anthrax locally. Nationwide, five people died and 13 others developed an anthrax infection after the mailing of contaminated letters to high-ranking government officials and news media personalities following the September 11 attacks on the United States.

As a result of the experience, the department improved lines of communication and developed good working relationships with law-enforcement agencies, including the FBI's bioterrorism representatives and police and fire departments assisting with the collection of samples from all over southeast Texas. The lab serves as a regional laboratory for a 16-county area, but during the anthrax scare the state asked that for bioterrorism purposes, the facility handle testing for 28 counties. Approximately half of the samples tested originated outside of Houston.

Located in the Texas Medical Center, the lab is one of six in the state considered regional laboratories because of their capacity to handle sophisticated testing such as typing, or grouping organisms in a way that permits distinguishing between different strains, isolating viruses, serving as a reference laboratory capable of identifying tuberculosis bacteria and tuberculosis-like organisms and performing antibody susceptibility tests and tests most hospital laboratories are unable to do.

The lab is a Level B facility, meaning it forms part of the Centers for Disease Control and Prevention's laboratory response network and local hospitals can submit specimens for more definitive identification. However, it can perform almost every test conducted at state laboratories, designated as Level C.

Laboratories are usually classi-



Benita Waas, HDHHS chemist, loads a tube into equipment during a test for pollutants in an air sample. The equipment, acquired by HDHHS through a U.S. Department of Justice grant, can detect agents that terrorists might use during a chemical attack.

fied as Level A, B, C, or D. Level A laboratories are those typically found in community hospitals and are able to perform initial testing on all clinical specimens, usually blood or some other body fluid. Public health laboratories are usually Level B; they are valuable for confirming or refuting preliminary test results and can usually perform antimicrobial susceptibility tests on bacteria and viruses. Level C laboratories, which are reference facilities and usually large public health laboratories, can perform more rapid identification tests. Level D laboratories are designed to perform the most sophisticated tests and are located in federal facilities such as the CDC.

The lab is a recipient of grant-funded projects that are helping the area with bioterrorism preparedness. Among them is a \$58,000 grant that helped secure a microbiologist and

equipment to develop protocols and procedures for testing biological agents as well as perform actual bioterrorism testing. The funding is part of a larger grant awarded to the state by the CDC.

A second grant, awarded by the Department of Justice, made it possible for the lab to obtain high-tech equipment able to perform routine testing in addition to detecting agents that terrorists might use during a chemical attack.

While the anthrax scare underscores the fact that Houston's safety is closely linked to the lab's advanced capabilities, the facility also is a crucial resource for the area every day. It functions as a reference laboratory for local hospitals and health care providers needing specific molecular identification of organisms.

"Most hospitals don't have the

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HDHHS Lab crucial to stopping spread of disease

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capacity to identify a virus,” Juchau said. “If they do, they can only detect a virus presence and place it in a general category. They send it to us to confirm the results and establish a more definitive identification.”

Local laboratory testing saves money for the community since sending specimens to commercial labs in other parts of the country would be much more costly, Juchau said. Even some local commercial laboratories refer their testing to the lab.

The lab, from an epidemiological point of view, also needs health care organizations to submit their specimens so it can assist the department in tracking and stopping the spread of disease. During outbreaks of food-

borne illnesses such as salmonella, shigella or pathogenic E. Coli, for example, the lab is able to isolate disease-implicated bacteria detected in different cases and link them to a common food source.

Linking the bacteria is feasible through equipment that allows the lab to analyze the organisms at the genetic level. Essentially, the equipment detects patterns in bacteria and stores the information in an electronic database of DNA fingerprints. The lab is only the third city-affiliated facility in the country awarded the technology through a grant from the CDC, which normally reserves the tool for state health departments.

Routine testing at the lab for the various programs provided by the

department’s health centers includes blood chemistry, hematology, rubella, blood typing to detect Rh factor and other maternity problems and detection of sexually transmitted diseases, hepatitis and tuberculosis. Examples of tests conducted for environmental health programs include analysis of potable and environmental water, analysis of milk, dairy products and foods and lead testing in humans and the environment.

“We provide the means for early detection of agents in the community,” Juchau said. “We provide the means for tracking the source of those agents. And finally, we aid in the diagnosis for the treatment.”

Calendar

MARCH

National Colorectal Cancer Awareness Month
www.preventcancer.org

National Kidney Month
www.kidney.org

National Nutrition Month
www.eatright.org/nnm/

Workplace Eye Health and Safety Month
www.preventblindness.org

3-9
Save Your Vision Week
American Optometric Association
www.aoanet.org

10-16
Pulmonary Rehabilitation Week
American Association of Cardiovascular and Pulmonary Rehabilitation
www.aacvpr.org

11-17
Brain Awareness Week
Dana Alliance for Brain Initiatives

www.dana.org

17-23
National Poison Prevention Week
Poison Prevention Week Council
www.cpsc.gov

17-23
National Inhalants and Poisons Awareness Week
National Inhalant Prevention Coalition
www.inhalants.org

24
World Tuberculosis Day
American Association for World Health
www.aawhworldhealth.org

27
American Diabetes Alert
American Diabetes Association
(800)DIABETES
www.diabetes.org

APRIL

Women’s Eye Health Safety Month
Prevent Blindness America
www.preventblindness.org

National STD Awareness Month
American Social Health Association
www.ashastd.org

1-7
National Public Health Week
American Public Health Association
www.apha.org

4
Kick Butts Day
National Center for Tobacco-Free Kids
www.tobaccofreekids.org

5-7
Alcohol-Free Weekend
National Council on Alcoholism and Drug Dependence, Inc.
www.ncadd.org

7
World Health Day
American Association for World Health
www.aawhworldhealth.org

14-20
National Infants Immunization Week
CDC
www.cdc.gov/nip

HDHHS examines local Hepatitis C prevalence

A study of hepatitis C prevalence in Houston suggests 2.7 percent of the general population may be infected with the virus causing the disease, an estimate that more than doubles for people at high risk for sexually transmitted diseases.

The newly completed study by the Houston Department of Health and Human Services (HDHHS) sought to determine the prevalence of infection for low-risk and high-risk groups in Houston. Findings from the blinded, age-adjusted study augment the limited data available locally on the extent of the disease and will help the department and other agencies such as community-based organizations target future education, prevention and intervention efforts more effectively.

“Studies like this one enable a community to discover hepatitis C cases at earlier stages of the disease,” said HDHHS’ Dr. Raouf Arafat, Chief, Bureau of Epidemiology. “The

cost — financial and in terms of quality of life issues and lives lost — is much lower when hepatitis C is detected early.”

Epidemiologists analyzed the prevalence of hepatitis C infection among low-risk populations using the medical records of an HMO, the closest measure available for the general Houston population. A targeted risk behavior survey and testing of clients served at the department’s sexually transmitted disease (STD) clinics and various community-based organizations provided the data used to assess high-risk groups.

The study found that 6 percent of people at risk for sexually transmitted diseases could be infected with hepatitis C, indicating the usefulness of screening for the disease at STD clinics. Already, public health literature has established drug treatment centers and prisons as settings with a high prevalence of hepatitis C infection; the study contributes to the theo-

ry that it is also worthwhile to target prevention efforts to other at-risk groups.

Hepatitis C is a liver disease spread through contact with the blood of someone infected with the hepatitis C virus. Although not usually deadly, it has been labeled “the silent killer” because 80 percent of those infected can remain symptom-free as long as 20 to 30 years despite gradual liver damage. Hepatitis C can lead to chronic liver disease and liver cancer and it is the leading reason for liver transplants.

Those at risk of infection include people who have ever injected illegal drugs, even if it was only once and many years ago, received a blood transfusion or solid organ transplant before July 1992 or received a blood product for clotting problems produced before 1987. Others are long-term kidney dialysis patients, people with signs or symptoms of liver disease and health care workers after on-the-job exposure -- such as needle sticks or splashes to the eye -- to hepatitis C infected blood.

There is an extremely low chance of spreading the hepatitis C virus to a partner during sexual activity. The Centers for Disease Control and Prevention does not recommend that infected people change sexual practices as long as they have only one long-term steady sex partner.

Most new hepatitis C cases are spread through injection drug use. Many people with the disease became infected through blood transfusions before 1992, the year better testing of blood donors became available. Today, all blood is screened for hepatitis.

Crude estimates from the study, based on the surveyed HMO population, suggest that approximately 69,400 people are infected in Harris

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The ABCs of Hepatitis

Hepatitis A is a liver disease caused by the hepatitis A virus. It is spread by eating or drinking anything contaminated with the stool of a person with hepatitis A. Good personal hygiene and proper sanitation can help prevent hepatitis A.

Hepatitis B is a serious disease caused by a virus that attacks the liver. The virus can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure and death. It is spread by direct contact with the blood or body fluids of an infected person; for example, you can become infected by having sex or sharing needles with an infected person. A vaccine is available.

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV), which is found in the blood of persons who have the disease. HCV is spread by contact with the blood of an infected person.

Hepatitis D is a defective virus that needs the hepatitis B virus to exist. Hepatitis D virus (HDV) is found in the blood of persons infected with the virus. Transmission is similar to hepatitis B.

Hepatitis E is a virus (HEV) transmitted mostly by drinking fecally-contaminated water. Hepatitis E, however, is rare in the United States.

Home maintenance key to stopping indoor mold

Editor's Note: Recently, the Texas Department of Insurance reported a surge in mold-related insurance claims. The agency issued an order eliminating coverage for high-priced testing and treatment procedures in an attempt to find a middle ground between several insurance companies wanting to cut mold coverage and consumer groups demanding homeowner policies remain the same despite the hike in claim costs. The developments signal that this is an appropriate time to review mold prevention tips. In the article below, Marilyn Bird, Chief, Bureau of Occupational Health and Radiation Control, describes how good home maintenance is essential to keeping indoor water troubles from developing into indoor mold, which in turn can lead to health problems.

Molds can be found almost anywhere and can grow on virtually any substance when moisture is present.

Molds reproduce by forming tiny spores, just as plants produce seeds. When mold spores land on a damp spot, they begin growing and digesting whatever they are growing on in order to survive.

When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem is not discovered or addressed.

There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture. In general, mold sampling is not recommended. Some molds are more hazardous than others, but all mold should be removed regardless of type.

Excessive exposure to mold may



Excessive moisture or water damage can spur indoor mold growth like in the cases shown in the adjoining photographs taken by inspectors with HDHHS' Bureau of Occupational Health and Radiation Control. Above, water accumulation caused mold to grow on sheetrock next to a door. Below, mold began growing on an air vent.

cause or worsen conditions such as asthma, hay fever or other allergies. Some symptoms reported include respiratory problems, wheezing, difficulty breathing, nasal and sinus congestion, coughing, sore throat, nose and throat irritation, shortness of breath, skin and eye irritation, rashes, and headaches. Less common symptoms include central nervous system problems, aches and pains, fever and fatigue. People with asthma, respiratory problems, immune compromised systems, the elderly, infants and children appear to be at higher risk for adverse health effects of mold, including mold infections.

If mold is a problem, you must clean up the mold and eliminate sources of moisture.

- Fix leaky plumbing or other sources of water.
- Keep drip pans in air conditioners, refrigerators and dehumidifiers

clean and dry.

- Use exhaust fans or open windows in kitchens and bathrooms when showering, cooking, cleaning or using the dishwasher.
- Vent clothes dryers to the outside.
- Maintain low indoor humidity, ideally between 30 percent and 50 percent relative humidity. Humidity levels can be measured by hygrometers, which are available at local hardware stores.
- Replace heating and air conditioning system fiberboard and flexible ductwork, fibrous insulation and disposable filters if they get wet.
- Prevent condensation: reduce the potential for condensation on cold surfaces (i.e., windows, pipes, exterior walls, roof or floors) by

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Upkeep helps prevent growth of indoor mold

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adding insulation, raising the temperature and increasing air circulation.

- Do not install carpeting in areas where there is a constant moisture problem.
- Determine if the building is properly constructed and maintained. For example, are weep holes, moisture barriers, air conditioning and heating systems, air filters, roof, windows and vents installed and working properly? Air conditioners that cool the air too quickly might not run long enough to remove excess moisture from the air.
- Ensure that flowerbeds next to a building drain properly, gutters are free from blockage and that

crawl spaces are dry and well ventilated.

- Inspect the structure for evidence of water damage and visible mold growth and correct the problem quickly. Areas that go unattended can soon become major problem areas.
- Clean and dry water-damaged areas and items within 24 to 48 hours to prevent mold growth. If this is not possible, such materials may need to be discarded.
- Wash mold off hard surfaces with detergent and water and then disinfect with a solution of bleach and water — one to two cups of bleach to one gallon of water. Dry completely. Absorbent materials, such as ceiling tiles and carpet, may have to be replaced

if they are contaminated with mold or if they have been water-damaged.

- Prevent the spread of mold spores by sealing off rooms or areas before mold remediation begins. Wear a dust mask with a rating of at least N-95 during mold cleanup and removal activities; they are available at local hardware stores.
- Seal mold-contaminated materials in plastic bags and dispose of them as normal waste.

For more information go to www.ci.houston.tx.us/departme/health/ and other mold links or call the Houston Department of Health and Human Services' Bureau of Occupational Health and Radiation Control at 713-640-4359.

Complications from Hepatitis C virus devastating

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County and 40,500 people are infected in Houston. Forty-six percent of the intravenous drug users in the study were infected with the virus.

The CDC estimates that in the United States an average of 242,000 new infections occurred each year during the 1980s. Since 1989, the annual number of new infections has declined by 80 percent to 36,000 by 1996. Data from the Third National

Health and Nutrition Examination Survey, conducted between 1988 and 1994, indicates that an estimated 3.9 million (1.8 percent) Americans have been infected with the hepatitis C virus.

The disease can prove devastating and complications may begin early in the life of an adult who is infected.

"Hepatitis C is a dangerous disease," Arafat said. "You have some

patients dying in their forties and for most this is the best time of their lives because they are beginning to settle into family life."

A grant from the Texas Department of Health funded the study through August 2001.

Routine Hep C testing recommendations

- people who have ever injected illegal drugs, even if it was only once and many years ago
- people who received a blood transfusion or solid organ transplant before July 1992
- people who received a blood product for clotting problems produced before 1987
- people who were ever on long-term kidney dialysis
- health care workers after on-the-job exposure to hepatitis C infected blood, and
- children born to hepatitis C infected mothers.

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