

BLOODBORNE PATHOGENS

PERSONAL PROTECTIVE EQUIPMENT CUTS RISK

U.S. Department of Labor
Occupational Safety and Health Administration

If an employee is expected to have hand contact

FACTS

Wearing gloves, gowns, masks, and eye protection can significantly reduce health risks for workers exposed to blood and other potentially infectious materials. The new OSHA standard covering bloodborne disease requires employers to provide appropriate personal protective equipment (PPE) and clothing free of charge to employees.

Workers who have direct exposure to blood and other potentially infectious materials on their jobs run the risk of contracting bloodborne infections from hepatitis B virus (HBV), human immunodeficiency virus (HIV) which causes AIDS, and other pathogens. About 8,700 health care workers each year are infected with HBV, and 200 die from the infection. Although the risk of contracting AIDS through occupational exposure is much lower, wearing proper personal protective equipment can greatly reduce potential exposure to all bloodborne infections.

SELECTING PPE

Personal protective clothing and equipment must be suitable. This means the level of protection must fit the expected exposure. For example, gloves would be sufficient for a laboratory technician who is drawing blood, whereas a pathologist conducting an autopsy would need considerably more protective clothing.

PPE may include gloves, gowns, laboratory coats, face shields or masks, eye protection, pocket masks and other protective gear. The gear must be readily accessible to employees and available in appropriate sizes.

The key is that blood or other infectious materials must not reach an employee's work clothes, street clothes, undergarments, skin, eyes,

with blood or other potentially infectious materials or contaminated surfaces, he or she must wear gloves. Single use gloves cannot be washed or decontaminated for reuse. Utility gloves may be decontaminated if they are not compromised. They should be replaced when they show signs of cracking, peeling, tearing, puncturing or deteriorating. If employees are allergic to standard gloves, the employer must provide hypoallergenic gloves or similar alternatives.

Routine gloving is not required for phlebotomy in voluntary blood donation centers, though it is necessary for all other phlebotomies. In any case, gloves must be available in voluntary blood donation centers for employees who want to use them. Workers in voluntary blood donation centers must use gloves (1) when they have cuts, scratches or other breaks in their skin; (2) while they are in training; and (3) when they believe contamination might occur.

AVOIDING CONTAMINATION

Employees should wear eye and mouth protection such as goggles and masks, glasses with solid side shields and masks or chin-length face shields when splashes, sprays, splatters or droplets of potentially infectious materials pose a hazard through the eyes, nose or mouth. More extensive coverings such as gowns, aprons, surgical caps and hoods and shoe covers or boots are needed when gross contamination is expected. This often occurs, for example, during orthopedic surgery or autopsies.

mouth or other mucous membranes under normal conditions for the duration of exposure.

Employers must provide the PPE and ensure that their workers wear it. This means that if a lab coat is considered PPE, it must be supplied by the employer rather than the employee. The employer also must clean or launder clothing and equipment and repair or replace it as necessary.

Additional protective measures such as using PPE in animal rooms and decontaminating PPE before laundering are essential in facilities that conduct research on HIV or HBV.

EXCEPTION

There is one exception to the requirement for protective gear. An employee may choose, temporarily and briefly, **under rare and extraordinary circumstances**, to forego the equipment. It must be the employee's professional judgment that using the protective equipment would prevent the delivery of health care or public safety services or would pose an increased hazard to the safety of the worker or co-worker. When one of these excepted situations occurs, employers are to investigate and document the circumstances to determine if there are ways to avoid it in the future. For example, if a firefighter's resuscitation device is damaged, perhaps another type of device should be used or the device should be carried in a different manner. Exceptions must be limited--this is not a blanket exemption.

DECONTAMINATING AND DISPOSAL OF PPE

Employees must remove personal protective clothing and equipment before leaving the work area or when the PPE becomes contaminated. If a garment is penetrated, workers must remove it immediately or as soon as feasible. Used protective clothing and equipment must be placed in designated containers for storage, decontamination or disposal.

OTHER PROTECTIVE PRACTICES

If an employee's skin or mucous membranes

come into contact with blood, he or she is to wash with soap and water and flush eyes with water as soon as feasible. In addition, workers must wash their hands immediately or as soon as feasible after removing protective equipment.

If soap and water are not immediately available, employers may provide other handwashing measures such as moist towelettes. Employees still must wash with soap and water as soon as possible.

Employees must refrain from eating, drinking, smoking, applying cosmetics or lip balm and handling contact lenses in areas where they may be exposed to blood or other potentially infectious materials.

PROTECT YOURSELF WHEN HANDLING SHARPS

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A needlestick or a cut from a contaminated scalpel can lead to infection from hepatitis B virus (HBV) or human immunodeficiency virus (HIV) which causes AIDS. Although few cases of AIDS have been documented from occupational exposure, approximately 8,700 health care workers each year contract hepatitis B. About 200 will die as a result. The new OSHA standard covering bloodborne pathogens specifies measures to reduce these risks of infection.

PROMPT DISPOSAL

The best way to prevent cuts and sticks is to minimize contact with sharps. That means disposing of them immediately after use. Puncture-resistant containers must be available nearby to hold contaminated sharps--either for disposal or, for reusable sharps, later decontamination for re-use. When reprocessing contaminated reusable sharps, employees must not reach by hand into the holding container. Contaminated sharps must never be sheared or

broken.

Recapping, bending, or removing needles is permissible **only** if there is no feasible alternative or if required for a specific medical procedure such as blood gas analysis. If recapping, bending or removal is necessary, workers must use either a mechanical device or a one-handed technique. If recapping is essential--for example, between multiple injections for the same patient--employees must avoid using both hands to recap. Employees might recap with a one-handed "scoop" technique, using the needle itself to pick up the cap, pushing cap and sharp together against a hard surface to ensure a tight fit. Or they might hold the cap with tongs or forceps to place it on the needle.

SHARPS CONTAINERS

Containers for used sharps must be puncture resistant. The sides and the bottom must be leak proof. They must be labeled or color coded red to ensure that everyone knows the contents are hazardous. Containers for disposable sharps must have a lid, and they must be maintained upright to keep liquids and the sharps inside.

Employees must never reach by hand into containers of contaminated sharps. Containers for reusable sharps could be equipped with wire basket liners for easy removal during reprocessing, or employees could use tongs or forceps to withdraw the contents. Reusable sharps disposal containers may not be opened, emptied, or cleaned manually.

Containers need to be located as near to as feasible the area of use. In some cases, they may be placed on carts to prevent access to mentally disturbed or pediatric patients. Containers also should be available wherever sharps may be found, such as in laundries. The containers must be replaced routinely and not be overfilled, which can increase the risk of needlesticks or cuts.

HANDLING CONTAINERS

When employees are ready to discard containers,

they should first close the lids. If there is a chance of leakage from the primary container, the employees should use a secondary container that is closable, labeled, or color coded and leak resistant.

Careful handling of sharps can prevent injury and reduce the risk of infection. By following these work practices, employees can decrease their chances of contracting bloodborne illness.

REPORTING EXPOSURE INCIDENTS

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OSHA's new bloodborne pathogens standard includes provisions for medical follow-up for workers who have an exposure incident. The most obvious exposure incident is a needlestick. But any specific eye, mouth, other mucous membrane, non-intact skin or parenteral contact with blood or other potentially infectious materials is considered an exposure incident and should be reported to the employer.

Exposure incidents can lead to infection from hepatitis B virus (HBV) or human immunodeficiency virus (HIV) which causes AIDS. Although few cases of AIDS are directly traceable to workplace exposure every year about 8,700 health care workers contract hepatitis B from occupational exposures. Approximately 200 will die from this bloodborne infection. Some will become carriers passing the infection on to others.

WHY REPORT?

Reporting an exposure incident right away permits immediate medical follow-up. Early action is crucial. Immediate intervention can forestall the development of hepatitis B or enable the affected worker to track potential HIV infection. Prompt reporting also can help the worker avoid spreading bloodborne infection to others. Further, it enables the employer to evaluate the circumstances surrounding the

exposure incident to try to find ways to prevent such a situation from occurring again.

Reporting is also important because part of the follow-up includes testing the blood of the source individual to determine HBV and HIV infectivity if this is unknown and if permission for testing can be obtained. The exposed employee must be informed of the results of these tests.

Employers must tell the employee what to do if an exposure incident occurs.

MEDICAL EVALUATION AND FOLLOW-UP

Employers must provide free medical evaluation and treatment to employees who experience an exposure incident. They are to refer exposed employees to a licensed health care provider who will counsel the individual about what happened and how to prevent further spread of any potential infection. He or she will prescribe appropriate treatment in line with current U.S. Public Health Service recommendations. The licensed health care provider also will evaluate any reported illness to determine if the symptoms may be related to HIV and HBV development.

The first step is to test the blood of the exposed employee. Any employee who wants to participate in the medical evaluation program must agree to have blood drawn. However, the employee has the option to give the blood sample but refuse permission for HIV testing at that time. The employer must maintain the employee's blood sample for 90 days in case the employee changes his or her mind about testing--should symptoms develop that might relate to HIV or HBV infection.

The health care provider will counsel the employee based on the test results. If the source individual was HBV positive or in a high risk category, the exposed employee may be given hepatitis B immune globulin and vaccination as necessary. If there is no information on the source individual or the test is negative and the employee has not been vaccinated or does not

have immunity based on his or her test, he or she may receive the vaccine. Further, the health care provider will discuss any other findings from the tests.

The standard requires that the employer make the hepatitis B vaccine available at no cost to the employee, to all employees who have occupational exposure to blood and other potentially infectious materials. This requirement is in addition to post-exposure testing and treatment responsibilities.

WRITTEN OPINION

In addition to counseling the employee, the health care provider will provide a written report to the employer. This report simply identifies whether hepatitis B vaccination was recommended for the exposed employee and whether or not the employee received vaccination. The health care provider also must note that the employee has been informed of the results of the evaluation and told of any medical conditions resulting from exposure to blood which require further evaluation or treatment. Any added findings must be kept confidential.

CONFIDENTIALITY

Medical records must remain confidential. They are not available to the employer. The employee must give specific written consent for anyone to see the records. Records must be maintained for the duration of employment plus 30 years in accordance with OSHA's standard on access to employee exposure and medical records.

HEPATITIS B VACCINATION-- PROTECTION FOR YOU

U.S. Department of Labor
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WHAT IS HBV?

Hepatitis B virus (HBV) is a potentially life-threatening bloodborne pathogen. Centers for Disease Control estimates there are approximately 280,000 HBV infections each

year in the U.S.

Approximately 8,700 health care workers each year contract hepatitis B, and about 200 will die as a result. In addition, some who contract HBV will become carriers, passing the disease on to others. Carriers also face a significantly higher risk for other liver ailments which can be fatal, including cirrhosis of the liver and primary liver cancer.

HBV infection is transmitted through exposure to blood and other infectious body fluids and tissues. Anyone with occupational exposure to blood is at risk of contracting the infection.

Employers must provide engineering controls; workers must use work practices and protective clothing and equipment to prevent exposure to potentially infectious materials. However, the best defense against hepatitis B is vaccination.

WHO NEEDS VACCINATION?

The new OSHA standard covering bloodborne pathogens requires employers to offer the three-injection vaccination series free to all employees who are exposed to blood or other potentially infectious materials as part of their job duties. This includes health care workers, emergency responders, morticians, first-aid personnel, law enforcement officers, correctional facilities staff, launderers, as well as others.

The vaccination must be offered within 10 days of initial assignment to a job where exposure to blood or other potentially infectious materials can be "reasonably anticipated." The requirements for vaccinations of those already on the job take effect July 6, 1992.

WHAT DOES VACCINATION INVOLVE?

The hepatitis B vaccination is a noninfectious, yeast-based vaccine given in three injections in the arm. It is prepared from recombinant yeast cultures, rather than human blood or plasma. Thus, there is no risk of contamination from other bloodborne pathogens nor is there any chance of developing HBV from the vaccine.

The second injection should be given one month after the first, and the third injection six months after the initial dose. More than 90 percent of those vaccinated will develop immunity to the hepatitis B virus. To ensure immunity, it is important for individuals to receive all three injections. At this point it is unclear how long the immunity lasts, so booster shots may be required at some point in the future.

The vaccine causes no harm to those who are already immune or to those who may be HBV carriers. Although employees may opt to have their blood tested for antibodies to determine need for the vaccine, employers may not make such screening a condition of receiving vaccination nor are employers required to provide prescreening.

Each employee should receive counseling from a health care professional when vaccination is offered. This discussion will help an employee determine whether inoculation is necessary.

WHAT IF I DECLINE VACCINATION?

Workers who decide to decline vaccination must complete a declination form. Employers must keep these forms on file so that they know the vaccination status of everyone who is exposed to blood. At any time after a worker initially declines to receive the vaccine, he or she may opt to take it.

WHAT IF I AM EXPOSED BUT HAVE NOT YET BEEN VACCINATED?

If a worker experiences an exposure incident, such as a needlestick or a blood splash in the eye, he or she must receive confidential medical evaluation from a licensed health care professional with appropriate follow-up. To the extent possible by law, the employer is to determine the source individual for HBV as well as human immunodeficiency virus (HIV) infectivity. The worker's blood will also be screened if he or she agrees.

The health care professional is to follow the guidelines of the U.S. Public Health Service in providing treatment. This would include hepatitis B vaccination. The health care professional must give a written opinion on whether or not vaccination is recommended and whether the employee received it. Only this information is reported to the employer. Employee medical records must remain confidential. HIV or HBV status must NOT be reported to the employer.

HOLDING THE LINE ON CONTAMINATION

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Keeping work areas in a clean and sanitary condition reduces employees' risk of exposure to bloodborne pathogens. Each year about 8,700 health care workers are infected with hepatitis B virus, and 200 die from contracting hepatitis B through their work. The chance of contracting human immunodeficiency virus (HIV), the bloodborne pathogen which causes AIDS, from occupational exposure is small, yet a good housekeeping program can minimize this risk as well.

DECONTAMINATION

Every employer whose employees are exposed to blood or other potentially infectious materials must develop a written schedule for cleaning each area where exposures occur. The methods of decontaminating different surfaces must be specified, determined by the type of surface to be cleaned, the soil present and the tasks or procedures that occur in that area.

For example, different cleaning and decontamination measures would be used for a surgical operatory and a patient room. Similarly, hard surfaced flooring and carpeting require separate cleaning methods. More extensive efforts will be necessary for gross contamination

than for minor spattering. Likewise, such varied tasks as laboratory analyses and normal patient care would require different techniques for clean-up.

Employees must decontaminate working surfaces and equipment with an appropriate disinfectant after completing procedures involving exposure to blood. Many laboratory procedures are performed on a continual basis throughout a shift. Except as discussed below, it is not necessary to clean and decontaminate between procedures. However, if the employee leaves the area for a period of time, for a break or lunch, then contaminated work surfaces must be cleaned.

Employees also must clean (1) when surfaces become obviously contaminated; (2) after any spill of blood or other potentially infectious materials; and (3) at the end of the work shift if contamination might have occurred. Thus, employees need not decontaminate the work area after each patient care procedure, but only after those that actually result in contamination.

If surfaces or equipment are draped with protective coverings such as plastic wrap or aluminum foil, these coverings should be removed or replaced if they become obviously contaminated. Reusable receptacles such as bins, pails and cans that are likely to become contaminated must be inspected and decontaminated on a regular basis. If contamination is visible, workers must clean and decontaminate the item immediately, or as soon as possible.

Should glassware that may be potentially contaminated break, workers need to use mechanical means such as a brush and dustpan or tongs or forceps to pick up the broken glass--never by hand, even when wearing gloves.

Before any equipment is serviced or shipped for repairing or cleaning, it must be decontaminated to the extent possible. The equipment must be labeled, indicating which portions are still contaminated. This enables employees and those who service the equipment to take appropriate

precautions to prevent exposure.

REGULATED WASTE

In addition to effective decontamination of work areas, proper handling of regulated waste is essential to prevent unnecessary exposure to blood and other potentially infectious materials. Related waste must be handled with great care-- i.e., liquid or semi-liquid blood and other potentially infectious materials, items caked with these materials, items that would release blood or other potentially infected materials if compressed, pathological or microbiological wastes containing them and contaminated sharps.

Containers used to store regulated waste must be closable and suitable to contain the contents and prevent leakage of fluids. Containers designed for sharps also must be puncture resistant. They must be labeled or color-coded to ensure that employees are aware of the potential hazards. Such containers must be closed before removal to prevent the contents from spilling. If the outside of a container becomes contaminated, it must be placed within a second suitable container.

Regulated waste must be disposed of in accordance with applicable state and local laws.

LAUNDRY

Laundry workers must wear gloves and handle contaminated laundry as little as possible, with a minimum of agitation. Contaminated laundry should be bagged or placed in containers at the location where it is used, but not sorted or rinsed there.

Laundry must be transported within the establishment or to outside laundries in labeled or red color-coded bags. If the facility uses Universal Precautions for handling all soiled laundry, then alternate labeling or color coding that can be recognized by the employees may be used. If laundry is wet and it might soak through laundry bags, then workers must use bags that prevent leakage to transport it.

RESEARCH FACILITIES

More stringent decontamination requirements apply to research laboratories and production facilities that work with concentrated strains of HIV and HBV.

BLOODBORNE PATHOGENS

The following information was prepared by Dr. Peter Axelrod, Chairman Infection Control Committee of Temple University Hospital. Due to the usefulness of this information it is being distributed in a slightly edited form

The Occupational Safety and Health Administration requires that all physicians employed by any health care institution in this country receive information, yearly, on blood borne pathogens. I have prepared this brief information sheet for Temple University physicians to present data that I think may be of interest to you.

HEPATITIS B:

Hepatitis B virus (HBV) is the most contagious blood borne agent. The risk of acquiring HBV infection from a needlestick/sharp injury resulting in exposure to blood/body fluids ranges from 5% (HBV e antigen-negative source) to 43% (HBV e antigen-positive source). Prior to the availability of HBV vaccine, infection rates (measured by serologic markers) in physicians were about 4-5 times that of the general public (about 19% versus 4%), and were especially high in pathologists (27%) and surgeons (28%). Recent studies have shown that after hospitals began vaccinating health care workers, the incidence of reported clinical hepatitis B dropped over 20 fold. In unvaccinated physicians, it has been estimated that the risk of becoming infected and then dying from HBV is at least 1.7 times higher than the risk of infection and death from HIV. With acute hepatitis B infection, the risk of fulminant hepatitis and death is about 1%, of chronic active hepatitis, 5%, and of cirrhosis 2.5%.

The HBV vaccine is highly effective, but even

so, about 6-10% of healthy adult vaccine recipients will fail to develop protective titers of antibody after three injections. About half of these non-responders will develop protective antibodies after repeated immunization (additional 1-3 doses). For this reason, it is reasonable for physicians to have their antibody titer (quantitative anti-HBs) checked shortly after the primary vaccination series. Furthermore, titers should be checked after a needlestick injury with HBV-infected blood (or blood of unknown HBV infectivity). If a physician's titer is negative after such a needlestick, he or she should receive a booster vaccine dose. If the physician was originally a known responder to vaccine, no further treatment is needed, but if he or she was a non-responder (or the initial response is unknown), hepatitis B immune globulin (HBIG) is recommended. The need for routine booster shots, or routine antibody titer testing, is still unclear. If a needlestick occurs in a physician more than five years following initial immunization and hepatitis B testing is not practical, the Centers for Disease Control and Prevention (CDC) recommend that a booster dose of vaccine be given since antibodies to HBsAg sometimes wane by the fifth post-vaccine year.

HEPATITIS C:

Hepatitis C virus (HCV) clearly can be acquired after a needlestick, but the risk is lower than that associated with hepatitis B virus. There have been three recent studies of the risk of HCV after needlestick injury. In the first, 3 of 107 hospital employees percutaneously exposed to hepatitis C-infected blood seroconverted to hepatitis C, and one employee had seronegative acute hepatitis (total infection rate 4%). In the second, zero of 81 individuals developed hepatitis C. In the third, 7 of 74 (9.5%) exposed to HCV developed acute hepatitis C; no infections occurred in the small subset (8 patients) who were exposed to antibody positive-HCV RNA negative blood. The overall risk to physicians of HCV infection appears to be low. In one study, the incidence of acute hepatitis C was determined in 51 hemodialysis nurses who worked for an average of 5.5 years with a

population of dialysis patients with a 19% HCV antibody positivity rate. None of the nurses developed acute hepatitis C. In a study at Johns Hopkins, 0.7% of 943 health care workers had antibodies to HCV, compared with 0.4% of local blood donors ($p > .05$).

The risk of developing chronic hepatitis in typical patients with acute HCV infection is about 50%. It is estimated that about 17% of HCV-infected patients will develop clinical evidence of cirrhosis after 16 years of disease, but hepatic failure is rare before 10 years. In one study, after 18 years of follow-up, mortality related to liver disease was 3.3% in patients with HCV and 1.5% in matched controls ($p=.03$), but there was no difference in overall survival between the two groups. It appears that the risk of chronic HCV following a needlestick may be lower than infection acquired in other ways, but numbers of patients are still too small to be sure about this.

Some experts recommend that health care workers parenterally exposed to HCV receive a single dose of intramuscular immune globulin (gamma globulin). However, there is some evidence that this is unlikely to be effective in preventing HCV. Acute HCV in chimpanzees and in patients with hemophilia does not protect against re-infection (i.e. even one's own natural antibodies are not protective). Results from early trials of immune globulin as post-exposure prophylaxis against non-A non-B hepatitis were equivocal. No specific recommendations for prophylaxis come from the Advisory Committee for Immunization Practices in the USA.

HUMAN IMMUNODEFICIENCY VIRUS (HIV):

The CDC has an ongoing prospective study of health care workers with occupational exposure to HIV-infected blood. Three hundred twelve US hospitals have voluntarily reported their data. As of June 10, 1994 they have information on 1314 needle-sticks: 4 workers (0.3%) seroconverted to HIV; 0/166 workers with mucosal exposures (to eyes, mouth, non-intact skin, etc) have seroconverted. A multi center Italian study

published in 1993 had similar results: 1/1003 workers (0.1%) exposed to HIV by needlestick injury seroconverted and 1/158 (0.63%) with mucosal exposure seroconverted. All seroconversions occurred within 6 months of the exposure. Seroconversions related to mucosal exposure have typically involved exposure to large quantities of blood. According to a recent article there have been "over 50" health care workers reported worldwide who have acquired HIV through occupational exposure. A number of authors have attempted to estimate the "career-long" risk of acquiring HIV by multiplying (number of needlesticks and scalpel injuries per career) x (% of needlesticks/injuries with HIV-contaminated blood) x (risk of HIV transmission per needlestick/injury). Estimates, for surgeons, have ranged from 0.17% to 14% based on varying assumptions, especially the HIV positivity rate in patients. However, current data on infection rates in surgeons and other physicians suggest that, in real life, occupationally acquired HIV infection is quite rare, even in "high risk" practices. For example, in a 1991 annual professional meeting of orthopedic surgeons, there were 7147 attendees, and 3420 (48%) allowed anonymous HIV testing. Only 2 orthopedists were HIV positive and both reported nonoccupational risk factors for HIV infection (risk for 3267 with only occupational risk was 0%).

Data on the value (if any) of AZT prophylaxis after a needlestick or sharp injury with HIV-contaminated blood are very limited. In small-scale animal studies, AZT did not prevent simian immunodeficiency virus infections in monkeys unless a small viral inoculum was used and AZT was begun before exposure; even then, only 3/8 animals were "protected." In mice transplanted with human hematolymphoid cells (SCID-hu mice) AZT delayed the onset of HIV infection, but did not prevent it in any animal. There have been well documented case reports in humans describing failure of AZT to prevent HIV infection after a parenteral exposure. In the CDC needlestick study, as of 1992, the rate of HIV infection in workers taking AZT was 0.38% compared to a rate of 0.36% in workers not taking AZT. However, since it is not possible to

know if the injuries were comparable in the two groups (amount of blood, depth, stage of HIV in patient, etc.) this does not "prove" AZT to be worthless. Of the 263 workers who took AZT, 75% had adverse symptoms (mainly nausea, malaise, and headache) and 31% did not complete treatment because of side-effects. Most authors agree that if AZT is to be used, it should be begun as soon as is reasonably possible after an exposure, preferably within one hour.

USEFUL REFERENCES

Several recent articles about blood borne pathogens may be of interest.

1. A 1992 study from the emergency department at Johns Hopkins (a hospital similar to ours) found that 2~ of 2523 unselected adult patients had serologic evidence of HBsAg, HIV, or hepatitis C.
2. In a 1993 study from UCSF, researchers stretched Latex glove material over paper prefilters and porcine limbs in order to determine if gloves cut down on the amount of blood transferred to skin during simulated needlestick injuries; gloves reduced the transferred blood volume by 46-86% in both models.
3. In a 1993 multi center study of shielded 3 cc syringes (standard 3cc hollow bore needles with a retractable plastic shield and restrictive collar), needlestick injuries with 3 cc syringes dropped from 14/100,000 to 2/100,000, while needlesticks with other syringes increased.
4. A 1992 study from UCLA found that 71% of residents and medical students admitted to a contaminated needlestick injury during the previous year, but only 9% of exposures were reported to the health center. Surgical residents had a sixfold greater rate of occupational exposure compared with medical residents and were significantly more likely to experience suture needlesticks, cuts, open wound contamination, and mucous membrane exposure.

5. A 1992 study at Jefferson found that faculty demonstrated the lowest levels of adherence to universal precautions.

SUMMARY

The current evidence suggests that although adherence to universal precautions may, at times, be inconvenient, it is beneficial. Reporting of blood exposures can also be time consuming, but it offers several advantages: 1) documenting exposure in the (extremely unlikely) event that workman's compensation will be needed, 2) determining the need for a hepatitis B vaccine booster dose, or hepatitis B immune globulin, and providing AZT for those who desire it 3) allowing for legal HIV testing of the source patient without their consent (assuming there is "available blood" in the lab). Temple University Hospital is currently assessing devices designed to reduce the risk of sharps injuries, and is working on streamlining the needlestick injury assessment process.