WORKPLACE SOLUTIONS

From the National Institute for Occupational Safety and Health

Preventing Exposures to Bloodborne Pathogens among Paramedics

Summary

Patient care puts paramedics at risk of exposure to blood. These exposures carry the risk of infection from bloodborne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV), which causes AIDS.

A national survey of 2,664 paramedics contributed new information about their risk of exposure to blood and identified opportunities to control exposures and prevent infections.

Paramedics attend to a patient. *Photo courtesy of 911imaging.*

Description of Exposure

Paramedics, the most highly trained emergency medical technicians (EMTs), can be exposed to blood because they treat trauma victims and perform advanced life support procedures using needles and other sharp instruments.

Paramedics often work under unpredictable, adverse conditions where patients may be experiencing uncontrolled bleeding or disorientation.

Exposure to blood can occur from a sharps injury, such as a needlestick after use on a patient or a cut from a contaminated sharp object.

Exposure can also occur from a splash to the eyes, nose, or mouth; contact on non-intact (broken or cracked) skin; or a human bite.

National Survey of Paramedics

Constella Group and NIOSH conducted a national survey of paramedics between 2002–2003 to measure the incidence of exposure to blood among paramedics [Leiss et al. 2006, 2009; Boal et al. 2008, 2010; Mathews et al. 2008].

We analyzed the results for California paramedics separately because

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California had a needlestick prevention law several years before there was a similar national law.

Survey Findings

Exposure rates

Twenty-two percent of all the paramedics surveyed had at least one exposure to blood in the previous year. California paramedics had one-quarter the national rate of needlesticks and half the national rate of all exposures to blood. The national sharps injury rate for paramedics was also high compared with most hospital workers. Also, exposure of broken skin to blood was extremely high among paramedics.

Use of safety devices

Safety devices have engineered sharps injury protections; non-safety devices do not.

Eighty percent of needlesticks involved non-safety devices. The use of safety devices was much higher among California paramedics compared with paramedics nationally.

The main predictor for use of safety devices was whether employers provided them. Many paramedics said they needed more training in the use of safety devices.

Use of personal protective equipment (PPE)

Major factors for eye and nose exposures to blood included: the patient vomited, spit, or coughed; the patient was uncooperative, combative, or being resuscitated; or the blood/body fluid splashed.

Although more than 80% of paramedics said their employers provided safety goggles and face/surgical masks, most splashes to the eye or nose occurred when protection was not used.

Most exposures to broken skin were on the hand, but one-third were on the arm.

One-fifth of paramedics said they needed more training in how to use PPE, and one-fourth said they needed better-designed PPE or additional PPE to protect themselves.

Special situations

Forty percent of exposures to broken skin happened when a patient was being extricated. Uncooperative or combative patients were a major factor for exposures to the eye, nose, and broken skin.

Safety procedures

Paramedics had significantly fewer exposures to blood if their supervisors emphasized following Universal/Standard Precautions and if paramedics were evaluated on following safety procedures.

Reporting exposures to management

Our survey found exposures were underreported. Only 72% of needlesticks, 29% of exposures to broken skin, and 49% of exposures overall were reported to employers.

The most common reason paramedics gave for not reporting an exposure was that they did not consider it a significant exposure.

In particular, they did not seem to think contact of their broken skin with patient's blood was serious enough to warrant reporting.

Survey results suggested paramedics were less likely to report needlesticks if they thought the exposure was their own fault.

The Importance of Reporting

Immediate reporting to management of all potential exposures is important for the following reasons:

- Exposures should be medically evaluated immediately (some treatments, such as for HIV exposure, should be started as soon as possible, preferably within hours).
- Infected workers who remain undiagnosed could place others, especially sexual partners, at risk of infection.
- HIV, HBV, and HCV have all been transmitted through broken skin; thus, these exposures have an infection risk and should be reported.
- Workers who develop occupational infections may not be eligible for workers' compensation if the exposure has not been documented.
- Employers need to know about exposures so they can implement effective prevention strategies, such as changing work practices, buying different safety devices or PPE, or improving employee training.

Recommendations

Employers

- Show employees that safety is a core value in your organization. Require workers to follow all safety procedures and include this in their job performance evaluations.

- Train employees about bloodborne pathogens, safe work practices, the proper use of safety devices and PPE, and other topics required by the Bloodborne Pathogens standard [29 CFR* 1910.1030]. Include the opportunity for questions and answers with the trainer.
- Have a written Exposure Control Plan and update it annually.
- Provide effective medical safety devices and involve frontline workers in their selection.
- Provide appropriate PPE and encourage its use. PPE includes gloves; impermeable clothing; face shields or surgical face masks and eye protection; and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices.
- Develop effective techniques for extricating patients from enclosed places, handling combative or uncooperative patients, and avoiding vomitus.
- Encourage workers to report all blood or body fluid exposures. Identify and address any barriers or attitudes that discourage reporting.
- Review exposures to identify patterns and opportunities for prevention. Inform workers of the findings.
- Implement a procedure for post-exposure evaluation and follow-up.
- Offer free hepatitis B virus vaccinations, and encourage workers to get vaccinated.

Paramedics

- Follow Universal/Standard Precautions and other safety procedures (see www.cdc.gov/ncidod/dhqp/bp_universal_precautions.html).
- Attend bloodborne pathogens and other safety training.
- Use appropriate safety devices provided by your employer.
- Dispose of sharps properly.
- Use appropriate PPE provided by your employer.
- Avoid skin contact with blood, including on the arms.
- Wash skin visibly soiled with body fluids with soap and water.
- After skin contact with body fluids, even if skin is not visibly soiled, use antimicrobial soap and water or alcohol-based sanitizer.
- Report all exposures to blood and other potentially infectious materials to management.
- Get vaccinated against hepatitis B virus.

**Code of Federal Regulations*. See CFR in References.

Conclusions

Nationally, paramedics have high rates of occupational exposure to blood. Lower exposure rates among California paramedics and among most hospital workers suggest that practical steps can be taken to effectively reduce exposures. This includes always providing and using appropriate safety devices and PPE and promoting adherence to safety procedures.

These steps will help protect the health of paramedics, their co-workers and family members, and the general public.

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More information for healthcare workers is available on the NIOSH Web site at www.cdc.gov/niosh/topics/healthcare/.

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