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## NIOSH

*The National Institute for  
Occupational Safety and Health*



# Use of Blunt-Tip Suture Needles to Decrease Percutaneous Injuries to Surgical Personnel

OSHA/NIOSH Safety and Health Information Bulletin  
(SHIB)

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(2) CDC, National Institute for Occupational Safety and Health



# Joint Document

The SHIB is a joint effort between OSHA and NIOSH

and was reviewed by surgical personnel, professional associations, an accreditation organization, academia, and government organizations.

This document was also made available for public comment.

# Purpose of the SHIB

- To describe the hazard of sharp-tip suture needles.
- To present evidence of the effectiveness of blunt-tip suture needles in decreasing percutaneous injuries particularly when used to suture muscle and fascia.
- To emphasize OSHA's requirement to use safer medical devices where clinically appropriate.

# Background

- Sharp-tip suture needles are the leading source of percutaneous injuries (51% - 77%) in the operating room.
- As many as 59% of suture needle injuries occur during suturing of muscle and fascia.
- Surgical personnel at risk include surgeons, nurses, surgical technicians, anesthesiologists, and other healthcare personnel in and out of the operating room.

# Background

- Needlestick injuries expose workers to bloodborne infectious diseases such as HIV, HBV, HCV.
- OSHA's Bloodborne Pathogens standard (29 CFR 1910.1030) protects employees against occupational exposure to bloodborne pathogens.
- Needlestick injuries also present a risk to patients from potential exposure to injured staff's blood.

# American College of Surgeons Statement 2005

- “All published studies to date have demonstrated that the use of blunt suture needles can substantially reduce or eliminate needle-stick injuries from surgical needles.”
- All seven members of the Council on Surgical and Perioperative Safety endorsed this ACS statement.

# Why did OSHA and NIOSH issue this SHIB?

- OSHA'S Bloodborne Pathogens standard requires that employers:
  - use engineering and work practice controls to eliminate or minimize occupational exposure to bloodborne pathogens.
  - evaluate and implement appropriate, available, and effective safer devices.

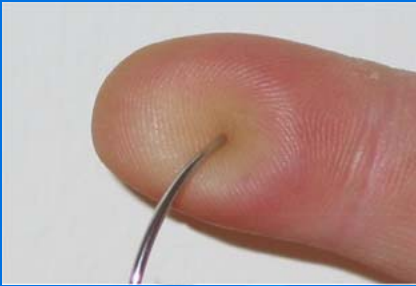
*“Engineering and work practice controls shall be used to eliminate or minimize employee exposures.” OSHA’s Bloodborne Pathogens Standard (29 CFR 1910.1030)*



# Why did OSHA and NIOSH issue this SHIB?

- NIOSH recommends that blood-exposure prevention practices be prioritized following the principles of the hierarchy of controls prevention model.
  - In this model, blunt-tip suture needles are an example of engineering controls.
- Blunt-tip suture needles are not yet widely used: 3% of suture needle sales in 2004.

# Why Use Blunt-Tip Suture Needles?



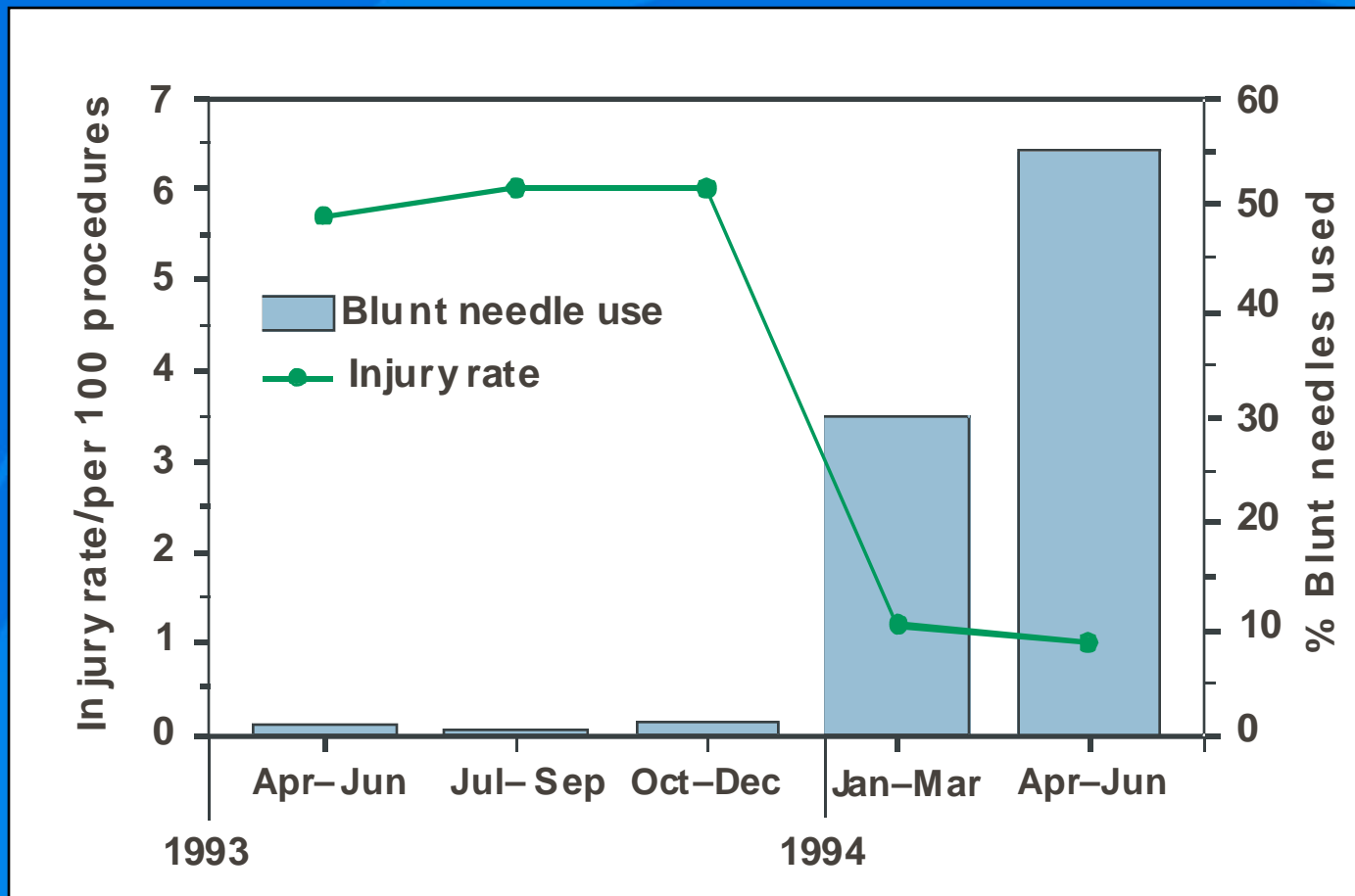
- Use of blunt-tip suture needles can substantially reduce needlesticks.
- Blunt-tip suture needles can be used to suture less dense internal tissue like muscle and fascia.
- Blunt-tip suture needles are a safety-engineered device.
- Blunt-tip suture needles have been found to be technically satisfactory when used appropriately.



## A CDC study found

- A statistically significant reduction of injury rates when blunt-tip suture needles were used. MMWR Morb Mortal Wkly Rep. 1997; 46(2):25–9.
- Use of blunt-tip suture needles resulted in minimal clinically apparent adverse effects on patient care and were generally accepted by participating surgeons.

**FIGURE 1. Rate of injury associated with use of blunt-tip suture needles during gynecologic surgical procedures and percentage of suture needles used that were blunt, by quarter — three hospitals, New York City, April 1993 - June 1994**



# Will OSHA cite employers who are not using blunt-tip suture needles?

- Decision will be made on a case-by-case basis.
- Where engineering and work practice controls will reduce employee exposure to bloodborne pathogens, they must be used.
- Blunt-tip suture needles may not be clinically appropriate for all surgical closures and procedures.
  - Conventional sharp-tip suture needles may be needed to suture skin, bowel, and blood vessels.
  - If using a safer device compromises either patient safety or medical integrity, its use would not be required.

# How do employers maintain compliance regarding suture needles?

- Evaluate the use of suture needles and implement appropriate, commercially-available, and effective blunt-tip suture needles.
- Include non-managerial front-line employees potentially exposed to injury from suture needles in the evaluation and selection process.
- Train employees on the use of selected safer suture needles and on any work practices to ensure safe use.

# How do employers maintain compliance regarding suture needles?

- Document the device selection process and employee training in the facility's Exposure Control Plan.
- Where an employer has determined that the use of available safer devices is not feasible the employer should:
  - Document this in the facility's Exposure Control Plan.
  - Implement alternative means of protecting surgical personnel from percutaneous injuries.

# Dissemination, implementation, and surveillance plan

Completed so far:

- OSHA and NIOSH press releases - received wide media coverage.
- Electronic dissemination to partners, alliances, and OSH list servers.
- Presentations at national and international conferences: AOHP, ICOH, APHA.
- Translation into Spanish in progress.
- Formatted for printing.



# Dissemination, implementation, and surveillance plan

## Use of Blunt-Tip Suture Needles to Decrease Percutaneous Injuries to Surgical Personnel

### Safety and Health Information Bulletin

SHIB 03-23-2007 • DHHS (NIOSH) Publication No. 2008-101 (supersedes 2007-132)

This document was developed by the Occupational Safety and Health Administration (OSHA), Department of Labor, and the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention, Department of Health and Human Services.

OSHA's mission is to assure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. NIOSH is the federal agency responsible for conducting research and making recommendations for the prevention of workplace injuries and diseases.

This Safety and Health Information Bulletin is not a standard or regulation, and it creates no new legal obligations. The Bulletin is advisory in nature, informational in content, and is intended to assist employers in providing a safe and healthful workplace. Pursuant to the Occupational Safety and Health Act, employers must comply with hazard-specific safety and health standards promulgated by OSHA or by a state with an OSHA-approved state plan. In addition, pursuant to Section 5(a)(1), the General Duty Clause of the Act, employers must provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm. Employers can be cited for violating the General Duty Clause if there is a recognized hazard and they do not take reasonable steps to prevent or abate the hazard. However, failure to implement any recommendations in this Safety and Health Information Bulletin is not, in itself, a violation of the General Duty Clause. Citations can only be based on standards, regulations, and the General Duty Clause.

#### Preface

The Occupational Safety and Health Administration's (OSHA's) Bloodborne Pathogens standard (29 CFR 1910.1030) protects employees against occupational exposure to bloodborne pathogens.

Bloodborne pathogens are pathogenic microorganisms that may be present in human blood and cause human disease. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). Occupational exposure to bloodborne pathogens may occur when workers receive a penetrating injury to their skin (percutaneous injury). Surgical personnel are at risk of occupational exposure to bloodborne pathogens from injuries caused by sharp surgical instruments. Such personnel include surgeons, nurses, surgical technicians, anesthesiologists, and other health care personnel both inside and outside the operating suite.

#### Purpose

The purpose of this Safety and Health Information Bulletin is:

1. To describe the hazard of sharp-tip suture needles as a source of percutaneous injuries to surgical personnel;

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



U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention  
National Institute for Occupational Safety and Health



## Targeted mass dissemination:

- Surgical workers through their professional organizations.
- Employers through accreditation organizations and healthcare facilities.
- Manufacturers.

# Dissemination, implementation, and surveillance plan

Partnering with key organizations to implement and monitor implementation on a national level:

- American College of Surgeons
- Association of Perioperative Registered Nurses
- Joint Commission
- OSHA Alliance Partners

Research to track the contribution of the SHIB in reducing needlestick injuries among surgical personnel.



# Conclusions

- Clinical use and scientific studies have established the effectiveness of blunt-tip suture needles in decreasing the risk of needlesticks.
- OSHA and NIOSH strongly encourage the use of blunt-tip suture needles, whenever feasible and appropriate, to decrease needlestick injuries to surgical personnel.
- OSHA and NIOSH will partner with key organizations to implement and monitor this preventive tool at the national level.

# Questions?

- OSHA/NIOSH Safety and Health Information Bulletin: SHIB 03-23-2007 and NIOSH 2008-101.
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Available from:

- <http://www.osha.gov/dts/shib/shib032307.html>
- <http://www.cdc.gov/niosh/docs/2007-132/>



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## NIOSH

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*Providing National and World Leadership to Prevent Work-Related Illnesses and Injuries.*