FIT4Safety
Canada

Recommendations for Best Practice in the Safe Use of Diabetes Sharps
FIT4Safety Canada will provide evidence-based best practice information to promote the safe and effective use and disposal of sharps used in the provision of care for people with diabetes. The goal of these recommendations is to protect all those at risk of needlestick injury by ensuring safe practice through professional and patient education, risk management and awareness training.

**Objectives**

1. Increase awareness of risk for needlestick injury to all health care providers involved in the care of people with diabetes.
2. Identify evidence-based best practice to minimize the risk for needlestick injuries.
3. Promote safe practice when using and disposing of sharps in diabetes care through the dissemination and implementation of the recommendations stated in this document.

**Introduction**

Everyday healthcare providers (HCPs) and healthcare workers are at risk of life threatening infections due to needlestick injuries (NSI) from the improper use and disposal of lancing and injection devices used in the care of people with diabetes.1, 2, 3

In Canada, it is estimated that more than seventy thousand workers are injured by needlesticks each year.4

The most common blood borne pathogens of hepatitis B, hepatitis C and human immunodeficiency virus (HIV) are only three of more than 20 pathogens which can be transmitted through needlestick injury.5

To prevent exposure to these blood borne pathogens and protect all people at risk safety procedures need to be implemented.

The leading priorities were identified as:

1. Risk awareness
2. Best practice initiatives
3. Education to promote a ‘safe culture’

In Canada, several provinces have been proactive with the introduction of safety legislation requiring health care institutions to use safety engineered devices (SEDs).6, 7

However, studies show that simply using a SED is not sufficient to significantly reduce the number of NSIs.8, 9, 10, 11

There are also situations, such as in the home setting, where caregivers are not using SEDs. Research emphasizes the need for HCPs to be educated in the correct injection technique and in the proper use and disposal of all devices related to diabetes treatment.12, 13, 14

Administrators also need to be held responsible for creating a ‘safety culture’ within their healthcare settings. Clear reporting procedures and a ‘no blame’ policy are essential to safe practice.

The Canadian FIT4Safety Initiative has been led by the FIT4Safety Board:

- **Gail MacNeill**, BNSc, RN, MEd, CDE
  FIT4Safety Board Chair
  Toronto, ON

- **Lori Berard**, RN, CDE
  FIT Board Chair
  Winnipeg, MB

- **Joyce Arsenault**, RN, BN, CDE
  Montreal, QC

- **Kathryn DeCiantis**, RN
  Toronto, ON

- **Sandra Dudziak**, NP
  Toronto, ON

- **Lee Ann Trimble**, RN, BScN, CDE
  Vancouver, BC

- **Sandy Koropas**, RN, CDE
  Winnipeg, MB

**The Canadian FIT4Safety Initiative has been led by the FIT4Safety Board:**
Definitions

1. **Sharps:** lancets, pen needles, syringes, infusion sets for pumps and continuous glucose monitoring (CGM).

2. **Settings:** hospitals, ambulatory care, prisons, camps, homes for physically or intellectually challenged people, long term care facilities, retirement homes, medical offices, schools, daycare settings.

3. **Healthcare providers** (HCPs): regulated and unregulated care providers including paramedics, community care nurses, pharmacists, primary care givers, school staff and child care workers.

4. **Safety engineered device** (SED): a needle device used for withdrawing body fluids, accessing a vein or administering medication with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

5. **Needlestick injury** (NSI): a penetrating stab wound from a needle (or other sharp object) that may result in unwarranted exposure to blood or other body fluids.

6. **Safe injection:** an injection that does not harm the recipient, does not expose the HCP and healthcare worker to any avoidable risk, and does not result in any waste that is dangerous to the community.

Reviews

“In a hospital setting it is essential that health care providers are aware of the risks involved in the use of sharps, in addition to any measures to ensure their safe use and disposal. This FIT4Safety document provides very clear and concise practical advice for end users to reduce the risk of needlestick injuries.”

Sara Kyriacos, M.Pharm R.Ph
Pharmacy Operations Manager
Toronto Western Hospital and Toronto Rehab Institute
University Health Network

“It is with great pleasure that we have reviewed the Recommendations whose aim is to increase the awareness of safety relative to the use of lancets and subcutaneous injections. We believe this initiative is extremely useful for health care professionals who administer injectable therapies and teach patients best practices for injection technique and safe sharps disposal. The recommendations are relevant and based on research or expert consensus. We believe they can make a difference to reduce the risk of needlestick injuries.”

Suzanne Durand
Director
Management, Professional Development and Support
College of Nurses of Quebec

Risks

NSI to HCPs and others occur from the improper use and disposal of both standard lancing devices, injection devices and SEDs. 1, 2, 4, 37-41 In diabetes care, sharps come in multiple forms and are used daily, or several times a day, resulting in frequent risk for NSI. Sharps exposure could include insulin syringes, pen needles, lancets and infusion sets for pumps and continuous glucose monitoring.

It is important to identify two distinct groups of workers who are at risk for NSI. The HCP who is handling the sharp has a direct risk of NSI but improper disposal or re-sheathing can increase the risk of exposure to other ‘downstream’ workers in healthcare facilities and private homes.

Research has shown that SED technology, when used and disposed of correctly by informed HCPs, has contributed to the decline in NSI. 38, 39 Therefore it is recommended that the use of SEDs be implemented and that proper injection technique and disposal procedures are followed thereby creating a safer environment for all. 38, 39

In situations where SEDs are not used, i.e. home settings, proper disposal of all sharps must be emphasized.

**Recommendations**

1. Organizations should develop and communicate appropriate policies and procedures to implement all FIT4Safety recommendations to ensure a safer environment for all.4, 42-45

2. SEDs (syringes, pen needles or lancets) should be used by all HCPs.4, 42-45, 43-49

3. The use of SEDs should especially be considered in high risk patients i.e. those positive for HIV, HBV or HCV when injecting in a home setting; where there are young children; where elderly patients have mobility and/or dexterity issues; and those with limited access to proper disposal.4, 48

**Practical FIT Tips:**

• Diabetes syringes, pen needles and lancets are the three sharp devices most frequently associated with NSI among HCPs.40
Two components of a safe injection for the patient involves delivering an accurate dose of medication into the appropriate tissue. To accomplish this, the HCP must choose the appropriate device and use it safely with the correct technique to deliver the medication into the subcutaneous tissue.

The use of a skin lift accounts for a high percentage of NSIs and is to be avoided wherever possible.

Recommendations

1. All HCPs should be trained in the use of the SED.
2. HCPs should use the shortest possible length of SED for the pen or syringe to avoid using a skin lift and ensure delivery into the subcutaneous tissue.
3. HCPs should use a 90° insertion angle.
4. HCP should count to a minimum of 10 seconds before withdrawing the needle to ensure appropriate delivery of the medication.
5. To remove pen needle, HCP should use a two-fingered technique to grasp either side of the pen needle safety device and avoid putting fingers near the top of the device.

Syringe Use

6. If using an 8mm or 12.7mm SED syringe, a 45° angled injection is preferred over the skin lift except in very young children, muscular adults and thin elderly where a skin lift may also be required.

Figure 3. HCPs should avoid the use of skin lifts to reduce risk of NSIs.

Figure 4. Proper delivery of insulin into the subcutaneous tissue.

Figure 5. Proper injection technique for insertion of safety engineered pen needle – 90° insertion, no skin lift.

Figure 6. Proper “two-fingered” technique for safe removal of safety engineered pen needle from device.

Injection Technique Implications

Practical FIT Tips:

• Due to the potential for nosocomial infections in health care settings, alcohol wipes can be used to clean (not disinfect) the injection sites. Soap and water is an alternative as per the institution’s policies.

• Studies have demonstrated fewer NSIs when pens with a SED needle are used versus vial and safety syringes.

• Many NSIs occur after use but before disposal.

1. Where pen devices are used there must be an enforced policy of one pen per patient.
2. All SEDs being used should have the following features:
   • an easy one hand activation;
   • a clear view of the tip of the sharp at the entry site;
   • a clear indication of the dose delivery;
   • a clear indication of the activation of the safety feature;
   • no exposure to the sharp following the dose administration.

3. A SED pen needle should have protection from exposure at both ends of the needle to prevent NSI before and after use.
4. Lancets should be removed from the lancing device as per manufacturer instructions.
Recommendations for Best Practice in the Safe Use of Diabetes Sharps

Wherever diabetes care is being delivered, it is the responsibility of the HCP and the institution to ensure that policy and procedures are being followed to promote the safest environment for anyone exposed to the potential for a needlestick injury. Research has repeatedly shown that risk assessment, ongoing education and continuous quality improvement programs contribute to the development and sustainability of this ‘safe culture’.

1. All HCP and care providers at risk of NSI injury should be trained by qualified professionals in the proper use of the injection and lancing devices, protective equipment, safe disposal of the devices and the reporting procedure for any NSI.1,4,8,35,42,43,44

2. Administrators should ensure a ‘no blame’ approach in the reporting process of a NSI, a near miss or improper technique with emphasis on treatment, education and future prevention.2,5,13,23,32

3. Health care curriculum should include education regarding all aspects of FIT4Safety Canada.

4. Continuous quality improvement programs should be in place to update training programs and reinforce the values intrinsic to the development of the ‘safe culture’.13,23,44

5. Frontline and occupational health workers should be included in the decision making process when choosing a SED.2,6,13,15,23

Practical FIT Tips:
- Does your institution promote a ‘safe culture’?
- Disseminating this document can increase awareness and help create a safer environment.

The development of this document has been supported by BD Canada and reviewed by the associations as noted.

Safe Sharps Disposal

Recommendations
1. Needles and sharps should not be uncapped unless there is a proper sharps disposal container available within the immediate vicinity.25,35

2. Used (contaminated) sharps should be disposed of immediately after use in an approved sharps container that is clearly labelled, readily available and puncture resistant.6,21,46

3. Sharps containers should have tight fitting lids.11,19

4. HCP should fill sharps containers no more than 3/4 full or until the indicated fill line on the container. When full, the lid should be secured as per the manufacturers’ instructions.11

5. Sharps should be disposed of in sharps containers at the site of use. If traveling in a vehicle with contaminated sharps, the sharps must be stored in a closed container.25

6. HCP should not recap, bend or manipulate needles or lancets in any way for disposal.10,11,36

7. Safe placement of the sharps container in the client’s home or mobile clinic must be a priority in consideration of children, confused adults, drug abusers, etc.

8. Sharps should never be disposed of in the public or household garbage.10,36

9. Dispose of used sharps containers in accordance with regulations from local, municipal, provincial/territorial authorities.10,34

Practical FIT Tips:
- Local pharmacies often have programs offering free sharps containers.
- Sharps containers stored at eye level or slightly below (always out of reach of children) are more readily usable.

Figure 7. Sharps container.
References
