A Health Advisory provides key information for a specific incident or situation; might not require immediate action.

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Authority  Centre for Healthcare Related Infection Surveillance and Prevention (CHRISP)

Distribution List  District Managers - Queensland Health
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                  Clinical Products Advisory Committee
                  Infection Control Practitioners - Private & Public
                  Australian Diabetes Educators Association

Subject  Needlestick Injuries Related To Injector Pens

Suggested Action  We recommend that District Managers:
1. Ensure the following information is incorporated in a hospital policy/ procedure(s) -
   Administration of insulin (or other drugs) via an injector pen is for patient self administration only. If a patient, who usually self administers medication using an injector pen, is compromised due to illness or injury, the health care worker is to use a single use retractable syringe/needle (e.g. insulin syringe) to administer the medication.

   It is important that the patient has the capacity/ability to remove the used needle from the injector pen. Needle removers should be available for patient use if this facilitates patient self care. After the needle is removed from the pen it should be disposed of immediately into a designated sharps container by the patient.

   Under no circumstances should a health care worker recap a used injector pen needle.

2. Continue to monitor and investigate reports of injuries related to injector pen needles.
Reported cases

68 hollow bore needlestick injuries related to injector pen needles have been reported to the CHRISP State aggregate data base between the 1st February 2002 and 30th June 2005.

What happened?

- Pen injectors are auto-delivery systems designed for self-administration of medication (insulin, interferon etc) via the subcutaneous (SC) route.
- Insulin injectors became available in Australia in 1985. Since their introduction, there has been a significant increase in the use of injectors due to a variety of clinical and non-clinical factors.
- Devices are available in a variety of designs and feature either a replaceable cartridge or single use design.
- There has been an increase in needlestick injuries (NSIs) related to injector pen needles within Queensland Health hospitals.
- NSIs due to injector pen needles have been recognised as a problem worldwide. The majority of injuries are due to staff recapping or manually disassembling the needle prior to storage.
- NSIs associated with SC injection are considered low risk invasive procedures with respect to blood borne virus (BBV) transmission, however three cases of occupationally acquired hepatitis C virus (HCV) infection have been caused by SC needles (Pellissier et al, 2006).
- Based on information from a project being undertaken at the Princess Alexandra Hospital, the majority of injuries related to insulin injectors could have been prevented.
- The incorrect use of injector pens can also lead to inaccurate dosing and device failure.

Why did it happen?

- Due to the variety of injector pen devices, staff are unfamiliar with insulin pen delivery systems (often patients instruct staff on the use of the pen).
- Health care workers are sustaining NSIs when patients are unable to administer their insulin. Injuries have been caused by staff resheathing the injector pen needle prior to unscrewing it or when unscrewing the needle before discarding it into the sharps container. Some injuries have occurred when patients have not removed the needle after they administered their own insulin and therefore injuries have occurred when staff have retrieved the device.
- Injector pen needles are single use and should be removed after each injection; removal devices (for patient use) are available.
- In 1996, the Therapeutic Goods Administration (TGA) reported that ‘insulin injectors are precision medical instruments.’ Additionally, no insulin injectors should be distributed to a user without that user completing a comprehensive safety training program. This includes the patient’s capacity/ability to remove the used needle from the insulin injector.
- Health care workers (other than those who have undertaken a comprehensive safety training program e.g. Diabetes Educators) should not administer medication using an injector pen.
How could it be prevented?

- Health care workers should not assist patients to remove and/or dispose of injector pen needles.
- Hospital policy/procedure(s) should include information on the correct use of these devices. This should incorporate drawing up of insulin directly from the cartridge with an insulin syringe, if a particular type of insulin is not immediately available in a vial. Information outlining what insulins are available in both cartridges and vials is included in Table 1; this information should be reviewed as new products become available (refer Attachment 1)
- Where required, health care worker training programs are offered by appropriately qualified staff.
- Patients should be instructed on safe needle disposal and sharps containers should be readily available.
- The design of injector pen delivery systems needs to be improved.

Acknowledgement

Principal Project Officer, CHRI SP Project to Reduce High-Risk Needlestick Injuries, Princess Alexandra Hospital

Nurse Unit Manager, Diabetes & Endocrinology Department, Princess Alexandra Hospital

CHRISP Surveillance Coordinator

References

**Table 1: Insulin Availability**

<table>
<thead>
<tr>
<th>Type</th>
<th>Brand Name</th>
<th>Manufacturer</th>
<th>Availability*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>10ml vial</td>
</tr>
<tr>
<td>RAPID ONSET-FAST ACTING</td>
<td>Novorapid</td>
<td>Novo Nordisk</td>
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</tr>
<tr>
<td></td>
<td>Humalog</td>
<td>Lilly</td>
<td>✓</td>
</tr>
<tr>
<td>SHORT ACTING</td>
<td>Actrapid</td>
<td>Novo Nordisk</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Humulin R</td>
<td>Lilly</td>
<td>✓</td>
</tr>
<tr>
<td>INTERMEDIATE ACTING</td>
<td>Protaphane</td>
<td>Novo Nordisk</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Humulin NPH</td>
<td>Lilly</td>
<td>✓</td>
</tr>
<tr>
<td>LONG ACTING</td>
<td>Lantus</td>
<td>Aventis</td>
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</tr>
<tr>
<td>Insulin Glargine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin Detemir</td>
<td>Levemir</td>
<td>Novo Nordisk</td>
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</tr>
<tr>
<td>PRE-MIXED INSULINS</td>
<td></td>
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</tr>
<tr>
<td>- containing rapid acting</td>
<td>Humalog Mix 25</td>
<td>Lilly</td>
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</tr>
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<td>Novomix 30</td>
<td>Novo Nordisk</td>
<td>✓</td>
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<td>- containing short acting</td>
<td>Mixtard 20/80</td>
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<tr>
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<td>Mixtard 50/50</td>
<td>Novo Nordisk</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Any change of insulin or human insulin analogue should be made under medical supervision

✓ Product to be discontinued from 1 September 2007

**References:**
1. Diabetes & Endocrinology Department, Princess Alexandra Hospital
4. Product information