Guideline for the Administration of Insulin by Nursing Staff

Aims and objectives

In Lanarkshire the number of people with Diabetes on insulin treatment is growing, as both the population ages and people are affected by Diabetes for longer. Within the community setting there are a group of patients who need their injections administered by Registered Nurses as, due to a variety of reasons (poor manual dexterity, lack of strength, mental ability), they are incapable of self-injection.

This guideline provides information and advice on the sub-cutaneous administration of insulin to reduce the risk of error in medicines administration and needlestick injury. This guideline also seeks to promote safe practice in the use of insulin PEN devices, which can be used when the traditional method of insulin syringe and vial is not appropriate. It is recommended that, whenever possible, insulin must be administered using an insulin syringe and vial (SAN (SC) 05/10). In the event that the medication prescribed is only available in a pen device (due to the type of insulin prescribed) the Registered Nurse must ensure they are proficient in the use of the pen.

Responsibility for the procedure is with the Registered Nurse. They must ensure that they are competent in the following before undertaking the procedure:

- Understanding and interpreting an insulin prescription sheet
- Drawing up the correct dose of insulin into an insulin syringe or correctly using a pen device
- Knowledge of injection sites
- Examination of injection sites for lipodystrophy (lumpy areas)
- Administering a subcutaneous injection
- Safe disposal of sharps, immediately after use
- The use of a blood glucose meter to monitor blood glucose and interpretation of the result
- How to recognise and respond to hyper- or hypoglycaemia
- Patient/carer communication strategies, with the outcome of increased patient/carer involvement and concordance in all aspects of Diabetes management and decision making
- Record keeping which complies with the NHS Lanarkshire policies

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User group

All registered nursing staff who require to administer insulin
All staff involved in the use of insulin pen devices, or in the education of patients in the use of these devices.

Guideline

PATIENT CRITERIA

Community patients who are experiencing difficulties in drawing up and administering their insulin on their own should be assessed by community nursing staff and, where appropriate, referred to the Diabetes Specialist Nurse for additional support and assessment. Any changes in the patient's diabetes management should be clearly documented and communicated effectively to all those involved in the care of that individual.
Teaching self administration of insulin for new Type 1s and Type 2s commencing insulin therapy within the hospital environment should be undertaken by appropriately trained staff who are fully aware of the working mechanisms of all insulin devices.

**NB** Being able to self-administer is an essential part of a patient's education and should be carried out under the supervision of trained staff prior to discharge.

**ADMINISTRATION OF INSULIN BY NURSING STAFF**

**Identification of Insulin**
- Is the insulin available in vials? If yes, follow procedure for administration of insulin with insulin syringes. If the insulin is not available in vials, ensure that the insulin has been prescribed for use in the appropriate pre loaded disposable pen listed below and follow procedure for pen use
- Novomix 30 (Flexpen), Levemir (Flexpen) and Humalog Mix 50 (Kwik Pen) are only available for PEN devices. Where insulin is to be administered by a Registered Nurse the use of prefilled PEN devices (as detailed in brackets) is preferred for those patients. All have a similar mechanism and are easy to demonstrate and use
- Note pre-meal analogue insulin is rapid acting and the person with Diabetes requires to eat immediately after insulin administration
- **Never withdraw insulin from a cartridge or prefilled pen using a needle and insulin syringe. This contaminates the insulin and interferes with accurate dose determination using the PEN device**
- The insulin must never be drawn up in an insulin syringe or the pen dialled up and stored in advance of the procedure

**Equipment required**
- U100 disposable insulin syringe with 8mm needle
- Vial of insulin
  - **Or**
  - Pre loaded insulin device with appropriate needle
- Owen Mumford Uniguard Needle Remover (acute sites) or Novofine Needle Remover (community)
- Sharps box
- Gloves
- Blood glucose meter

**Procedure**
- Ensure prescription is complete, correct, legible and unambiguous prior to administration
- Check the name of the insulin and dose against the insulin prescription chart in the patient’s record
- Confirm the identity of the patient prior to administering the insulin
- Check the insulin has not already been administered by someone else
- Wash hands and put on gloves
- Check the blood glucose level according to NHS Lanarkshire guideline on blood glucose monitoring and record the result prior to administering the insulin
- Check correct storage of insulin
- Check expiry date
- Prepare the insulin syringe or pen device (see below)
Procedure (continued)

- Select injection site - remember to rotate injection sites, never use the same site for consecutive injections
- Insulin should be injected into sub-cutaneous tissue or soft fat, not muscle. To avoid intramuscular injection, evidence suggests that raising the skin is best practice and, in some cases, use of a smaller needle will be recommended by the specialist clinician (see below)
- Continue to raise the skin and hold the insulin syringe in place for a count of 10 to ensure that the insulin disperses from the site of the injection
- Remove the needle and insulin syringe and dispose as per safe disposal of sharps
- Record the dose, timing and site of insulin injection on the chart and initial
- Report to a supervisor if the patient bleeds from an injection site, insulin appears at the site of an injection or the patient complains that the injection is painful. If this is the case injection technique may need reassessment

NB In the hospital environment, insulin should be checked by two registered nurses (or nurse and medical practitioner); as this is not possible within the community setting, extra care and vigilance must be practised by the registered nurse when administering insulin.

Preparing insulin syringe

- For Neutral Protamine Hagedorn (NPH) and pre mixed insulin invert the vial of insulin backwards and forwards and roll gently between your hands approximately 20 times to insure the insulin is well mixed. Do not shake
- Take the insulin syringe and pull back the plunger to measure the amount of air equivalent to the amount of insulin to be drawn up. Expelling air into the vial prior to an injection creates a vacuum and makes it easier to draw out the insulin
- With the vial standing upright insert the needle straight through the centre of the rubber cap of the insulin vial and push the plunger down
- Turn the vial upside down. Make sure that the point of the needle inside the vial is well beneath the surface of the insulin to avoid unnecessary air bubbles
- Pull back the plunger until you have measured slightly more than the required dose of insulin
- Flick or tap any air bubbles to the top of the insulin syringe, then push the plunger back to the desired dose expelling the bubbles into the vial. Air bubbles are not dangerous if injected into the recommended subcutaneous injection sites. This procedure ensures an accurate dose of insulin. If air bubbles persist then expel all the insulin back into the vial and start again
- Remove the needle from the vial and recheck the dose

Preparing preloaded pen device

- Attach a pen needle. Pen needles come in a range of sizes
- 8mm needles are recommended for the majority of patients, unless the patient is underweight or there is another injection-related issue identified by the specialist clinician - in which case smaller needle sizes can be used
- Inject into clean skin with clean hands. Alcohol wipes are not recommended. Alcohol is an astringent and can make the injection more painful as well as hardening the skin
- If using cloudy insulin gently roll the pen ten times and invert the pen ten times. The liquid should look evenly mixed
- Prime pen by dialling up 2 units. Point pen upwards and depress injector button
- Ensure insulin is expelled from needle - repeat priming process if no insulin seen
- Turn the dose knob to the number of units to be administered
SAFE DISPOSAL OF SHARPS

- Insulin syringe and needle – dispose directly into the sharps box to avoid needlestick injury
- If using a pen device, use a needle remover - Uniguard single use pen needle remover (acute sites), or Novofine needle remover* for individual patient use (community) and dispose directly into sharps box to avoid needlestick injury
- If no needle remover is available use the outer plastic cap in which the needle is supplied - never re-sheath with the small inner plastic cover

(* Novofine needle remover not compatible with Unifine pen needles; patients would require to use an alternative pen needle during their stay in hospital.)

If needlestick injury occurs take prompt first aid action as follows:

- Encourage wounds to bleed by gentle squeezing - DO NOT SUCK the area
- Wash thoroughly with soap and warm running water - DO NOT SCRUB the area
- IMMEDIATE MANAGEMENT OF INJURIES/EXPOSURE AT TIME OF INCIDENT: INDIVIDUAL RESPONSIBILITIES

Storage

- Unopened insulin vials/preloaded pens should be stored in the main body of the fridge at 2-8°C. If stored in this way the insulin remains useable up until its expiry date
- Insulin in use should be stored at room temperature. Stored in this way, the insulin remains stable and useable for 1 month Note - Write date of expiry on vials i.e. one month from removing from the fridge
- Partly used insulin pens should never be returned to the fridge to be reused. They must be discarded
- In hospital, insulin pens in use are stored with the patient in their POD locker. Opened vials are usually stored in the fridge and annotated with one month expiry

Training

It is the responsibility of the Registered Nurse to adhere to NMC guidance on management of medicines.

Diabetes MCN Endorsement

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Review Date

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References

NHS Lanarkshire (2003), Risk Assessment for Insulin Administration in the Community.
Royal College of Nursing UK (2004) Starting insulin treatment in adults with Type 2 Diabetes
SAN (SC) 05/10 - Pen Injection Devices and Needles : Risk of Needlestick Injury
http://www.hse.gov.uk/healthservices/needlesticks/eu-directive.htm
Forum for Injection Technique (FIT); Diabetes Care In The UK; The First UK Injection Technique Recommendations: October 2010
Administration of Insulin by Nursing Staff - A Summary

When:
Patient unable to self administer their injections.

Procedure:
- Ensure the patient’s insulin is available in vials or prefilled pen device
- Check the name of the insulin and dose against the patient’s insulin prescription chart
- Check insulin correctly stored and its expiry date
- Wash hands, put on gloves
- Check patient’s blood glucose level and record the result
- Prepare the insulin syringe or pen device
- Select the injection site
- Raise the skin and insert the needle
- Depress the insulin syringe or pen device and hold in place for a count of 10
- Remove the needle and insulin syringe or device and dispose safely
- Record the dose, timing and site of injection on the chart and initial
- If the patient is administered pre-meal analogue insulin i.e. rapid acting, the patient should eat immediately after insulin administration

Remember:
- The insulin syringe or pen device must not be prepared and stored in advance of the procedure
- Do not draw insulin from a pen cartridge using a needle or insulin syringe
- Report to a supervisor any bleeding from the injection site, pain following administration or if insulin appears at the site of injection
- Report any hypo- or hyperglycaemia on BG testing to the patient’s diabetes team