Wednesday 30 October 2019

12:40 - 13:30
TREND-UK & Injection Technique Matters Theatre

Injection Technique Matters with Lipohypertrophy
‘Live’ Demonstration

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Declarations

Co Chair of TREND-UK (Training, Research & Education for Nurses in Diabetes).
Chair of Injection Technique Matters
Editorial Board Member of The Diabetes Times

I have received funding from the following companies for providing educational sessions and documents, and for attending advisory boards:
B Braun, BD, Boehringer Ingelheim, BMS/Astra Zeneca, Eli Lilly, GlucoRx, Janssen, MSD, Mylan, Napp, Novo Nordisk, Owen Mumford, Sanofi and Takeda.
Learning Objectives for Session

This presentation will explore research that has confirmed that people who use injectable therapies for diabetes can be adversely affected if the correct injected technique is not used at each injection. It will give information on the correct injection technique to be teaching those who need injectable therapies to achieve optimum benefit from their therapy. We will look at some of the adverse effects caused by poor injection technique focusing on Lipohypertrophy. There will then be a ‘Live’ demonstration on correct palpation of Injection Sites after which the audience will have chance to perform the same technique on a person with diabetes.

Learning points:

• Demonstrate the correct injection technique for administering diabetes injectable therapies
• Be aware of the importance of site selection and site rotation
• Be aware of the importance for advising on appropriate needle size
• List the impacts of poor injection technique
• Examine injection sites for detection of lipohypertrophy

A distinct lack of non-promotional educational material for HCPs and people with diabetes to support best practice injection technique.

During 2018 *Injection Technique Matters* was founded by the former board members of FIT.
This initiative is supported via an educational grant from B Braun, GlucoRx and Owen Mumford.

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Some facts & figures

• **4.2 million people** in the UK are diagnosed with diabetes\(^1\)
• **20 - 30%** of all people with diabetes in the UK are **insulin treated**\(^2\)

- Over £1 billion is spent on drugs for diabetes
- £350 million on insulin
- + GLP-1 RA costs within (Antidiabetic Drugs = £476 million)

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....more “person-friendly” devices and shorter, finer needles.
“Insulin is rarely, if ever, given at the right time, in the right way or in the right amount. It is therefore amazing that anyone with diabetes has any semblance of good blood glucose control.”

Professor Edwin Gale, Medical School Unit, Southmead Hospital, Bristol
How you inject is as important as what you inject
The potential consequences of poor injection technique

• Glycaemic variation (hypoglycaemia/hyperglycaemia) – risk of hospital admissions – poor control – increased risk of complications
• Lipohypertrophy
• Excess insulin requirement (weight gain, cost implications)
• Inaccurate dosing
• Poor efficacy of drug
• Risk of needlestick injury
Good injection technique is crucial to achieve the expected absorption and action of insulin.

The implications of poor injection technique

- **Unpredictable Absorption**

  - **Rapid Absorption**
    - Hypoglycaemia
      - Poor glycemic control
      - Increased risk of complications
      - Negative impact on quality of life
  
  - **Poor Absorption**
    - Hyperglycaemia
Where should insulin and GLP-1 RA be injected and how can you ensure this happens?
Should a person’s BMI/weight influence needle length?

Fully insert the needle into the skin at 90 degrees, keeping the pen stable.
Press dose button until dose fully injected.
Are lifted skin folds required when self-injecting?

How to perform a correct lifted skin fold

1. Raise a fold of skin between thumb and fingers
2. Try not to pinch the skin too tightly
3. Do not grasp too much tissue to avoid raising the muscle
4. Insert needle into skin at 90 degree angle and inject
   Remove needle while still holding skin fold
   Release skin fold once needle withdrawn
Be aware ……if district nurses or carers are giving injection

Only available with 8mm or 12mm needle – risk of IM injection

Risk of needlestick injury

There is legislation in place to try to protect healthcare professionals from harm…

But you have to know how to use them correctly!!!
How many times should a pen needle be used?

Once only

- Review needles
  - What size?
  - Single use?
  - Left in situ on pen?
  - Angle of insertion?
  - Lifted Skin fold performed?
What about site selection?
What are appropriate sites for injection?

- Abdomen
- Upper outer aspect of thighs
- Upper outer quadrant of buttocks
- Upper underside of arms

The rate of absorption of some insulins varies according to the site of delivery.

- The abdomen is the preferred site for the injection of soluble insulin (as it absorbed faster in this area).
- The thighs and buttocks are the preferred sites for Neutral Protamine Hagedorn (NPH) insulin where absorption is slowest.
- When pre-mixed insulin is being injected, it is suggested that the abdomen is used in the morning, and the thigh or buttock in the evening.

Which sites are being used?
What about site rotation?

Because he knew the importance of daily injection site rotation, George went to extremes to avoid problems.

☑️ Are injections within a site being rotated?
Lipohypertrophy is a common consequence of poor injection technique

How common do you think it is?

Blanco (2013)\(^1\) 64%
Grassi (2014)\(^2\) 49%

Expect to find it in **over half** of your patients who use insulin

But if you don’t SUSPECT it - you won’t DETECT it!

Lipohypertrophy (LH) appears as thickened ‘rubbery’ lesions, they appear over time in the subcutaneous tissue of overused injection sites but can vary in shape and size.

- Lipohypertrophy (LH) is disfiguring.
- Unpredictable and delayed absorption resulting in glycaemic variation\(^1\),\(^2\),\(^3\).
- Malabsorption from lipohypertrophic sites may lead to patient giving unnecessarily large doses of insulin (cost implications)\(^4\).

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What causes Lipohypertrophy?

The primary causative factors are:

- **Duration** of insulin use with longer duration associated with more LH
  (p=0.001) 12% less than 5 years / 84% 16-20 years use

- Incorrect site **rotation** (p=0.004)
  23% with weekly rotation / 90% chose randomly

- An association between **needle reuse** and presence of LH (p=0.004)
  20% single use / 75% 4-5 times

Make examination of injection sites part of a regular review.
Encourage person to inspect the site before injecting.
Case

• Type 1 Diabetes admitted to ITU with severe prolonged hypoglycaemia.
• This occurred within 4 hours of his first ever flu vaccination at the GP surgery → ? reaction to vaccine
• On examination – severe lipohypertrophy found. It was discovered later that patient injects rapid insulin into his arms and long acting insulin into his stomach. He was given flu vaccine into arm, the practice nurse noted lipohypertrophy and suggested he avoid that area (but no advice given with regard to dose reduction).

What happened next……..

• Patient injected 58 units of NovoRapid into his abdomen away from the lipo at the next mealtime. (His usual dose was 58 -72 units NovoRapid with meals and 110 units Lantus at night)

• After assessment and discharge he was well controlled on 5-14 units NovoRapid with meals (1unit to 7g CHO) and 48 units Lantus daily.
If on occasion the patient changes from an area of LH to normal tissue but gives the same dose, there is a risk of hypoglycaemia.
• Raise awareness (amongst HCPs & people with diabetes)
• Promote best injection technique practice (refer to Injection Technique Matters Guideline)
• Encourage HCPs and people with diabetes that examination of injection sites should be part of regular practice.
• Any abnormalities should be documented in the patient’s notes and reassessed at subsequent consultations.
• Individuals should be taught to examine their own injection sites and how to detect lipohypertrophy (and encouraged to do so regularly).
• Patients should be advised to avoid injecting into areas of lipohypertrophy until tissue returns to normal (this can take months or even years)
• People who inject should be taught to check for signs of Lipohypertrophy & report any abnormalities.
• Rest areas of Lipohypertrophy BUT discuss with HCP before switching to a different site (dose adjustment may be required to minimise risk of hypoglycaemia.)
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Available to download at www.trend-uk.org
Key things to remember if you use injectable medication ……..

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Live Demo
HOW TO EXAMINE FOR LIPOS

- Always inspect for lipohypertrophy in good light
- Gain consent to examine
- Look for changes in contour of skin
- Warm, clean hands
- Use water soluble gel
- Use tips of fingers
- Work towards suspected area of lipohypertrophy with a light massage-like motion (Figure 10)
- Push deep into tissue through fat to feel muscle below (if possible) then push forward toward until lipohypertrophic tissue is felt
- Feel for a change in the subcutaneous tissue
- Document size and position of lipohypertrophy
- Advise avoid using area for at least 3-6 months
- Re-examine at next visit