



Meet Doris



70 year old ♀
Type 2 diabetes for 22 years
BMI = 32kg/m²

- Treated with NPH insulin only for 10 years with meal time insulin added for the last 7 years.
- Currently using a 12.7mm syringe.



- HbA_{1c} is 76mmol/mol experiencing nocturnal hypoglycaemia and erratic blood glucose control. Switched to a basal insulin analogue. Instructions on use of a prefilled pen provided by her nurse.
- Continues with 12.7mm pen needles.

Current Challenges

- 1 Variable blood glucose levels (2.9-18.0 mmol/L), no discernible pattern.
- 2 Nocturnal hypoglycaemia continues though reduced with basal insulin analogue. Some daytime hypoglycaemia with physical activity.

Injection Technique Review:

- **Site rotation:** uses a structured pattern.
- **Injection sites:** no lipohypertrophy, some bleeding and bruising.
- **Site selection:** abdomen and thighs (basal), thigh and back of arm (meal time).
- **Technique:** injects 12.7mm pen needle at a 90° angle (no lifted skin fold). Finds that if she tries to angle her injections into her arm it is less painful.

12.7mm pen needle increases her risk of intramuscular (IM) injection potentially causing the glycaemic variability and pain.¹

What does the research say?

Gibney 2010¹

Average skin thickness ranges from 1.9-2.4mm in adults living with diabetes regardless of age, gender, ethnicity or BMI.



Hirsch 2010²

4mm pen needles are safe and efficacious for adults living with diabetes and preferred compared to 5mm and 8mm pen needles.



Hofmann 2010³

5mm needles reliably delivered insulin into subcutaneous tissue and that the necessity of an angled injection and skin lift could be left to patient preference in adults.



Recommendations for Doris



Advised to avoid injecting into the back of the arm (difficult to reach with possible risk of IM injection).

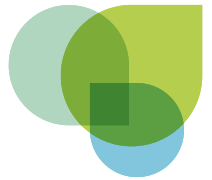


Benefits of shorter pen needles were reviewed (less risk of IM injection, no need for a lifted skin fold, more comfortable to inject).



Follow-up HbA_{1c} in 3 months and 6 months showed improved glucose control with infrequent hypoglycaemia, painless injection and reduced bruising using 4mm pen needles.

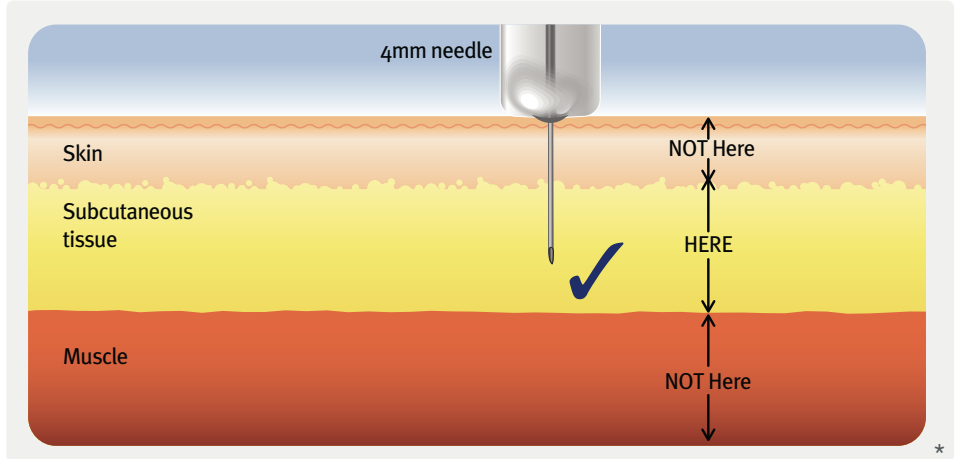
FIT UK Recommendation:⁴
4, 5 and 6mm pen needles are suitable for all adults living with diabetes regardless of BMI.



Did you know?

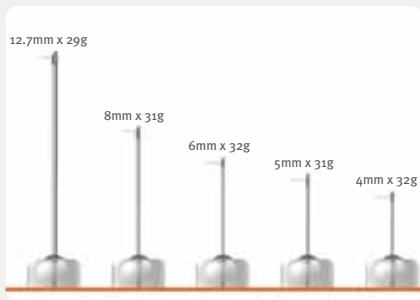
Insulin is best absorbed in the subcutaneous layer

Insulin injected into the muscle will not be absorbed properly. It may be painful and could be the cause of low or high blood glucose.

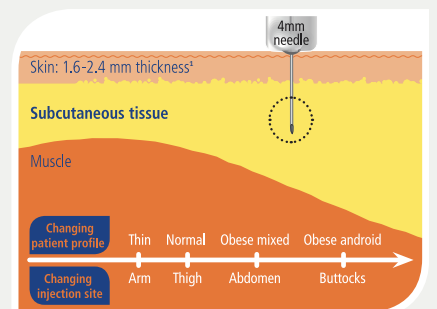


Did you know?

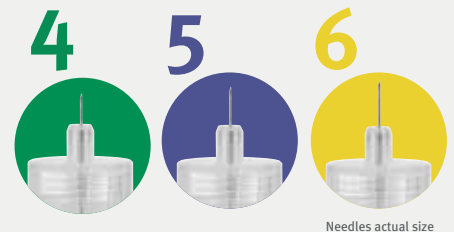
Needles come in **many lengths** from 4mm to 12.7mm long.



New research of the skin shows that on average the skin is only **1.6-2.4mm thick** in all people living with diabetes.^{4,5}



This means that **4, 5 and 6mm needles are suitable** for all adults living with diabetes who inject.⁴

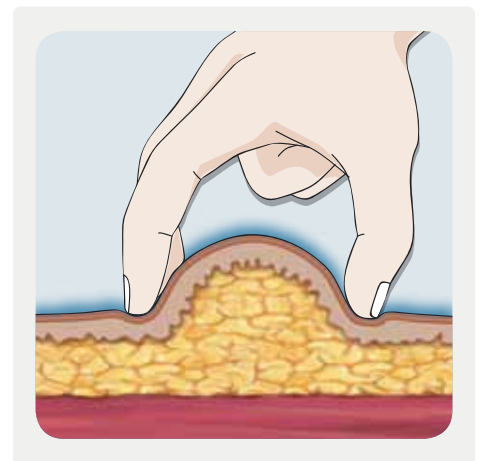


Did you know?

How you inject your insulin matters

If you choose to use longer pen needles or syringes, or if you are extremely lean, you may need to perform a lifted skin fold in order to avoid injecting into the muscle.

Review your injection technique with your doctor or diabetes nurse today.



1. Gibney MA, et al. Skin and subcutaneous adipose layer thickness in adults with diabetes at sites used for insulin injections: implications for needle length recommendations. Curr Med Res Opin. 2010; 26 (6): 1519-1530.

2. Hirsch LJ, et al. Comparative glycemic control, safety and patient ratings for a new 4mm x 32G insulin pen needle in adults with diabetes. Curr Med Res Opin 2010;6:1531-41.

3. Hofman PL, et al. Defining the ideal injection techniques when using 5-mm needles in children and adults. Diab Care. 2010;33(9): 1940-1944.

4. Hicks D, et al. The First UK Injection Technique Recommendations 2nd Edition October 2011.

5. Lo Presti D, et al. Skin and subcutaneous thickness at injecting sites in children with diabetes: ultrasound findings and recommendations for giving injection. Ped Diab 2012;13(7):525-53.

* The needles sizes are for illustrative purposes only and do not reflect the actual size.