

## Practical Tool 3: Supporting People using Insulin Pens: Practical Information

### Technical Considerations

Pen cartridges will have either one type of insulin in them or a pre-mixed ratio of rapid to long-acting insulin. The choice of pens will vary depending on which insulin is used.

### Pen needles

Different pen needles can alter the delivered dose. All manufacturers recommend that only needles compatible with their pens be used.

Different pen needles are available in six different lengths (5mm, 6mm, 8mm, 10mm, 12mm and 12.7mm) and four gauges (28G, 29G, 30G, and 31G). Children and people with little body fat will need smaller needles, while those with higher than normal subcutaneous fat at injection sites will need longer needles.

### Complications

A well recognised side-effect of repeated injections into the same area is the development of lipohypertrophy (lumps) or lipodystrophy (tissue hardening and indentation) which hinder insulin absorption and impact on glycaemic control. Rotation of the injection site reduces the frequency but does not eliminate the problem<sup>38</sup>.

### Supporting people on use of insulin pens

The improper use of insulin pens can have serious consequences for people with diabetes<sup>39</sup>. For many people with diabetes the insulin pen is the most tangible aspect of their treatment and it is, therefore, important that people are comfortable with using their pens. Table 1 describes aspects of the pens that pharmacists should consider when supporting and advising people on the use of their insulin pens.

**Table 1: Practical Advice and Support by Pharmacists for People Using Pens**

<b>Instructions</b>	Patients should not be left to work out how to use a pen from the instruction alone; training should always be provided. The instructions should, however, state clearly how to operate the pen, or how to deal with problems.
<b>Pen accessories (if any)</b>	Accessories may make a particular pen more suitable for some individuals, e.g. an accessory that makes setting the dose easier for those with impaired dexterity.
<b>Inserting a cartridge</b>	Pen users must replace the insulin cartridge when it is empty. The task involves several sub-tasks including removing the cartridge holder from the pen body, rewinding the internal plunger, inserting the cartridge then reconnecting the cartridge holder to the pen. It is essential that they can do this easily and should be tested before taking away.
<b>Connecting a needle</b>	The needle should be clicked or screwed into place as securely as possible and must be removed from the pen after injection to guard against contamination and prevent leakage of insulin, entry of air and the needle becoming blocked.
<b>Setting a dose</b>	It is essential that the pen affords easy dose setting. Devices that are error tolerant i.e. permit easy correction of a misdialled dose, may be more suitable for some patients than others.
<b>Maximum dose</b>	Different pens permit different maximum doses to be set (currently between 21 and 80 units) in increments of between 0.5 and 2 units. Pens with half-unit increments are particularly well suited for children and adults on low doses.
<b>Injecting the dose</b>	For most pens the dose selector doubles as an injection button; the knob is turned to set the required dose, and then is pushed to inject the insulin. The force required to press the button varies, as does the distance the button must be pushed. The needle must remain in the skin for 5-10 seconds to ensure that all the insulin has been delivered.
<b>Visual, auditory or haptic (touch) feedback when dose-setting</b>	It is important that the pen indicates to users (with a range of abilities) that it is ready for injection [12]. To set a dose, the dose knob is dialled until the required number of units is shown in the viewing window. Some pens have digital dose displays. Pens also indicate the dose dialled by means of clicks for each dose increment, which users can hear and/or feel as they turn the dose knob. Texture can also be used to distinguish products, e.g. pens can provide tactile clues to the type of insulin they contain
<b>The display of residual insulin in the pen</b>	The cartridge holder should allow easy sight of the deliverable volume, and it should permit people to determine whether sufficient insulin remains to administer the dose