

Injection Force of SoloSTAR® Compared with Other Disposable Insulin Pen Devices at Constant Volume Flow Rates

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Abstract

Background:

Injection force is a particularly important practical aspect of therapy for patients with diabetes, especially those who have dexterity problems. This laboratory-based study compared the injection force of the SoloSTAR® insulin pen (SoloSTAR; sanofi-aventis) versus other available disposable pens at injection speeds based on the delivered volume of insulin released at the needle.

Method:

Four different prefilled disposable pens were tested: SoloSTAR containing insulin glargine; FlexPen® and the Next Generation FlexPen® (NGFP) (Novo Nordisk), both containing insulin detemir; and KwikPen® containing insulin lispro (Eli Lilly). All pens were investigated using the maximum dispense volume for each pen type [80 units (U) for SoloSTAR; 60 U for the other pens], from the free needle tip dispensing into a beaker. Twenty pens of each type were fitted with the recommended needles and tested at two dose speeds (6 and 10 U/s); each pen was tested twice.

Results:

Mean plateau injection force and maximum injection force were consistently lower with SoloSTAR compared with FlexPen, NGFP, and KwikPen at both injection speeds tested. An injection speed of 10 U/s was associated with higher injection force compared with 6 U/s for all the pens tested ($p < .001$).

Conclusions:

SoloSTAR stands out because of its low injection force, even when compared with newer insulin pen devices such as the KwikPen and NGFP. This may enable patients, especially those with dexterity problems, to administer insulin more easily and improve management of their diabetes.

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Abbreviations: (N) newton, (NGFP) Next Generation FlexPen, (U) unit

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