

Optimizing Patient Comfort During Delivery of Subcutaneous IgG (sCIg)

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Introduction

Studies have shown that home-based subcutaneous immunoglobulin replacement therapy achieves acceptable IgG trough levels and better health related quality of life and treatment satisfaction. While patients and caregivers are expressing a growing preference for home-based treatment, there remains a need to improve patient experience and comfort during delivery of sCIg to further enhance treatment satisfaction and maintain compliance. This study discusses the insertion and extraction of needle sets during self-administration of sCIg and highlights how treatment satisfaction can be improved with specific attention to needle penetration force, use of an insertion device and improved extraction techniques.

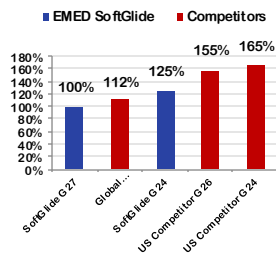
Methods

Needle penetration force through various membranes is well accepted as a means to establish needle sharpness with a direct correlation to perceived pain. Tests were conducted to compare the dynamic penetration force of EMED's Soft-Glide needle sets (27G and 24G) which has a proprietary coating, with a selection of other market needles according to protocols based on ASTM F3014 test standard. Other features that contribute to needle sharpness and perceived pain were evaluated such as bevel design, needle coating and insertion or extraction techniques. In this regard, needle set features of EMED's OPTFlow sets and inserter, as well as Soft-Site dressings were also evaluated.

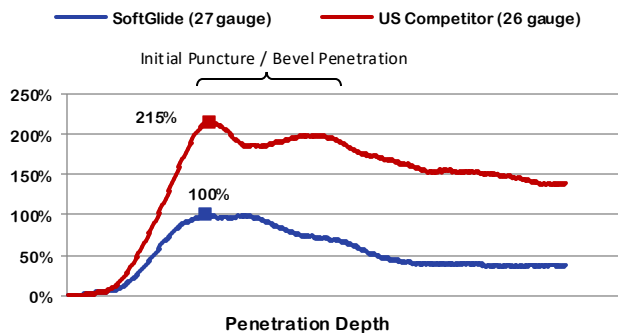
Results

Test results showed that the author's coated needle sets require the lowest amount of penetration force, both during initial puncture and the rest of the needle insertion. One comparison revealed that a different manufacturer's 26G needle set required as much as 115% higher penetration force than the coated 27G needle sets. On average, competitor's needles required between 12%-55% higher penetration forces for 27G and 26G respectively. The author's coated 24G sets also performed better than other 24G sets, and even other 26G sets, requiring 40% and 30% less penetration force respectively.

Average Penetration Force During Insertion

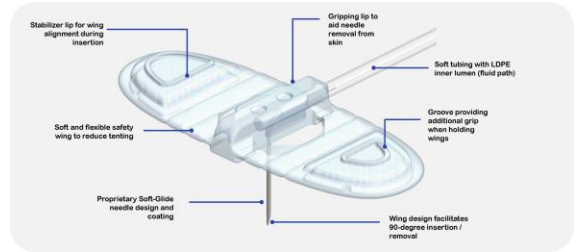


Dynamic Needle Penetration Force Comparison



Discussion

Test results indicate that although the needle gauge influences penetration force, additional design features such as the quality and length of the bevel cut, and needle coating can reduce the penetration force and related pain. Furthermore, features on the needle set wings and hub that facilitates 90° insertion and extraction techniques reduces additional trauma to the injection site tissue. Some patients may benefit from using a needle inserter to assist in this process. Needle set removal can also be tedious and painful when dressings stick to the needle set wings, causing additional aggravation to site tissue. The dressing evaluated in this study demonstrated improved features allowing less adhesion and interference to the needle set during its removal and extraction.



OPTFlow Features for Improved Patient Comfort and Usability



Accusert Insertion device assisting with placement and alignment of needle sets.



Soft-Site Dressing with non-stick zone to reduce interference between dressing and the needle set wings during removal.

Conclusion

The main goal with any IgG replacement therapy is to achieve normalized serum IgG levels and, thereby, a reduced frequency and severity of infections. For home-based therapy, this requires patient compliance and treatment satisfaction. This study has shown that through improved needle design, penetration forces and expected pain during insertion is reduced. In addition, features on the needle set wings and hub are essential to facilitate a perpendicular insertion and extraction from the skin to reduce pain and improve patient comfort.

References

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