WEIBEL CDS AG
safer, easier and faster drug delivery

SUPERCAPSYRINGE® PASSES THE TEST

In this article, Hans Peter Manser, Chief Operating Officer and Business Director, Weibel CDS, alongside Lisa Lippuner and Sarah Raible, both BSc Nursing at FHS St Gallen, University of Applied Sciences, Switzerland, discuss the findings of a study conducted to test the qualities of Weibel's SuperCapSyringe®.

Weibel CDS, the developer and producer of the SuperCapSyringe® (Figure 1), claims that the product reduces the risk of contamination, handling errors and needlestick injuries. The Health Department of FHS St Gallen, University of Applied Sciences, Switzerland conducted a series of tests to verify these claims. This work was carried out by Lisa Lippuner and Sarah Raible, under the leadership of Prof Heidi Zeller, PhD.

"Following Weibel's mission to support safer, easier and faster preparation and administration of drugs, all functions and parts needed for a specific drug application are integrated into one product."

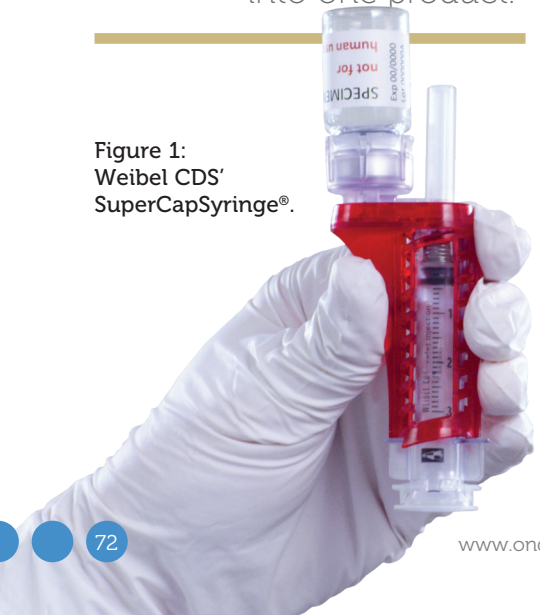

Figure 1: Weibel CDS' SuperCapSyringe®.

"The SuperCapSyringe® product family works as an add-on to a standard vial, upgrading it effectively into a prefilled syringe."

BACKGROUND

The SuperCapSyringe® product family works as an add-on to a standard vial, upgrading it effectively into a prefilled syringe. Based on a modular design, the syringe is fully adaptable to a client's application needs. It is supplied in different sizes and with staked needles including a passive safety device.

Following Weibel's mission to support safer, easier and faster preparation and administration of drugs, all functions and parts needed for a specific drug application are integrated into one product. The user only opens one package and the drug is handled entirely within a closed system in order to reduce the risk of contamination, handling errors and needlestick injuries, as well as being a quicker and easier process (Figure 2).

With SuperCapSyringe®, the drug is contained in its original vial, which is attached to the vial adaptor. The drug is then drawn into the SuperCapSyringe® for injection. After withdrawal of the syringe a passive safety system slides over the needle providing the highest safety levels against needlestick injuries.

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Under the title "*Standard versus SuperCapSyringe® – Comparison between the standard, open preparation of parenteral injections versus the SuperCapSyringe®*", Lisa Lippuner and Sarah Raible conducted a study to ascertain the truth of Weibel's claims. The criteria to be tested were:

- Contamination
- Dosing Accuracy
- Timing.

The goal was to identify which method offered the greatest patient safety for the lowest cost and time required.

THE TEST

Method

Within an evaluation study the participants were instructed to carry out the preparation and injection process to verify the stated claims. Each participant was asked to carry out 50 preparations and injections using the standard, open method (Figure 3) as well as with the SuperCapSyringe® (Figure 4). In order to verify dosing accuracy, the authors defined a prescription to be followed by the participants. Prior to each preparation, a fluorescent media was applied to the hands of the proband allowing the identification of possible contamination.

Figure 2: The SuperCapSyringe® is entirely contained in a single package.

Video sequencing enabled exact timing of each preparation, allowing for a calculation of the cost per preparation and injection. This cost was added to the material and general cost to generate a total cost perspective.

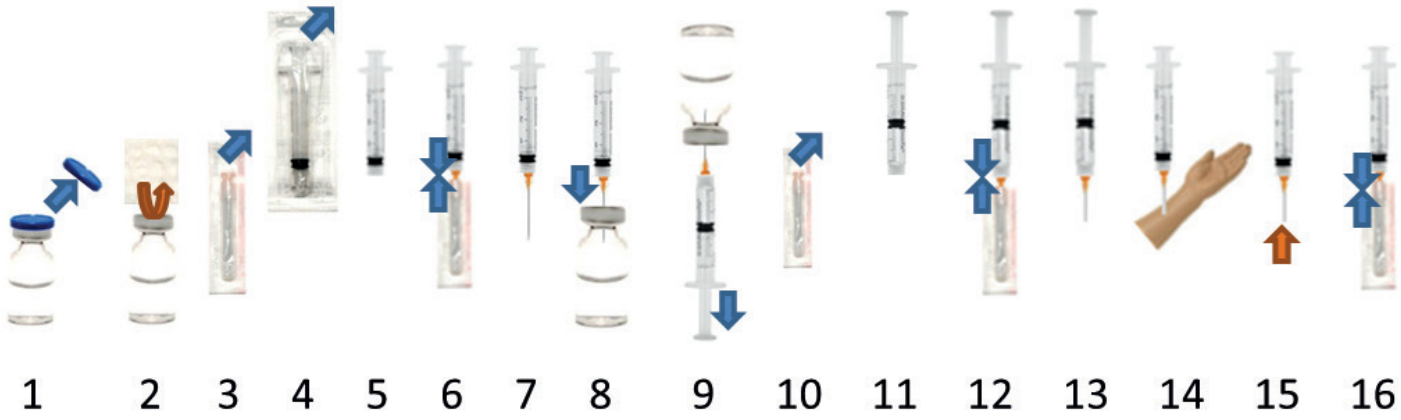

Figure 3: The standard, open preparation and administration of liquid drugs requires as many as 16 individual steps.

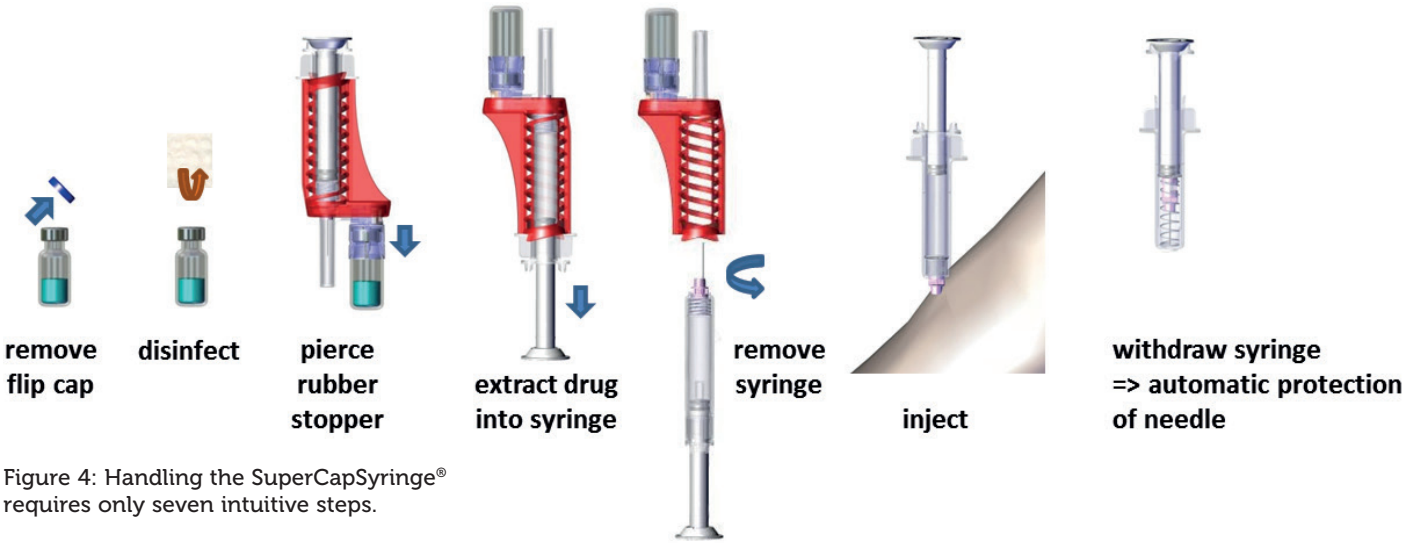

Figure 4: Handling the SuperCapSyringe® requires only seven intuitive steps.

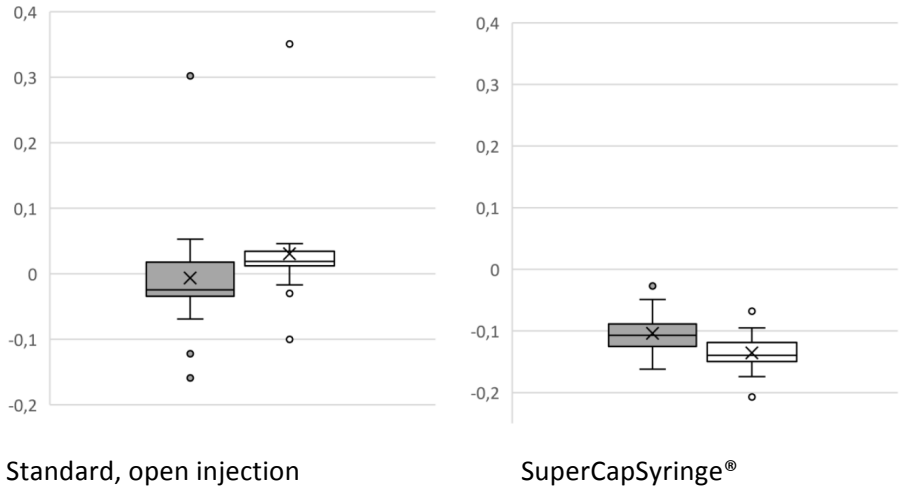

Figure 5: A comparison of dosing accuracy between the standard, open injection method and SuperCapSyringe®.

Contamination

Healthcare personnel are subjected to physical and mental stress, as well as time pressure. Due to this lack of time, the risk of poor adherence to proper hygienic guidance increases.[1] Manipulation during the preparation of injectable drugs can influence sterility and cause contamination. Often contamination is caused by contacting the syringe luer cone, as well as the cannula hub, coming into contact with either hands or surfaces.[2]

The test was set up to identify contamination on the plunger rod, the luer cone and the cannula. Especially on the luer cone and cannula the result was extraordinary as for the standard, open injection contamination occurred in between 9% to 40% of cases, whereas there was no contamination observed throughout the entire test for participants using the SuperCapSyringe®.

Dosing Accuracy

Using a prescription of 1 mL the Standard Deviation for the dosing accuracy was at 0.091 for the standard, open injection and at 0.032 for the SuperCapSyringe®. As can be seen in results displayed in Figure 5, the homogeneity of an administration of 1 mL is clearly better using the SuperCapSyringe®.

Economic Aspects

The average time required for the preparation was 62 seconds for the standard, open injection, and 34.5 seconds for the SuperCapSyringe®, a reduction of almost half. With the learning curve considered, this value dropped to less than 30 seconds for the SuperCapSyringe®, whereas for the standard, open injection the study observed no noticeable change over time.

The WHO estimates that 16 billion injections are administered worldwide every year. Considering that number of injections, the potential for saving time is immense. A total cost of ownership (TCO) calculation resulted in a total saving of 42% for the SuperCapSyringe®. This calculation included a comparison of device cost as well as the saving in labour cost.

REFERENCES

1. *"Gesundheitsberichterstattung des Bundes Heft 8, Nosokomiale Infektionen". Robert Koch Institute, 2000.*
2. *Stucki C et al, "Microbial contamination of syringes during preparation: The direct influence of environmental cleanliness and risk manipulations on end-product quality". Am J Health Syst Pharm, 2009, Vol 66(22), pp 2033-2036.*

ABOUT THE AUTHORS

Hans Peter Manser, Chief Operating Officer and Business Director at Weibel CDS, holds a diploma in Business Administration and Applied Technical Management. After perennial stays in the UK, Australia, US, France and Germany, he assumed sales management and executive functions in the communications industry with global responsibilities. Mr Manser transitioned to the pharmaceutical packaging business in 2001 and subsequently joined Weibel CDS in May 2011 as Business Director responsible for setting up and management of all administrative and commercial aspects of the company.

Lisa Lippuner, BSc in Nursing, Health Department of FHS St Gallen, University of Applied Sciences, Switzerland, has had internships in paediatrics at Münsterlingen Cantonal Hospital, medical at Grabs Hospital, rehabilitation at the Zihlschlacht Rehabilitation Clinic and urology (surgery) at the Grisons Cantonal Hospital.

Sarah Raible, BSc in Nursing, Health Department of FHS St Gallen, University of Applied Sciences, Switzerland, is a medical practice assistant, having performed internships in orthopaedics, medical, acute psychiatry and geropsychiatry at the Cantonal Hospitals in Thurgau and Münsterlingen.

SuperCapSyringe®

Passed the Test!

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International patents granted

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