

Usability Study for a Novel Intravenous and Subcutaneous Syringe Infusion System

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BACKGROUND

While intravenous and subcutaneous routes of medication therapy have primarily been used for the infusion of medications in the hospital and clinic, they are also used in the home where patients perform their own infusion, or the infusion is performed by a caregiver/home care nurse. Home healthcare is on the rise; according to the Centers for Medicaid and Medicare Services, home infusion therapy visits increased from 20,520 to 24,469 in 2020. Common medications given in the home setting include intravenous antibiotics and subcutaneous immunoglobulin. Adults and pediatric patients without systemic symptoms are frequently treated for diseases such as bone and joint infections, staphylococcal bacteremia, endocarditis, lung infections, soft tissue infections, neurologic disorders, cancer, and immunodeficiency diseases.

The company performed a pre-market usability study to gauge user experiences with a novel infusion system for intravenous and subcutaneous use. User feedback on infusion effectiveness, efficiency, controllability, customizability, and consistency provides invaluable data, which is used to assess the ease of use, safety, and identify additional user needs.

METHODS

The study was performed with two groups: 16 nurses and 15 caregivers ages 12 – 82. The nurses included a combination of registered nurses with varying degrees of education, from 3-year prepared nurses to an expert doctoral prepared nurse. The lay persons varied from high school education to college with some post graduate work. One participant was an adolescent. Both groups were trained on the Insignis Syringe Infusion System and asked to return-demonstrate the infusion process. In addition, to assess retention and trainability, post-demonstration nurses took a 90-minute break and were asked to demonstrate how they would train a caregiver.

References:

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MKT03-1022v1

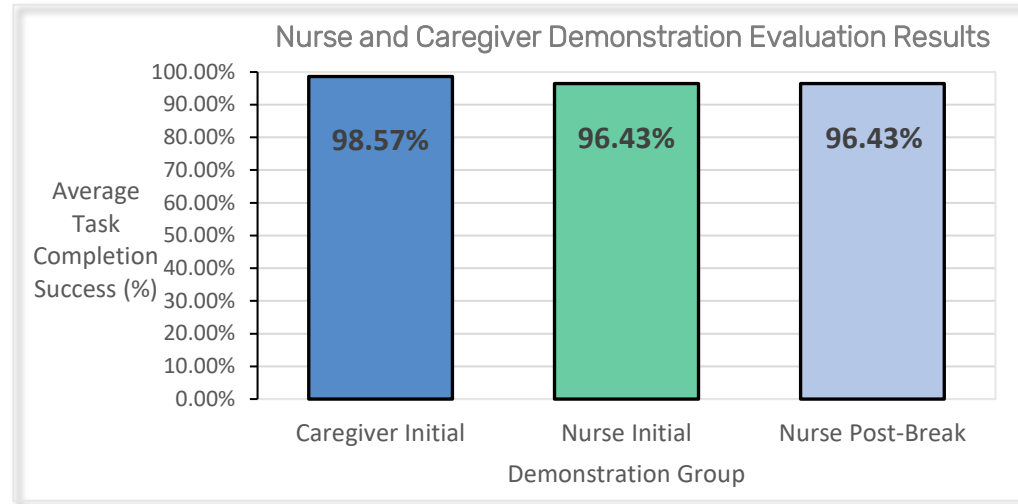


Figure 1: Demonstration evaluation results with caregivers, nurses, and nurses after a 90-minute break.

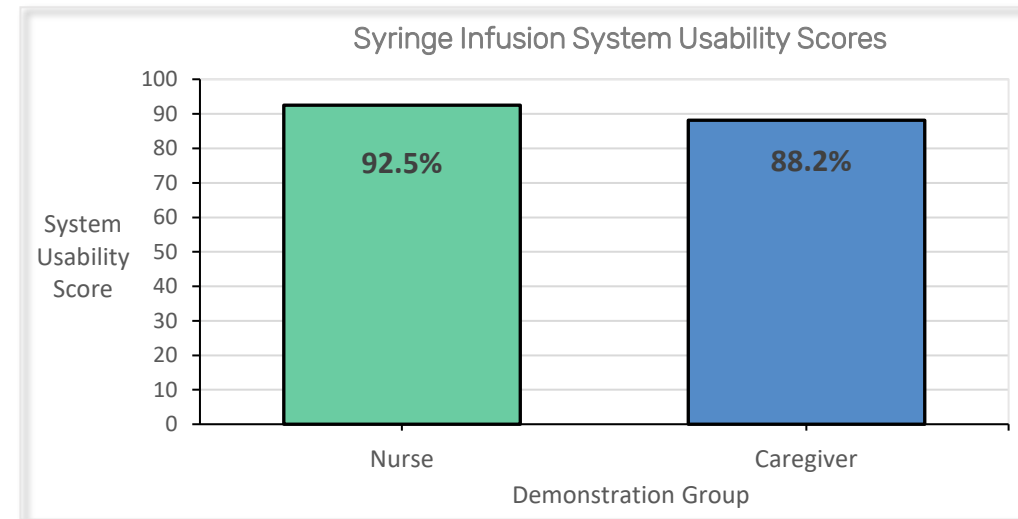


Figure 2: Overall usability scores from nurses and caregivers involved in the study.

RESULTS

100% of nurses indicated the infusion system was: “very easy” or “somewhat easy” to train and prepare, “convenient” to use, and was more satisfactory to use than other infusion systems. Other descriptor words used included: “accessible,” “clear,” “easy to use,” “effective,” “reliable,” “understandable,” “useful,” “fast,” and “efficient.”

DISCUSSION

It is imperative that a medical device performs reliably and achieves its intended use effectively. The end user must easily understand how to infuse safely, whether in the home or in a hospital setting. For home infusions, users need a simple, easy-to-use, infusion system. The system’s compact design, versatility, and portability further aid in providing the patient with an improved quality of life.

CONCLUSION

The usability study demonstrated the infusion system was effective, simple, and easy to use and teach. The majority of participants ranked the system an “A” or “B.” Benefits of an easy-to-teach and easy-to-use system may include a reduction of infusion resources including training time and costs.

Disclosures: Melody Bullock is the Clinical Science Liaison for Innovative Health Sciences.



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