



CARESCAPE R860

Usability in critical care

Your ventilator is an essential part of caring for patients in the ICU. Besides technical accuracy, the device's usability – whether or not it helps users effectively achieve their goals – is an important consideration in choosing a system. With improved usability comes potentially better patient care. ¹⁻³ “Usability is mainly related to the quality of the human-machine interface...and an improved interface seems mandatory to limit human errors that could exacerbate morbidity and mortality.”⁵

With its innovative user interface, the CARESCAPE R860 is inherently familiar the first time you use it. It flattens the learning curve and unlocks ventilation capabilities by making them more accessible and easier to use so you can confidently provide tailored therapy for your ICU patients.

Effective Alarm Management with CARESCAPE R860

“The alarm system works well. You get a good indication of why it is alarming. Then when you press the alarm, you immediately get the options of what to do so it is easier to adjust it.”

–Nurse, Norway

“When an alarm goes off, the event can be interpreted more easily. It is also easier to react on the alarm because it is easier to interpret.”

–Physician, France

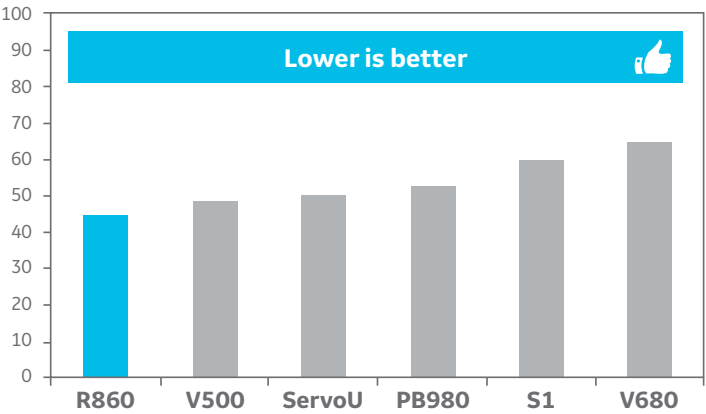
The authors of “A New Global and Comprehensive Model for ICU Ventilator Performances Evaluation” in the Annals of Intensive Care describe their process for evaluating six models of ICU ventilators for both technical performance and ergonomics. The study involved 20 clinicians, ranging in age from 30 years old to 60 years old, in four ICUs.

To assess usability, the authors used two psycho-cognitive scales: NASA’s Task Load Index (TLX) and System Usability Scale (SUS). TLX is a multi-dimensional tool that evaluates physicians’ mental

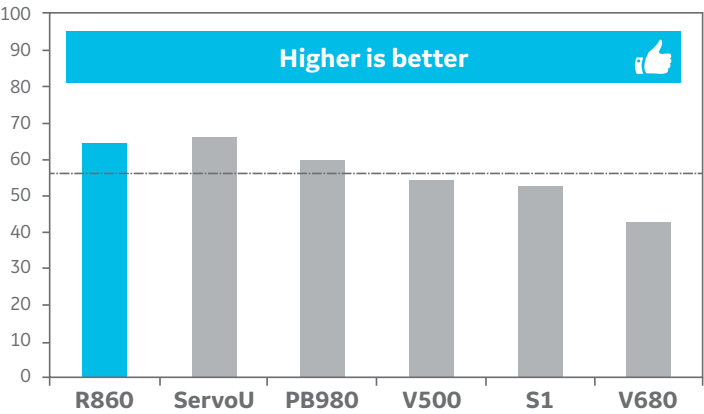
workload, which often has a direct effect on patient care. In fact, when asked to identify leading causes of preventable errors, 50% of physicians pointed to “overwork, stress or fatigue.”⁴ SUS is a 10-item questionnaire that assesses usability by evaluating effectiveness, efficiency and satisfaction.

In this paper’s assessment, the CARESCAPE R860 required the lowest levels of mental workload, induced less clinicians’ physiological parameter modifications, had one of the best usability scores, and had one of the highest objective task completion rates.

Task Load Index (TLX) Scores



System Usability Scale (SUS) Scores



References

1. Institute of Medicine. To err is human: building a safer health system. Washington: The National Academies Press; 1999.
2. Horsky J, Zhang J, Patel VL. To err is not entirely human: complex technology and user cognition. J Biomed Inform. 2005;38:264–6.
3. Richard JC, Kacmarek RM. ICU mechanical ventilators, technological advances vs. user friendliness: the right picture is worth a thousand numbers. Intensive Care Med. 2009;35:1662–3.
4. Views of Practicing Physicians and the Public on Medical Errors Robert J. Blendon, Sc.D., Catherine M. DesRoches, Dr.P.H., Mollyann Brodie, Ph.D., John M. Benson, M.A., Allison B. Rosen, M.D., M.P.H., Eric Schneider, M.D., M.Sc., Drew E. Altman, Ph.D., Kinga Zapert, Ph.D., Melissa J. Herrmann, M.A., and Annie E. Steffenson, M.P.H.N Engl J Med 2002; 347:1933-1940December 12, 2002DOI: 10.1056/NEJMs022151.
5. Marjanovic, N. S., Simone, A. D., Jegou, G., & L’Her, E. A new global and comprehensive model for ICU ventilator performances evaluation. Annals of Intensive Care. 2017; 7:68

Imagination at work