



Baxter

Equilibria

FLUID OPTIMIZATION

Systemic inflammatory response syndrome (SIRS): a substantial burden for healthcare systems^{1,2}

Introducing SIRS

- SIRS is a pathological inflammatory response to events such as infection, trauma, burns and pancreatitis¹
- Up to 26% of patients with SIRS* present to the emergency department, creating a significant financial and resource burden for healthcare systems²
 - Patients with SIRS* had higher rates of admittance to the ICU (11.2% vs 3.7%, $P < 0.0001$), longer average hospital stays (3.8 days vs 3.3 days, $P < 0.0001$) and higher 28-day in-hospital mortality (4.6% vs 1.8%, $P < 0.0001$)²

Managing SIRS: choice of IV fluid therapy

The management of hypovolaemic SIRS patients includes the use of IV fluids to restore intravascular volume and maintain organ perfusion.³ Despite the availability of an extensive range of IV fluids to healthcare systems, patients may receive fluids that lead to complications and negative outcomes.³⁻⁵ Understanding the association between fluid types and clinical outcomes in SIRS patients may help to inform IV fluid selection in clinical practice.⁴

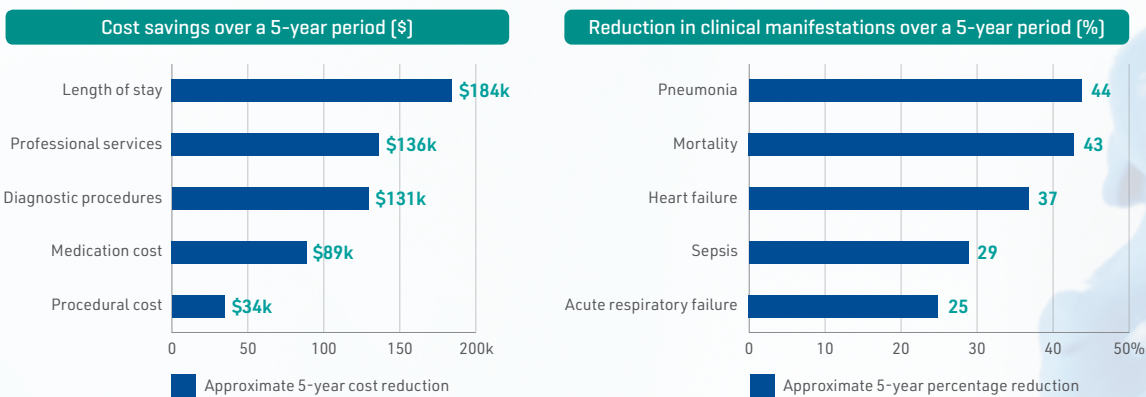
*Using the moderate estimate (17.8%) of patients with SIRS admitted to the ED.

Cost-benefit analysis

An economic model based on the results of a 5-year retrospective Electronic Health Record database analysis of US hospitals was developed. Despite increased acquisition costs, it found that increased use of balanced/buffered crystalloid calcium-free fluids is associated with considerable cumulative savings and improved patient outcomes compared with 0.9% sodium chloride (saline).^{3,4}

The model also found that the use of 0.9% sodium chloride in patients with SIRS was associated with greater morbidity and mortality compared with balanced/buffered crystalloid calcium-free fluids.³

Increased use of balanced/buffered crystalloid calcium-free fluids from **5% to 75%** delivered estimated savings of **\$1.16M** for hospitals and **\$172,641** for pharmacies over a 5-year period. Savings were made through reduced service costs and complication rates.³



The decrease in complications due to increased use of balanced/buffered crystalloid calcium-free fluids led to significant cost savings as early as year 1.³ These savings were evident despite increased fluid costs; for the base case assuming 300 hospital beds, cumulative savings vs current usage were estimated to be \$29,232 by year 1 and \$1.16M by year 5.³ The largest contributors to savings were length of stay, professional services, and diagnostic costs.³

An increase in the use of balanced fluids from 5% to 75% reduced overall annual costs by **32%^{*3}**

The total pharmacy costs, which included the medication and the 72-hour fluid usage costs, decreased by **30%^{*3}**

*Cumulative savings over a 5-year period.

ED, emergency departments; ICU, intensive care unit; IV, intravenous; SIRS, systemic inflammatory response syndrome; USD, United States Dollar.

References

1. Balk RA. *Virulence*. 2014;5(1):20–26. 2. Horeczko T, Green JP, Panacek EA. *West J Emerg Med*. 2014;15(3):329–36. 3. Laplante S et al. *Pharmacoecoon Open*. 2018;2:325–35. 4. Shaw AD et al. *Crit Care*. 2015;19(1):334. 5. Gomaa A et al. Poster presented at IFAD 2017.