Letter to the Editor

Normal Saline Storage Practices

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To the Editor:

The current shortage of a variety of intravenous (IV) admixture solutions including dextrose 5% in water (D5W) and lactated Ringers solution has led to a shortage of 0.9% sodium chloride (normal saline [NS]).¹ In an effort to reduce wastage, Puertos² evaluated the effect of different storage temperatures (5.2°C, 21.8°C, and 39.2°C) on the stability and sterility of NS solutions (B. Braun, Inc.). All samples were protected from light and stored with the overwrap intact. Stability was determined by measuring pH and sodium concentration. Samples from each bag of NS solution were evaluated for bacterial or fungal growth. Neither the stability nor the sterility of NS solutions was impacted by 199 days of storage under refrigeration or heating. The author stated, “The findings of this study will enable hospitals and emergency medical service facilities to significantly extend the expiration date assigned to these fluids and therefore save time and money and decrease the number of fluids that need to be discarded each month.”

Although this study suggests that the manufacturer’s expiration dating may be overly conservative, the data are not sufficient to warrant changes in current storage practices. For example, the NS solutions came from a single manufacturer and there were relatively few samples in each group. Groups of IV bags should have been assigned to various temperature ranges rather than to a specific temperature because storage conditions at other storage sites may differ. Stability and sterility appear to have been tested at the end rather than at specific intervals. Chlorine and plastic particles that leach into solution contribute to osmolality and were not measured. Future studies should use a larger number of NS solutions from a variety of manufacturers, store solutions at a variety of temperature ranges, and evaluate stability and sterility at intervals throughout the study. In addition,

more consideration should be given to the types of plastic in the packaging of IV solutions, as each plastic differs in porosity and may degrade at different rates.³

It is not known how long the current shortage of NS solution will last. For now, the US Food and Drug Administration is allowing manufacturers to import sodium chloride 0.9% for injection from other countries into the US market to address this shortage.¹ A medication safety alert issued by the Institute for Safe Medicine Practices provides guidance on dealing with the shortage and “urge[s] hospitals to explore other alternatives” before extending expiration dates.⁴ In addition, the American Society for Health-System Pharmacists⁵ offers a set of strategies for conserving IV solutions during this shortage.

REFERENCES

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