

Abstract:

The effect of pH on solubility and stability is a critical factor in the formulation of parenteral dosage forms and becomes more complicated in intravenous admixtures since the additives and the vehicle may have different pH values. This is especially important as a significant number of parenteral medications require some compounding involving dissolution of lyophilized powders, dilution of drug doses for infusion, mixing of dextrose, amino acids, vitamins, and electrolytes for parenteral nutrition, etc. A change in the acid-base environment of a drug involves both the solubility and stability characteristics and can be critically related to pH as follows: (1) as a solution goes away from the pH of maximum solubility, the drug can precipitate out of solution, and (2) as the solution goes away from the pH of maximum stability, the drug can degrade more rapidly and have a short beyond-use date. This fifth of a series of articles on intravenous admixture preparation considerations represents an introduction on pH considerations, which is presented in two parts, pH basics and applications, covering pH Considerations - Basics (In part 5 of this series): Basics of pH, pKa and Dissociation Constants, pH and Solubility, pH and Stability; and pH Considerations - Applications (in part 6 of this series): Vehicle Characteristics, Selected Injectable Characteristics, IV Admixtures and Syringe Admixtures, and General Summary of pH Effects.

Reference:

Allen LV Jr. Sterile Basics: Intravenous Admixture Preparation Considerations, Part 5: pH Considerations. *Int J Pharm Compd.* 2020;24(4):305-309.