Infusion dead space is the internal volume of a catheter and tubing through which a fluid must pass before reaching a patient's intravenous space. It is a factor in time to delivery for intravenous administration and can be significant, depending on the volume and rate of infusion" Gregerson et al (2018).

Abstract:

Infusion dead space is the internal volume of a catheter and tubing through which a fluid must pass before reaching a patient's intravenous space. It is a factor in time to delivery for intravenous administration and can be significant, depending on the volume and rate of infusion. A 10-kg infant was simulated, receiving an epinephrine infusion with a concentration of 20 mcg/mL at a rate of 0.1 mcg/kg/min, which equals 3 mL/h. Commonly used pediatric intravenous equipment was selected. The tubing was flushed with a dyed solution. The setup was connected to 24- and 22-gauge catheters, with and without extension tubing. Each configuration was tested by allowing the intravenous solution to drip onto chromatography paper until color could be seen. The time from the start of the infusion to the visualization of dye was recorded 10 times for each configuration. The average time was 88 seconds for a 24-gauge catheter and 439 seconds with extension tubing added. For the 22-gauge catheter, the average time was 98 seconds and 431 seconds with extension tubing. Though often considered inconsequential, infusion dead space can cause significant delays in drug administration, especially in small patients and with slow, concentrated infusions. When appropriate, clinicians should consider bolus administration of critical medication before starting an infusion.

Full Text

Reference:

Gregerson, B.G., Larsen, A.L., Kelly, S.M., Sonnier, J.D. and Juergens, A.L. (2018) Effect of intravenous infusion dead space on time to drug delivery in infants. Proceedings (Baylor

University. Medical Center). 31(2), p.168-170.

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