We have investigated the ability of IV in-line filters to eliminate particulate matter from multidrug infusion lines and so prevent contamination. The impact on particle occurrence of the internal volume of the IV line below the in-line filter was then evaluated” Perez et al (2018).

Abstract:

The large number of drugs administered simultaneously to neonates and children in hospital results in the formation of particles that are potentially infused. We have investigated the ability of IV in-line filters to eliminate particulate matter from multidrug infusion lines and so prevent contamination. The impact on particle occurrence of the internal volume of the IV line below the in-line filter was then evaluated. The multidrug therapy given to children was reproduced with and without in-line filtration. Three combinations with a filter were tested to vary the internal volume (V) between the filter and the catheter egress. The catheter was then connected to a dynamic particle count to evaluate the particulate matter potentially administered to children during infusion. The introduction of in-line filters led to a significant reduction in overall particulate matter, from 416,974 [208,479-880,229] to 7,551 [1,985-11,287] particles (p < 0.001). Larger particles of ≥10 and 25 µm were also significantly reduced. Adding an extension set to the egress of the in-line filter (V = 1.7 mL) caused a significant increase in particulate contamination for both. This study showed that in-line filtration is an effective tool in preventing particle administration to patients. Their position in the infusion in-line is therefore important because of its impact on internal volume and drug particle formation.

Reference:

Effectiveness of infusion filters to remove particulate contamination during a multidrug infusion protocol | 2

Particulate Contamination During a Pediatric Multidrug Infusion Protocol. Scientific Reports. 8(1), p.7714.