



Applying multi-infusion while following a neonatal medication schedule may temporarily result in dosing errors, which can be relevant for fast-acting medications” Snijder et al (2016).

Abstract:

BACKGROUND: Drug administration on the neonatal intensive care unit is often associated with adverse events. This may be due to dosing errors caused by multi-infusion setups. We aim to investigate these dosing errors.

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MATERIAL AND METHODS: N=3 experiment using a medication schedule, multi-infusion setup (three pumps) and disposables as applied on the NICU. In-line and real-time absorption spectrophotometry was used with dyes as substitutes for pharmaceuticals. Three flow rate changes lasting 1h were initiated. Subsequently, the possible dosing errors were estimated in the parallel pumps. In addition, startup durations, the times the flow rates required to reach steady state after significant dosing errors, as well as the total dosing error were measured.

RESULTS: Contribution of the start-up delays to the cumulative dosing errors was the largest. However, initiated flow rate changes resulted in significant dosing errors in the parallel

pumps as well. The total dosing error was not significant. The significant peak errors were between 48.2% and -32.5% at flow rate increase and decrease, respectively. Startup delays of up to 42.6min were measured.

**CONCLUSIONS:** Applying multi-infusion while following a neonatal medication schedule may temporarily result in dosing errors, which can be relevant for fast-acting medications. Awareness may mitigate the risks.

Reference:

Snijder, R.A., Egberts, T.C., Lucas, P., Lemmers, P.M., van Bel, F. and Timmerman, A.M. (2016) Dosing errors in preterm neonates due to flow rate variability in multi-infusion syringe pump setups: An in vitro spectrophotometry study. *European Journal of Pharmaceutical Sciences*. August 4th. .

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