“In this paper we present a previously unreported, but potentially widespread practice which may result in significant over or under-delivery of medication. Even with the naked eye it is evident that syringes of equal volume have different dimensions and to quantify this we sectioned a range of syringes and measured the inner and outer dimensions.” Tooke and Howell (2014).

Reference:


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Abstract:

There have been many reported adverse incidents due to syringe driver use, most of which have been attributable to human error. In this paper we present a previously unreported, but potentially widespread practice which may result in significant over or under-delivery of medication. Even with the naked eye it is evident that syringes of equal volume have different dimensions and to quantify this we sectioned a range of syringes and measured the
inner and outer dimensions. Extensive menus for syringe brand and volumes are available on syringe drivers, offering users greater flexibility. However, this feature also allows users to select an incorrect syringe brand with potential consequences for drug delivery. We measured outputs under all selectable permutations, to determine the degree of fluid delivery variation and discovered inaccuracies in volumes ranging from 10% under-delivery to 24% over-delivery. There is a wide variation in syringe metrics and complex syringe menus may increase errors, resulting in significant under or over-delivery of medication. Availability of more than one brand of syringe in a clinical area increases the risk of adverse drug delivery events. Systems need to be implemented to minimise the risk of adverse events.

Other intravenous and vascular access resources that may be of interest (External links – IVTEAM has no responsibility for content).

Result of incorrect selection of syringe type from the IV pump syringe menu | 3
Result of incorrect selection of syringe type from the IV pump syringe menu