“We evaluated the Hospira Plum A+ (HB) hyperbaric infusion pump under monoplace and multiplace hyperbaric conditions to test pump flow accuracy.” Bell et al (2014).

Reference:


Evaluation of the Hospira Plum A+ (HB) hyperbaric infusion pump http://ctt.ec/TvKxc+
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Abstract:

BACKGROUND: We evaluated the Hospira Plum A+ (HB) hyperbaric infusion pump under monoplace and multiplace hyperbaric conditions to test pump flow accuracy.

METHODS: Pump flow accuracy was tested in monoplace and multiplace hyperbaric chambers at different rates, fluid viscosities, pressures and volumes. Output was recorded from the pump (programmed) and from graduated cylinders or syringes (actual). The lead acid battery life was recorded for multiplace trials.

RESULTS: In monoplace trials to 3.0 atmospheres absolute (atm abs), the pump functioned...
within the published tolerance of 12.5% at 1 ml/hour (mean deviation +3.3%, range 0.0% to +5.0%) and at faster flow rates (mean deviation -0.4%, range -11.5% to +6.0%). A trial of packed red blood cells (deviation -3.3%) was also within acceptable limits. For all multiplace trials, the pump functioned well within the manufacturer’s limits (mean deviation -0.1%, range -0.8% to +0.9%). At the maximum flow rate, the interval to the first battery alarm for two trials was shorter than the duration of a clinical hyperbaric session (first alarm at 82 and 94 minutes). When we examined delivery variances in the compression and decompression phases for monoplace chambers, at 1 ml/hour 25/39 trials (64%) had no measurable infusion volume during compression. Conversely, more than twice the programmed volume was infused during the 10-minute decompression interval (mean 0.40 ml, range 0.32 to 0.60 ml). The tubing compliance effect was also noted, to a lesser degree, in trials at 3 and 5 ml/hour.

CONCLUSIONS: This infusion pump can be useful in hyperbaric medicine departments that treat patients who need intravenous infusions. Tubing compliance may affect fluid volumes delivered by the pump, especially when delivery rates are low. Careful monitoring of patients with low volume infusions during monoplace chamber compression and decompression is advised.

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