



We compared the warming properties and resistance to flow of currently available battery-operated fluid warmers” Lehavi et al (2018).

Abstract:

OBJECTIVES: Warming intravenous fluids is essential to prevent hypothermia in patients with trauma, especially when large volumes are administered. Prehospital and transport settings require fluid warmers to be small, energy efficient and independent of external power supply. We compared the warming properties and resistance to flow of currently available battery-operated fluid warmers.

METHODS: Fluid warming was evaluated at 50, 100 and 200 mL/min at a constant input temperature of 20°C and 10°C using a cardiopulmonary bypass roller pump and cooler. Output temperature was continuously recorded.

RESULTS: Performance of fluid warmers varied with flows and input temperatures. At an input temperature of 20°C and flow of 50 mL/min, the Buddy Lite, enFlow, Thermal Angel and Warrior warmed 3.4, 2.4, 1 and 3.6 L to over 35°C, respectively. However, at an input temperature of 10°C and flow of 200 mL/min, the Buddy Lite failed to warm, the enFlow warmed 3.3 L to 25.7°C, the Thermal Angel warmed 1.5 L to 20.9°C and the Warrior warmed 3.4 L to 34.4°C (p<0.0001).

CONCLUSION: We found significant differences between the fluid warmers: the use of the Buddy Lite should be limited to moderate input temperature and low flow rates. The use of the Thermal Angel is limited to low volumes due to battery capacity and low output temperature at extreme conditions. The Warrior provides the best warming performance at high infusion rates, as well as low input temperatures, and was able to warm the largest volumes in these conditions.

Reference:

Lehavi, A., Yitzhak, A., Jarassy, R., Heizler, R., Katz, Y.S. and Raz, A. (2018) Comparison of the performance of battery-operated fluid warmers. Emergency Medicine Journal. June 7th. .

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