

**Abstract:**

**BACKGROUND:** To compare the utility of a targeted smartphone application (TSPA) with a non-programmable calculator (NPC) when calculating fluid drip rates (FDR) and constant rate infusions (CRIs).

**METHODS:** In a prospective randomised clinical study, 48 fourth-year veterinary students entered one of four parallel groups involving two mock scenarios: fentanyl calculation using an NPC followed by lidocaine calculation using a TSPA, fentanyl (TSPA) followed by lidocaine (NPC), lidocaine (NPC) followed by fentanyl (TSPA) or lidocaine (TSPA) followed by fentanyl (NPC). Students calculated volume of drug added to maintenance fluids and drops/second that correctly administered the drug dose and FDR. Time to completion was assessed using an analysis of variance. A Fisher's exact test assessed the effect of study period, scenario and device in the proportion of correct/incorrect answers.

**RESULTS:** Participants took longer to complete the scenarios in period 1 and 2 with the NPC ( $380.7 \pm 195.6$  seconds and  $488 \pm 154.8$  seconds, respectively) than the TSPA ( $247.5 \pm 88.8$  seconds and  $224 \pm 94.2$  seconds, respectively) ( $P < 0.0031$  and  $P < 0.0001$ ). Participants were more likely to complete the scenarios incorrectly with the NPC ( $n=32$ ) when compared with the TSPA ( $n=7$ ) ( $P < 0.0001$ ).

**CONCLUSIONS:** TSPAs are more efficient and accurate when calculating CRIs and FDR compared with conventional methods. Medical mathematics must be emphasised during the veterinary curriculum.

**Reference:**

White, J.F., Scallan, E.M., Lizarraga, I. and Simon, B.T. (2020) Clinical utility of a targeted smartphone application to aid veterinary students in calculating constant rate infusions and perioperative fluid drip rates. *The Veterinary Record*. April 11th. doi: 10.1136/vr.105805. (Epub ahead of print).

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