Critical appraisal – Randomised controlled trial questions

Warne et al. 2014

Introduction	
Are the aims clearly stated?	Yes
Methods	
Is the study design suitable for the aims?	Yes testing treatments so a randomized clinical trial was appropriate
Which population was studied?	Cats presenting to University Veterinary Hospital (Melbourne) for elective OVH (40 cats)
Were the treatments randomly allocated? If yes, how was the randomisation done?	Yes Using a Microsoft Excel spreadsheet
Were the groups comparable prior to intervention?	In Phase 2 – median weight, age the same between groups (they stated which breeds were present but not which ones were in each group)
Was the person who administered the interventions blinded?	The anaesthetist administering the premedication and postoperative analgesia was unaware of the treatments allocated by way of a sticker over the graduations on the administration syringe.
Is it clear what measurements were carried out in the study?	Yes
Were the correct measurements chosen? Do they reflect (or are they strongly related to) the outcome of interest?	Yes Yes
Were previously established validated methods	Yes – used a published multidimensional composite pain scoring system which had been

used to make the measurements? (e.g. Glasgow pain score, International Units etc)	validated for use in cats undergoing OVH operations
What outcomes were measured?	Two phases to the study: Phase 1 – Anesthesia time, length of time of surgery, pain assessments at time 0, 20, 60, 120, 180, 240, 300 and 360 minutes after extubation Phase 2 – Cats were given a second dose of analgesia (assume the analgesic given was the same as the one administered as part of the premedication, but not clearly stated) at wound closure. Rectal temperature, pre and post-operative pain levels (20, 60, 120, 180, 240, 300, 360 mins), whether rescue analgesia was required, blood pressure, sedation levels, anaesthetic sparing effect, anaesthesia depth, other physiologic variables e.g. heart rate, respiratory rate, oxygen saturation, pain reaction at injection were all measured
Are the outcomes clinically relevant?	Yes
Were the outcomes assessed blind?	Yes – by the same anaesthetist administering the treatments (blinded)
Are the statistical methods described?	Yes
Was the statistical significance level stated?	Yes
Was the sample size justified?	No justification for the numbers of animals used in the study.
Was ethical approval obtained?	Yes

Are the methods described in enough detail that you could repeat them?	It would be good to have more details provided for some of the methods.
Results	
Were the basic data adequately described?	Yes
Do the numbers add up? Are all subjects accounted for?	Not all cats had outcomes measured during Phase 1 (was reported by the authors), and 10 cats did not complete Phase 2.
Was the statistical significance (p value) stated in the results? Is this consistent with the methods? (It should be stated in the sample size or power calculation)	Yes Yes
Were any side effects of the intervention reported if applicable?	In Phase 1, many cats required rescue analgesia, particularly in the butorphanol group
What were the main findings/key results?	Phase 1 – only 10 cats completed this part of the study, 9 out of 10 cats required rescue analgesia, no difference between the groups at 20 min which was the only reading taken that we can see Phase 2 – only 29 cats completed this due to recruitment issues, median 20 min pain scores significantly different (butorphanol group higher scores than buprenorphine group). Rescue analgesia was needed for all butorphanol cats, with no buprenorphine cats needing rescue analgesia.
Discussion and conclusion	
What do the main findings/key results mean?	Difficult to unpick as there were issues with the dosages used. Dose used for butorphanol was not

	adequate perhaps to start with. Overall it appears that buprenorphine may have better coverage.
Are the negative findings discussed? How are the negative findings interpreted?	Talked about the scaling system lacking sensitivity, and also not having enough animals to be able to demonstrate a significant difference between groups.
Does the discussion reflect the results?	Yes
Interpretation	
What are the clinical implications of this study? Are the subjects in the study similar to those in the BET/your own?	In the right dosages and administration timings (pre and post operatively), both butorphanol and buprenorphine could provide appropriate analgesia. Buprenorphine appears to be superior to butorphanol when given at the right dose and/or frequency. Yes
General	
Who funded this study?	Supported by Troy, who make buprenorphine. In the discussion it was stated that the present study was designed to assess the efficacy of buprenorphine for regulatory purposes to obtain registration for buprenorphine as a perioperative analgesic.