Critical appraisal – Randomised controlled trial questions – Guzel et al, 2010

Introduction	
Are the aims clearly stated?	Yes The aim of this study was to compare the clinical efficacy of a single dose of diclofenac sodium versus three doses of flunixin meglumine in improving the treatment of BRD of calves.
Methods	
Is the study design suitable for the aims?	Yes
Which population was studied?	80 calves (2-5months, 6-155kg) on 3 private farms in Turkey split into 3 groups: Tulathromycin only (N=20), Tulathromycin and diclofenac (N=30) and Tulathromycin and flunixin (N=30)
Were the treatments randomly allocated? If yes, how was the randomisation done?	Yes No
Were the groups comparable prior to intervention?	Yes, no significant differences in age, rectal temperature, respiratory rate and clinical condition at the start of the study.
Was the person who administered the interventions blinded?	Not explicitly stated, though it says it is a double blinded trial
Is it clear what measurements were carried out in the study?	Respiratory rate Rectal temperature Clinical severity score: appetite, respiratory rate, coughing, nasal discharge, demeanor

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 used to make the measurements? (e.g. Glasgow pain score, International Units etc)	Yes for respiratory rate and body temperature Subjective scoring system used
What outcomes were measured?	Rectal temperature Respiratory rate Subjective clinical score
Are the outcomes clinically relevant?	Yes
Were the outcomes assessed blind?	Not explicitly stated, though it says it is a double blinded trial
Are the statistical methods described?	Yes
Was the statistical significance level stated?	Yes
Was the sample size justified?	No
Was ethical approval obtained?	Not stated
Are the methods described in enough detail that you could repeat them?	Yes

Results	
Were the basic data adequately described?	No
Do the numbers add up? Are all subjects accounted for?	It is not made explicit that all results are for all calves.
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?	No
What were the main findings/key results?	Rectal temperature, respiratory rate and clinical index score in the NSAIDs groups were all significantly decreased ($P < 0.05$) in comparison with the tulathromycin group for the first 48 h. There were no statistical differences in clinical score between treatment groups on day 7. There were no statistical differences in clinical scorebetween treatment groups on day 14
Discussion and conclusion	
What do the main findings/key results mean?	Flunixin may help in the first 48hours of illness but there is no sustained effect on the clinical disease.
Are the negative findings discussed? How are the negative findings interpreted?	Yes
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?	Flunixin may be useful in calves to control body temperature and decrease clinical signs in the first 48hours of pneumonia Yes
General	
Who funded this study?	Not stated