

Critical appraisal – Randomised controlled trial questions – Hellwig et al, 2000

<b>Introduction</b>	
Are the aims clearly stated?	Yes  The purpose of this study was to examine flunixin meglumine as adjunct therapy for BRD in stressed stocker cattle.
<b>Methods</b>	
Is the study design suitable for the aims?	Yes
Which population was studied?	96 beef breed calves, body weight 396-526lb, with clinical signs of bovine respiratory disease split into 2 groups tilmicosin and flunixin (N=48) and tilmicosin only (N=48)
Were the treatments randomly allocated?  If yes, how was the randomisation done?	Yes  Not stated
Were the groups comparable prior to intervention?	The data is not given but all calves met the inclusion criteria which is briefly described.
Was the person who administered the interventions blinded?	Not stated
Is it clear what measurements were carried out in the study?	Clinical signs  Rectal temperature  Average daily weight gain
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, body temperature and body weight  Subjective scoring system used for clinical signs
What outcomes were measured?	Clinical signs  Rectal temperature  Treatment success (resolution of clinical signs and body temperature <103°F) and failure (no improvement in clinical signs or reduction in body temperature within 48hours)  Treatment relapses  Average daily weight gain  Cost of gain per pound
Are the outcomes clinically relevant?	Yes
Were the outcomes assessed blind?	Yes
Are the statistical methods described?	Yes
Was the statistical significance level stated?	No
Was the sample size justified?	No
Was ethical approval obtained?	Not stated
Are the methods described in enough detail that you could repeat them?	No

<b>Results</b>	
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 but where the numbers are given they are correct
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  Not applicable as not mentioned in methods
Were any side effects of the intervention reported if applicable?	No
What were the main findings/key results?	<p>The number of treatment successes was greater in the flunixin/antibiotic treated (88%) group compared to the group treated with antibiotics alone (61%) (P=0.06).</p> <p>The combined number of treatment failures and relapses of disease was less for the flunixin/antibiotics (5%) treated group than group treated with antibiotics (38%) alone (P &lt; 0.05).</p> <p>The total medication cost per head for the flunixin/antibiotics treated group was less than for group receiving antibiotics alone (\$14.66 vs. \$18.10) (P = 0.10).</p> <p>The average daily gain over the 35 days feeding period was not different between groups (2.2 vs. 2.4 lb per head/d, P = 0.51).</p> <p>The cost of gain per pound was the same for both groups (\$0.37).</p>
<b>Discussion and conclusion</b>	

What do the main findings/key results mean?	Flunixin may aid treatment of calves with pneumonia by reducing body temperature and illness clinical scores.
Are the negative findings discussed? How are the negative findings interpreted?	No
Does the discussion reflect the results?	There is no real discussion as it is combined with very brief results
<b>Interpretation</b>	
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 clinical signs during the first 48 hours of pneumonia  Yes
<b>General</b>	
Who funded this study?	Not stated, but one of the authors postal address was Schering Plough.