

Comprehensive assessment of feedlot health interventions using outcomes research in a sustainability context



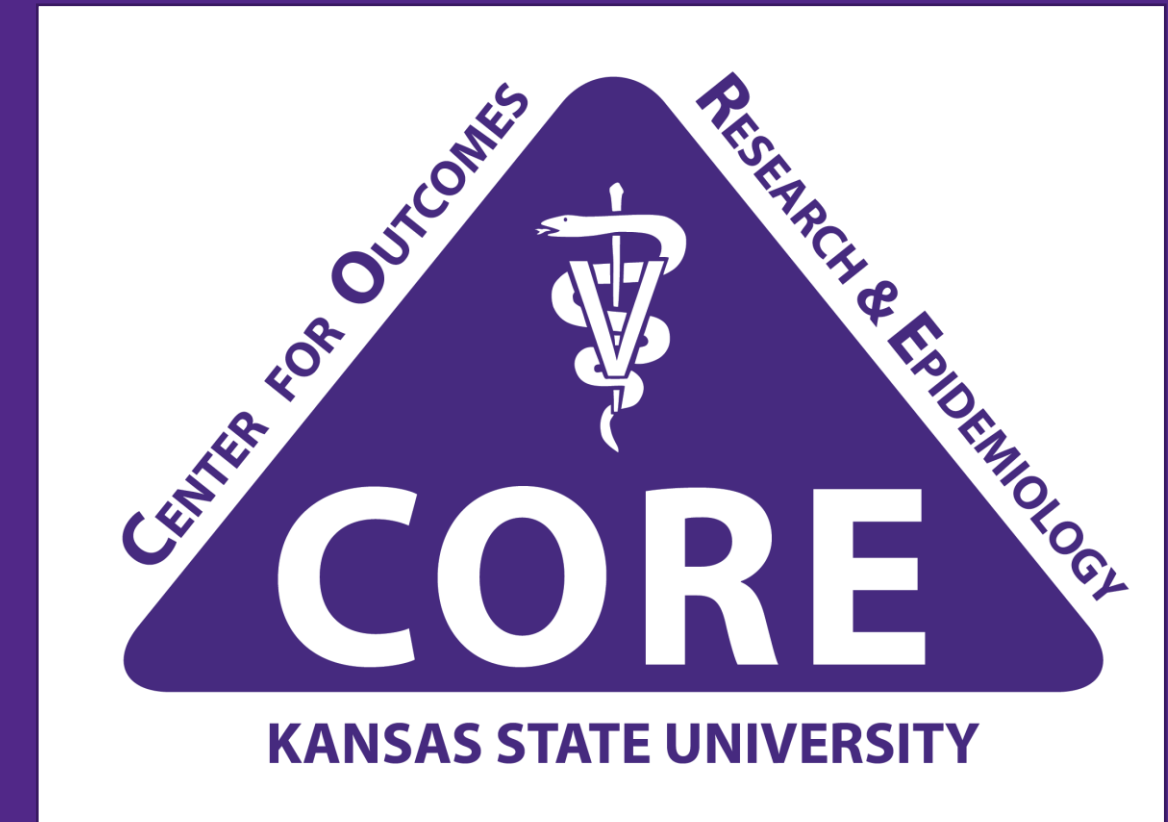
Taylor McAtee¹, David Renter¹, Lucas Horton¹, Nick Betts², Merri Day³, Ted Schroeder³, Brandon Depenbusch⁴

¹Department of Diagnostic Medicine/Pathobiology, Kansas State University, Manhattan, KS

²Elanco Animal Health, Greenfield, IN

³Department of Agricultural Economics, Kansas State University, Manhattan, KS

⁴Innovative Livestock Services, Inc., Great Bend, KS, [Current: Irsik and Doll Feed Services, Inc., Cimarron, KS]



Background

- Stakeholders are **increasingly** interested in **sustainability** of food production systems
- Sustainability is a balance between environmental responsibility, economic viability, and social acceptability
- Stakeholders need to quantify the **value** of interventions or health management options to enable more **informed decisions**
- **No standard metric(s) exist to compare sustainability of health or management strategies in a production system**

Objective

Evaluate different antimicrobial use strategies to demonstrate approaches to comprehensively estimate value and assess sustainability

Conclusions

An outcomes research approach may provide a **framework** to quantify values for **comprehensive assessments** of animal health and management strategies in a **sustainability context**

Comprehensive assessment

Need to consider the “Trade-offs” of sustainability comprehensively

Quantification

As stakeholders increase sustainability terms/goals, the need for an ability to measure change and impacts increases

Value

There are many ways to determine value, and sustainability is another important aspect for stakeholders to consider

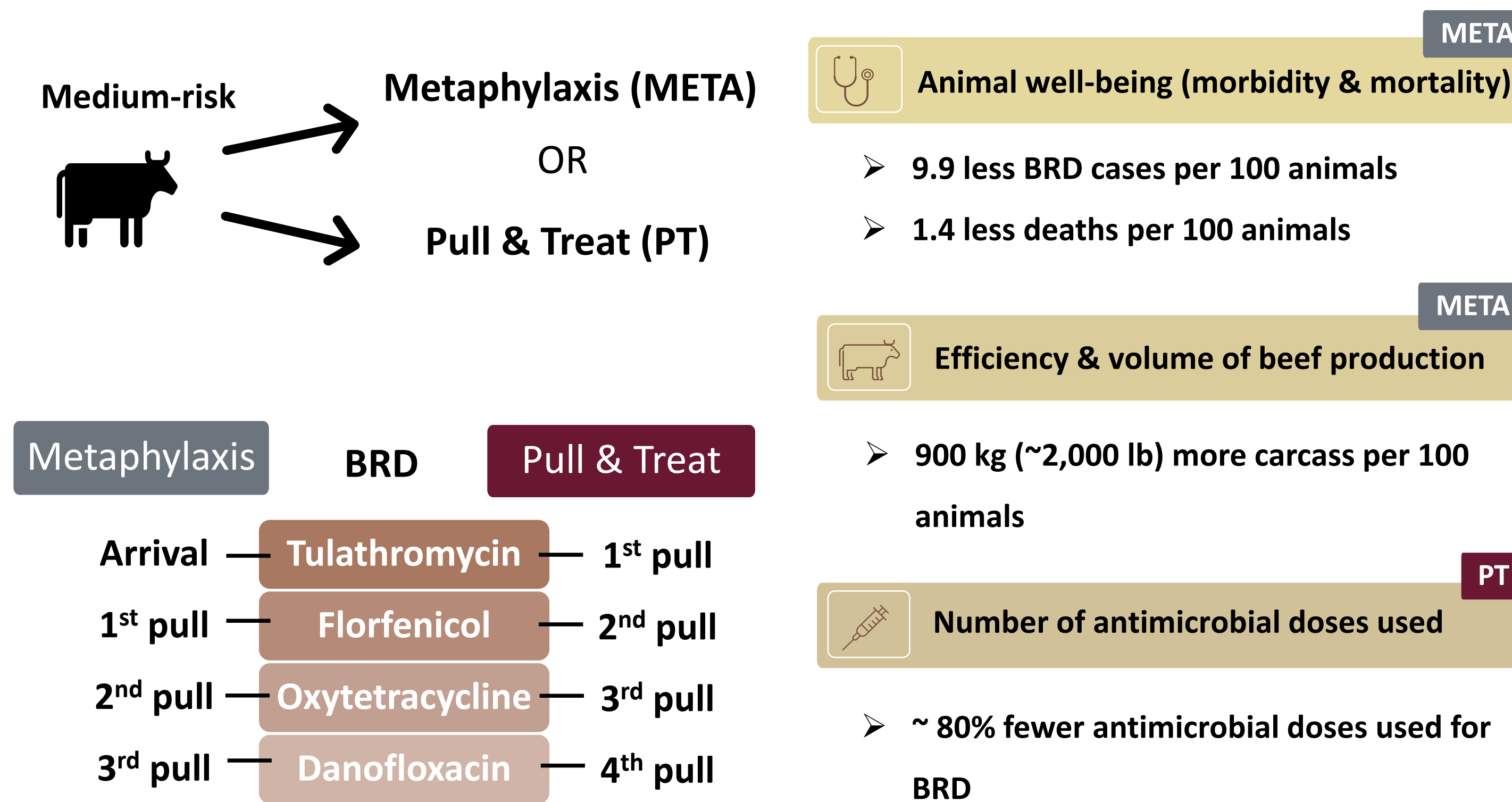
Related Paper



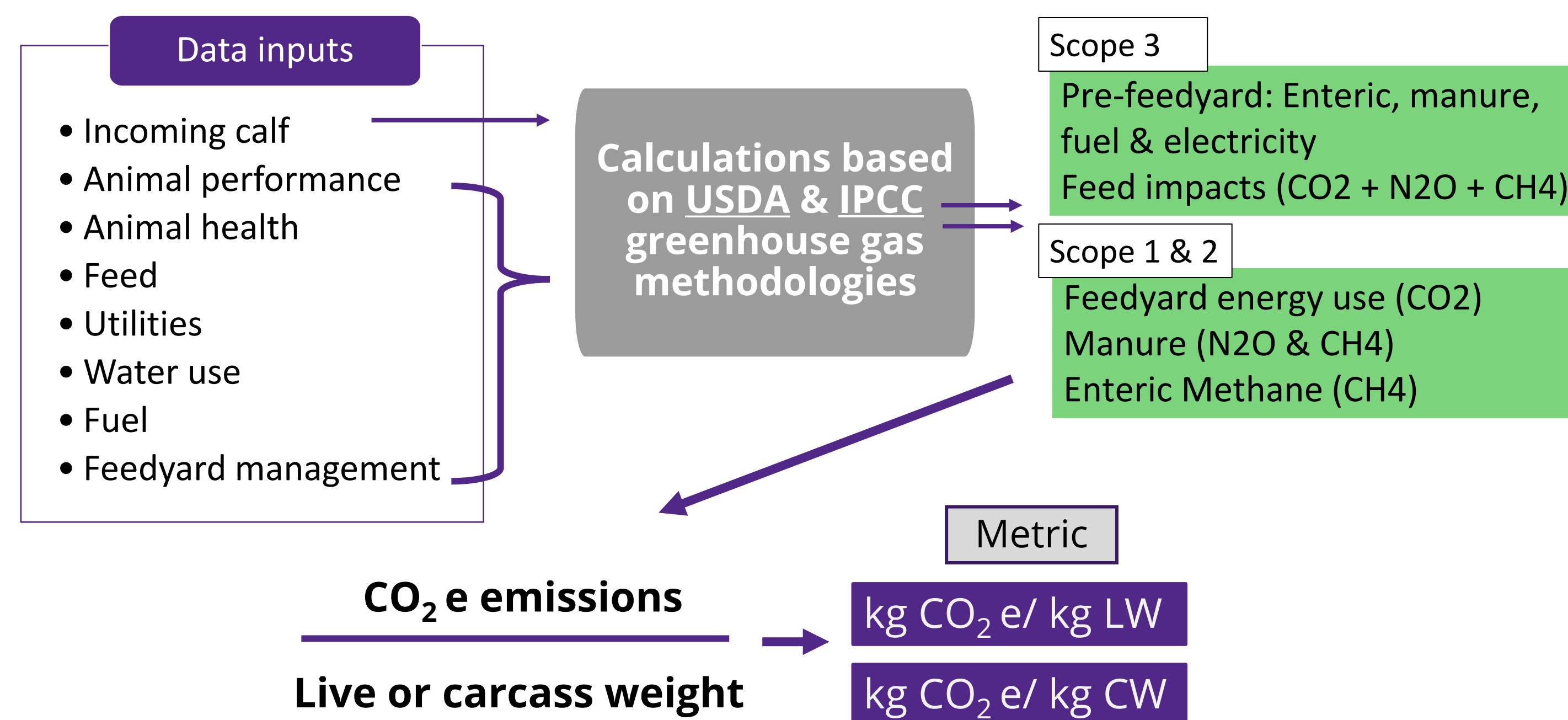
Taylor's Contact Info



Respiratory Disease (BRD) Study

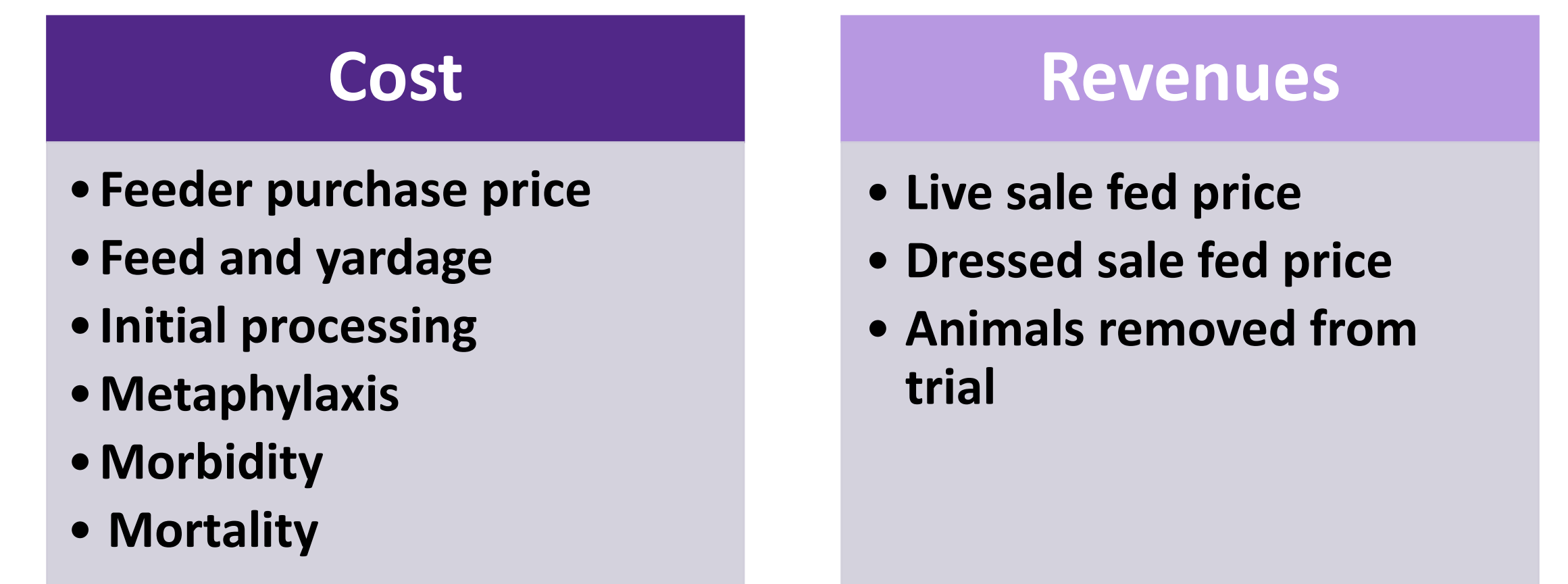


CO₂e Emissions Estimates [via Elanco's Uplook®]



CO ₂ e emissions	PT	META	SEM	P-value
Pre-feedlot calf footprint, kg CO₂e				
Per animal enrolled	5,859.6	5,862.4	21.24	0.55
Feedlot finishing footprint, kg CO₂e				
Feedlot operations, per animal enrolled	981.0	1,005.6	16.73	0.06
Manure, per animal enrolled	402.5	413.0	6.81	0.09
Enteric methane, per animal enrolled	399.6	410.4	6.52	0.06
Total footprint, kg CO₂e				
Per animal enrolled	7,642.6	7,691.4	33.14	0.08
Per kg final BW	13.66	13.38	0.138	0.09
Per kg HCW	21.20	20.74	0.245	0.10

Economic Estimates



Item, \$/animal enrolled	PT	META	SEM	P-value
Purchase cost	843.83	845.73	13.75	0.54
Feed and yardage cost	536.21	550.65	8.74	0.06
Cost of gain	81.54	79.79	1.91	0.24
Cost of BRD antimicrobials	5.83	27.18	0.81	< 0.01
Live sale basis revenue	1,290.25	1,322.09	12.67	0.07
Dressed sale basis revenue	1,289.30	1,320.56	16.22	0.12
Net return- live basis	-106.40	-110.30	16.52	0.68
Net return - dressed basis	-107.35	-111.83	20.92	0.71

Outcomes Assessed:

Result:

Animal well-being (morbidity & mortality)	META
Efficiency & volume of beef production	META
Number of antimicrobial doses used	PT
Net economic returns (partial budget)	—
Standardized GHG emission (UpLook, Elanco)	META