How to test a vaccine: A focus on CBPP

Introduction

- Testing novel vaccine candidates is a critical step in the development of modern vaccines.
- A good **reproducible challenge model** is needed to test vaccines for the control of CBPP
- A good challenge model will test for the quality and quantity of the immune response, identify the optimal route of delivery and formulation, determine protection from infection and disease transmission, and evaluate the safety and toxicity of the vaccine formulation
- Current challenge models include **incontact** which takes a longer period and intubation.
- Other challenge models need to be investigated such as the use of newer nebulizers.

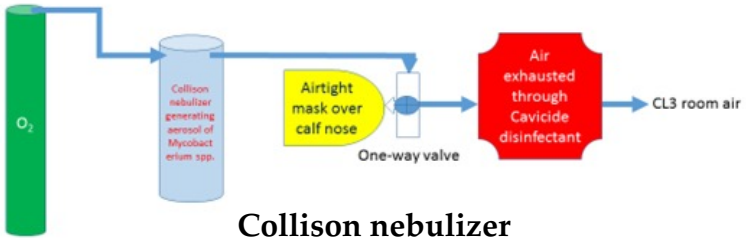
The challenge

- Intubation technique is not replicative
- Results from the Collison nebulizer were reproducible however the nebulizer is bulky and was custom made
- New nebulizers need to be tested and fine tuned

Photo credits: **Massimo Scacchia**
IZS-Zambia Filed work

Our innovative approach-testing the different nebulizers

- Use different nebulizers to test for adaptability, reproducibility and ease of use on cattle.
- **Old nebulizer model:**



Collison nebulizer

- **New nebulizers tested on cattle:**

3. Flexineb

1. **Ultrasonic nebulizers**
   - Cumulus S130
2. **Mesh nebulizers**
   - CONTEC NE-M01
   - Aerogen
   - Flexineb E3

Outcomes

- One nebulizer was selected, and an infection model was conducted .
- Though pathology, disease outcome was established with the new nebulizer model.

Next steps

- The chosen nebulizer will be used to conduct future experimental challenge models
- Establish some correlates of protection in experimentally infected animals
- Test different existing vaccines against CBPP using this nebulization model
- Inform policy makers on the outcome of the different vaccines and their effectiveness

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