



UNIVERSITY OF MINNESOTA

Swine Disease Eradication Center

February 15, 2013

Volume 2, Issue 2

www.cvm.umn.edu/sdec

SDEC Partners Research Update

Project Update: Early detection of *Mycoplasma hyopneumoniae* infections in live pigs: Comparison of current methods

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Funded by: National Pork Board & Pork Checkoff and Pig Improvement Company

Background

- *M. hyopneumoniae* diagnosis in live pigs is very challenging, especially during early stages of infection
- There is a growing need for surveillance tools to demonstrate that populations remain negative to *M. hyopneumoniae* overtime or to accurately detect early infection
- Several sampling and diagnostic tools can be used in live pigs, for example, oral fluids, laryngeal swabs, and tracheo-bronchial lavages. However, some of these techniques have not been properly evaluated and they have not been compared side by side.

Objective

To perform a side-by-side comparison of various sampling and testing tools currently available for detection of *M. hyopneumoniae* during the early stages of infection

Results

Table 1. Real time PCR results of oral fluids collected from rooms of experimentally infected pigs

dpi	0	2	5	9	14	21	28
(+/Tested)	(0/1)	(0/3)	(0/3)	(2/3)*	(0/3)	(0/3)	(2/3)^

dpi: Days post inoculation

* 2 Suspects (Ct value >37)

^ 1 Positive, 1 suspect

(Number rooms positive/number rooms tested)

Seven experimentally infected pigs housed/room.

Results

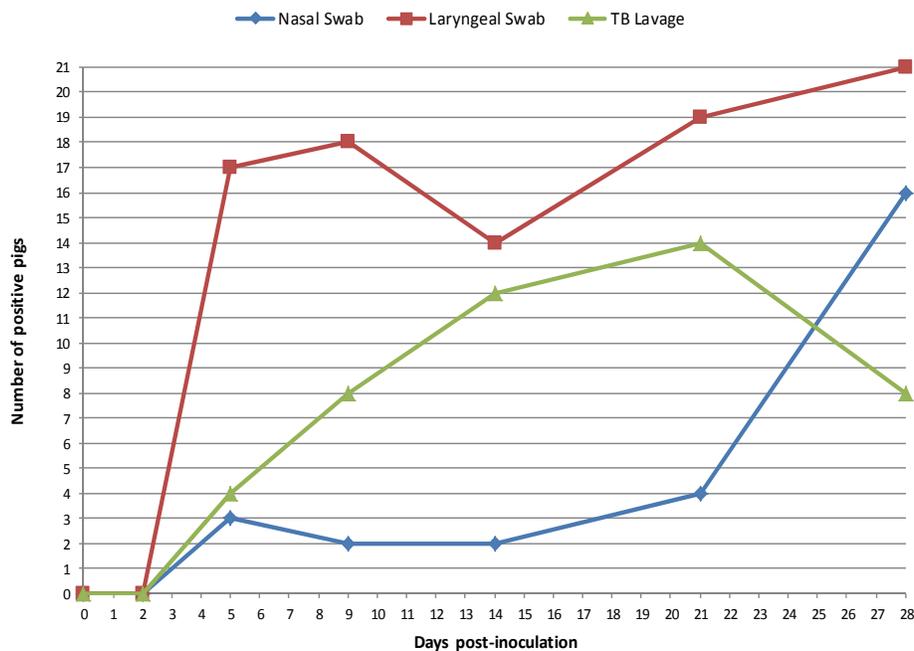


Figure 1. Real time PCR results of experimentally infected pigs for various sample types.

Laryngeal swab > Nasal swab	significant at 5, 9, 14 and 21 dpi
Laryngeal swab > TB lavage	significant at 5, 9 and 28 dpi
TB lavage > Nasal swab	significant at 9, 14 and 21 dpi
Nasal swab > TB lavage	significant at 28 dpi

Significance level: p -value <0.05.

Conclusions

- Laryngeal swabs showed the highest sensitivity for early detection of *M. hyopneumoniae* compared to other sample types
- Tracheo-bronchial lavages were more sensitive than nasal swabs during the first 21 dpi
- Nasal swabs showed lower sensitivity during the first 3 weeks post-inoculation, compared to laryngeal swabs and tracheo-bronchial lavages
- Oral fluids showed low sensitivity for *M. hyopneumoniae* detection during the early stages of infection

Implications

- Detection of *M. hyopneumoniae* using laryngeal swabs appeared to be the best tool for In vivo diagnostics during the early stages of infection.
- Laryngeal swabs are faster to collect than tracheo-bronchial lavages, but require snaring the pig, the use of a mouth gag and a light source (e.g. laryngoscope).
- Oral fluids may not be the best sample type for monitoring *M. hyopneumoniae* negative populations