Appendix

S1 Appendix: Estimation of transmission rates

The transmission rates ($\beta$) used in our simulation model was drawn from a pert distribution.

The values used as most likely, min. and max. value in the distribution was calculated from the reproduction ratio ($R_0$) and corresponding the 95% CI reported by Broens et al., 2012a, combined with the duration of carriage ($D$) used in the same study (estimated by Broens et al., 2012b) as:

$$\beta = \frac{R_0}{D}, \quad (A1)$$

where $D$ was 17.4 days.

Broens et al., 2012a introduces the term total infection pressure (IP) defined as:

$$IP = IP\text{ within the pen} + IP\text{ other pens} + IP\text{ environment}, \quad (A2)$$

where IP within the pen = proportion of infectious pigs within the pen, IP other pens = proportion of infectious pen within the compartment, but not in the same pen, and IP environment = proportion of positive environmental wipes.

Based on, this Broens et al., 2012a also introduced a variable ($pIP$) to describe the relative effect of transmission through direct contact with pen mates:

$$pIP = \frac{IP\text{ within the pen}}{IP}, \quad (A3)$$

$R_0$ reported by Broens et al., 2012a, when $pIP=1$ was used for estimation of within-pen transmission rates, whereas between- pen transmission rates were estimated based on $R_0$ when $pIP=0$.

References
