

### Supporting information 2:

| Trial        | Group  | No. infected | No. not infected | Risk                   | Vaccine efficacy<br>(95% CIs)                    |
|--------------|--------|--------------|------------------|------------------------|--|
| Formula      | Vacc   | a            | b                | $Rv = \frac{a}{a + b}$ | $VE = \left(1 - \frac{Rv}{Ru}\right) \times 100$ |
|              | Unvacc | c            | d                | $Ru = \frac{c}{c + d}$ |  |
| Haig         | Vacc   | 1            | 9                | 0.10                   | 90% (35.8 – 98.4%)                               |
|              | Unvacc | 6            | 0                | 1.00                   |  |
| Russell      | Vacc   | 3            | 15               | 0.17                   | 81.5% (46.9 – 93.5%)                             |
|              | Unvacc | 9            | 1                | 0.90                   |  |
| Field        | Vacc   | 19           | 76               | 0.20                   | 56% (29.5 – 72%)                                 |
|              | Unvacc | 41           | 51               | 0.45                   |  |
| Tz challenge | Vacc   | 3            | 5                | 0.38                   | 50% (-33.2 – 81.2%)                              |
|              | Unvacc | 6            | 2                | 0.75                   |  |

**Vaccine efficacy (VE) formula and calculations:** In the VE formula  $Rv$  and  $Ru$  are the risk of becoming infected in vaccinated and unvaccinated cattle respectively. Data from four vaccine trials testing the attenuated AIHV-1 vaccine are also shown (Haig = Haig et al., 2008; Russell = Russell et al., 2012; Field = Lankester et al., 2016; Tz challenge = this trial). The number of vaccinated (Vacc) and unvaccinated (Unvacc) animals that became infected, the calculated risk of becoming infected in each group (Risk) and the resultant vaccine efficacies (and 95% confidence intervals) are shown.