

Herd-level prevalence and incidence of porcine epidemic diarrhea virus (PEDV) and porcine deltacoronavirus (PDCoV) in swine herds in Ontario, Canada

T. Ajayi, R. Dara, M. Misener, T. Pasma, L. Moser, Z. Poljak

Key Points

- Cumulative incidence of PED and PDCoV in Canada is decreasing according to data coming from the industry for the year 2014, 2015 and 2016.
- PED showed a cyclical pattern when looking at the number of farms infected. However, PDCoV showed a more erratic pattern with no clear trends.
- Industry driven disease control programs provide useful information to understand temporal evolution and disease patterns.

Introduction

Porcine epidemic diarrhea (PED) and porcine delta coronavirus (PDCoV) have similar signs and transmission routes (fecal – oral). PED mortality of piglets in farrowing room is usually higher (near 100%) than mortality of PDCoV infections. Both pathogens have been identified in herds in Canada.

Objectives

The primary goal of this study was to estimate herd-level incidence and prevalence measures for PEDV and PDCoV in swine herds in Ontario (Canada) between January 2014 and December 2016, based on industry data (Ontario Swine Health Advisory Board (OSHAB) Disease Control Program (DCP))

Results

Table 1. Herd-level incidence risk and rate of two novel porcine coronaviruses (PEDV and PDCoV) in Ontario swine herds between 2014 and 2016, and estimated prevalence of positive cases at the end of each year based on data provided in the Ontario Swine Health Advisory Board (OSHAB) Disease Control Program (DCP) database (average number of herds for 2014–2016 = 1093).

Year	Cumulative n of new cases	Incidence risk (%)	95% CI (%)	Incidence rate (cases per herd-year)	95% CI (cases per herd-year)	Number of cases at year-end	Prevalence at year-end (%)	95% CI (%)
Porcine epidemic diarrhoea virus								
2014	95	13.49	(11.06–16.24)	0.14	(0.12–0.18)	36	4.36	(3.07–5.99)
2015	29	2.97	(2.00–4.24)	0.03	(0.02–0.05)	27	2.25	(1.49–3.26)
2016	17	1.42	(0.83–2.26)	0.02	(0.01–0.03)	17	1.35	(0.79–2.16)
Porcine deltacoronavirus								
2014	8	1.14	(0.49–2.23)	0.011	(0.005–0.022)	4	0.48	(0.13–1.24)
2015	3	0.30	(0.06–0.87)	0.003	(0.001–0.009)	2	0.17	(0.02–0.60)
2016	1	0.08	(0.00–0.45)	0.001	(0.000–0.005)	2	0.16	(0.02–0.57)

Discussion and Conclusion

PED showed a cyclical pattern over the three years of the study while PDCoV showed a more erratic pattern. Incidence decreased over time between 2014 and 2016 in both, PED and PDCoV. In conclusion, this study provides estimates of incidence and prevalence measures in Ontario based on industry data collected through voluntary disease control programs.