

Swine Disease Reporting System Report 12 (February 6, 2019)

What Is the SDRS?

SHIC-funded, veterinary diagnostic laboratories (VDLs) collaborative project, with goal to aggregate swine diagnostic data from participating reporting VDLs, and report in an intuitive format (web dashboards), describing dynamics of disease detection by pathogen or disease syndrome over time, specimen, age group, and geographical space.

For this report, data is from the Iowa State University VDL and South Dakota State University ADRDL. University of Minnesota VDL and Kansas State University VDL. Specifically, for PRRSV RFLP data, , and syndromic information the results are from Iowa State University VDL.

For all 2019 predictive graphs, the expected value was calculated using a statistical model that considers the results from three previous years. The intent of the model is not to compare the recent data (2019) to individual weeks of previous years. The intent is to estimate expected levels of percent positive cases based on patterns observed in the past data, and define if observed percentage positive values are above or below the expected based on historic trends.

Note: starting on Report 12, RFLP information is presented by year and not by year season.

Collaborators:

Iowa State University: Giovani Trevisan*, Leticia Linhares, Bret Crim; Poonam Dubey, Kent Schwartz, Eric Burrough; Rodger Main, Daniel Linhares**.

University of Minnesota: Mary Thurn, Paulo Lages, Cesar Corzo, Jerry Torrison.

Kansas State University: Rob McGaughey, Jamie Henningson, Eric Herrman, Gregg Hanzlicek, Ram Raghavan, Douglas Marthaler.

South Dakota State University: Shivali Gupta, Jon Greseth, Travis Clement, Jane C. Hennings.

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Advisory Council:

The advisory group reviews the data to discuss it and provide their comments to try to give the data some context and thoughts about its interpretation: Clayton Johnson, Emily Byers, Hans Rotto, Mark Schwartz, Paul Sundberg, Paul Yeske, Pete Thomas, Rebecca Robbins, Tara Donovan, Matthew Turner.

This report is an abbreviated version of the dashboards that are available online.

To access the full data, use your computer, tablet, or phone to:

1) Scan the code below, or go to: www.powerbi.com



- 2) Login: sdrs@iastate.edu
- 3) Password: Bacon 100
- 4) On the left bar, click on 'Apps'
- 5) Select your dashboard of interest (e.g. PRRS)
- 6) More information at the SDRS webpage

https://fieldepi.research.cvm.iastate.edu/swine-disease-reporting-system/

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Figure 1. A: Results of PRRS rRT-PCR cases over time. **B**: Proportion of accession ID cases tested for PRRSV by age group per year and season. **C**: expected percentage of positive results for PRRSV RNA by rRT-PCR, with 95% confidence interval band for predicted results. **D**: percentage of PRRS PCR-positive results, by age category over time. Wean to market corresponds to nursery and grow-finish. Adult/Sow correspond to Adult, boar stud, breeding herd, replacement, and suckling piglets. Unknown corresponds to not informed site type or farm category. **E**: RFLP type detected during year of 2019. **F**: RFLP type detected during year of 2018. RFLPs indicated as N/A represents not detected or European PRRSV type.

SDRS Advisory Council highlights:

- a) Level of detection of PRRSV by PCR is within the expected for January of 2019.
- b) Percentage of positive results in sow farms has been stable since October 2018.
- c) Wean to market percentage of positive results decreased from 47.42 percent in December to 40.82 percent in January.
- d) Percentage of positive results in "unknown" category increased from 14.55 percent in December to 22.44 percent in January; 66 percent of "unknown" category cases tested in January came from the states of Iowa, Minnesota or from an unknown state.
- e) RFLP 1-7-4 was the most frequently detected in January 2019, followed by 2-5-2, and 1-8-4.

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Page 2 – Detection of enteric coronaviruses by rRT-PCR



Figure 2. A: results of PEDV rRT-PCR cases over time. **B**: expected percentage of positive results for PEDV by rRT-PCR and 95% confidence interval for 2019 predicted value. **C**: percentage of PEDV PCR-positive results, by category over time. **D**: results of PDCoV rRT-PCR cases over time. **E**: expected percentage of positive results for PDCoV by rRT-PCR and 95% confidence interval for 2019 predicted value. **F**: percentage of PDCoV PCR-positive results, by age category over time. **G**: number of PCR-positive accession ID results of TGEV by age category. **H**: percentage of PCR-positive results for TGEV by age category. Each color represents one distinct age category.

SDRS Advisory Council highlights:

a) Level of detection of PEDV by PCR continues to meet the expected value with indication of relatively increasing activity of the virus as predicted by the model.

- b) Percentage of positive results in PEDV is slightly increasing in all age groups in the last three months.
- c) There was a signal for high PDCoV detection in week 2 of 2019, mostly from wean to market animals.
- d) There has been limited number of cases of TGEV. Five cases were detected in January 2019. The total number of accession IDs tested for TGEV during January 2019 is 30.98 percent higher than January of 2018, and was due to change in procedure in one VDL testing for TGEV submitted samples for PEDV and PDCoV.

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Figure 3. Pathogen detection on CNS tissue over time. Each green bar indicates a different agent or syndrome, the red bar accounts for the sum of the green bars. **A:** winter months of 2019. **B**: winter months of 2018. **C**: winter months of 2017. Winter months contains results of December, January, and February. 'Multiple agents' represent cases with more than one pathogen detected on CNS tissues.

SDRS Advisory Council highlights:

- a) Winter season of 2019 has similar pattern of detection for CNS agents from previous years and winter seasons;
- b) Streptoccoccus suis (S. suis) is still the major agent detected;

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Page 4 – Detection of pathogens in respiratory tissue over time.



Figure 4. Pathogen detection on respiratory tissues over time. **A**, **B**, and **C** each bar and color indicate a different agent or syndrome. The red line accounts for the cumulative percentage of the bars. **A**: winter months of 2019. **B**: winter months of 2018. **C**: winter months of 2017. Winter months include December, January, and February. 'Multiple agents' represent cases with more than one pathogen detected on respiratory tissues. **D**: Multiple agents detected in respiratory tissue per accession ID case level. Each bar and colour bar represent a combination of 2 or more agents. Presented results are based on diagnostician interpretation.

SDRS Advisory Council highlights:

- a) Porcine circoviruses (PCV2 and 3 combined) and *Bordetella bronchiseptica* are having more detection in respiratory tissues during Winter 2019 than previous Winter 2018, Winter 2017.
- b) Samples diagnosed with PCV for Winter 2019 come from eight different states and 18 different owner/production systems.
- c) For Winter 2019 the multiple association between PRRSV and Influenza A (PRRSV IAV) has been the most frequent diagnosis.

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Page 5 – Detection of pathogens in enteric tissue over time.



Figure 5. Pathogen detection on enteric tissues over time. **A**, **B**, and **C** each bar and color indicate a different agent or syndrome. The red line accounts for the cumulative percentage of the bars. **A**: winter months of 2019. **B**: winter months of 2018. **C**: winter months of 2017. Winter months include December, January, and February. 'Multiple agents' represent cases with more than one pathogen detected on respiratory tissues. **D**: Multiple agents detected in enteric tissue per accession ID case level. Each bar and colour represent a combination of 2 or more agents. Presented results are based on diagnostician interpretation.

SDRS Advisory Council highlights:

- a) Similar pattern for agent detection in Winter 2019 when compared with previous Winter 2018, and Winter 2017.
- b) Cases with multiple agents reported in Winter 2019 are a combination from the major agents reported individually.

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