FACULTY PROFILE

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Professional Summary

Dr. Mohammad A. Alkhamis is an assistant professor at the Department of Epidemiology and Biostatistics, Faculty of Public Health, Kuwait University. His scientific expertise includes statistical learning, Bayesian statistics, big data, one health and applications of advanced epidemiological methods in disease surveillance, control, and prevention. His current research interests include tracing the origins and dispersal of infectious pathogens using Bayesian phylodynamic methods and applications of machine-learning methods in infectious disease prediction and mapping. His teaching expertise includes classical statistics and epidemiology, spatial epidemiology, and evolutionary epidemiology. Dr. Alkhamis is also an adjunct assistant professor at the University of Minnesota and an associate editor for the journal Frontiers in Veterinary Science (2015-current). In the past four years, Dr. Alkhamis published more than 20 publication indexed in Pubmed (11 as the corresponding author) and edited one book. Dr. Alkhamis has collaborated with national and international organizations (OIE, FAO, USDA, DHS, NPB) on projects related to the applications of advanced surveillance methods on transboundary infectious diseases.

Education and Training

- P.h.D, Epidemiology, quantitative methods, University California Davis, Health Science Center, 2014
- M.P.V.M, School of Veterinary Medicine, Health Science Center, University California Davis, 2009
- D.V.M, School of Veterinary Medicine and Animal Resources, King Faisal University, 2004

Research Interests and Projects

Dr. Alkhamis current research interests and projects are focused on the areas of evolutionary epidemiology of infectious diseases, spatial epidemiology and disease mapping, applications of machine learning methods in surveillance of communicable and non-communicable diseases, one health and big data, and development of early warning systems for disease surveillance. He is currently working on research activities related to surveillance of food animal pathogens in the USA and the EU.

Selected Publications

1. **Alkhamis MA**, Moore BR, Perez AM. 2015. Phylodynamics of H5N1 Highly Pathogenic Avian Influenza in Europe, 2005-2010: Potential for Molecular Surveillance of New Outbreaks. Viruses 7:3310-3328.

2. **Alkhamis M**, Hijmans RJ, Al-Enezi A, Martinez-Lopez B, Perea AM. 2016. The Use of Spatial and Spatiotemporal Modeling for Surveillance of H5N1 Highly Pathogenic Avian Influenza in Poultry in the

Middle East. Avian Dis 60:146-155.

3. **Alkhamis MA**, Perez AM, Murtaugh MP, Wang X, Morrison RB. 2016. Applications of Bayesian Phylodynamic Methods in a Recent U.S. Porcine Reproductive and Respiratory Syndrome Virus Outbreak. Front Microbiol 7:67.

4. **Alkhamis MA**, VanderWaal K. 2016. Spatial and Temporal Epidemiology of Lumpy Skin Disease in the Middle East, 2012-2015. Front Vet Sci 3:19.

5. Belkhiria J, **Alkhamis MA**, Martinez-Lopez B. 2016. Application of Species Distribution Modeling for Avian Influenza surveillance in the United States considering the North America Migratory Flyways. Sci Rep 6:33161.

6. **Alkhamis MA**, Arruda AG, Morrison RB, Perez AM. 2017. Novel approaches for Spatial and Molecular Surveillance of Porcine Reproductive and Respiratory Syndrome Virus (PRRSv) in the United States. Sci Rep 7:4343.

7. Arruda AG, **Alkhamis MA**, VanderWaal K, Morrison RB, Perez AM. 2017. Estimation of Time-Dependent Reproduction Numbers for Porcine Reproductive and Respiratory Syndrome across Different Regions and Production Systems of the US. Front Vet Sci 4:46.

8. Ekong PS, Fountain-Jones NM, **Alkhamis MA**. 2017. Spatiotemporal evolutionary epidemiology of H5N1 highly pathogenic avian influenza in West Africa and Nigeria, 2006-2015. Transbound Emerg Dis doi:10.1111/tbed.12680.

9. Willeberg PW, **Alkhamis M**, Boklund A, Perez AM, Enoe C, Halasa T. 2017. Semiquantitative Decision Tools for FMD Emergency Vaccination Informed by Field Observations and Simulated Outbreak Data. Front Vet Sci 4:43.

10. **Alkhamis MA**, Arruda AG, Vilalta C, Morrison RB, Perez AM. Surveillance of porcine reproductive and respiratory syndrome virus in the United States using risk mapping and species distribution modeling. Preventive veterinary medicine. 2017. Epub 2017/11/25. doi: 10.1016/j.prevetmed.2017.11.011. PubMed PMID: 29169685.

11. **Alkhamis MA**, Gallardo C, Jurado C, Soler A, Arias M, Sanchez-Vizcaino JM. Phylodynamics and evolutionary epidemiology of African swine fever p72-CVR genes in Eurasia and Africa. PLoS One. 2018;13(2):e0192565. Epub 2018/03/01. doi: 10.1371/journal.pone.0192565. PubMed PMID: 29489860.

12. **Alkhamis MA**, Fernández-Fontelo A, VanderWaal K, Abuhadida S, Puig P, Alba-Casals A (2018). Temporal dynamics of Middle East respiratory syndrome coronavirus in the Arabian Peninsula, 2012–2017. Epidemiology and Infection 1–10. https:// doi.org/10.1017/S0950268818002728.

13. Omondi G, **Alkhamis MA**, Obanda V, Gakuya F, Sangula A, Pauszek S, et al. Phylogeographic and cross-species transmission dynamics of SAT1 and SAT2 Foot-and-Mouth Disease Virus in Eastern Africa. Mol Ecol. 2019. Epub 2019/05/11. doi: 10.1111/mec.15125. PubMed PMID: 31074125.

Professional Affiliations

- Adjunct Faculty— University of Minnesota, Department of Population Health, School of Veterinary Medicine (2015-present).
- Associate editor in the open access journal Frontiers in Veterinary Sciences, Section Veterinary Epidemiology and Economics Member (2015-present).