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Welcome to the American Association of Food Safety and Public Health Veterinarians

The AAFSPHV represents veterinarians working in:

- Public health agencies
- Departments of agriculture
- Wildlife health agencies
- Environmental agencies
- Animal welfare agencies
- Military service
- Private practice
- Shelter medicine
- Industry
- Academia
- Food safety agencies

Dear Members of the AAFSPHV,
Happy 2024!

It has been some time since we last connected as a community, and we would like to rekindle our bonds and re-engage with each other. The AAFSPHV (American Association of Food Safety and Public Health Veterinarians) has always prided itself on the diverse and impactful career paths our members have taken. From public health advocates and veterinarians to private industry and policy makers, our members have contributed significantly to the betterment of society in various capacities.

As we continue to grow and evolve individually, we would love to see our collective strength grow as well. To facilitate this, we kindly request that you take a moment to update your profiles on our membership roster. This will allow us to better highlight the inspiring journeys each of you has embarked upon and foster connections within our network that can lead to collaborations, mentorship opportunities, and shared knowledge.

Here's how you can update your profile:

- 1. Visit our AAFSPHV website at [Home (aafsphv.org)].*
- 2. Log in using your credentials.*
- 3. Navigate to the "Member Information" section and click on the "Change Contact/Profile Info"*
- 4. Update your contact information, current position, and a brief bio.*
- 5. Feel free to upload a recent photo to put a face to your name.*

By updating your profile, you not only help us connect the dots within our community but also enable us to provide you with relevant updates, networking events, and opportunities tailored to your interests and expertise.

We also have exciting plans for the future, including webinars featuring distinguished speakers (Think Free CE!), and advocacy at the AVMA. Our organization has designated seats in the House of Delegates, Food Safety Advisory Committee, The Committee on Antimicrobials and the Legislative Advisory Committee where our representatives work to support a safe food supply, strong public health initiatives and legislation that benefits veterinary public health.

Let's rekindle the spirit of our AAFSPHV community and make 2024 a year of reconnection, inspiration, and growth. Your involvement is highly valued, and we are excited to witness the positive impact we can create together.

Thank you for being a part of our vibrant alumni network. We look forward to seeing your updated profiles and reconnecting with you soon.

Warm regards,

Your 2024 Officers and Board of Directors

FROM THE EVP

Each year we submit our membership roster to AVMA to be certified as a Constituent Allied Organization. As an Allied Organization we have a seat in the House of Delegates and on the Food Safety and Legislative Advisory Committees and the Committee on Antimicrobials.

Your support allows us to provide representation for veterinarians working in food safety and public health. Thank you.

Our RACE approved CE webinar series will continue monthly in 2024. We welcome the National Association of State Public Health Veterinarians (NASPHV) into our partnership with ACVPM, NAFV and USAHA. If you are interested in presenting a continuing education webinar or have topics you would like to see discussed please contact our President Elect Dr. Pam Abney Pres-elect@aafsphv.org

If you are interested in volunteering in any of these ways, please contact your EVP Katherine Waters, executivevp@aafsphv.org



Katherine Waters
AAFSPHV Exec VP
executivevp@aafsphv.org

2024 Annual Membership Fees

The AAFSPHV has sent invoices to members for their 2024 Annual membership renewal dues.

Invoices were sent to the primary email address contained in your online member profile.

The due date for the annual dues is one year from your last payment (anniversary date).

Members will be dropped from our membership roster if their annual dues are not paid within 3 months after their anniversary date.

If you did not receive this notification, please check your spam/junk folder first before contacting us. Should you have any questions, please send them to executivevp@aafsphv.org

From the Past President

Recruiting and Retaining Members has an ongoing concern since I was President -elect, President, and now Past President. That's *six years* of addressing this concern. I believe that every single Governing Board Meeting we have talked about it and that amounts to touching on this topic about 50 or more times.

I believe that this boils down to **you**. Do you like AAFSPHV? Do you encourage your colleagues in these fields of Food Safety and Public Health to join? Do you share the amazing job opportunities to veterinarians trying to transition from clinical medicine and point them to AAFSPHV as a networking tool?

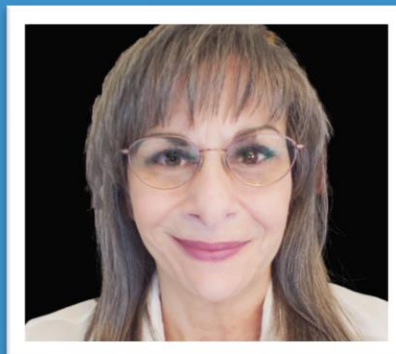
It's clear that I can't do it alone. The new AAFSPHV website can't do it either unless you share it in your email signature block tagline or put it on your resume or email it directly to friends and at least share the free CE opportunities for them.

Today, a young veterinarian mentioned on Facebook that she wanted to know what else she could do as a veterinarian since she suffered health issues and lost her ability to do surgery. I shared our website and JOB BOARD (which is kind of pitiful right now with only 4 jobs. <HINT>). I told her about the remarkable careers that veterinarians can have in other than clinical medicine, and I shared our YouTube channel of 20 interviews for her to listen to and realize there's so much more out there. All of this is accessed from AAFSPHV website. If our Association were gone, then no one could comprehend what AAFSPHV members bring to veterinary medicine. We are each so unique in our careers!

My point is that we have an incredible group of people as members and a really cool interactive website. However, we are operating like we are in an isolation ward but we are not. We have the power of the internet, and we have the power of technology. Please encourage your colleagues to join us. You have the power to increase our membership and retain it if you simply help us get the word out.

If you have any questions or suggestions, please contact me at my email, drdebonis@gmail.com

Donna DeBonis, DVM, MSFS
Past President



Affiliation of AAFSPHV Members

- Public health agencies
- Departments of agriculture
- Wildlife health agencies
- Environmental agencies
- Animal welfare agencies
- Military service
- Private practice
- Shelter medicine
- Industry
- Academia
- Food safety agencies

Become a member
today!



Promoting the science and art of public health, food safety, epidemiology, and preventive medicine to the veterinary profession

Members,

We want to keep our organization strong and relevant. In order to represent the public health and food safety sectors of our profession, we **need** to boost our membership numbers. To continue our free RACE CE webinars and scholarship programs we need to increase our income.

If you know of veterinarians who would be interested in joining our organization please copy and paste the Member Recruitment information below into a text or email and send it to them now.

Thank you for your support.

Become a Member for \$50/Year!

When you become a member of AAFSPHV, you join the ranks of veterinarians and veterinary students from all over the country who maintain an active interest in public health, food safety and veterinary preventive medicine and strive to promote the science and art of public health.

Benefits of Membership:

- **Free monthly online CE** in public health via our partnership with the American College of Veterinary Preventive Medicine (ACVPM)
- Access to our The Quarterly, our **newsletter** with association and member news and a compendium of abstracts relating to veterinary public health and food safety
- Supporting an organization with representation on the AVMA **House of Delegates**, Food Safety Advisory and Legislative Advisory committees
- Access to our new website with a CE calendar, forums, and a **jobs board**
- Access to our YouTube and Podcast channels featuring interviews with veterinarians working in public practice, academia, and industry
- Access to our LinkedIn for job postings and discussions
- **Networking** with veterinarians across all sectors of public health and food safety
- **Access to veterinarians** for informational interviews and job or career advice
- **Complimentary 1st year membership to recent DVM, MS in Food Safety, and MPH graduates**
- **Scholarships** to help cover **travel and expenses** for student members to attend the AVMA **Annual Meeting** and other meetings
- **NEW in 2023:** scholarship fund for **MPH or public health/food safety MS tuition** for DVM students and graduate veterinarians

To join, visit our website: <http://aafsphv.org/membership.html>

Sincerely, Katherine Waters, AAFSPHV Exec VP

Editor's Note

Thank you for your time

In a world of unceasing inboxes, we appreciate you taking the time to read our newsletter. AAFSPHV is a special organization because we are a community of veterinarians within a community of veterinarians who are often the unsung heroes behind zoonotic threats or One Health challenges. Whether we found Public Health as a second chance or navigated the daunting institution of veterinary medicine knowing we wouldn't spend our careers in clinical practice, our advocacy across varying industries serves our communities in irreplaceable ways. Plus, there is something awfully gratifying in explaining to laymen that veterinarians can do more than just vaccinate their dog. More powerful yet, is being able to share with other veterinarians the ways in which their voices and their experience can serve critical gaps in their community, either through public health, epidemiology, environmental health, or food safety.

We are currently in the process of discussing the future role of the newsletter in our communications to our community. We appreciate we represent a community of demanding professions and we want to serve AAFSPHV members to meet your needs and expectations. If you have feedback, comments, or suggestions regarding the newsletter or future AAFSPHV publications, please don't hesitate to reach out to editor@aafspvh.org to share your thoughts.

And please, continue to share any articles, announcements, commendations, or recommendations that we can pass along on your behalf to our membership. It is our goal at AAFSPHV to celebrate you and assist you while providing support and community to each other. Thank you again for your time and your membership.

Sincerely,
Tori Novak, DVM, MPH



Update from the Communications Committee

*Goal: better member comm to increase and engage membership**

Hello Colleagues,

The Communication Working Group will be revamping in the near future in accordance with our stated goal. We will be better utilizing our new website, so I would like to start by inviting you to go to our new website and enter the Members Center (top far right tab). You will want to log in and check out the delightful areas we have set up there for you particularly the ListServ and some cool Message Boards. Also check out our new JOB BOARD, where you can see and also post jobs for free. If you have not logged in as yet, please do the following:

1. Visit our AAFSPHV website at [Home (aafsphv.org)]
2. Log in using your credentials.

This will be your email address that you joined under, and your password. Request a new password if you can't remember or haven't logged in as yet.

In addition, I'd like to invite you to go to our social media sites and Follow Us:

<https://www.facebook.com/aafsphv> for our FaceBook Group

<https://www.aafsphv.org/youtube.php> this is the link off of our AAFSPHV Website to find our YouTube Channel.

Please subscribe to our YouTube Channel and SHARE the link to it.

If you have any questions, please reach out to me on email at drdebonis@gmail.com

Donna DeBonis, DVM, MSFS

Communication WG

Announcement

New Discussion Board on AAFSPHV website: PET FOOD SAFETY

Are you concerned about pet food safety? Do you have expertise or education in this topic? If so, please join us here to work on Pet Food Safety issues. AAFSPHV is creating a working group to discuss pet food safety and develop guidance for professionals in the area and the public. All AAFSPHV members are invited to participate as we discuss pet food safety issues as well as items brought up before the AVMA Food Safety Committee. Paulo Mohyla is our delegate and Donna DeBonis is the alternate to the AVMA Committee and will be bringing items from there up for discussion, as well as emerging issues related to this theme. In addition to Pet Food Safety, we will also be taking a look at Animal Feed issues. So, those of you in Food Animal Production are also encouraged to join in on this discussion. (If you are interested in being considered for the working group, please reply to this email with your name, title, location, and professional experience related to this area. All meetings are expected to be remote with no more than 4 hours of commitment per month) Please bring your topics to this discussion board as well as any applicable free CE, so we can post it on our Calendar for our members.

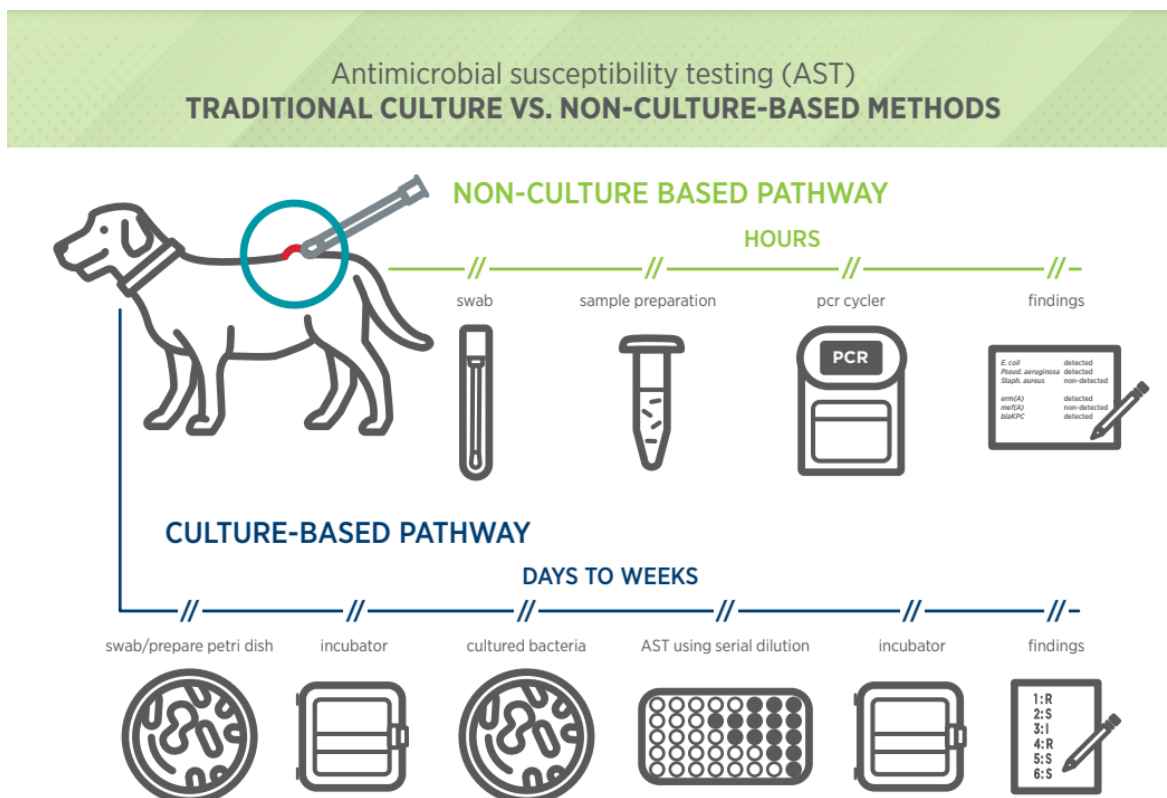
 [Search Topics](#)

Update from the Committee on Antimicrobials

Antimicrobial resistance is a quintessential One Health problem, requiring multisectoral engagement across each One Health domain. In a presenting patient (be them animal or human) with a bacterial infection, identifying the inciting pathogen and what tools at our disposal to treat that infection is crucial both to heal that patient and to maintain the effectiveness of antimicrobials. A cornerstone in our toolkit is antimicrobial susceptibility testing (AST), a tried-and-true method to evaluate the susceptibility and resistance profile of a given bacteria population. The AVMA recently published a series of six documents on AST to assist veterinarians regarding appropriate use and interpretation of results for dogs, cats, cattle, or food fish. Further, AVMA has expanded on the use of non-culture-based methods vs. culture-based methods for identifying antimicrobial resistance and how it can and should guide clinical decision-making. These have been professionally designed to be conveniently placed at point of care locations.

You can find these resources, and others on the topic of good antimicrobial stewardship at this website: <https://www.avma.org/resources-tools/one-health/antimicrobial-use-and-antimicrobial-resistance/antimicrobial-use-veterinary-practice>

Additionally, the Clinical & Laboratory Standards Institute (CLSI), a not-for-profit organization that develops laboratory standards worldwide, has more comprehensive, detailed information provided in its “VET09—Understanding Susceptibility Test Data as a Component of Antimicrobial Stewardship in Veterinary Settings.” This document gives further information needed to successfully acquire and interpret AST results.



Call for Applications

❖ DIRECTOR: GOVERNMENT PRIVATE, *AAFSPHV*

The AAFSPHV is seeking candidates for Director, Federal (Civilian) Government. Information about position is listed below. AVMA membership is required for our Governing Board members. Members who would like to nominate themselves or another member should provide:

1. Position applying for:
2. Name of person being nominated _____
3. Nominator:
4. One paragraph statement to help explain interest and background related to the position:

Please attach a Resume or CV (brief or full CV)

Email the nomination form and CV to executivevp@aafsphv.org

Term: Oct 2024 - Oct 2027

Meetings: The Directors are members of the governing board. Meetings are held via Zoom for 1 hour once a month. Directors are encouraged to participate in one of our standing committees: Finance, Communication, Education and Student Outreach.

The terms of office for the current Directors shall be three years and their terms shall be staggered. Directors are not term limited. The Directors will serve as members of the Governing Board and will provide specialized employment sector advice, support, and assistance in determining the policies and pursuing the objectives of the association.

Save the Date!

You are cordially invited to attend the **2024 Antimicrobial Stewardship Summit** to be held **March 28th of 2024**.

Please share with health care providers, pharmacists, veterinarians, and any other health care and veterinary personnel who are interested in learning more about antimicrobial stewardship.

This Summit is designed to highlight the importance of:

- Antimicrobial stewardship
- Implementation strategies to promote facility-wide incorporation
- Improving antimicrobial use and patient outcomes for both humans and animals

This accredited continuing education activity is designed for the following:

Post-acute and long-term facilities: Long-term care providers, medical directors, infection preventionists, nurses, consultant pharmacists, directors of nursing, quality program leaders, and all other health care workers interested in improving the management of common infections through the incorporation of antimicrobial stewardship principles.

Outpatient facilities and acute care hospitals: Family medicine providers, internal medicine providers, pediatric providers, ambulatory care providers, pharmacists, nurses, medical directors, quality program leaders, and all other health care workers interested in improving the management of common infections through the incorporation of antimicrobial stewardship principles.

Veterinary hospitals and clinics: Veterinarians, veterinary technicians, and other veterinary personnel interested in improving the management of common companion animal infections through the incorporation of antimicrobial stewardship principles.

The graphic features a dark grey background with a light grey geometric pattern. At the top center is a yellow arrow-shaped box containing the text 'THU MAR 28'. Below this, the event title 'IOWA ANTIMICROBIAL STEWARDSHIP SUMMIT' is written in large, bold, white capital letters. Underneath the title, the location 'Gateway Hotel & Conference Center | Ames, IA' is written in a smaller, yellow font. The time '7:30 am - 4:15 pm' is centered below the location. In the bottom right corner, a rounded rectangular box contains the address '2100 Green Hills Dr, Ames, IA 50014'. At the bottom center, a yellow rectangular button with the word 'REGISTER' in blue capital letters is displayed.

<https://www.regcytes.extension.iastate.edu/antimicrobial/>

Member News

❖ Dr. Carie Alexander was chosen by AAFSPHV to receive a scholarship to attend the AVMA Veterinary Leadership Conference

Dr. Carie Alexander DVM, MPH, DACVPM:

It was my pleasure to attend the 2024 AVMA Veterinary Leadership Conference on behalf of our organization from January 4 to 6 this year. This was my first time attending the VLC, so it was a completely new experience that exposed me to organized veterinary medicine on a much larger scale than I had ever seen.

The conference started with an orientation lunch, followed by a small on-site service project that allowed participants to connect with other conference attendees and to learn more about a relatively new veterinary mentorship program. This was followed by a choice of presentations on various veterinary leadership topics, including my selections of quiet leadership, emotional intelligence, and overcoming perfectionism.

The first day ended with meetings of the eleven District Caucuses where veterinary leaders from different states provided updates on issues of concern in their states. I listened in on District Caucus 7, which is comprised of Iowa, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota, since I reside and work in Minnesota, and found it to be very interesting and enlightening.

Day 2 included the keynote speaker, a plenary session and lunch with updates from different AVMA groups, and then meetings of the seven Reference Committees. Each reference committee reviews different AVMA policies, and I listened in on Reference Committee 7, where policies such as “Safe Non-Commercial Transport of Pets in Motor Vehicles” and “Animal Loss Support Services” were discussed. Again, it was interesting and enjoyable to get a behind-the-scenes look at how AVMA governance works. The afternoon ended with another choice of leadership presentations - workplace culture and imposter syndrome - followed by an early evening social hour, a stretch for us (seemingly few) introverts in attendance!

Following the AVMF breakfast on Day 3, I attended HOD 101: the HOD session was live-streamed into a separate room where attendees could ask questions about the HOD process. This was another very interesting and enlightening experience. The rest of the morning and afternoon consisted of presentations on many different leadership-related topics, with a Conversation Circles Lunch in the middle. I sat at a table with an industry veterinarian (nutrition) and two first-year veterinary students, which was very enjoyable, and later I was able to connect one of the students who is considering an MPH degree with some current DVM/MPH students at the U of MN.

The AVMA VLC was quite a different experience from scientific CE conferences I've attended over the years - and it wasn't just the business attire! It was very interesting to witness and learn more about organized veterinary medicine, and it was inspiring to see how hard committee members work to produce AVMA policies that are important to and representative of the profession.

Many thanks to the AAFSPHV Board of Directors for the opportunity to attend!



Member On the Move

Share your career moves here to network and foster mentorship for others! Contact editor@aafsphv.org to report your new position in the upcoming newsletter.

Call for Honorary Member Nominations

The AAFSPHV is a national organization that recognizes and fosters excellence in veterinary public health and food safety. We ask members to nominate veterinarians who have contributed to our profession by nominating them for Honorary Membership. Honorary members receive all communications from our organization, can contribute to our publications, attend CE webinars and member meetings. To nominate an individual for Honorary Membership, please fill out the form on the website.

Login and go to your member page>Membership>Submit recommendation for Honorary Member

<https://www.viethconsulting.com/members/form.php?orgcode=AAFS&fid=5074645>

After the nomination is received, it will be presented to our Governing Board for approval and the nominee will be notified.

Thank you, by nominating an honorary member, you help us honor their contribution to our profession as well as increase the visibility and understanding of our organization and who we are.

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ENVIRONMENTAL HEALTH AND TOXICOLOGY

Human biomonitoring of environmental contaminants in Gulf Countries - current status and future directions

Background

This systematic review aimed to evaluate the status of Human Biomonitoring (HBM) in the Gulf Cooperation Council (GCC) region and provide recommendations for future research, considering the increased environmental contaminants that pose a threat to human health in this rapidly industrializing area.

Methods

A thorough search was performed in PubMed and Web of Science databases up to February 2023 to identify biomonitoring studies on human exposure and levels in the GCC region. Two independent reviewers assessed study eligibility, conducted data extraction and risk of bias assessment. The NIH Quality Assessment Tools and PRISMA guidelines were utilized for quality evaluation and reporting of results.

Results

A total of 38 eligible articles were included in this systematic review out of 662 articles screened. The majority of the publications were from Saudi Arabia ($n = 24$) and Kuwait ($n = 10$), while limited representation was found from Qatar ($n = 3$) and the UAE ($n = 1$). No articles were identified from Oman and Bahrain. The studies focused on metals, organohalogen compounds, pesticides, polycyclic aromatic hydrocarbons, and phthalates. The findings revealed elevated levels of metals and established correlations between metal exposure and adverse health effects, including infant neurodevelopmental issues, vitamin D deficiency, and oxidative stress. The presence of organohalogen compounds and pesticides was prevalent in the GCC region, with significant associations between exposure to these compounds and negative health outcomes.

Notably, high levels of perchlorate were observed in the Kuwaiti population, and a study from Saudi Arabia found an association between per- and polyfluorinated substances and increased odds of osteoporosis.

Conclusions

This review emphasizes the need to address environmental health challenges in the GCC region through improved HBM research methods and strategies. Implementing biomonitoring programs, conducting cohort studies, investing in tools and expertise, promoting collaboration, and engaging the community are crucial for reliable HBM data in the GCC.

Authors: Raghad Khaled, Shahd Elabed, Asmaa Masarani, Anfal Almulla, Shamsa Almheiri, Rinsha Koniyyath, Lucy Semerjian, Khaled Abass

Source: (2023). Environmental Research, Volume 236, Part 1, 116650, ISSN 0013-9351, <https://doi.org/10.1016/j.envres.2023.116650>

Impacts of net zero policies on air quality in a metropolitan area of the United Kingdom: Towards world health organization air quality guidelines

Climate change and air pollution are closely interlinked since carbon dioxide and air pollutants are co-emitted from fossil fuel combustion. Net Zero (NZ) policies aiming to reduce carbon emissions will likely bring co-benefits in air quality and associated health. However, it is unknown whether regional NZ policies alone will be sufficient to reduce air pollutant levels to meet the latest 2021 World Health Organisation (WHO) guidelines. Here, we carried out high resolution air quality modelling for in the West Midlands region, a typical metropolitan area in the UK, to quantify the effects of different NZ policies on air quality. Results show that NZ policies will significantly improve air quality in the West Midlands, with up to $6 \mu\text{g m}^{-3}$ (21%) reduction in annual mean NO₂ (mostly through the electrification of vehicle fleet, EV) and up to $1.4 \mu\text{g m}^{-3}$ (12%) reduction in annual mean PM_{2.5} projected for 2030 relative to levels under a "business as usual" (BAU) scenario. Under BAU, 2030 PM_{2.5} concentrations in most wards would be below $10 \mu\text{g m}^{-3}$ whilst under the Net Zero scenario, those in all wards would be below $10 \mu\text{g m}^{-3}$. This means that the ward averages in the West Midlands would meet the UK PM_{2.5} of $10 \mu\text{g m}^{-3}$ target a decade early under the Net Zero scenario. However, no ward-level-averaged annual mean PM_{2.5} concentrations meet the 2021 WHO Air Quality guideline level of $5 \mu\text{g m}^{-3}$ under any scenario.

Similarly for NO₂ only 18 wards (8% of the region's population) are predicted to have NO₂ concentrations below the 2021 WHO guideline level ($10 \mu\text{g m}^{-3}$). Decarbonisation policies linked to Net Zero deliver substantial regional air quality benefits, but are not in isolation sufficient to deliver clean air with air pollutant levels low enough to meet the 2021 WHO guidelines.

Authors: Jian Zhong, James Robert Hodgson, William James Bloss, Zongbo Shi

Source: (2023). Environmental Research, Volume 236, Part 1, 116704, ISSN 0013-9351, <https://doi.org/10.1016/j.envres.2023.116704>

Airborne grass pollen and thunderstorms influence emergency department asthma presentations in a subtropical climate

Background

Grass pollen is considered a major outdoor aeroallergen source worldwide. It is proposed as a mechanism for thunderstorm asthma that lightning during thunderstorms promotes electrical rupture of pollen grains that leads to allergic airway inflammation. However, most evidence of associations between grass pollen and asthma comes from temperate regions. The objective of this study was to investigate short-term associations between airborne grass pollen exposure and asthma emergency department presentations in a subtropical population.

Methods

Episode level public hospital presentations for asthma (2016-2020) were extracted for greater Brisbane, Australia, from Queensland Health's Emergency Data Collection. Concentrations of airborne pollen were determined prospectively using a continuous flow volumetric impaction sampler. Daily time series analysis using a generalised additive mixed model were applied to determine associations between airborne grass pollen concentrations, and lightning count data, with asthma presentations.

Results

Airborne grass pollen showed an association with asthma presentations in Brisbane; a significant association was detected from same day exposure to three days lag. Grass pollen exposure increased daily asthma presentations up to 48.5% (95% CI: 12%, 85.9%) in female children. Lightning did not modify the effect of grass pollen on asthma presentations, however a positive association was detected between cloud-to-cloud lightning strikes and asthma presentations ($P = 0.048$).

Conclusion

Airborne grass pollen exposure may exacerbate symptoms of asthma requiring urgent medical care of children and adults in a subtropical climate. This knowledge indicates an opportunity for targeted management of respiratory allergic disease to reduce patient and health system burden. For the first time, an influence of lightning on asthma was detected in this context. The outcomes support a need for continued pollen monitoring and surveillance of thunderstorm asthma risk in subtropical regions.

Authors: Marko Simunovic, Justin Boyle, Bircan Erbas, Philip Baker, Janet M. Davies

Source: (2023). Environmental Research, Volume 236, Part 1, 116754, ISSN 0013-9351, <https://doi.org/10.1016/j.envres.2023.116754>

A comprehensive review on immobilized microbes - biochar and their environmental remediation: Mechanism, challenges and future perspectives

The environment worldwide has been contaminated by toxic pollutants and chemicals through anthropogenic activities, industrial growth, and urbanization. Microbial remediation is seen to be superior compared to conventional remediation due to its low cost, selectivity towards particular metal ions, and high efficiency. One key strategy in enhancing microbial remediation is employing an immobilization technique with biochar as a carrier. This review provides a comprehensive summary of sources and toxic health effects of hazardous water pollutants on human health and the environment. Biochar enhances the growth and proliferation of contaminant-degrading microbes. The combined activity of biochar and microbes in eliminating the contaminants has gained the researcher's interest. Biochar demonstrates its biocompatibility by fostering microbial populations, the release of enzymes, and protecting the microbes from the acute toxicity of surrounding contaminants. The current review complies with the immobilization technique and remediation mechanisms of microbes in pollutant removal. This review also emphasizes the combined utilization, environmental adaptability, and the potential of the combined effect of immobilized microbes and biochar in the remediation of contaminants. Challenges and future outlooks are urged to commercialize the immobilized microbes-biochar interaction mechanism for environmental remediation.

Authors: A. Saravanan, Pavithra Swaminaathan, P. Senthil Kumar, P.R. Yaashikaa, R. Kamalesh, Gayathri Rangasamy

Source: (2023). Environmental Research, Volume 236, Part 1, 116723, ISSN 0013-9351, <https://doi.org/10.1016/j.envres.2023.116723>

Field experiments on chemical and biological changes of thin-layer oyster shells capping sediments in dense aquaculture area

Thin-layer oyster shell capping has been proposed as a method for improving contaminated coastal environments. Field experiments were conducted to investigate the effects of oyster shell capping on nutrient concentrations, microorganisms, and macrobenthic communities. The concentration of PO₄-Pin the experimental area decreased by approximately 38% more than in the control, due to phosphorus fixation of oyster shells and the presence of Proteobacteria. Ammonia-oxidizing bacteria such as the order Pirellulales (phylum Planctomycetes) were related to the low ratio of NH₃-N found in dissolved inorganic nitrogen in the

experimental area, indicating nitrification promotion. The reduction in annular benthic organisms observed in the experimental area indicates a decline in sediment organic matter, which could potentially mitigate eutrophication. Oyster shell capping was confirmed to be an effective material for restoring coastal sediments by improving their chemical and biological properties.

Authors: Hee-Eun Woo, Ilwon Jeong, Jong-Oh Kim, Young-Ryun Kim, In-Cheol Lee, Kyunghoi Kim

Source: (2023). Environmental Research, Volume 237, Part 1, 116893, ISSN 0013-9351, <https://doi.org/10.1016/j.envres.2023.116893>

<https://doi.org/10.1016/j.onehlt.2023.100571>

Large scale spatio-temporal modelling of risk factors associated with tuberculosis exposure at the wildlife-livestock interface

The management of animal tuberculosis (TB) is a priority for European Union animal health authorities. However, and despite all the efforts made to date, a significant part of Spain has as yet been unable to obtain the officially tuberculosis-free (OTF) status. Information regarding wildlife disease status is usually scarce, signifying that the role played by wildlife is usually ignored or poorly assessed in large-scale TB risk factor studies. The National Wildlife Health Surveillance Plan in Spain now provides information on infection rates in wildlife reservoirs at a national level, but there are limitations as regards the sample size, the spatio-temporal distribution of the samples, and the lack of homogeneity of the diagnostic techniques employed. The objective of the study described herein was, therefore, to employ a Bayesian approach with the intention of identifying the risk factors associated with four TB rates in cattle: prevalence, incidence, maintenance and persistence in Spain during the period 2014-2019. The modeling approach included highly informative spatio-temporal latent effects with which to control the limitations of the data. Variation partitioning procedures were carried out, and the pure effect of each factor was mapped in order to identify the most relevant factors associated with TB dynamics in cattle in each region. This made it possible to disclose that the movement of cattle, particularly from counties with herd incidence > 1%, was the main driver of the TB dynamics in cattle. The abundance of herds bred for bullfighting was retained in all four models, but had less weight than the movements. After accounting for farm-related factors, the TB prevalence in wild boar was retained in all the models and was significantly related to incidence, maintenance and persistence. With regard to the incidence, variation partitioning revealed that wildlife was the most explicative factor, thus suggesting that it plays a role in the introduction of the pathogen into uninfected herds, and consequently highlighting its importance in breakdowns. These results show, for the first time on a national scale, that wild ungulates play a relevant role in the spatio-temporal variability of TB in cattle, particularly as regards their disease status. Moreover, the spatial representation of the pure effect of each factor made it possible to identify which factors are driving the disease dynamics in each region, thus showing that it is a valuable tool with which to focus efforts towards achieving the OTF status.

Authors: Cesar Herraiz, Joaquín Vicente, Christian Gortázar, Pelayo Acevedo

EPIDEMIOLOGY AND BIostatISTICS

Association between seroprevalence of measles virus in monkeys and degree of human-monkey contact in Bangladesh

Measles infections can cause significant morbidity and mortality in human and monkey populations. The endemicity of measles in human populations and viral circulation within populations of free-living monkeys may have important repercussions for potential zoonotic transmission events and for the long-term health of monkey populations. Yet, there has not yet been a rigorous investigation of the dynamics of measles transmission where human and monkey populations coexist. In this study, to determine the difference in seroprevalence of the measles virus across different contexts of human-monkey contact, we analyzed serum samples collected from 56 apparently healthy *Macaca mulatta* monkeys who occupied diverse contexts, with different degrees of human-monkey contact, in Bangladesh. This is the first report of measles virus seroprevalence in monkeys in Bangladesh. We found a clear association between measles virus seropositivity in monkeys and the context in which they interact with humans. Seroprevalence was the lowest in wild areas (0.0%) and increased in shrines (4.8%), urban areas (5.9%), and was highest among monkeys who are used as performance animals (50.0%). This work suggests that a One Health approach informed by local interspecies transmission dynamics is necessary to develop strategies that both improve measles vaccination coverage, achieve long-term surveillance in monkey populations, and prevent measles spillback to monkeys. This approach aims to inform conservation efforts and protect the long-term health of human and monkey populations.

Authors: Lizzie Ortiz-Cam, Lisa Jones-Engel, Patricia Mendoza, Ricardo Castillo-Neyra

Source: (2023). One Health, Volume 17, 100571, ISSN 2352-7714,

Source: (2023). Preventive Veterinary Medicine, Volume 220, 106049, ISSN 0167-5877, <https://doi.org/10.1016/j.prevetmed.2023.106049>

Farm level bio-economic modelling of aquatic animal disease and health interventions

A farm level bio-economic model, for aquatic animal production, of the relationships between inputs (e.g. purchased animals), outputs (e.g. harvested animals) and gross margin (GM) was developed to assess ex-ante the economics of disease and animal health interventions. Feed costs were calculated from estimates of food conversion ratio (FCR), animals harvested and mortality. The model was applied to a typical grow-out rainbow trout (*Oncorhynchus mykiss*) farm on Lake Titicaca, Peru and a typical shrimp (*Paenus vannamei*) farm in the Mekong Delta, Vietnam. The model was used in two analyses. Firstly, an approach to assess the burden of disease developed by the Global Burden of Animal Diseases (GBADs) project was adopted. Output under conditions of 'ideal health' was estimated by reducing mortality to zero and removing health costs. GM in both systems increased by approximately 25% when production was kept constant (and stocking rates reduced) and more than doubled if production was allowed to rise (and initial stocking increased). The increase in GM under conditions of ideal compared with current production provided an estimate of the maximum possible benefit from improved health management. Secondly, break-even analysis was used to assess the economics of vaccination against infectious pancreatic necrosis (IPN) vaccine (rainbow trout - RBT) and probiotics (shrimp). If initial stocking was kept constant, and production allowed to rise, break-even points for the intervention (when GM was the same with and without the intervention) were achieved when mortality was reduced by 16% in RBT fry and juvenile and 28% in shrimp. If production was kept constant and benefit realised by reduced initial stocking, the break-even point was achieved for i) vaccination of RBT when mortality in fry and juveniles was reduced by 39%, and ii) probiotics in shrimp production when there was a 15% reduction in mortality (nursery and grow-out), 10% increase in shrimp weight at harvest and 10% improvement in FCR. The results demonstrate how relatively simple models, parameterised with basic farm production data, can assess the burden of disease and quantify ex-ante the potential benefit of interventions. In the absence of trial data, these analyses support decision-making by farmers. The models can be adapted for many aquaculture systems. Farm level results can be extrapolated to estimate disease burden, and benefits of interventions, at regional or national level and thus support informed decision-making and allocation of resources to health management.

Authors: E.J. Peeler, R. Caballero-Celli b, C.E.S. Davila, A.C. Canales Gomez, W. Gilbert, M. Gómez-Sánchez, Huntington, V.T. Phan, J. Rushton, R.S. Schrijver, A. Kennerley

Source: (2023). Preventive Veterinary Medicine, Volume 221, 106055, ISSN 0167-5877, <https://doi.org/10.1016/j.prevetmed.2023.106055>

Historical associations and spatiotemporal changes of pathogen presence in ticks in Canada: A systematic review

Starting in the early 20th century, ticks and their pathogens have been detected during surveillance efforts in Canada. Since then, the geographic spread of tick vectors and tick-borne pathogens has steadily increased in Canada with the establishment of tick and host populations. Sentinel surveillance in Canada primarily focuses on *Ixodes scapularis*, which is the main vector of *Borrelia burgdorferi*, the bacterium causing Lyme disease. Other tick-borne pathogens, such as *Anaplasma*, *Babesia*, and *Rickettsia* species, have lower prevalence in Canada, but they are emerging or re-emerging in tick and host populations.

Here, we assessed the historical associations between tick vectors, hosts and pathogens and identified spatiotemporal clusters of pathogen presence in ticks in Canada using data extracted from the literature.

Approximately one-third of ticks were infected with a pathogen, and these ticks were feeding primarily on bird and mammal hosts. *B. burgdorferi* was the most detected pathogen and *I. scapularis* harboured the greatest number of pathogens. We identified several spatial outliers of high pathogen presence in ticks in addition to five spatiotemporal clusters in southern Canada, all of which have long-established tick populations. Six spatiotemporal clusters of high pathogen presence in ticks were also identified based on surveillance method, with four clusters associated with passive surveillance and two clusters associated with active surveillance. Our review represents the first systematic assessment of the literature that identifies historical associations and spatiotemporal changes in tick-host-pathogen disease systems in Canada over broad spatial and temporal scales.

As distinct spatiotemporal clusters were identified based on surveillance method, it is imperative that surveillance efforts employ standardized methods and data reporting to comprehensively assess the presence, spread and risk of tick-borne pathogens in tick and host populations.

Authors: Kirsten E. Crandall, Virginie Millien, Jeremy T. Kerr

Source: (2023). Zoonoses and Public Health, 71, 18-33. <https://doi.org/10.1111/zph.13093>

FOOD SAFETY

Gut microbiome and antibiotic resistance effects during travelers' diarrhea treatment and prevention

International travelers are frequently afflicted by acute infectious diarrhea, commonly referred to as travelers' diarrhea (TD). Antibiotics are often prescribed as treatment or prophylaxis for TD; however, little is known about the impacts of these regimens on travelers' gut microbiomes and carriage of antibiotic resistance genes (ARGs). Here, we analyzed two cohorts totaling 153 US and UK servicemembers deployed to Honduras or Kenya. These subjects either experienced TD during deployment and received a single dose of one of three antibiotics [Trial Evaluating Ambulatory Therapy of Travelers' Diarrhea (TrEAT TD) cohort] or took once-daily rifaximin (RIF), twice-daily RIF, or placebo as prophylaxis to prevent TD [Trial Evaluating Chemoprophylaxis Against Travelers' Diarrhea (PREVENT TD) cohort]. We applied metagenomic sequencing on 340 longitudinally collected stool samples and whole-genome sequencing on 54 *Escherichia coli* isolates. We found that gut microbiome taxonomic diversity remained stable across the length of study for most treatment groups, but twice-daily RIF prophylaxis significantly decreased microbiome richness post-travel. Similarly, ARG diversity and abundance were generally stable, with the exception of a significant increase for the twice-daily RIF prophylaxis group. We also did not identify significant differences between the ARG abundance of *E. coli* isolates from the TrEAT TD cohort collected from different treatment groups or timepoints. Overall, we found no significant worsening of gut microbiome diversity or an increase in ARG abundance following single-dose treatment for TD, underscoring that these can be effective with low risk of impact on the microbiome and resistome, and identified the relative microbiome risks and benefits associated with the three regimens for preventing TD.

Authors: Kevin S. Blake, Drew J. Schwartz, Srinand Paruthiyil, Bin Wang, Jie Ning, Sandra D. Isidean, Daniel S. Burns, Harris Whiteson, Tahaniyat Lalani, Jamie A. Fraser, Patrick Connor, Tom Troth, Chad K. Porter, David R. Tribble, Mark S. Riddle, Ramiro L. Gutiérrez, Mark P. Simons, Gautam Dantas

Source: (2023). *mBio* 15:e02790-23.
<https://doi.org/10.1128/mbio.02790-23>

Traditional and novel approaches to derive health-based guidance values for pesticides

Owing to their inherent toxicities, rigorous testing and critical evaluation of pesticides are required by many legislations. Pesticide residues in agricultural

products are inevitable but must be kept below legal limits to guarantee that exposure of the consumer does not exceed safe levels. Substance-specific health-based guidance values for long-term or acute dietary exposure are currently based on studies in laboratory animals, in which doses without adverse health effects serve as the point of departure for their derivation. While the system has so far delivered well in terms of public health protection, it is increasingly challenged to develop further by using new approach methodologies. The potential of these methods not only lies in their reduced animal use but, more importantly, in their ability to use human-derived systems, thus producing data closer to the species of interest as well as enabling a more mechanistic interpretation of any toxicities observed.

Authors: Lars Niemann, Judy Choi, Carsten Kneuer, Tewes Tralau

Source: (2023). *Current Opinion in Food Science*, Volume 54, 101091, ISSN 2214-7993,
<https://doi.org/10.1016/j.cofs.2023.101091>

Predictive Mapping of Antimicrobial Resistance for *Escherichia coli*, *Salmonella*, and *Campylobacter* in Food-Producing Animals, Europe, 2000-2021

In Europe, systematic national surveillance of antimicrobial resistance (AMR) in food-producing animals has been conducted for decades; however, geographic distribution within countries remains unknown. To determine distribution within Europe, we combined 33,802 country-level AMR prevalence estimates with 2,849 local AMR prevalence estimates from 209 point prevalence surveys across 31 countries. We produced geospatial models of AMR prevalence in *Escherichia coli*, nontyphoidal *Salmonella*, and *Campylobacter* for cattle, pigs, and poultry. We summarized AMR trends by using the proportion of tested antimicrobial compounds with resistance >50% and generated predictive maps at 10 × 10 km resolution that disaggregated AMR prevalence. For *E. coli*, predicted prevalence rates were highest in southern Romania and southern/eastern Italy; for *Salmonella*, southern Hungary and central Poland; and for *Campylobacter*, throughout Spain. Our findings suggest that AMR distribution is heterogeneous within countries and that surveillance data from below the country level could help with prioritizing resources to reduce AMR.

Authors: Ranya Mulchandani, Cheng Zhao, Katie Tiseo, João Pires, and Thomas P. Van Boeckel

Source: (2024). *Emerging Infectious Diseases*, 30(1), 96-104.
<https://doi.org/10.3201/eid3001.221450>

Micro(nano)plastics in commercial foods: A review of their characterization and potential hazards to human health

Micro (nano)plastics (MNPs) are pollutants of worldwide concern for their ubiquitous environmental presence and associated impacts. The higher consumption of MNPs contaminated commercial food can cause potential adverse human health effects. This review highlights the evidence of MNPs in commercial food items and summarizes different sampling, extraction, and digestion techniques for the isolation of MNPs, such as oxidizing digestion, enzymatic digestion, alkaline digestion and acidic digestion. Various methods for the characterization and quantification of microplastics (MPs) are also compared, including μ -Raman spectroscopy, μ -Fourier transform infrared spectroscopy (FTIR), thermal analysis and Scanning electron microscopy with energy-dispersive X-ray spectroscopy (SEM-EDX). Finally, we share our concerns about the risks of MNPs to human health through the consumption of commercial seafood. The knowledge of the potential human health impacts at a subcellular or molecular level of consuming mariculture products contaminated with MNPs is still limited. Moreover, MNPs are somewhat limited, hard to measure, and still contentious. Due to the nutritional significance of fish consumption, the risk of exposure to MNPs and the associated health effects are of the utmost importance.

Authors: Suman Thodhal Yoganandham, Naima Hamid, Muhammad Junaid, Jin-Jing Duan, De-Sheng Pei

Source: (2023). Environmental Research, Volume 236, Part 2, 116858, ISSN 0013-9351, <https://doi.org/10.1016/j.envres.2023.116858>

Zoonotic Pathogens Associated with Pet and Feeder Murid Rodent Species: A Global Systematic Review

Background: Pet and feeder rodents are one of the main sources of emerging infectious diseases. These rodents are purchased from pet shops, breeders, and online. Consequently, some of these rodents may subtly transmit diseases as they may be asymptomatic to certain pathogens.

Materials and Methods: We systematically searched four academic databases viz. Google Scholar, PubMed, Web of Science, and Scopus to determine zoonotic pathogens associated with pet and feeder rodents globally. Our searches were performed in R statistical software using the packages “metagear” and “revtool”.

Results: We found 62 studies reporting on zoonotic pathogens between 1973 and 2022 from 16 countries representing 4 continents, namely Africa, Europe, Asia, and North America. The review

identified 30 zoonotic pathogens isolated from pet and feeder rodents, including the African pygmy mouse (*Mus minutoides*), brown rat (*Rattus norvegicus*), and the house mouse (*Mus musculus*). The greatest number of pathogens was reported from the United States, followed by Togo and the United Kingdom. Bacterial pathogens were the most prevalent. However, the Seoul virus and rat bite fever (*Streptobacillus moniliformis*) were the most studied pathogens, found in more than one country, with reported outbreak cases. Most of the zoonotic pathogens were isolated from rodents acquired from pet shops.

Conclusions: We recommend that pet and feeder rodents purchased from pet shops should be regularly screened for potential zoonotic pathogens as some of these animals may not show clinical signs of the illness. There is also a critical need to develop strict regulations and policies, especially in underdeveloped and developing regions for an effective surveillance process, which will include early detection, rapid response, and control of zoonotic diseases globally.

Authors: Ndivhuwo Shivambu, Tinyiko C. Shivambu, and Christian T. Chimimba

Source: (2023) Vector-Borne and Zoonotic Diseases, 23:11, 551-560.

<https://doi.org/10.1089/vbz.2023.0024>

INFECTIOUS AND PARASITIC DISEASES

Surveillance and Genetic Analysis of Jamestown Canyon Virus in New York State: 2001-2022

Jamestown Canyon virus (JCV) (Peribunyaviridae; Orthobunyavirus) is a mosquito-borne pathogen endemic to North America. The genome is composed of three segmented negative-sense RNA fragments designated as small, medium, and large. Jamestown Canyon virus is an emerging threat to public health, and infection in humans can cause severe neurological diseases, including encephalitis and meningitis. We report JCV mosquito surveillance data from 2001 to 2022 in New York state. Jamestown Canyon virus was detected in 12 mosquito species, with the greatest prevalence in *Aedes canadensis* and *Anopheles punctipennis*. Detection fluctuated annually, with the highest levels recorded in 2020. Overall, JCV infection rates were significantly greater from 2012 to 2022 compared with 2001 to 2011. Full-genome sequencing and phylogenetic analysis were also performed with representative JCV isolates collected from 2003 to 2022. These data demonstrated the circulation of numerous genetic variants, broad geographic separation, and the first identification of lineage B JCV in New York state in 2022.

Authors: Kiet A. Ngo, Joseph G. Maffei, Cheri A. Koetzner, Steven D. Zink, Anne F. Payne, P. Bryon Backenson, Jennifer L. White, Alan P. Dupuis II, Laura D. Kramer, and Alexander T. Ciota

Source: (2023). *The American Journal of Tropical Medicine and Hygiene*. 2023;109(6):1329-1332. <https://doi.org/10.4269/ajtmh.23-0392>

An Outbreak of Acute Chagas Disease Possibly Spread through Oral Transmission Involving Animal Reservoirs in Eastern Colombia

Chagas disease (CD) is a parasitic infection caused by the parasite *Trypanosoma cruzi*. Reports of CD cases associated with oral transmission have increased, particularly in Colombia, Brazil, and Venezuela. In this investigation, parasitological, serological, and molecular tests were conducted on samples obtained from humans, mammal reservoirs, and hosts involved in the assessment of a suspected oral transmission outbreak in Cubara, Boyaca, Colombia. Seropositivity was observed in 60% (3 of 5) of index patients and 6.4% (5 of 78) of close contacts. *Trypanosoma cruzi* DNA was detected by quantitative polymerase chain reaction in 100% of index cases, 6.4% (5 of 78) of close contacts, 60% (6 of 10) of canines, and 100% (5 of 5) of opossums. In all index cases, the TcI lineage was identified, along with two cases of mixed infection (TcI/TcII-TcVI). Hemoculture revealed a flagellate presence in 80% of opossums, whereas all triatomine bugs tested negative. Our findings suggest a potential oral transmission route through contamination with opossum secretions.

Authors: Stiven A. Gutiérrez, Jeiczon Jaimés-Dueñez, Lissa Cruz-Saavedra, Carolina Hernández, Omar Cantillo-Barraza, Francisco Álvarez, María Blanco, Bernardo Leal, Lida Martínez, Manuel Medina, Mabel Medina, Silvia Valdivieso, and Juan David Ramírez

Source: (2024). *The American Journal of Tropical Medicine and Hygiene*. 2024;110(1):36-39. <https://doi.org/10.4269/ajtmh.23-0380>

Occurrence of Major Human Extraintestinal Pathogenic *Escherichia coli* Sequence Types Among Diarrheic Pet Animals: A Potential Public Health Threat

Background: Extraintestinal pathogenic *Escherichia coli* (ExPEC) has become a mounting public health concern. The present study was conducted to address the role of diarrheic pet animals as potential reservoirs for major human ExPEC sequence types (STs).

Materials and Methods: Rectal swabs were collected from 145 diarrheic pet animals (75 dogs and 70

cats). Samples were processed for isolation and identification of *E. coli* by culture methods. Afterward, ExPEC isolates were identified on a molecular basis through detection of ExPEC phylogroups (B2 and D) coupled with carriage of two or more of the virulence genes associated with ExPEC (papAH, papC, *sfa/focDE*, *afa/draBC*, *iutA*, and *kpsMT II*). ExPEC STs 131, 73, 69, and 95 were identified among ExPEC isolates by quadruplex PCR and tested for their antimicrobial susceptibility. Eventually, two isolates underwent gene sequencing for the phylogenetic analysis.

Results: Of 145 pet animals, 16 (11%) *E. coli* strains were identified as ExPEC, in which 15 (10.3%) isolates belonged to phylogroup B2 and 1 (0.69%) strain belonged to phylogroup D. The major human ExPEC STs were detected in 13 (9%) isolates, whereas the prevalence rates were 5.3% and 12.9% for dogs and cats, respectively. The isolation rates of ExPEC STs were 4.8%, 2.8%, 0.69%, and 0.69% for ST73, ST131, ST95, and ST69, respectively. Regarding the prevalence of virulence genes among ExPEC STs, the most prevalent ones were papC and *sfa/focDE* (92.3%), followed by papAH (76.9%), *iutA* (53.8%), *afa/draBC* (30.8%), and *kpsMT II* (30.8%). Moreover, 38.5% of the obtained human ExPEC STs were multidrug resistant. The phylogenetic analysis of two ExPEC ST73 gene sequences showed high genetic relatedness to those isolated from humans in different countries. Conclusions: The fecal carriage of major human ExPEC STs among diarrheic dogs and cats poses a potential zoonotic hazard with serious public health implications.

Authors: Alaa A. Shaker, Ahmed Samir, Hala M. Zaher, and Khaled A. Abdel-Moein

Source: (2023). *Vector-Borne and Zoonotic Diseases*, 23:11, 568-575. <https://doi.org/10.1089/vbz.2022.0075>

First report of an outbreak of “Q” fever IN an abattoir from Argentina

In late October 2021, one of the veterinarians and the occupational physician of a bovine and swine abattoir from Entre Ríos Province, Argentina were alerted about workers with atypical pneumonia symptoms, raising suspicious of a possible Q fever outbreak. An outbreak epidemiological investigation was carried out. Analysis was based on the description of the study population, according to gender, age, symptoms, and position within the abattoir, as well as on outbreak epidemic curve and its probable origin. Cases of Q fever in the workers were confirmed by serology. Measurements of the association between the evaluated variables and the risk of exposure were investigated and calculated as attack rates. The outbreak occurred between October and November 2021, symptomatically affecting 11 workers, out of a total exposed

population of 49 individuals. The index case was a 33-year-old male who started with symptoms on 27 October 2021, and the outbreak extended for at least 17 days. Workers in the clean zone of the slaughter floor had a 4.68 times higher risk of contracting Q fever than people located in other areas. Importantly, two pregnant cows were slaughtered a few days before the outbreak began, which could have been the origin of the outbreak. The present study demonstrates the urgent need to consider Q fever when diagnosing abortive diseases of ruminants in Argentina, as well as in zoonotic disease epidemiological surveillance to inform all actors of the health system.

Authors: Natalia Marina Cardillo, Reginaldo Bastos, Araceli García, Rosendo Pérez, Ezequiel García, Susana Lloveras, Carlos Suarez

Source: (2023). *Zoonoses and Public Health*, 70, 674-683. <https://doi.org/10.1111/zph.13077>

Genomic Diversity and Zoonotic Potential of *Brucella neotomae*

After reports in 2017 of *Brucella neotomae* infections among humans in Costa Rica, we sequenced 12 strains isolated from rodents during 1955-1964 from Utah, USA. We observed an exact strain match between the human isolates and 1 Utah isolate. Independent confirmation is required to clarify *B. neotomae* zoonotic potential.

Authors: Gilles Vergnaud, Michel S. Zygmunt, Roland T. Ashford, Adrian M. Whatmore, and Axel Cloeckaert

Source: (2024). *Emerging Infectious Diseases*, 30(1), 155-158. <https://doi.org/10.3201/eid3001.221783>.

occupations, such as health care, K-12 school staff, and agriculture. In almost all occupations investigated, workers of color experienced higher excess mortality than did White workers. Excess mortality in 2021 was greater than in 2020 across groups: occupations, vaccine eligibility tiers, and race/ethnicity.

Conclusions. Although workers in critical occupations experienced greater excess mortality than did others, excess mortality among critical workers varied substantially by occupation and race. **Public Health Implications.** Analysis of mortality across occupations can be used to identify vulnerable populations, prioritize protective interventions for them, and develop targeted worker safety protocols to promote equitable health outcomes.

Authors: Harshada Karnik, Elizabeth Wrigley-Field, Zachary Levin, Yea-Hung Chen, Erik W. Zabel, Marizen Ramirez, and Jonathon P. Leider

Source: (2023). *American Journal of Public Health* 113, no. 11: pp. 1219-1222. <https://doi.org/10.2105/AJPH.2023.307395>

Understanding Fc function for rational vaccine design against pathogens

Antibodies represent the primary correlate of immunity following most clinically approved vaccines. However, their mechanisms of action vary from pathogen to pathogen, ranging from neutralization, to opsonophagocytosis, to cytotoxicity. Antibody functions are regulated both by antigen specificity (Fab domain) and by the interaction of their Fc domain with distinct types of Fc receptors (FcRs) present in immune cells. Increasing evidence highlights the critical nature of Fc:FcR interactions in controlling pathogen spread and limiting the disease state. Moreover, variation in Fc-receptor engagement during the course of infection has been demonstrated across a range of pathogens, and this can be further influenced by prior exposure(s)/immunizations, age, pregnancy, and underlying health conditions. Fc:FcR functional variation occurs at the level of antibody isotype and subclass selection as well as post-translational modification of antibodies that shape Fc:FcR-interactions. These factors collectively support a model whereby the immune system actively harnesses and directs Fc:FcR interactions to fight disease. By defining the precise humoral mechanisms that control infections, as well as understanding how these functions can be actively tuned, it may be possible to open new paths for improving existing or novel vaccines.

Authors: Kathryn A. Bowman, Paulina Kaplonek, Ryan P. McNamara

PUBLIC HEALTH TOPICS

Examining Excess Mortality Among Critical Workers in Minnesota During 2020-2021: An Occupational Analysis

Objectives. To understand the occupational risk associated with COVID-19 among civilian critical workers (aged 16-65 years) in Minnesota. **Methods.** We estimated excess mortality in 2020 to 2021 for critical occupations in different racial groups and vaccine rollout phases using death certificates and occupational employment rates for 2017 to 2021. **Results.** Excess mortality during the COVID-19 pandemic was higher for workers in critical occupations than for noncritical workers. Some critical occupations, such as transportation and logistics, construction, and food service, experienced higher excess mortality than did other critical

Source: (2023). mBio 15:e03036-23.
<https://doi.org/10.1128/mbio.03036-23>

Mentoring across difference and distance: building effective virtual research opportunities for underrepresented minority undergraduate students in biological sciences

The National Summer Undergraduate Research Program (NSURP) is a mentored summer research program in biosciences for undergraduate students from underrepresented backgrounds in science, technology, engineering, and mathematics (STEM). Conducted virtually over 8 weeks every summer starting in 2020, NSURP provides accessible and flexible research experiences to meet the needs of geographically diverse and schedule-constrained students. Drawing from mentee reporting and surveys conducted within the NSURP framework involving over 350 underrepresented minority undergraduate students over three cohorts (2020-2022), matched with mentors, this paper highlights the potential benefits of students participating in virtual mentored research experiences. In addition to increased access to quality research experiences for students who face travel or academic setting constraints, we found that virtual mentoring fosters cross-cultural collaborations, generates novel research questions, and expands professional networks. Moreover, this study emphasizes the role of virtual mentorship opportunities in fostering inclusivity and support for individuals from underrepresented groups in STEM fields. By overcoming barriers to full participation in the scientific community, virtual mentorship programs can create a more equitable and inclusive environment for aspiring researchers. This research contributes to the growing body of literature on the effectiveness and the potential of virtual research programs and mentorship opportunities in broadening participation and breaking down barriers in STEM education and careers.

Authors: Corey J. Knox, Faqryza M. Ab Latif, Natasha R. Cornejo, Michael D. L. Johnson

Source: (2023). mBio 15:e01452-23.
<https://doi.org/10.1128/mbio.01452-23>

Systematic Review of Scales for Measuring Infectious Disease-Related Stigma

Infectious disease outbreaks are associated with substantial stigma, which can have negative effects on affected persons and communities and on outbreak control. Thus, measuring stigma in a standardized and validated manner early in an outbreak is critical to disease control. We reviewed existing scales used to assess stigma during outbreaks. Our findings show that many different scales have been developed, but few have been

used more than once, have been adequately validated, or have been tested in different disease and geographic contexts. We found that scales were usually developed too slowly to be informative early during an outbreak and were published a median of 2 years after the first case of an outbreak. A rigorously developed, transferable stigma scale is needed to assess and direct responses to stigma during infectious disease outbreaks.

Authors: Amy Paterson, Ashleigh Cheyne, Benjamin Jones, Stefan Schilling, Louise Sigfrid, Jeni Stollow, Lina Moses, Piero Olliaro, and Amanda Rojek

Source: (2024). Emerging Infectious Diseases, 30(3), 519-529.
<https://doi.org/10.3201/eid3003.230934>

A One Health perspective: COVID-sniffing dogs can be effective and efficient as public health guardians

Scent-detection dogs have been used for decades to locate drugs, explosives, toxic waste, and more. Scent dogs have been trained to alert for seizures and hypoglycemia, locate cadavers, and screen for viruses, bacterial infections, and numerous cancers. These capable dogs warrant a more significant role in public health protection.

The purpose of this preliminary study was to determine whether dogs could be trained to accurately identify coronavirus disease 2019 (COVID-19) infections in humans. In previously published studies, dogs were trained to identify the scent of COVID-19 in inert samples with high sensitivity and specificity. In this study, 2 dogs were trained to identify the scent in live individuals (vs inert samples, as used in previous studies), a faster and more efficient screening method. These dogs tested out at 94% to 96% positive and negative agreement compared to PCR testing. These results recommend the use of scent dogs for public health applications and warrant investigation for other applications beyond COVID-19.

This study is included as part of the Currents in One Health series. A partner article by Pellin et al, AJVR, January 2024, describes and evaluates the current research on the utilization of trained scent-detection dogs for the detection of disease within human and veterinary patients.

Authors: Patricia J. Ungar, MacKenzie A. Pellin, and Laurie A. Malone

Source: (2024). Journal of the American Veterinary Medical Association, 262(1), 13-16.
<https://doi.org/10.2460/javma.23.10.0550>

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You are receiving this email because you were a member of AAFSPHV who has been removed due to nonpayment of annual dues. [Dues are only \\$50](#) and in some cases you may rejoin for free*.

But we know you won't want to miss your chance to effect changes on a broad scale.

When you are a member of AAFSPHV, you join the ranks of veterinarians and veterinary students from all over the country who maintain an active interest in public health, food safety. You are part of a unique organization that comes together to strive to promote the science and art of public health.

Your experience and input matters.

One of the most important ways that you represent public health and food safety is through the AVMA House of Delegates. Every year AAFSPHV must submit our membership numbers to the AVMA. Without **YOU** we will not meet the 300-member requirement. Please help maintain our influence and impact in the AVMA, and in turn through legislature in our federal government and on policy for U.S. veterinarians.

[Benefits of Membership:](#)

- **Free monthly online CE** in public health via our partnership with the American College of Veterinary Preventive Medicine (ACVPM)
- Access to our The Quarterly, our **newsletter** with association and member news and a compendium of abstracts relating to veterinary public health and food safety
- Supporting an organization with representation on the **AVMA House of Delegates**, Food Safety Advisory and Legislative Advisory committees
- Access to our new website with a CE calendar, forums, and a **jobs board**
- Access to our YouTube and Podcast channels featuring interviews with veterinarians working in public practice, academia, and industry
- Access to our LinkedIn for job postings and discussions with veterinarians across all sectors of public health and food safety
- **Access to your fellow food safety and public health veterinarians** for informational interviews and career advice
- **leadership scholarship** to help cover **travel and expenses** for student members to attend the **AVMA Annual Meeting** and other meetings
- **Lafontaine memorial** scholarship fund for **MPH or public health/food safety MS tuition** for DVM students and graduate veterinarians

But wait, you may qualify for a [free membership!](#)

*We also have a Lifetime Membership option with two enrollment categories:

- An active member in good standing has reached the age of 65 years and has maintained continuous membership in AAFSPHV or its original constituent organizations for a period of 10 years prior to reaching the age of 65.
- An active member who, for reasons of medical or physical disability, is unable to continue gainful practice

Lifetime members continue to receive the same voting rights and privileges as active members. The application for lifetime membership shall be submitted to the executive vice president specifying the basis for the request. Approval requires review and affirmative vote by a majority of the Executive Council. No annual dues are required to maintain Lifetime Membership. **However, continual AVMA membership is required.**

[Please rejoin now!](#)

If you have already renewed and received this letter in error, please contact:
executivevp@aafsphv.org