



EnvDis

D-PhD11-2.1

Responsible Partner: P23 UoS

Contributing partners: PHE



GENERAL INFORMATION

European Joint Programme full title	Promoting One Health in Europe through joint actions on foodborne zoonoses, antimicrobial resistance and emerging microbiological hazards
European Joint Programme acronym	One Health EJP
Funding	This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 773830.
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DOCUMENT MANAGEMENT

Project deliverable	D-PhD11-2.1. Presentation of findings Year 2
Project Acronym	PhD11-FBZ4/5- EnvDis
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Dissemination <i>Author's suggestion to inform the following possible interested parties.</i>	OHEJP WP 1 <input type="checkbox"/> OHEJP WP 2 <input type="checkbox"/> OHEJP WP 3 <input type="checkbox"/> OHEJP WP 4 <input type="checkbox"/> OHEJP WP 5 <input type="checkbox"/> OHEJP WP 6 <input type="checkbox"/> OHEJP WP 7 <input type="checkbox"/> Project Management Team <input checked="" type="checkbox"/> Communication Team <input type="checkbox"/> Scientific Steering Board <input type="checkbox"/> National Stakeholders/Program Owners Committee <input type="checkbox"/> EFSA <input type="checkbox"/> ECDC <input type="checkbox"/> EEA <input type="checkbox"/> EMA <input type="checkbox"/> FAO <input type="checkbox"/> WHO-EU <input type="checkbox"/> OIE <input type="checkbox"/> Other international stakeholder(s): Social Media: Other recipient(s):



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Presentation of findings

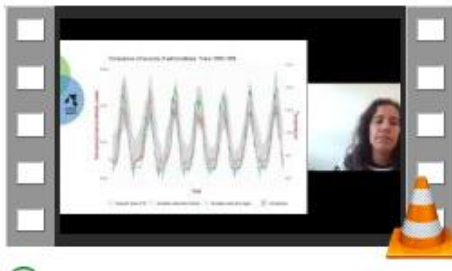
1. University of Surrey Conferences

1.1. Veterinary School Research Symposium. Short oral pre-recorded presentation. 02/07/21. Online



- Oriented to the wide University community, and more especially to the Veterinary Medicine staff and students.
- Presentation of the mechanistic modelling as the method that will be used to tackle the research questions.
- Awarded best short talk of its category.
- Member of the organising committee.

1.2. 3-Minute thesis competition with the Doctoral College 23/06/2021. Online



- Oriented to the University-wide academic community.
- Presentation of PhD project and objectives in a concise and engaging way.



2. OHEJP-related Conferences

2.1. Annual Scientific Meeting 2021. Poster presentation and 3 minute thesis competition. 09-11/06/2021. Online.

ADVANCES IN UNDERSTANDING THE ENVIRONMENTAL DRIVERS OF HUMAN SALMONELLOSIS USING MODELLING

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METHODS

The higher incidence of *Salmonella* infections consistently reported in humans in the summer season suggests the role of the environment as a modulator of infections. Analysing the effect of the main environmental drivers and their interaction over historic salmonellosis data will help to better assess the risk of salmonellosis under different climate scenarios.

RESULTS

The incidence estimates for human salmonellosis capture the seasonality of the reported cases from Public Health England (Fig 1). However, when we look at the superimposed cases through a year, we can observe some discrepancies between predicted and reported cases (Fig 2). This suggests that modelling bacterial growth in eggs and fresh chicken products alone is not sufficient to adequately predict the association between cases of human salmonellosis and climate seasonality. The contribution of other factors needs to be explored.

FIGURE 1: SIMULATION OF THE SEASONAL COVER OF SALMONELLA FROM CHICKEN EGGS

FIGURE 2: DEVELOP OF THE TOTAL ANNUAL SALMONELLOSIS CASES

FUTURE WORK

The model is expected to be improved by adding more factors involved in the multiplication of *Salmonella* in other relevant food (e.g. veggie burgers) with other fundamental variables (e.g. veggie proteins). A link between animal and human health will be investigated by identifying: (i) potential associations with the abundance of relevant livestock at the location of the reported cases, (ii) concurrent diseases in chicken and pigs that could have an effect in the prevalence of annual salmonellosis or increase its shedding.

REFERENCES

- 1) FAO/WHO, Microbiological Risk Assessment 2002, series 2, pp. 2-620.
- 2) Cook, T.V., Journal of Food Protection 2006, 5, pp. 2048-2057.
- 3) Humphrey, T.L. et al., Epidemiology and Infection 1995, 155, pp. 489-500.

This poster is part of the European Joint Programme One Health EJP. This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 773830.

competition. 09-11/06/2021. Online.

- Oriented to the OHEJP consortium as well as open to the general public interested in One Health-related research (Foodborne zoonoses, antimicrobial diseases and emerging threats).
- Presentation of the research question which takes a look at seasonality as a driver of salmonellosis and research objectives as well as the preliminary results.
- Over 750 participants.



3. External Conferences

3.1. 2nd Modelling in Animal Health conference – ModAH2. Pre-recorded presentation. 16/09/2021. Online

Ongoing progress in the UNDERSTANDING OF THE ENVIRONMENTAL DRIVERS OF HUMAN SALMONELLOSIS USING MODELLING

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ModAH2 – Session 3
16/09/21

UNIVERSITY OF SURREY

MODAH2

- Oriented to the modeller community with a link with Animal Health topics.
- Presentation of first modellisation of human salmonellosis based on eggs and temperature, and simulations of disease increase in an $\Delta 2^{\circ}\text{C}$ scenario.
- Around 60 attendants.