PATH-SAFE Newsletter July 2024

PATH-SAFE is a Shared Outcomes Fund (SOF) research programme which aims to pilot a national surveillance programme for forborne diseases and antimicrobial resistance.

Hello!

Welcome to the Pathogen Surveillance in Agriculture, Food and the Environment (PATH-SAFE) programme newsletter for July 2024.

PATH-SAFE is a?4-year, UK wide, cross government programme, led by the FSA and supported by £24m funding from the HMT Shared Outcomes Fund (SOF) and match funding from a range of government and academic delivery partners.? The programme is working to develop a pilot national surveillance network, using the latest DNA-sequencing technology and environmental sampling, to improve the detection, and tracking of foodborne human pathogens and AMR through the whole agri-food system from farm-to-fork.

This newsletter at a glance

- News and key updates
- Connections and outputs
- Spotlight – continuation: project overview
- Progress updates

News and key updates

Programme continuation

In our March 2024 newsletter, we were able to share the good news that HMT had approved the continuation of PATH-SAFE for 24/25. Work in this period will focus on building the programmes achievements so far, taking the pilot approach towards ‘real-world’ deployment, and thus enabling the delivery of improved outcomes and ultimately the intended impacts.

The continuation bid prepared for HMT was developed with the support of the programme delivery partners, which includes colleagues from across government and academia, with more than 50% of the budget required for the year pledged by programme partners across Government and Academia, emphasising the importance this work holds in the biosurveillance community.

The programme and project teams have been hard at work making the necessary arrangements to continue the projects for an additional year. Key activities included completing a number of contract variations and reviewing underpinning financial processes, to support management of the budget for the year.

Alongside the setup of the continuation projects, the programme and project teams have also paused to reflect and review progress and achievements to date. In this, its final year, there will be a focus on dissemination and communication of the achievements, outputs and excellent work of the programme. A number of publications are in development at present and we hope to be able to share those via the website and other channels in the coming weeks and months.

Website

We mentioned in our last newsletter that continuation would see the programme delivery structure change slightly, taking on a more thematic structure to reflect the evolution of the work. Because of this, and with our focus this year on knowledge sharing and dissemination of programme outputs, we will be working to restructure our website over the summer. In the meantime, you can find the new programme themes and read more on progress to date with each in the Progress Updates section.

Evaluation – The final aspects of the first phase of the evaluation were progressed across April and May. These include: wider landscape analysis, gap analysis, and the impact feasibility assessment. The outputs from these aspects will be incorporated into the phase 1 report, finalised at the end of June.

Connections and outputs

Connections

The programme continues to connect with synergistic programmes and initiatives, with the aims of identifying areas of complementarity and sharing learnings:

- PATH-SAFE has been acknowledged as a major success linked to the **AMR National Action Plan**(NAP) 2019 – 2024, specifically from the Animal, Plants, Food and Environment Delivery Programme, with Prof Rick Mumford invited to showcase the achievements of the programme at the AMR NAP board meeting in June. The new AMR National Action Plan (2024 – 2029)was released on 8th May and PATH-SAFE is set to contribute significantly to the new plan also.
- **National Biosurveillance Network**(NBN) - Data sharing is current an area of shared focus for both PATH-SAFE and NBN, and our teams have been working together in recent months to share information to support mutual progress toward programme objectives. Recent discussions between the programme teams have also had a focus on next steps, with both programmes considering how their synergistic objectives may be progressed in the future.
- **Genomics of Animal and Plant Health Disease Centre Phase 2**(GAP-DC2) - The programme teams met in May to review the outputs from the recently concluded GAP-DC2 informatics dash-board project discovery effort, share knowledge and to consider specific opportunities for collaboration across the programmes.

Outputs

As mentioned in the news and key updates section, we will be working to restructure our website over the summer to focus on output dissemination. In the meantime, we wanted to share links for a number of PATH-SAFE publications produced by the team at Cefas:

- Realising a global One Health disease surveillance approach: insights from wastewater and beyond
- Piloting wastewater-based surveillance of norovirus in England
- Development and validation of a duplex RT-qPCR assay for norovirus quantification in wastewater samples
- Long Amplicon Nanopore Sequencing for Dual-Typing RdRp and VP1 Genes of Norovirus Genogroups I and II in Wastewater

Spotlight – continuation: project overviews

Following award of 24/25 continuation funding, the programme workstream structure has evolved from the previous four workstream structure, into the following thematic structure, which reflects the evolution of the work:

National FBD genomic data platform- This work ultimately seeks to address the need for a national level, cross-government genomics capability which can perform analysis of genomic data and associated metadata to facilitate rapid identification of pathogen strains of interest and support elucidation of transmission pathways. With analytics for Salmonella now in place, work this year will focus on the integration of data, as well as the addition of analytics for E.coli and Listeria. (Digital Epidemiology Services).

On-site diagnostics- For the 'real world' deployment of on-site diagnostics, guidelines outlining requirements for application are essential. The focus of the continuation work for this project is to develop such a set of guidelines, in particular for the use of onsite diagnostics for official controls in the food sector. End user insights and perspectives will be sought, and a case study will be developed to illustrate application of the guidelines. Needs from the policy, legislative and accreditation body perspectives will also be considered. (Fera).

AMR Surveillance– Building on novel methods, data, collaborations and knowledge established within PATH-SAFE, five projects will continue under within this theme:

- **AMR.1**– Further explore novel abattoir environment sampling approaches, to establish AMR prevalence baseline data and evidence viability of alternative surveillance methods acting as a proxy for existing, labour intensive, livestock sampling methods.(APHA)
- **AMR.2**– Determine the prevalence of AMR bacteria in Raw Pet Food, focusing on imported material where possible, to inform future AMR surveillance approaches and interventions. (VMD and APHA)
- **AMR.3**– Continue building level wastewater and air surveillance (care home facility and control office) to further evidence their utility and increase understanding of AMR and foodborne pathogens prevalence and transmission. (Public Health Agency Norther Ireland and Queen's University Belfast)
- **AMR.4**– Undertake enhanced genomic characterisation of isolates generated in PATH-SAFE to enhance understanding of AMR dynamics, transmission pathways and mobile genetic elements dissemination. (APHA)
- **AMR.5**– Continued sequencing and analysis of further human and agri-food Campylobacter isolates to determine levels of AMR in Campylobacter isolates circulating in the UK and enhance understanding of AMR gene transmission. (Oxford University).

Foodborne disease (FBD) Surveillance – Also building on methods, data, collaborations and knowledge established within PATH-SAFE, four projects will continue under this theme:

- **FBD.1**– Produce a dataset of foodborne pathogen wastewater surveillance from around the UK, by applying novel methods developed within PATH-SAFE to ongoing UKHSA wastewater sample collections. This dataset can subsequently be compared to data from the IID3 project to determine how effective wastewater surveillance could be for estimating foodborne disease in the population. (FSA, UKHSA, NHS Lothian and Cefas)
- **FBD.2**– Continued application and advancements of methodologies developed in PATH-SAFE to demonstrate the utility of bivalve molluscan shellfish (BMS), a species routinely sampled through pre-existing surveillance frameworks, as a sentinel in a 'sample once test many' approach. (Cefas)
- **FBD.3**– Further explore and quantify pathogenic and AMR released from healthcare facilities into coastal waters, including investigating seasonal patterns and potential wastewater treatment opportunities and barriers. (Bangor University)
- **FBD.4**– Continue sequencing of agri-food related isolates to improve understanding of the transmission of E.coli and Salmonella Typhimurium (and associated AMR) from animals,

the environment, and food, to human infection in Scotland. Further verify the application of machine learning E.coli source attribution models, demonstrate proof of concept for the model in the investigation of foodborne illness and risk management and extend the approach to develop a similar model for Salmonella Typhimurium (STm). (FSS)

Progress updates

National FBD genomic data platform- End user engagement with key government partner organisations restarted in May, with discussions about platform requirements for the new pathogens to be added (E.coli and Listeria) set to continue over the summer. The delivery team (Digital Epidemiology Services) met with the team from CLIMB BIG-DATA, who are providing the secure infrastructure on which the platform has been built, for an in-person FY24/25 planning session at University of Birmingham. An evaluation piece being conducted by Enterobase, to assess existing genome assembly pipelines for E.coli and Listeria with the aim of making a recommendation on which should be implemented in the platform, has also begun and will form a key first step in the development process.

On-site diagnostics- A horizon scanning exercise to look for and assess existing guidelines for the deployment of on-site diagnostic technologies is in progress and will continue to end of June, when a report of the findings will be delivered to the programme. End user engagement is also being planned at present, with a review of end users that have been involved in the project to date to be conducted and further appropriate end users identified and approached as needed. In June, work began on drafting a structure for the guidelines and summarising key points for inclusion.

AMR and FBD surveillance– Project teams across all nine projects have been very busy making the necessary arrangements to continue the projects for an additional year. This has included establishing agreements and contracts, developing and refining project brief (including defining milestones and deliverables), engaging with key internal and external stakeholders, establishing extended / new sampling plans and analysis workflows. A number of projects have already initiated sample collection and data analysis, with others due to start in the coming weeks in line with their project plans.

For further information

For any questions or feedback please contact the team atpathsafe@food.gov.uk.

To sign up to the SERD newsletter which contains PATH-SAFE news and link to our full newsletter please visit Food Standards Agency UK (govdelivery.com)

To keep up to date on PATH-SAFE please visit Pathogen Surveillance in Agriculture, Food and the Environment (PATH-SAFE) programme