PATH-SAFE Programme Evaluation

Webinar presentation

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One Health ambitions for surveillance

- Centralised and interoperable datasets; agriculture, environment, human health
- Improved coordination among important actors
- Enhancing surveillance capabilities to tackle infectious diseases and AMR

The PATH-SAFE programme

Aim is to improve the tracking of foodborne pathogens and antimicrobial resistant (AMR) microbes in all four nations of the UK

How? Developing easier and more accurate surveillance mechanisms, including new technologies to identify pathogens/AMR microbes, novel datasets, and linked up data and analysis to spot trends and hotspots

Large-scale pilot programme: 19.2 million GBP for testing and developing novel mechanisms and tools

Evaluation of PATH-SAFE

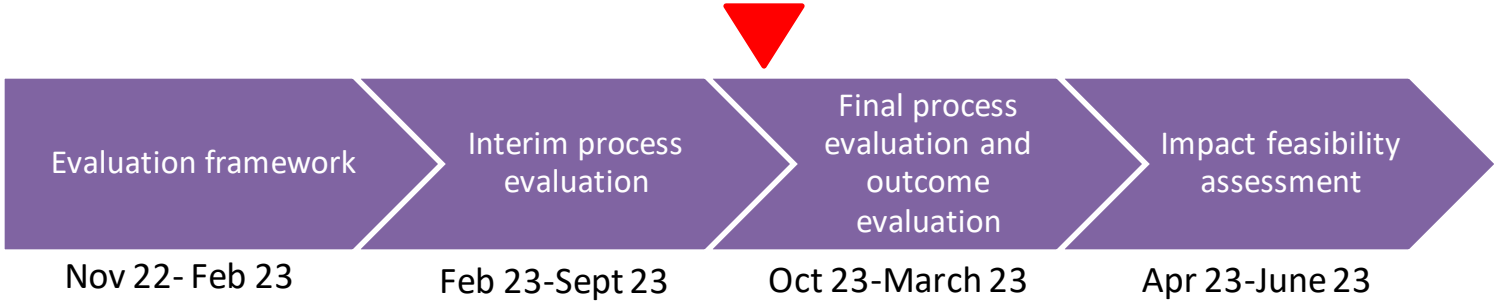
Process evaluation: effectiveness and appropriateness of programme design, governance and implementation mechanisms

Outcome evaluation: what changes/novel aspects of surveillance have been realised

Impact feasibility assessment: how can long-term impacts be measured and what will it take to achieve them


AIM
Pilot a national surveillance system that better monitors and tracks foodborne disease (FBD) and antimicrobial resistance (AMR) in the environment and agri-food system, taking a One Health approach
INPUTS
ACTIVITIES
OUTPUTS
OUTCOMES (2-5 years)
IMPACTS (5-10 years)
Staff and researcher time
Laboratories
Consumables and equipment
Sampling sites and samples
Contractors
WGS technology
Novel and user-friendly tools for analysis and visualisation of microbial genomes
Collaborations with key stakeholders and partners such as DEFRA, UKHSA devolved nations, and academics and access to their expertise and facilities
Funding
WS1
Establish a curated and national FBP (and their AMR) genomic data platform with Salmonella as exemplar pathogen
WS2
Pilot new FBP and AMR surveillance approaches based on regular, multi-location sampling in a range of settings, combined with novel technologies (e.g. whole genome sequencing) inclusive of WS1b
WS3
Map and test new and repurposed technologies for rapid onsite FBP testing in collaboration with end users
WS4
Develop a pilot AMR surveillance system based on mechanisms of AMR spread in the environment
WS1
Functional and scalable data platform that houses sequences of exemplar pathogens and their AMR genes
Data platform is interoperable and can interact with other systems like Enterobase and provide an interrogatable user interface
WS2
AMR and FBP curated sample data captured from multiple sources, and tested using novel analysis techniques
Combined evidence from the piloted FBP and AMR surveillance and modelling approaches
WS3
TRL assessment of rapid onsite FBP testing tools with end users
Evidence on utilising COVID-19 testing technology (LAMP) for FBP detection in wastewater
WS4
AMR surveillance framework and suite of diagnostics monitoring of AMR across the environment within a catchment area
Key stakeholders can more easily share and access data across organisations for rapid identification and tracking of foodborne pathogens and AMR, bringing together multiple data sources
Predictive assessment of risk and threat is enabled when assessing a new isolate through access to a comparative repository of pathogen sequences and metadata
Improved understanding of source attribution and infection threat of FBP and AMR through various environments and international entry points
Additional knowledge of how to expand existing surveillance mechanisms to support a robust national surveillance infrastructure and improved monitoring
Guide the use of novel and existing/repurposed rapid onsite FBP testing technology with improved knowledge of where further development is needed
Informed consideration, based on evidence surfaced, on how proactive, rapid and efficient management can be used to reduce the risk of FBP and AMR introduction into the wider environment and food systems
Key stakeholders and decision makers are brought together to engage with evidence and take forward policy recommendations
Contributing to the One Health ambitions of reducing threats to public health and the ecosystem
Improved monitoring helps track spread of food borne pathogens and AMR across the agri-food system and wider environment
Knowledge and technology is added to the UK's capability to respond to and build resilience to AMR threats
Policy makers make informed, evidence-based decisions which improves efficient use of resources and strengthens cross-government collaboration in FBP and AMR surveillance and management
Detection of pathogen emergence and spread supports development of mitigation strategies to stop increased incidence of foodborne illness
Reduced incidence of foodborne illness
Innovations enable step change in approach to FBP/AMR surveillance and decision making promoting UK's food sector reputation internationally in FBP and AMR surveillance
Reduction of commercial losses from reduced food waste through prevention of FBP contamination
AMR: Antimicrobial resistance
FBP: Foodborne pathogen
TRL: Technology readiness level
WGS: Whole genome sequencing

Evaluation timelime



Interim Process evaluation

Methods and data sources

- Documentary review (project briefs, Board papers and reports)
- Desk research (Google Scholar)
- Interviews (Strategic stakeholders, programme management, delivery teams)

Synthesis and reporting

- Thematic analysis
- Evidence triangulation
- Corroboration with programme management
- Recommendations for wider community

Limitations

- Small groups of stakeholders created challenges in assessing what is a perception held by a minority versus where there is consensus
- Rapidly unfolding activities mean there is a lag in evaluation outputs and findings become dated quickly
- Nature of the programme means that data sources are limited

Interim findings: positive contributions and step change in surveillance

Design and governance

- Appropriate resourcing and fluid allocation across WSs
- Central programme management team facilitation of connections
- Relevant governance mechanisms and forums in place to support knowledge exchange and monitor progress

Processes underpinning surveillance activities

- Data platform interoperability and connectivity assessments
- Comprehensive multi-locations sampling and sequencing with over 80% target for sampling met
- Machine learning algorithms for predictive risk assessments and novel data capture
- TRL based identification and prioritisation of remote sampling and diagnostics

Interim findings: positive contributions and step change in surveillance

End-user and wider engagement/alignment

- Comprehensive mechanisms deployed for user engagement to ensure outputs meet their needs
- Alignment with key government priorities and strategies e.g. AMR NAP, NBN, UKBSS, One Health, etc.
- Various COIs and advisory groups established
- Engagement with industry and multiple four nation initiatives and networks
- Expansive engagement across multiple government departments; UKHSA, DEFRA, FSS, FSA, EA, etc.
- Working across the entire surveillance value chain

Interim findings: learning for improvements

Consistency of engagement

- Varied engagement across WSs driven by individuals bottom-up rather than systematically
- Participants in Boards and advisory groups are not always fully engaged in discussions
- Industry and wider academic engagement is ad-hoc and bottom-up driven by niche areas of work
- Limited utilisation of COIs given broad remit and lack of formal mandate
- Milestone and delivery centric discussions are felt to be disproportionate

Data challenges

- Variable agreements on sharing as well as variable data and meta-data capture
- Commercial sensitivities on wider data sharing
- GDPR concerns on clinical data sharing
- Pervasive and systemic issues persist

Recommendations

Next steps

- **Process evaluation**
  - Updating data with additional document review, interviews, case studies and workshops
  - Assessing extent of output delivery as intended by PATH-SAFE

- **Outcome evaluation**
  - Collecting data through document review, desk research, interviews, case studies and workshops
  - Assessing extent of outcome delivery intended by PATH-SAFE