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Disaster Risk Reduction Related Data Needs and Statistics: A Multisectoral Approach

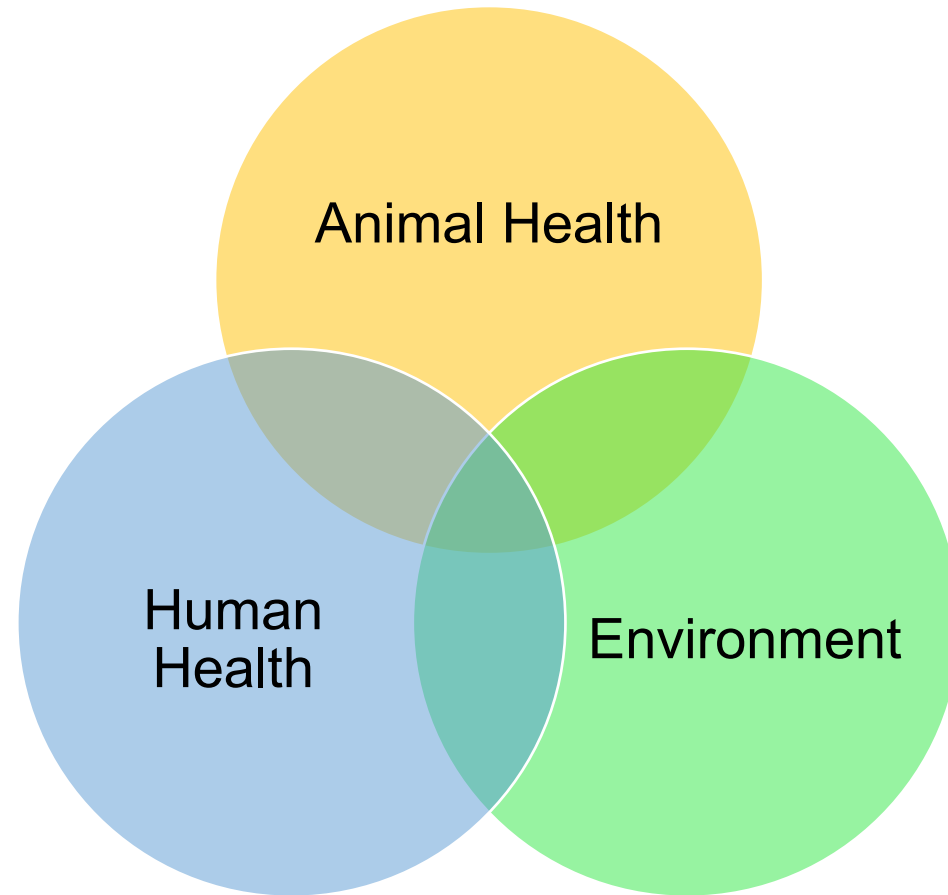
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Tuesday 17 October 2023; Geneva, Switzerland

Palais des Nations, Geneva; Meeting room: VII
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One Health Approach



Multi-Source Data to Develop Official Statistics

One Health is an approach to optimise the health of humans, animals and ecosystems by integrating these fields, rather than keeping them separate. Some 60% of emerging infectious diseases that are reported globally come from animals, both wild and domestic. (WHO)

Important to consider that production of official statistics may not just sit within NSOs – need to maps producers and users – understand context.



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How Environmental and Human Health Statistics Can Work Together: Three Case Studies



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Case Study 1. COVID19 – Human and Waste Water Monitoring

1. COVID19 – Human and Waste Water Monitoring



March 2020: the Office for National Statistics (ONS) and Department for Environment, Food and Rural Affairs (Defra) supported a grant application from a collaborative study between Bangor (Wales), Newcastle (England) and Edinburgh (Scotland) universities to monitor the levels of SARS-CoV-2 in sewage from a range of UK cities.



April 2020: working group was formed by the ONS and Joint Biosecurity Centre (JBC) to work towards a national monitoring system with cross-sectoral working.



https://assets.publishing.service.gov.uk/media/5fc8d6a2e90e07629f7fe1c6/S0908_Wastewater_C19_monitoring_SAGE.pdf



The programme began sampling at 44 wastewater treatment works across England in July 2020. Since then, several pilot studies have been undertaken to determine the effectiveness of wastewater monitoring to identify outbreaks



Recent study published in the journal PLOS One found that wastewater surveillance can be used to detect Covid-19 with high accuracy.



Found that wastewater samples from areas with high rates of Covid-19 infection had significantly higher levels of SARS-CoV-2 genetic material than samples from areas with low rates of infection.



<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0286259>

Case Study 1: Summary



Wastewater surveillance is a technique that can be used to detect and track the spread of infectious diseases, including Covid-19.

Wastewater is a rich source of genetic material from the people who use facilities in locations such as schools



Found that wastewater surveillance can be used to track the spread of new variants of SARS-CoV-2.

Able to identify the Alpha and Delta variants in wastewater samples before these variants were detected in clinical samples.



Wastewater surveillance is a valuable tool for public health officials who are working to prevent the spread of Covid-19.

It is a cost-effective and efficient way to identify outbreaks early and take steps to mitigate them.



Wastewater surveillance will become increasingly important for protecting public health. It is a valuable tool that can be used to identify outbreaks early, track the spread of new variants, and monitor the effectiveness of public health interventions.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10228768/>



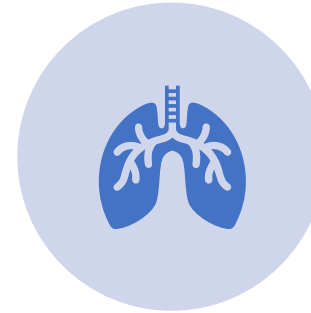
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Case Study 2: Thunderstorm Asthma

2. Thunderstorm Asthma



Since first formally recorded in 1983, there have been instances where **thunderstorm activity has been linked to increases in people reporting symptoms of asthma and seeking medical attention for issues with their breathing.**



We don't fully understand why these events trigger breathing problems, and this makes it very difficult to predict when they are likely to happen.



It is hypothesised that pollen and/or spores are caught in the up-draft and get pulled up into the clouds and storm system. The excess moisture in the clouds enter into the pollen grains and fungal spores causing them to break apart into smaller granules and/or other particles.

Rain then brings the tiny micro-particles down from the clouds to ground level where the micro-particles can be inhaled deep into the lungs, causing breathing problems.



In addition to the meteorological factors described, there are also environmental and individual factors which have been associated with these episodes.

Environmental factors include relatively high levels of pollen and or fungal spores, usually following a period of warm and humid days.

Syndromic Surveillance



“the near real-time collection, analysis, interpretation and dissemination of health-related data in order to enable the early identification of the impact (or absence of impact) of potential health threats that may require public health action”

https://extranet.who.int/kobe_centre/sites/default/files/chapters/Chapter%204.9%20Slideshow.pdf

Real-Time Syndromic Surveillance - England



UKHSA has an internationally renowned syndromic surveillance service



Syndromic surveillance is a tool we use to collect information about the general public's health and to see, in real time (each day), whether there are any diseases or health conditions which are following an unusual trend, like a sudden increase at an unexpected time of year.

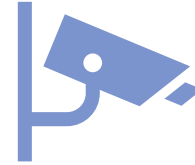
Thunderstorm Asthma - England



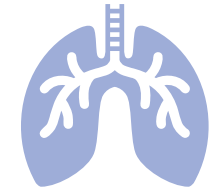
In England, the first recorded episode of thunderstorm asthma occurred in Birmingham in July 1983 and there have been several recorded events across the country since.



A potential episode of thunderstorm asthma was first detected by UKHSA's real-time syndromic surveillance systems July 2012 with further ones reported in June 2021 and June 2023.



Though evidence to prove causation is developing at this time, the increases we reported in our weekly surveillance reports coincided with Met Office yellow alerts for thunderstorms.



The sharp increase in patients presenting to NHS (e.g., NHS 111 and emergency departments) with asthma and difficulty breathing symptoms are therefore likely linked to a combination of high grass pollen levels (as indicated by pollen forecasts and our GP consultations for hay-fever) and the thunderstorm activity that occurred across parts of England around June 11-12 and on June 18.

Case Study 2: Summary



ENVIRONMENT, MET OFFICE
AND HEALTH STATISTICS
TOGETHER FORM A PICTURE.



THAT PICTURE CAN HELP
INFORM PUBLIC HEALTH
ACTION

Case Study 3: Standards for Official Statistics on Climate-Health Interactions

Myer Glickman – Project Supervisor
Megan Green – Principal Statistician
Vijendra Ingole – Principal Data Scientist
Office for National Statistics (ONS)

Kanza Ahmed – Consultant in Global Public Health
UKHSA (UK Health Security Agency)



The project

- 4-year project led by the UK Office for National Statistics in partnership with the UK Health Security Agency and funded by the Wellcome Trust
- Partnership with Rwanda and Ghana
- Primary aim is to define a statistical framework and unified methods for official reporting of climate change impacts on health, at national and local levels
- Will provide tools to operationalise a set of defined indicators consistently and help build expert capacity in government departments focused on climate and health where there is currently a lack of support.



Motivation



Support global providers of climate change statistics

Enable comparable and reliable evidence of impact on health

Support global action and policy change against climate change

Project workstreams

1. Statistical framework

METRICS: Develop a transparent and globally generalisable framework for official statistics on climate change and health containing a series of applicable metrics

2. Online knowledge sharing platform

DATA: Develop a global reporting and knowledge-sharing platform and open-source toolset to facilitate high quality research and official statistics in line with the agreed framework

3. Statistical methods

METHODS: Explore statistical methods to provide estimates of climate-related health risk using real world data sources, including novel and big data, and modelling local impacts



Climate Change Statistics: Climate and Health

Injury and mortality from extreme weather events

Heat-related mortality and morbidity

Cold-related mortality and morbidity

Respiratory Illnesses

Water-borne diseases and other water-related health impacts

Zoonoses

Vector-borne diseases

Malnutrition and food-borne diseases

Non-communicable diseases

Mental and psychosocial health

Impacts on healthcare facilities

Effects on health systems

Multi-Professional and Multi-Sectoral Approach

Timelines

Discovery phase ~ 2022 (started)

- Jointly finalise scope for statistical framework metrics
- Begin to identify and acquire countries climate and health data

Alpha Phase (year 1) ~ 2023

- Jointly develop framework metrics and experimental models, adapting metrics from existing frameworks or developing new models where there are gap
- Assist with feedback from NSOs

Beta Phase (year 2) ~ 2024

- Refine framework and metrics, finalising any additional data and model development
- Launch pilot studies in partner countries to test current Beta draft

Publication (year 3) ~ 2025

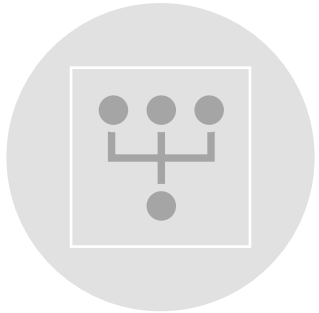
- Public consultations for final revisions
- Communicate the launch of the framework on the UN global platform

Case Study 3: Summary

To fully understand the impact of climate and health – several agencies need to collate their statistics.

Through effective collation of statistics, we can understand the true burden of climate change on health and inform action.

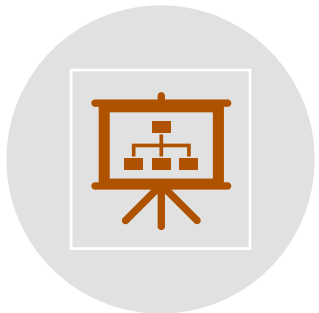
Key Messages



Several agencies can produce official statistics – important to map and work together.



One Health approaches to statistics are important to understand the picture.



Multisectoral, multi-professional approaches are important for developing contextualised statistics for action.



By working together, we use data and statistics to reduce the risk of harm from disasters.



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Thank you!

Additional thanks to teams across UKHSA and UK government agencies engaged in the projects covered in the case studies