

SHORT TERM SCIENTIFIC MISSION (STSM) – SCIENTIFIC REPORT

The STSM applicant submits this report for approval to the STSM coordinator

Action number: TD1404 (Network for Evaluation of One Health, NEOH)

STSM title: Finalising work to describe the methods and metrics used to quantify the environmental dimension of One Health

STSM start and end date: 23/02/2018 to 03/03/2018

Grantee name: Dr. K. Marie McIntyre

PURPOSE OF THE STSM/

The Network for Evaluation of One Health (NEOH) set out to develop a protocol for the evaluation of One Health, including creating clarity of what should be measured as well as the reason why a change in resource use should be valued, in order to measure the added value from a One Health approach. This STSM aimed to finalise a chapter within the best practice guide “Handbook for evaluation of One Health” developed as a part of this NEOH network.

The STSM applicant, McIntyre, and host, McMahon, have led on the development of the chapter which describes the main ecological components of the global ecosystem, which need to be considered when using a One Health approach, including incorporating metrics which both reflect the connectedness of different environments and quantify the complex interactions between humans, domesticated and non-domesticated animals and the environment in which they live. The chapter is integral to the development of the evaluation framework for One Health. It highlights the often under-represented information needed to describe the environmental dimension, when thinking of utilising a One Health perspective. It also adds important structure and detail to metrics which quantify the different aspects of health.

Before the STSM, the work had reached an advanced draft stage, and the chapter had been sent for external review to interested scientists as well as a (previous) EU nation Chief Veterinary Officer/Director General, to gain both a scientific as well as a policy perspective on what had been developed. Subsequent to the comments and suggestions to chapter content and structure which had been received, the STSM provided time for McIntyre and McMahon to sit down together to refine the text and structure of the chapter.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

The STSM took place in Dublin, unfortunately during the week in which ‘the Beast from the East’/Storm Emma impacted Europe. Despite this, McIntyre and McMahon spent Monday 26th and Tuesday 27th together, working on the chapter. In this time they redrafted and added to sections of the chapter text based upon reviewer comments from Dr. Jarlath Nally (USDA), Prof. Jim Scudamore (University of Liverpool), and Dr. Simon Rüegg (University of Zurich); one of the coordinators of the NEOH handbook.

Substantial parts of the chapter were restructured, and significant text was added to chapter sections including: the main introduction, ecosystem services, disease as a modulating factor in vertebrate

populations, metrics to quantify disease in populations, the health status of plant populations, the health status of aquaculture, and the impact of antimicrobial resistance on health status.

In addition, extra topics were added including: Integrated Dynamic Assessments of Disease Transmission, Health Impact Assessment, Impact of Sanitation including Waste on One Health, Quantitative Microbial Risk Assessment, and Material Flow Analysis.

On Wednesday 28th February to Friday 2nd March 2018, Dublin closed down completely due to a Government Directive, including the University and public transport systems. As a result of snowfall and high winds due to the storm, McIntyre and McMahon were not able to physically meet, however they spent the time working on the chapter in remote locations, and spoke by Skype and text throughout these days. They were able to incorporate the suggestions of Prof. Jakob Zinsstag (Swiss Tropical and Public Health Institute; also a coordinator of the NEOH handbook) into the chapter, including adding substantial references and examples of other One Health work.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

A post-review version of the chapter has been obtained in which the structure and content are better tailored towards the NEOH handbook. We are awaiting a few contributions from co-authors, after which the handbook will be forwarded for re-review. At this point, we will revisit the idea of submission of a doctored version of the chapter to the peer-reviewed journal 'Environmental Health Perspectives', for which we have already received a positive pre-submission enquiry response.

FUTURE COLLABORATIONS (if applicable)

We have discussed and would like to turn the chapter structure in to a standardised semi-quantitative framework in which environmental health would be quantified from a One Health perspective. Discussion of this will now need to be undertaken during a future collaborative meeting.

The chapter co-authors will continue to work remotely together to finalise the text within the chapter, including regular Skype conversations between McIntyre and McMahon. In addition, whilst in Dublin, McIntyre and McMahon met with Prof. Seamus Fanning (Full Professor of Food Safety and Zoonoses, UCD) to discuss proposals to work together on projects to characterise and begin to quantify antimicrobial resistance (AMR) spill-over points at the domestic animal/wildlife/human interfaces by bringing together big data epidemiology techniques and genomic sequence material describing AMR; this would map directly on to the One Health approaches described within this handbook chapter.