CLIMADE AFRICA WORKING GROUP MEETING MINUTES – WEEK 25

Host: Centre for Epidemic Response and Innovation (CERI)

Date: October 10, 2023

Time: 12:00 – 13:00 p.m. (SAST)

Facilitators: Prof Tulio de Oliveira, Dr Houriiyah Tegally and Dr Monika Moir

Attendance/ No. of Participants: 63

Start time: 12:01p.m. (SAST)

Purpose of the meeting

Integrated data analytics for arbovirus risk assessment

Agenda Items

1. Welcome
2. Feedback and discussion by Prof Tulio de Oliveira on COP28
3. Presentation on Integrated data analytics for arbovirus risk assessment by Professor Moritz Kramer of the Oxford Martin School, University of Oxford
4. Discussion and feedback

Discussion points and questions

- Welcome and introduction to this week's discussion by Dr Houriiyah Tegally.
- Professor Tulio de Oliveira provided feedback and discussed engagement with policy makers and participation in the Call for action: Climate Change & Infectious Diseases COP28 report (https://climade.health/cop28-report/)
- The call for action - request endorsements and support of CLIMADE for public health response and characterisation of outbreaks
- To increase both impact and research within CLIMADE.
- Dr Houriiyah Tegally to send out a questionnaire to confirm participation in the annual COP conference and report.

- Professor Moritz Kraemer discussed his work on Integrating data analytics for arbovirus risk assessment. He began the presentation by discussing:
    - The change in transportation since 1914 to 2022
    - Change in Landscape
    - Global impact and changes in climate, wealth, and burden of disease

Professor Moritz Kraemer highlighted the following topics:

- Infectious disease outbreaks
- Risk assessments (early outbreak)
    - How fast are epidemics spreading.
    - Case Prediction (modeling)
    - Geographical spread
- Early approaches to modeling – possible tractor
- Theoretical consideration of transmission heterogeneity
    - Spatial heterogeneity
    - Individual heterogeneity
- Empirical observations of spatial structure – mobility data through cell phone movement
- Empirical observation of spatial heterogeneity of measles
- Climate, evolution, and demographics acting together.
- The importance of previous outbreak data and genomic data generation through CLIMADE.
- Integrating modeling approaches
    - Less biased – Environmental data and real-time social data
    - More biased – Case data and Real-time genetic data
- Zika pandemic in Americas – Country wide assessment (PAHO, WHO and CDC)
- Distribution of Aedes Aegypti mosquito species
- Modeling based on geo-statistics.
- Risk maps and risk assessments
- Static distribution of arboviruses
    - Most invasive disease vector.
    - Climatic changes combined with increased movements might trigger rapid expansions.
- Static map *Aedes* mosquitos' specie

- Modern mapping approaches
- How will these vectors spread in the future?
    - Three process that will determine their future spread.
    - Environment (Climatic changes) and demographics (mobility data)
- Past distribution of both vectors - spread through time.
- Global modeling of climatic suitability
    - Co2 and greenhouse emissions
- Models to predict the spread of arboviruses.
- Models and modeling evaluations
    - Distance vs human movement shows the difference as to how the two vectors spread.
- Vector spread under climate changes scenarios.
- Quantifying uncertainty
- Real-time mapping of outbreaks
- Yellow fever outbreak in Angola and DRC in 2015-2016
- Model formulations
    - Covariant
    - Determinants
    - Target of vaccines under different scenarios (prediction model) to inform public health responses and vaccine prioritization.
- How to communicate uncertainty to policy makers.

Adjournment and Closing points.

1. Dr Houriiyah Tegally requested participation in the COP28 report and adjourned the meeting at 13:02 p.m. (SAST).

Next Meeting

Tuesday, October 17, 2023, at 12:00 – 13:00 p.m. (SAST)
To be confirmed by email.

Submitted by: Yajna Ramphal

Approved By: Monika Moir