



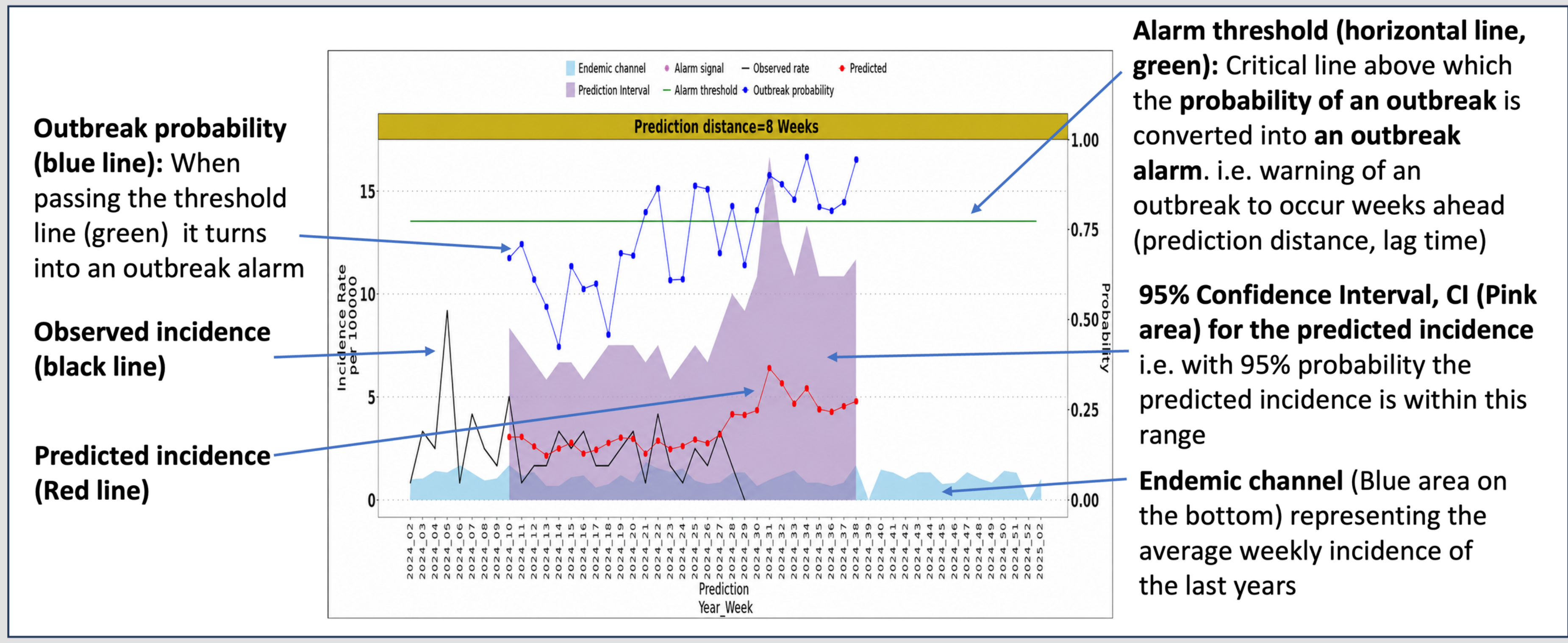
FROM CLIMATE-SENSITIVE DISEASE PREDICTION TO TIMELY OUTBREAK RESPONSE

EWARS-csd

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On behalf of the Epidemic Preparedness and Response Community, Global Health Hub Germany

INTRODUCTION

- Climate-sensitive infectious diseases pose increasing public health challenges.
- Effective vaccines are either unavailable or logistically cumbersome to distribute.
- Demands for shifting from disease detection (which is often late) to prediction (which allows timely action).
- **The Early Warning and Response System for climate-sensitive disease outbreaks (EWARS-csd)** – an organized mechanism to predict ahead of time any out-control disease situation and adequately and systematically coordinates the control and response process – can fill in the gap.



RECOMENDED ACTIONS

Municipality (Sensitivity-PPV)	Observations	Action points	Risk map
Medellin, Antioquia (Low Inc) (85%-100%)	Observed and predicted incidence are close to each other (week 01 is exceptional and can be discarded). Probability prediction starts at week 07. Outbreak probability in the prediction period is below threshold but predicted incidence is above endemic channel.	Intensify routine vector control particularly in hot-spot areas to get the incidence back to the endemic channel.	
Acacias, Meta (Low Inc.) (83%-97%)	Observed and predicted incidence are close to each other. Week 01 can be discarded. Outbreak probability from week 8 above threshold. Predicted incidence above endemic channel but below 40.	Intensify routine vector control particularly in hot-spot areas to get the incidence back to the endemic channel.	

How EWARS-csd supports decision-making

Historical data
(Automated calibration)
epidemiological, demographic, climate, and optional entomological data

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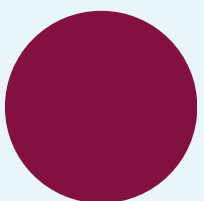
Prediction model & dashboard outputs
dashboard 1 (automated calibration)
dashboard 2 (output generation)

↓

Alarm signal & locally adapted response

- Outbreak response
- Intensified activities
- Routine prevention

(POLICY) RECOMMENDATIONS & LESSONS LEARNED



Implementation pathway

1

Preparation: 3 months

2

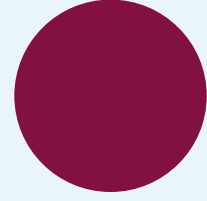
Pilot: 6-8 months

3

Scale-up: 6 months

4

Run and sustain: permanent

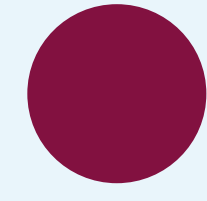


Public health contribution

Integrate automated EWARS-csd into routine surveillance systems.

Translate alarm signals into timely, locally feasible public health action.

Support sustainable outbreak preparedness and response for climate-sensitive diseases.



Recommendation

Weekly disease, climate and demographic data are essential for model calibration and outbreak prediction.

Alerts should be linked to locally adapted communication channels and predefined response plans

Evaluate predictive performance, user satisfaction, timeliness, costs, and implemented response actions.

Sources

1. TDR/WHO. Early Warning and Response System for climate-sensitive diseases (EWARS-csd). World Health Organization. <https://tdr.who.int/activities/ewars-csd>
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3. Hussain-Alkhateeb, L., Rivera-Ramirez, T., Kroeger, A., Gozzer, E., & Runge-Ranzinger, S. (2021). Early warning systems (EWSs) for chikungunya, dengue, malaria, yellow fever, and Zika outbreaks: What is the evidence? A scoping review. PLOS Neglected Tropical Diseases, 15, e0009686
4. Hussain-Alkhateeb, L., Pelull, S., Kroeger, A., Frieler, N., & Merle, C. S. C. (2022). Innovation and collaboration: The EWARS framework for infectious diseases [Policy brief]. Epidemic Preparedness and Response Community, Global Health Hub Germany

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