Establishing an event-based surveillance for emerging viral pathogens in private sector hospitals of Kerala, India, 2023

Raman Swathy, Vaman

India-FETP MPH programme, ICMR-NIE, Chennai, India

Health Services, Kerala, India

26/09/2024

This work was supported by the TEPHINET-Abbott Pandemic Defense Coalition (APDC) Field Epidemiology Training Program (FETP) Fellowship 2022-2023.

WCE

WORLD CONGRESS OF EPIDEMIOLOGY 2024

Event based surveillance (EBS)

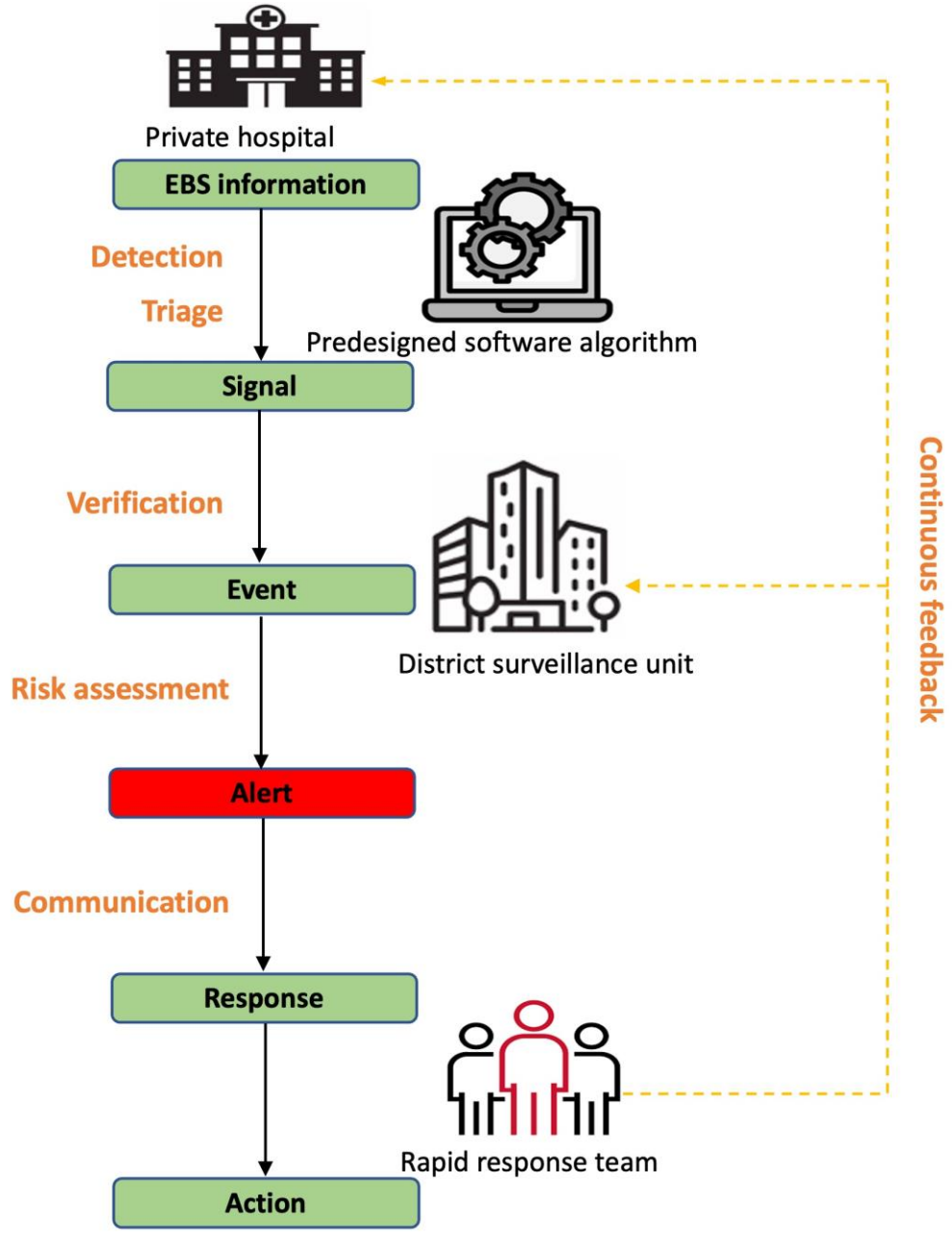
- Current outbreak response- Government facilities
- 65% population access private facilities for routine care
- Establishing EBS in private hospitals may augment current surveillance
- Utility of private sector EBS in India has not been assessed

Objectives

- To pilot an event-based surveillance in selected private sector hospitals in Kerala, India
- To assess the impact on the existing Integrated Disease surveillance and Response (IDSP) early warning system for infectious diseases in Kerala, India

IDSP- Integrated Diseases Surveillance Programme

EBS pathway


Private hospital
EBS information
Detection
Triage
Predesigned software algorithm
Signal
Verification
Event
District surveillance unit
Risk assessment
Alert
Communication
Response
Rapid response team
Action
Continuous feedback

EBS signals

Signal 1

- Two or more cases of the following syndromes within seven days from the same ward or household
- Severe acute respiratory illness (SARI)
- Acute Encephalitis Syndrome (AES)
- Acute hemorrhagic syndrome (AHS)
- Acute febrile illness with rash (AFIR)

Signal 2

- Two or more deaths within seven days from the same ward or household with the above symptoms

Signal 3

- Severe illness requiring admission in health care workers after caring for patients with similar symptoms as above

Signal 4

- Similar illness in any person working with veterinary/ Livestock/ Poultry/ Pig

Signal 5

- Severe, unusual, unexplainable illness, including failure to respond to standard treatment after 5 days

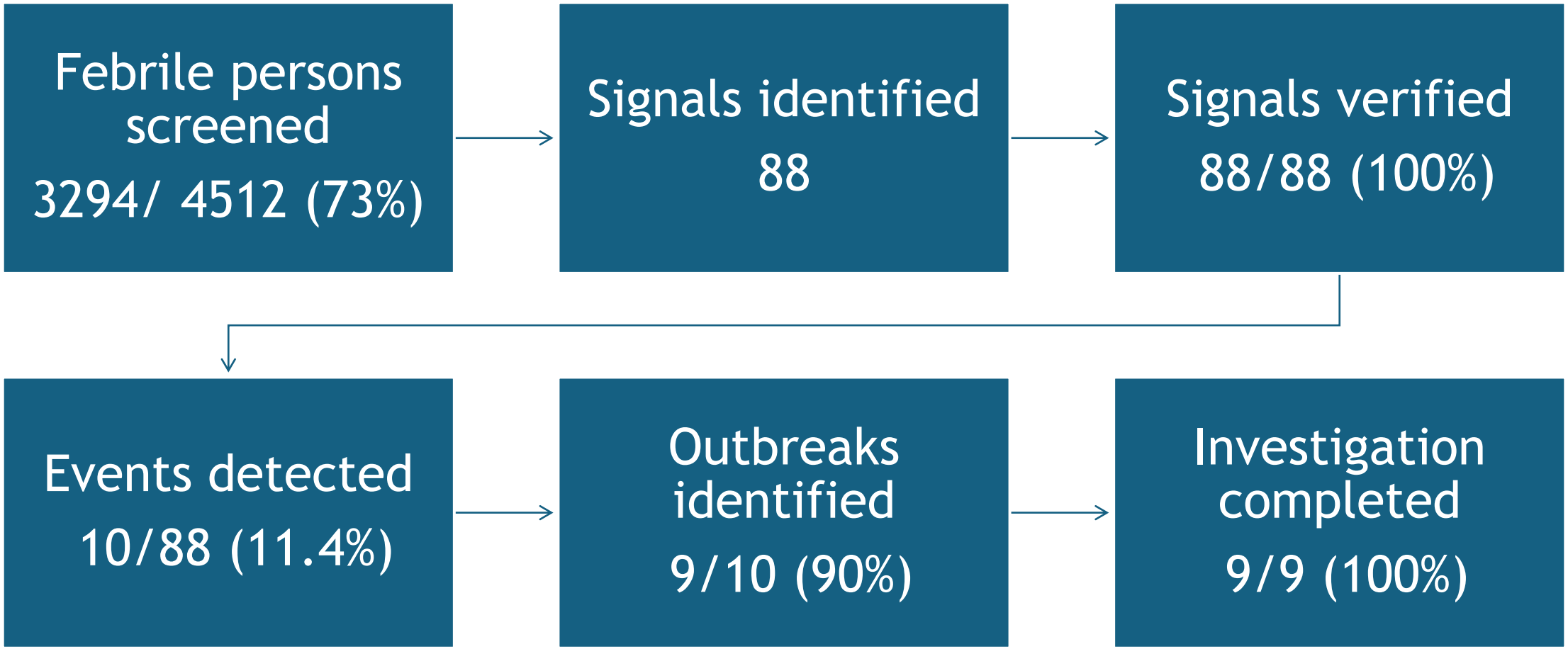
Signal 6

- Atypical organism detected from clinical samples

EBS process

- 6 hospitals
- Admitted patients with fever in medical, pediatric, pulmonology wards & ICU-consecutively enrolled
- Data collected by trained clinical nurses through e-tablet
- Predesigned software algorithm to automatically identify signals real time
- Signals verified by district IDSP team
- Developed testing algorithm and linkage with existing Viral Research Diagnostic Laboratory Network (VRDLN)
- Sample collection and transport as per IDSP standard operating procedure

Results

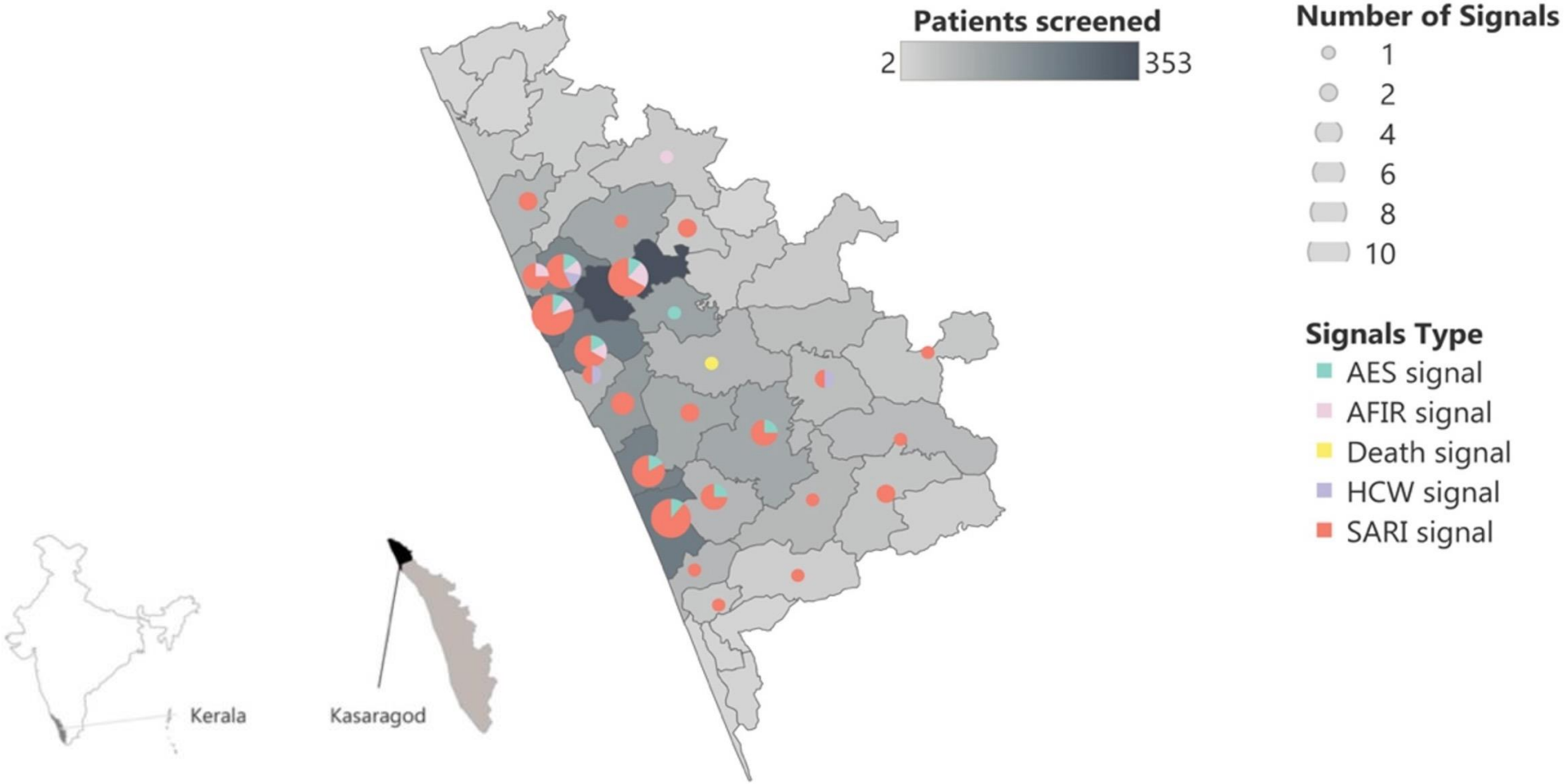

Febrile persons screened
3294/ 4512 (73%)
Signals identified
88
Signals verified
88/88 (100%)
Events detected
10/88 (11.4%)
Outbreaks identified
9/10 (90%)
Investigation completed
9/9 (100%)

EBS signals detected

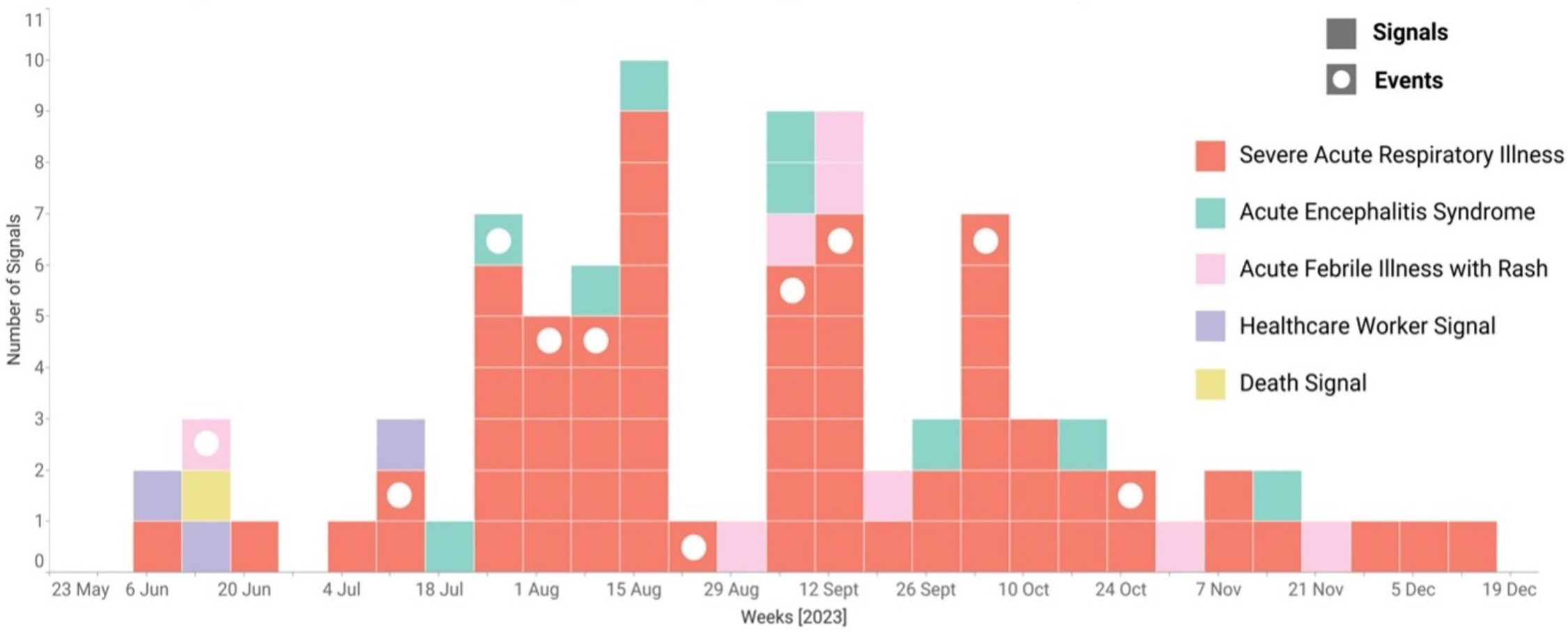
Signal type	n (%)
SARI signal	67 (76)
AES signal	9 (10.3)
AFIR signal	8 (9)
Healthcare worker signal	3 (3.5)
Death signal	1 (1.2)

10 Events identified : SARI 8, AES 1, AFIR 1

Patients screened and signals by local self government units



Timeline of signals and events detected



Events identified by the EBS

Event type	Date EBS picked	Date IBS picked	Case patients	Pathogens detected
AFIR*	12/06/2023	Not detected	11	DENV1, DENV3
SARI*	11/07/2023	13/07/2023	16	H1N1
AES	27/07/2023	27/07/2023	4	Unknown
SARI*	30/07/2023	1/08/2023	22	H1N1, SARSCoV2
SARI*	12/08/2023	Not detected	8	Unknown
SARI*	25/08/2023	Not detected	14	H1N1
SARI*	08/09/2023	10/09/2023	202	H1N1, H3N2
SARI*	12/09/2023	15/09/2023	6	H1N1
SARI*	07/10/2023	Not detected	8	Unknown
SARI*	08/11/2023	Not detected	14	H3N2

*** Outbreaks**

Conclusions

- EBS at private-sector hospitals in Kerala was demonstrated to be feasible
- Identified 88 signals, ten events and nine outbreaks over 7 months
- EBS detected five events (four SARI and one AFIR) not picked by routine IBS
- Integration with IDSP and VRDLN improves reproducibility and the willingness of the public-private partnership
- Consider implementing EBS activities in private sector hospitals in India to improve detection of emerging threats; cost effectiveness needs to be considered

Thank You

Abbott