

Key steps to follow when there is an outbreak

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WHO's Health Emergency Programme

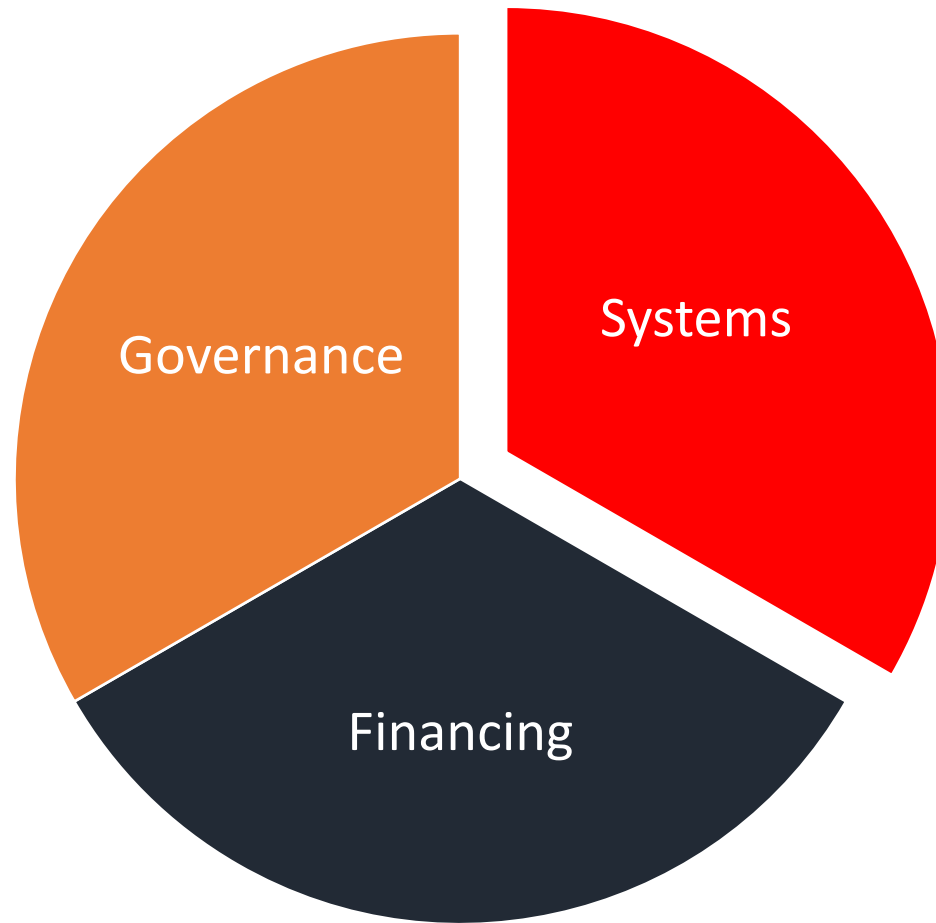
Southeast Asia Regional office, New Delhi

Global architecture for health emergency preparedness , response and resilience (HEPR)

Leadership – Political commitment ,
government support

Regulatory/Legislation framework

Accountability –mechanisms for
monitoring



Capacity : strengthened health
emergency alert and response teams

Coordination : Different aspects of
preparedness and response

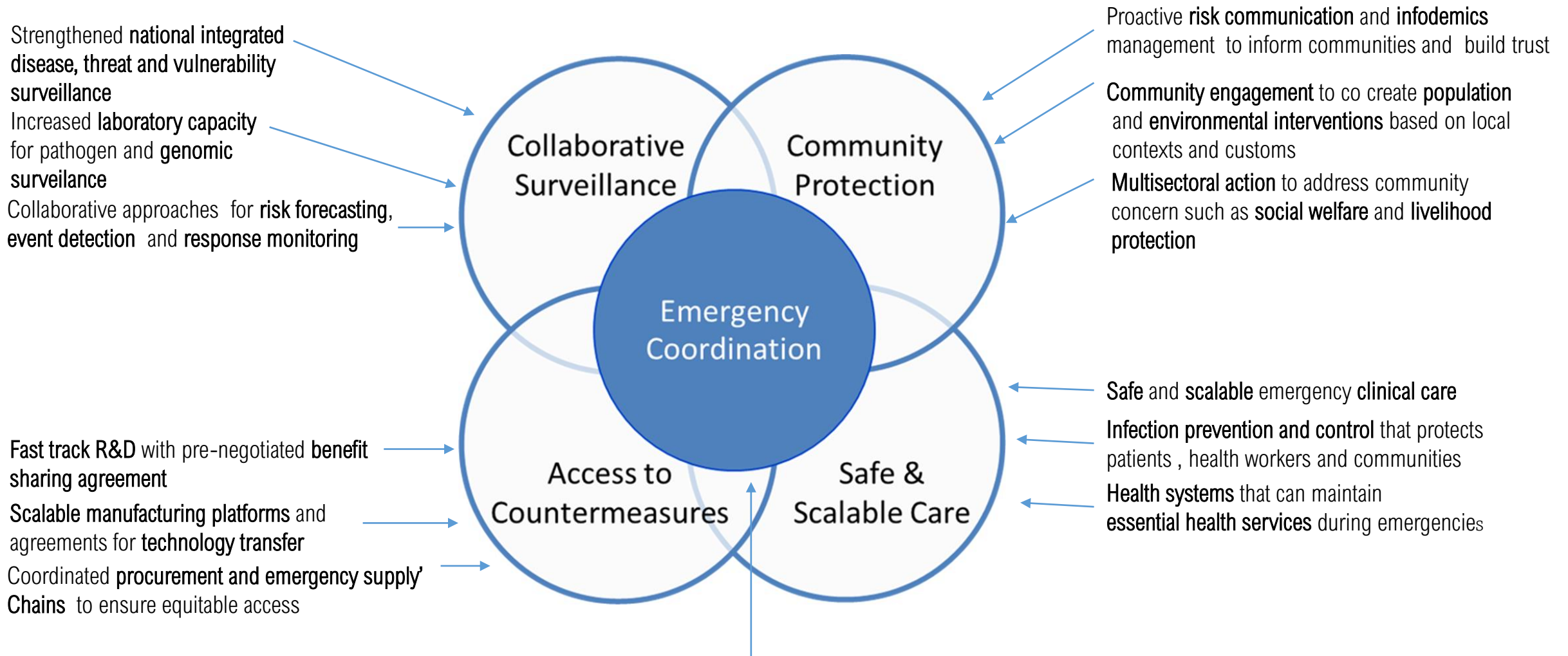
Collaborations : partnerships/
Networks for collaborate surveillance,
community protection, clinical care
and Access to counter measures

Predictable financing for preparedness

Rapidly scalable financing for response

Catalytic gap filling funding

Core subsystems for health emergency preparedness, response and resilience

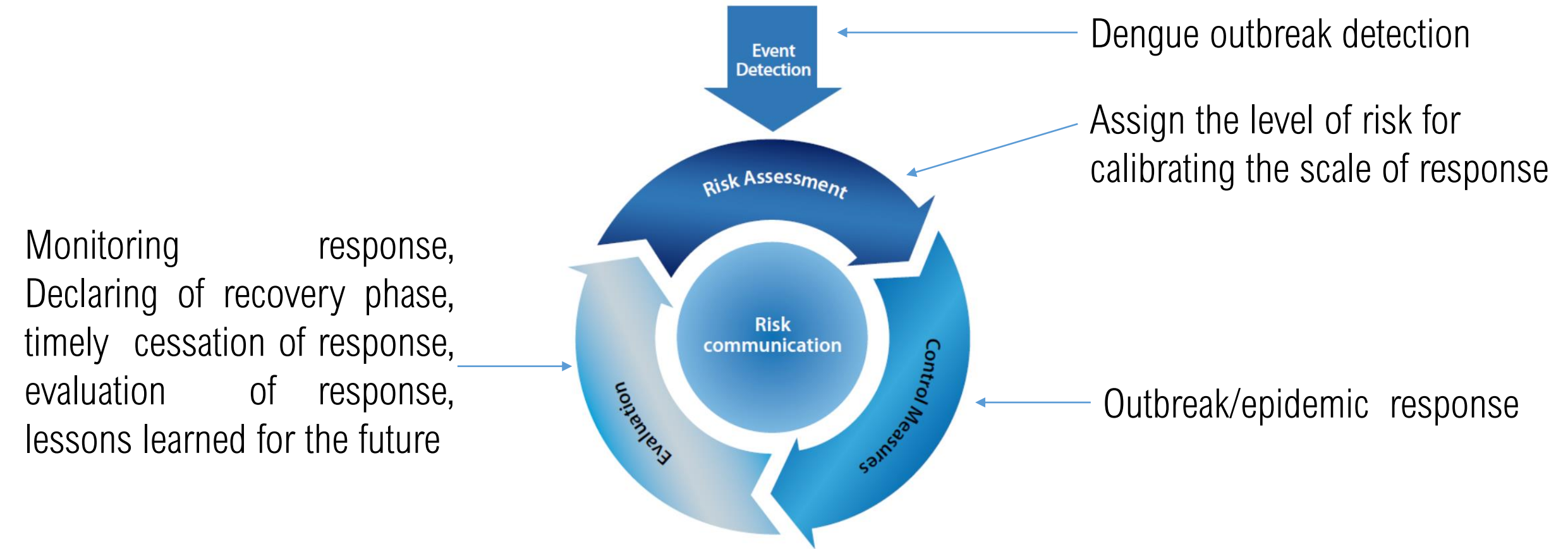


Strengthened interoperable and rapidly deployable health emergency, alert and response teams

Coherent national action plans for preparedness, prevention, risk reduction and operational readiness

Scalable health emergency response coordination through standardized, commonly applied emergency response framework

Risk based approach and risk management cycle



Risk-based Approach: Identifying the highest risks and taking appropriate risk reduction/mitigation measures in accordance with the level of risk.

Risk

- **Risk** : During a specified period (seasonality-determined by various factors)
 - The likelihood of the occurrence of the harm due to a hazard (dengue virus)
 - The likely magnitude of the consequences of the hazard (dengue virus)
- **Risk assessment**
 - A systematic process for gathering, assessing and documenting information to assign a level of risk.
 - Consists of hazard assessment, exposure assessment and context assessment
- **Risk Management**
 - The process of weighing policy options in the light of a risk assessment, selecting and implementing appropriate interventions, including regulatory measures.
 - In an acute public health event (dengue outbreak) - appropriate actions taken to manage and reduce the negative consequences

Outbreak detection and verification

■ **Outbreak/epidemic :**

- The occurrence in a community or region of cases of an illness, specific health-related behavior, or other health-related events clearly in excess of normal expectancy (Porta).

■ **Seasonal peak**

- an “expected increase in cases” that usually occurs during or immediately after the wet season.

■ **Epidemic channel**

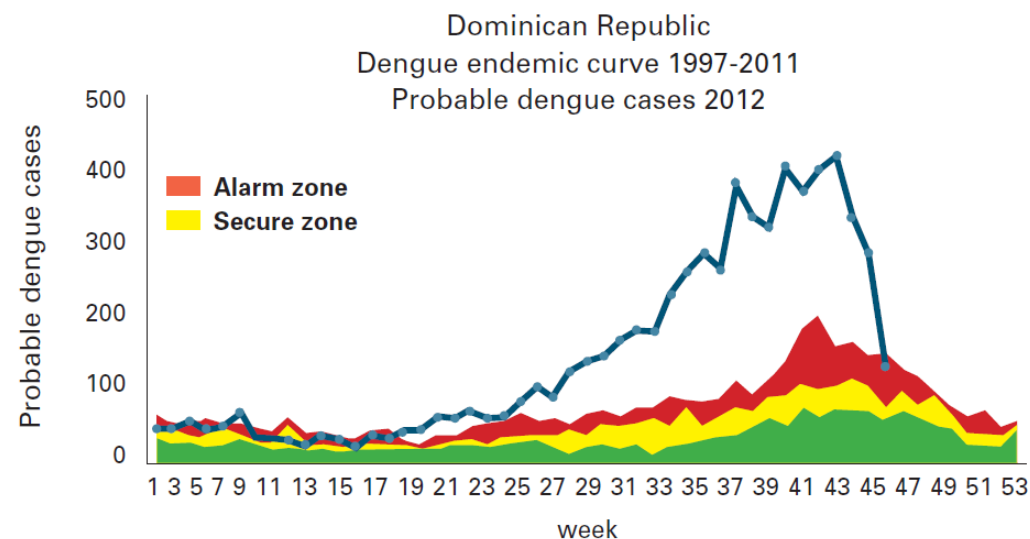
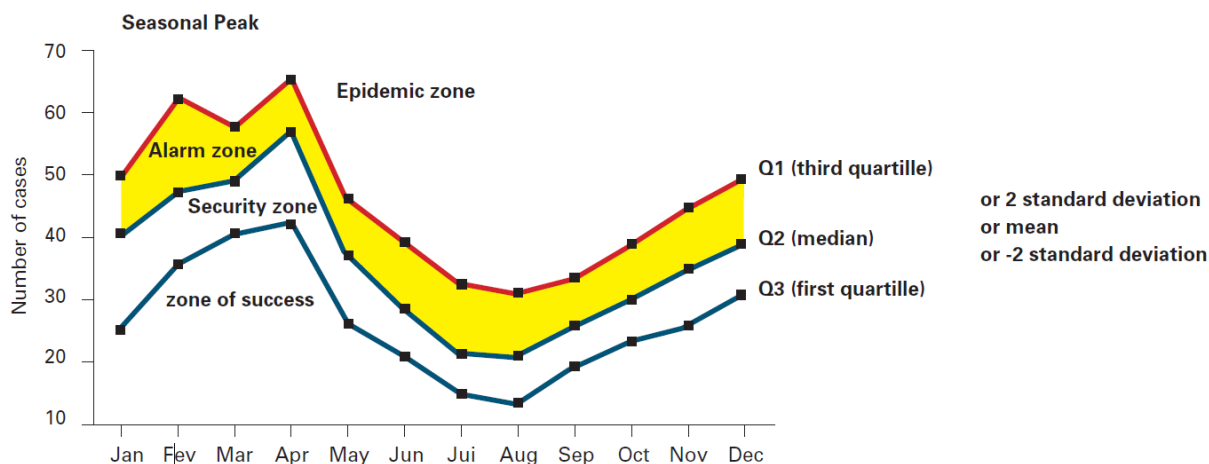
- Used for visualizing the expected case levels with the weekly (or monthly) average number of cases over the last five years

■ **Other outbreak definitions**

- Incidence threshold (Passing a pre-defined threshold level)
 - >10 cases per week in a local area (Sri Lanka); >300 cases per 100000 population at the local level (Brazil)

Outbreak detection using the “epidemic channel”

Fig. 3. Illustration of the seasonal variation of a vector-borne disease like dengue



2 Standard Deviation or quartiles used

The Area between Mean + 2SD – **Alert or Alarm zone** ;

The Area above Mean + 2SD – **Outbreak zone**

Alarm signals

■ Alarm signal :

- When the weekly case numbers enter the “alarm zone” (Excess case reporting)
- Availability of other potential alarm signals
 - Thresholds : based on syndromic surveillance
 - High transmission indicators : ex-climatic indicators
- Syndromic surveillance alarm signals
 - Increase of virus positivity rate
 - Increased malaria negative rate in fever patients in a malaria-endemic area
 - Rate of school absenteeism
 - Syndromic clinical surveillance system (Low specificity)
- Defining levels of transmission indicated by alarm signals to start specific responses against dengue
- Streamline triggers for early or late response



Risk assessment – A process enabling proportionate response to Identified risk

Likelihood	Almost certain					
	Highly likely					
	Likely					
	Unlikely					
	Very unlikely					
		Minimal	Minor	Moderate	Major	Severe
		Consequences				

Process of assigning a level of risk

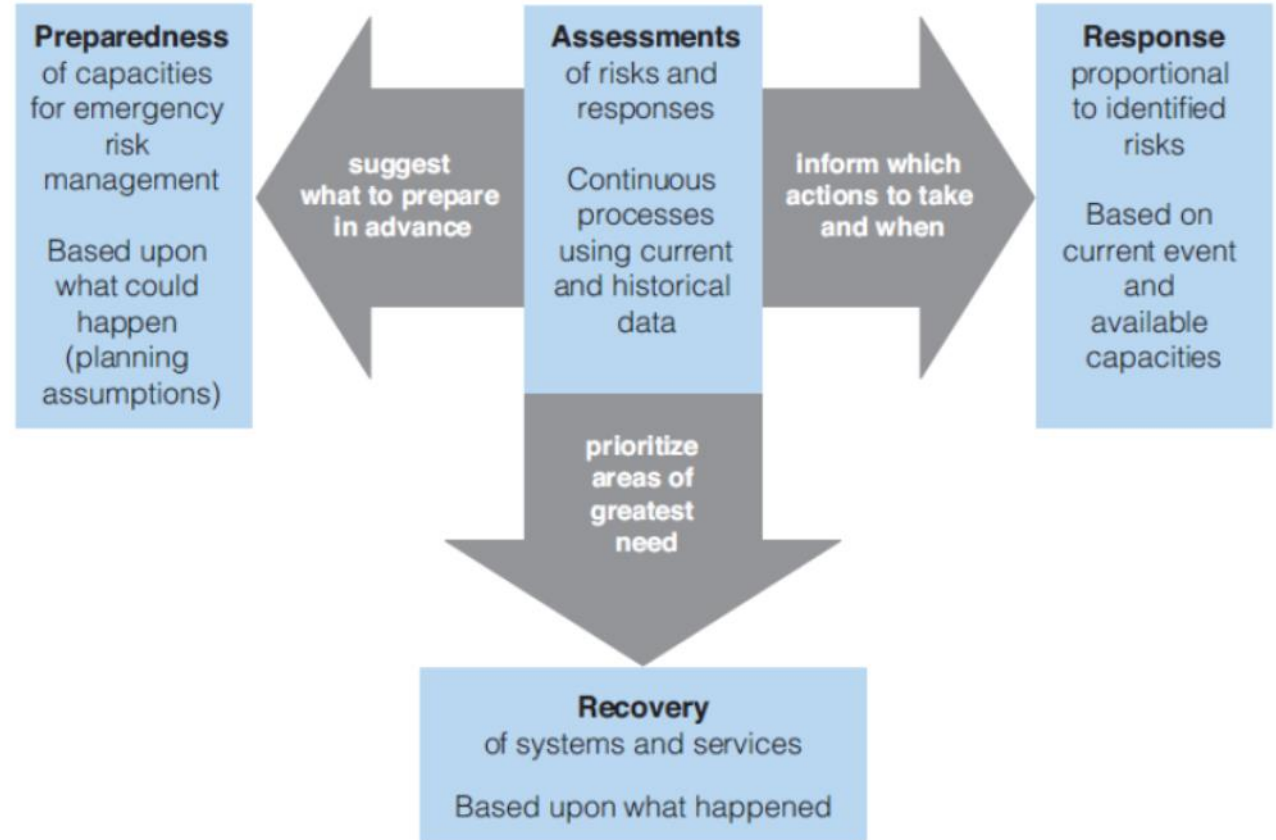
By quantitative method or by comparison with a reference standard or by consensus with members of assessment

Risk matrix is used with combination of the likelihood and estimates of consequences

Categories used in the matrix are broad descriptive definitions

In sequential risk assessment change in risk can be documented

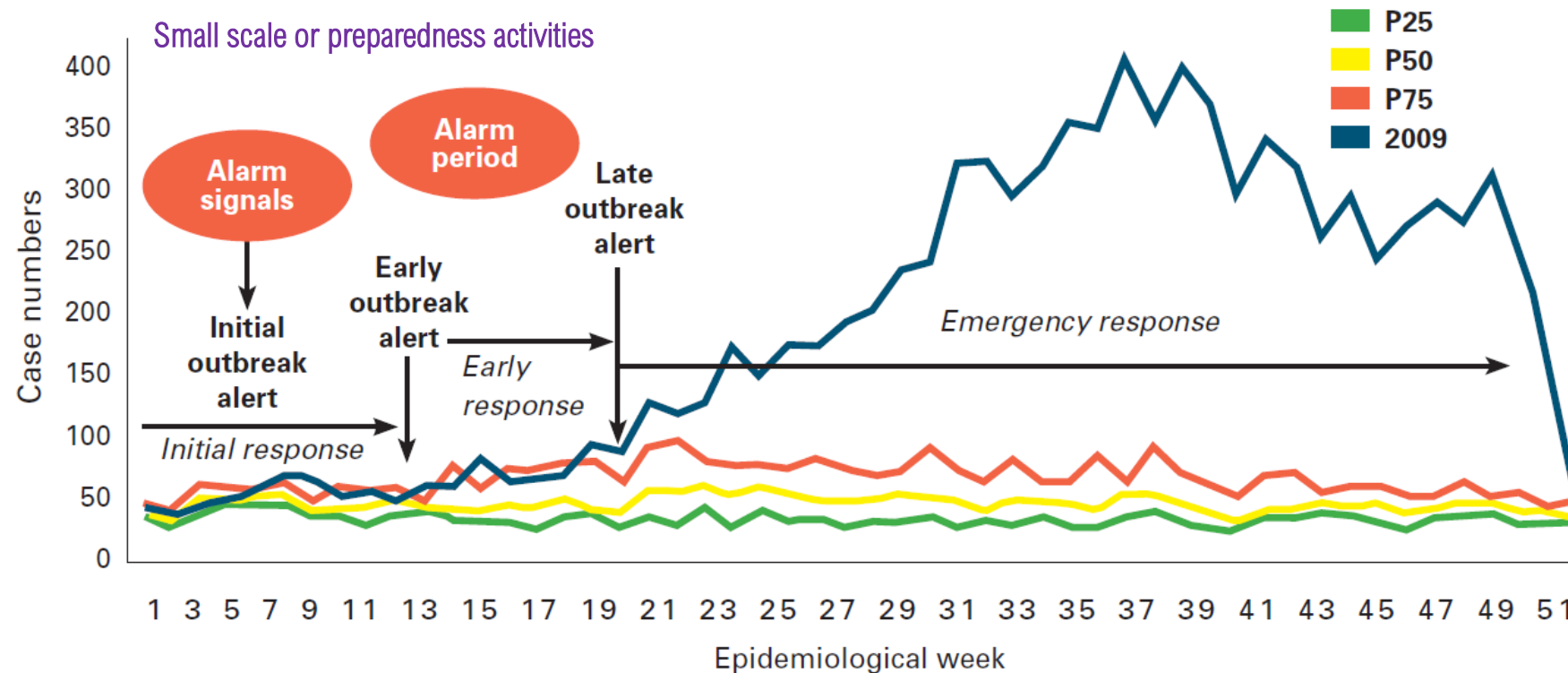
Risk assessment and its relationship with preparedness, response and recovery



Staged outbreak response

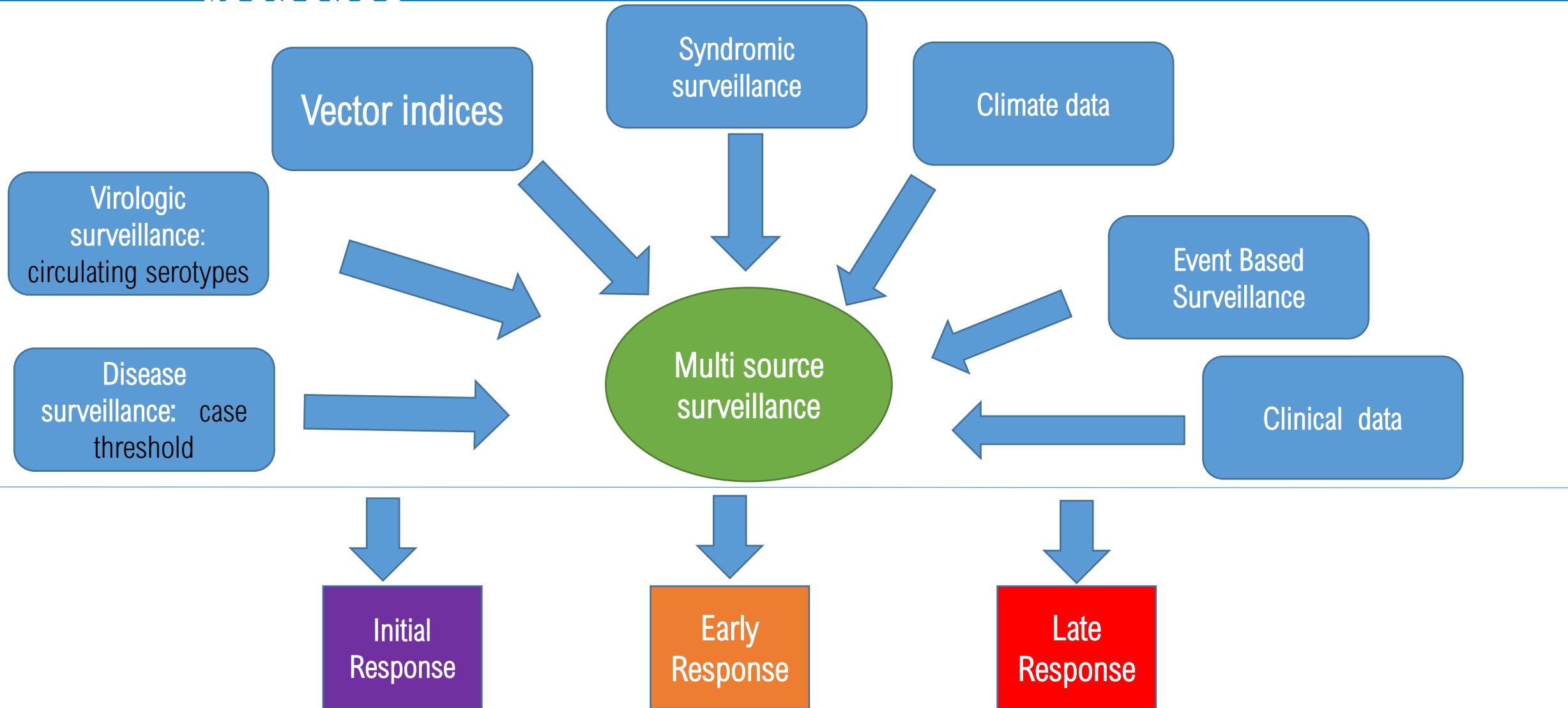
Staged outbreak response : Initiation of response activities according to the level of alert

Fig. 6. Illustration of the different phases in the development of a dengue outbreak and different levels of response

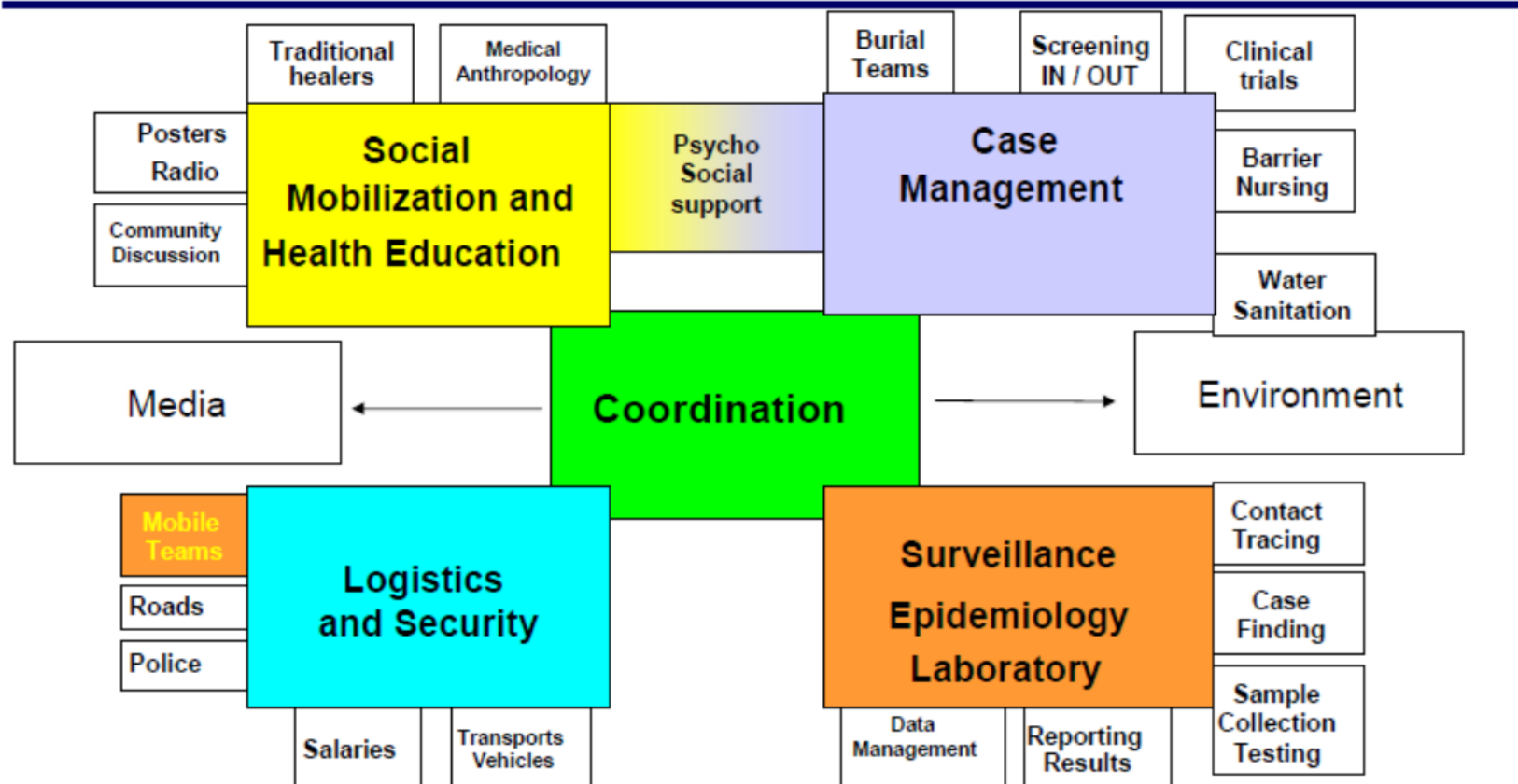


Source: Badurdeen et al. (2013).

Triggers for Staged outbreak response



Epidemic Field Operations - Functions



HEPR- CORE sub-systems – a fitting interconnected system for dengue outbreak response



Dengue outbreak response : staged response activities at three levels of outbreak response



Initial Response

- Outbreak investigations
- Readiness of the contingency plan
- Updated background information
- Prioritization of high-risk areas
- Enhancing surveillance and lab diagnosis
- Convening dengue task force/local dengue committees
- Readiness of activities incl. RCCM materials, training, hospitals
- Human, financial and logistics
- Enhancing routine activities including vector control



Early Response

- Activate channels and Communicate consistent risk messages
- Stakeholder communication
- Outbreak declaration, RCCM and risk reduction activities at community level
- Intensify Vector control by source reduction and fogging in high-risk areas
- Management of health services and activate dengue treatment plan
- Continued surveillance for impact assessment, further alerts , calibrate staged response or end of alert (M&E)



Late response

- Declare and communicate the urgency of the outbreak
- Full implementation of dengue contingency plan
- M&E activities
- Setting rules for stopping outbreak response and reverting to routine activities

Elements of a successful outbreak response

Management of outbreak response

1. Multi disciplinary response teams
2. Public-private cooperation in response teams
3. Public communication (update public, reassure actions are taken, public participation in Dengue risk reduction)
4. M&E of dengue control activities

Management of vector control services

1. Search and destroy teams
2. Community involvement, education of households on elimination and control of breeding sites and importance of neighbourhood fogging
3. Systematic Geographical coverage
4. Collection of data on cases for relating with vector control



Management of health services

1. Training (rapid diagnosis, clinical management)
2. Adequate supplies and logistics
3. Organizing out and in patient management with community management component
4. Reduce transmissions in hospitals
5. Public communication on health care seeking behaviours with special focus on while having warning signs



Good practices leading to effective outbreak management

3. Alert algorithms : based on threshold of reported cases leading to staged alert schemes for action

2. Surveillance system: multi source surveillance system capable of monitoring alarm signals

1. Plans: Availability , implementation, training of contingency plans
Distinguishing routine and epidemic interventions

4. Outbreak definition: .
Contextual, simple, operations focused outbreak definitions identifying early stages of outbreaks and differentiating seasonal and epidemic interventions

5. Managerial capacity :
Financial management; outbreak declaration and investigation, capacity building, risk communication , intersectoral coordination

6. Vector control: community engagement, timely impactful, quality of interventions , routine monitoring of insecticides

Effective outbreak management

7. Clinical services : Hospital network , contingency plans for hospital and home care, timely alert for clinicians, surge plans for staff and logistics, capacity , training, clinical audit/mortality reviews



Summary

Increasing numbers of dengue outbreaks in WHO's SEAR pose a health security threat and call for effective outbreak management.

WHO advocates for risk-based approach for responding to dengue outbreaks using the Emergency Response framework

Timely outbreak detection, risk assessment and appropriate response proportionate to the risk are critical for effective outbreak management and efficiency of limited available resources

Effective outbreak management necessitates early alerts and staged responses against dengue

Countries need to define appropriate triggers for response using multiple surveillance mechanisms

For coordinating such an outbreak response, management of outbreak response, vector control services and management of health services are undisputable

However, effective outbreak response is contingent upon health emergency architecture consisted of (1) governance, (2) scalable financing and more importantly (3) well-established health systems

The component of health systems enables (1) providing alerts, (2) outbreak detections and (3) timely risk-based responses for risk mitigation. Risk communication is a key component of the risk management cycle

Thanks

Further reading : [WHO resources for dengue outbreak](#)



Dengue Fever Prevention Tips



Eliminate
Standing Water



Stay
Indoors



Use Mosquito
Repellents



Use Mosquito
Nets



Wear Protective
Clothing

<https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/dengue-outbreak-toolbox>