

Surveillance for Climate Sensitive Diseases

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Outline

- Introduction
- Climate sensitive diseases
- Disease surveillance systems in India
- Limitations in surveillance for climate-sensitive diseases
- Way forward

Introduction

- Transmission of many infectious diseases affected by climate
- Climate-sensitive diseases
 - Involve pathogens with life cycle outside human hosts
 - Among most important global causes of mortality and morbidity, particularly in developing countries like India
 - Occur as epidemics, triggered by changes in climatic conditions favouring higher transmission rates

Which Diseases Most Climate Sensitive?

High

Sensitivity

Low



- Heat stress
- Effects of storms
- Air pollution effects
- Asthma
- Vector-borne diseases
- Water-borne diseases
- Food-borne diseases

Disease Sensitivity to Climate

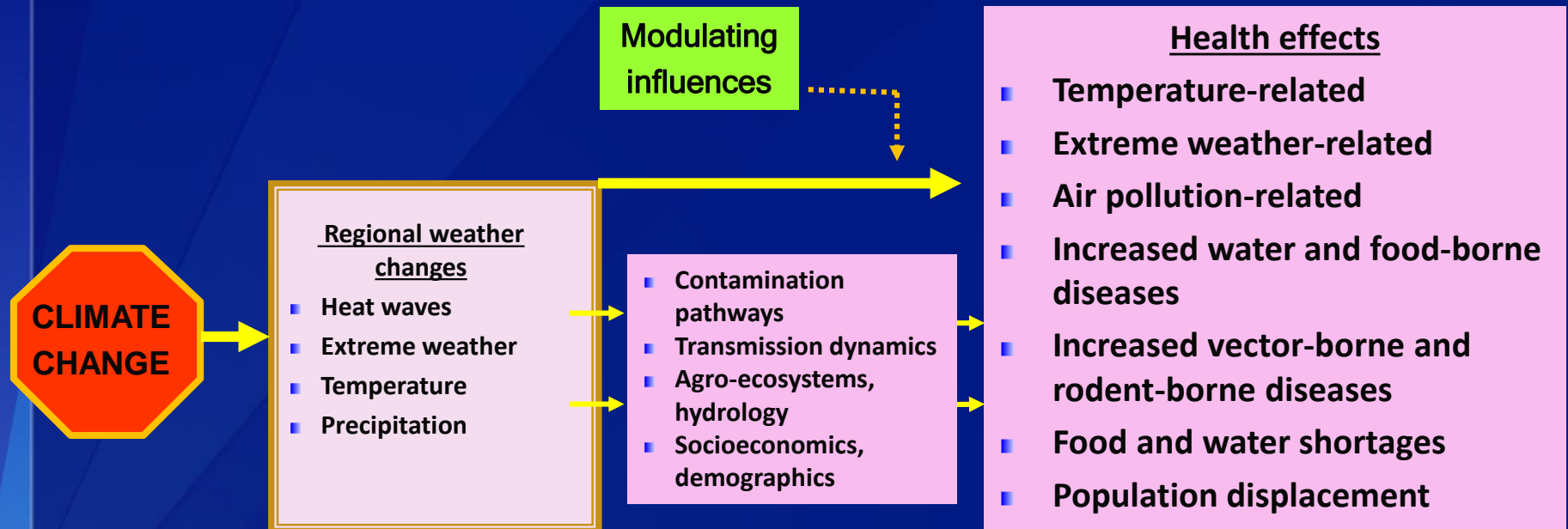
<u>Disease</u>	<u>Transmission</u>	<u>Strength of temporal climate sensitivity</u>
Malaria	Transmitted by the bite of female Anopheles mosquitoes	+++++
Cholera	Food- and water-borne transmission	+++++
Dengue	Transmitted by the bite of female Aedes mosquitoes	+++
Japanese Encephalitis	Transmitted by the bite of female Culex and Aedes mosquitoes	+++
Leishmaniasis	Transmitted by the bite of female phlebotomine sand flies	+++
Meningococcal Meningitis	Air-borne transmission	+++
Diarrhoeal Diseases	Food- and water-borne transmission	++
Lymphatic Filariasis	Transmitted by the bite of female Culex and Anopheles mosquitoes	++
Influenza	Air-borne transmission	++

Source: based on Kuhn, et al., 2005



Mapping Links Between Climate Change and Health

- Most expected impacts will be adverse but some will be beneficial
- May not lead to new health risks, but change frequency or severity of familiar health risks



Source: based on Patz, et al., 2000

Disease Surveillance Systems In India

- Integrated Disease Surveillance Program (IDSP)
- National Vector Borne Disease Control Program (NVBDCP)
- Health Management Information System (HMIS)
- Central Bureau of Health Information (CBHI)
- National Polio Surveillance Project (NPSP)
- Revised National Tuberculosis Control Program (RNTCP)
- National AIDS Control Program (NACP)
- National Program for Prevention and Control of Cancer, Diabetes, CVD and Stroke (NPCDCS)

Target Diseases In IDSP

Regular Weekly Surveillance

- Malaria
- ADD (Cholera)
- Typhoid
- Tuberculosis
- Measles
- Polio
- Plague
- Unusual Syndromes
- State Specific Diseases

- No linkage of IDSP data with climate data

Sentinel Surveillance

- HIV, HBV, HCV
- Accidents
- Water Quality
- Outdoor Air Quality

Community-based Surveys

- NCD Risk factors



Target Diseases In NVBDCP

Diseases under Surveillance

- Malaria
- Filaria
- Dengue
- Chikungunya
- Japanese Encephalitis
- Kala azar

Reporting

- Non transmission season - Monthly
- Transmission season - Weekly
- Outbreak - Daily
- No linkage of NVBDCP data with climate data

Target Diseases In HMIS

Monthly Surveillance

- Maternal health indicators
- Child health indicators
- Child immunization
- Childhood diseases
- RTI/STI cases
- Family planning
- Laboratory testing data
- Stock positions
- Details of deaths reported
- No linkage of HMIS data with climate data

Limitations in Surveillance of Climate-Sensitive Diseases

- Lack of high-quality disease surveillance data
- Lack of high quality meteorological climate data
- No linkage of climate data with disease surveillance data
- Limited data sharing
- Limited opportunities for collaborations

Way Forward

- Strengthen disease surveillance and meteorological data
- Link disease surveillance data with meteorological data
- Strengthen interdisciplinary collaborations
- Promote modelling studies of linked data to help develop an Early Warning Signal system for India

Thank You

