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# MEASURING THE ECONOMIC IMPACT OF CHIKUNGUNYA IN THE CARIBBEAN

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# PRESENTATION OUTLINE

- ▶ Four (4) Categories of Chikungunya Costs:
  1. Government/Public Health Costs
  2. Individual/Household Costs - Snapshot and Simulation for T&T at 10% Prevalence Rate
  3. Business Costs - The Case of Jamaica
  4. National Development/Macroeconomic Costs
- ▶ Cost-of-Illness Study - The Case of Reunion Island
- ▶ Concluding Comments
- ▶ Selected References

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# FOUR (4) CATEGORIES OF CHIKUNGUNYA COSTS

1. Government/Public Health Costs
2. Individual/Household Costs
3. Business Costs
4. National  
Development/Macroeconomic Costs

# GOVERNMENT/PUBLIC HEALTH COSTS

- ▶ **Additional Costs at the National/Community Level:**
  - Health education messages and
  - Equipment/materials/personnel for spraying and fogging activities, public health inspections and screening at ports of entry.
- ▶ **Additional Costs at Public Health Institutions:**
  - Cost of Supplies;
  - Medications;
  - Screening;
  - Laboratory Tests;
  - Hospitalisation and
  - Rehabilitation etc.
- ▶ Ministry of Health of Jamaica - an additional J\$362 million/US\$3.62 million allocated to control and mitigation efforts in the second half of 2014.

# INDIVIDUAL/HOUSEHOLD COSTS (1)

## ▶ Direct Costs:

- Consultation;
- Diagnosis;
- Intravenous Drips;
- Injections;
- Medications;
- Gels/Rubs and
- Physiotherapy.

## ▶ Indirect Costs:

- The cost of travel for treatment and
  - Non-medical items - insect repellent, special foods, supplements, bed nets, 'zappers' and other mosquito control supplies.
- ▶ Difficulty in measuring the intangible cost i.e. immediate and longer term cost of 'pain, suffering, depression, social dislocation and loss of quality of life' of Chikungunya patients.

# INDIVIDUAL/HOUSEHOLD COSTS (2)

CHIKUNGUNYA COST ITEMS	UNIT COST (TT\$)
<b>DOCTOR'S VISITS</b>	
<i>General Practitioner</i>	\$200.00 per visit
<i>Specialist</i>	\$400.00 per visit
<b>LABORATORY TESTS</b>	
<i>Blood Test</i>	\$200.00 per test
<b>PHARMACEUTICALS</b>	
<i>Corticosteroid Injection</i>	\$200.00 per injection
<b>Painkillers</b>	
<i>Panadeine</i>	\$2.50 per tablet
<i>Zerodol-P (Aceclofenac)</i>	\$2.65 per tablet
<i>Flamar-MX</i>	\$1.00 per tablet
<i>Auroflam-MX</i>	\$1.00 per tablet
<i>Nise</i>	\$1.50 per tablet
<b>Muscle Rubs</b>	
<i>Divon Gel (smallest size)</i>	\$13.95 per tube
<i>Arthritis Plus Cream (smallest size)</i>	\$10.95 per tube

# INDIVIDUAL/HOUSEHOLD COSTS (3): *SIMULATION FOR T&T AT 10% PREVALENCE RATE*

- ▶ **Average (Initial) Cost** (consultation with a General Practitioner, Blood Test, 2 week supply of Panadeine painkillers):
  - $TT\$200 + TT\$200 + TT\$250 = TT\$650$
- ▶ **10% Chikungunya Prevalence:**
  - $10\% * 1.3 \text{ million persons} = 130,000 \text{ persons}$
- ▶ **Total Cost:**
  - $130,000 * TT\$650 = TT\$84.5 \text{ million or US\$13.2 million}$



# BUSINESS COSTS (1)

## ▶ Absenteeism Costs:

- Production losses incurred by businesses as a result of absent workers who are sickened with Chikungunya or who are relatives of sickened persons and are forced to stay away from work to provide care.

## ▶ 'Presenteeism' Costs:

- Persons are 'present' but unable to function at full capacity.

## ▶ Additional Business Costs:

- Increases in health insurance premiums resulting from more medical claims.

# BUSINESS COSTS (2): THE CASE OF JAMAICA

- ▶ Jamaica Manufacturers' Association (sample survey of 101 member companies):
  - 81% of companies reported having workers affected by Chikungunya;
  - Affected workers stayed away from work for an average of 4 days;
  - At 8 hours per workday, a total of 35,072 man-hours were lost due to absenteeism.
- ▶ CEO of Private Sector Organisation of Jamaica (PSOJ):
  - More than 13 million man-hours lost due to Chikungunya-related absenteeism;
  - Resulting in J\$6 billion/US\$60 million in financial losses for 2014.

# NATIONAL DEVELOPMENT/MACROECONOMIC COSTS

- ▶ Lost/deferred expected benefits as a result of current programmes and projects having to be curtailed/diluted/displaced because Chikungunya has become the new priority.
- ▶ What are the 'opportunity costs' or 'benefits foregone' because of the negative impact of Chikungunya in terms of the shifting of resources from other development and social pursuits to combat the disease?
- ▶ **These include economic losses such as:**
  - Cancellation of or reduction in tourism visits;
  - Cancellation of social events e.g. entertainment and sporting events and
  - 'Education' losses for sickened school-children.

# COST-OF-ILLNESS STUDY: THE CASE OF REUNION ISLAND

COST CATEGORIES	PROPORTION OF TOTAL COST (%)
<b>DIRECT COSTS</b>	<b><u>60%</u></b>
<i>Consultations</i>	28%
<i>Drugs</i>	12%
<i>Serological Tests</i>	1%
<i>Subtotal</i>	41%
<i>Hospitalizations</i>	19%
<b>INDIRECT COSTS</b>	<b><u>40%</u></b>
<i>Sick Leave/Absenteeism</i>	40%
<b>TOTAL COST</b>	<b><u>100%</u></b>

12

Source: Soumahoro et al (2011).

# CONCLUDING COMMENTS (1)

1. **Gaps in the Management of the Vector:**
  - Repeated Dengue infections in the Caribbean region over the years and
  - Rapid spread of Chikungunya in the region within the last year.
2. **Need to Think Beyond Chikungunya** - positive externalities are high and the economic gains to be derived from integrated vector control, surveillance, prevention and management extend far beyond Chikungunya to other mosquito-related diseases e.g. Dengue, Yellow Fever and Malaria.

## CONCLUDING COMMENTS (2)

- 3. Disproportionate Cost Burden** - Individuals/households and businesses are bearing the brunt of the cost of Chikungunya in the Caribbean.
- 4. Data Challenges** - need for accurate, comprehensive and routine data collection to allow for timely and rigorous cost-benefit analyses as well as other types of studies to be conducted in the region.

# SELECTED REFERENCES

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# THE END

▶ Thank you for your attention.