Surveillance of long-term complications of chikungunya: assessing impact on healthcare delivery and society

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What is known about long-term impact of chikungunya?

- Studies have reported persistence of rheumatic symptoms (e.g., polyarthritis), fatigue, weakness, and depressive symptoms.

- Long-term joint symptoms most frequently described (>25 studies).

- Studies varied by:
  - Type of assessment (e.g., self-administered survey)
  - Dropout rates (higher in longer-term studies)
  - Comparison group (most lacked)
Long-term joint symptoms due to chikungunya virus infection

- Four studies at 1 week to 1 month: median of 28% (range 3-65%) with persistent joint symptoms
- Five studies at 2-6 months: median of 25% (range 10-37%) with persistent symptoms
- Five studies at 1-2 years: median of 43% (range 11-67%) with persistent symptoms
- Two studies at 2-5 years: 6% and 37% with persistent symptoms
Reported risk factors for persistent joint symptoms

- 11 studies assessed persistent symptoms by sex; 4 (36%) found increased rates in women.

- 10 studies assessed persistent symptoms by age; 9 (90%) showed increased severity with increasing age.
  - No clear or common age threshold assessed.

- 4 studies assessed persistent symptoms by pre-existing arthritis; 3 (75%) showed association.
Ways to address potential impact

- Assess rates of long-term symptoms through prospective cohort with lab confirmed disease
  - Assess initial and ongoing symptoms and healthcare utilization at regular intervals
  - Biased as represent those seeking medical care

- Assess rates of long-term symptoms at population level
  - Perform randomized, community level assessment of disease attack rate, long-term symptoms, and healthcare utilization
  - Correlate seropositivity to symptoms
Assessing healthcare needs and impact

- Establish baseline data for number of patients and estimated costs
  - By medical specialty (e.g., rheumatologists, pain specialists)
  - By hospital or clinic records – use census and disease specific codes

- Estimate healthcare needs from similar medical condition (e.g., rheumatoid arthritis)

- Utilize data from prospective cohort to improve estimates of healthcare utilization
Assessing societal cost of disease

- From data collected from prospective cohort, can estimate both direct and indirect costs.
- Direct costs typically include: medical appointments, re-hospitalization or rehabilitation, drugs, specialized medical needs (e.g., walkers).
- Indirect costs typically include death, lost wages, cost for being unable to perform daily tasks, travel to and from appointments.
- Can express as monetary amount, DALYs, QALYs, etc.
Additional studies needed to assess long-term chikungunya-related symptoms

- Large “case-control” studies to more clearly define risk factors for long-term symptoms
  - Females versus males
  - Underlying conditions
  - Genetic (e.g., halotypes)

- Need randomized control studies to assess impact of different treatments and therapies

- Need for basic science research to better describe pathophysiology of long-term symptoms
Lessons learned
Development of toolkit to address public and health care needs

- CDC initially developed chikungunya Fact Sheets
  - General public, healthcare providers, and vector control personnel
- Following spread of disease in Americas and U.S. territories, developed additional sheets
  - Clinical management in dengue endemic areas
  - Atypical and severe manifestation
- Delivered healthcare provider talk to over 800 physicians and public health officials
- Continually adapting website and material to address needs
Links to CDC Fact Sheets and Posters

- General public fact sheet

- Vector control personnel fact sheet
  - [http://www.cdc.gov/chikungunya/pdfs/CHIKV_VectorControl.pdf](http://www.cdc.gov/chikungunya/pdfs/CHIKV_VectorControl.pdf)

- Travel and disease related posters
Sick with CHIKUNGUNYA virus?

Protect yourself and others from mosquito bites during the first week of illness.

- During the first week of illness, chikungunya virus can be found in the blood.
- The virus can be passed from an infected person to a mosquito through mosquito bites.
- An infected mosquito can then transmit the virus to other people.

7 days

- Keep mosquitoes out of your house
- If possible, use the air-conditioner
- Repair window and door screens

For more information: www.cdc.gov/chikungunya
Links to CDC Fact Sheets and Presentations

- Healthcare providers fact sheet

- Healthcare and public health presentation

- Clinical management in dengue endemic areas fact sheet

- Atypical and severe clinical manifestations fact sheet
  - *To be posted in October 2014*
KEEP CALM AND WEAR INSECT REPELLENT

Protect yourself from mosquito bites that spread dengue and chikungunya.

For more information:
www.cdc.gov/dengue
www.cdc.gov/chikungunya/
References

References for longer-term symptoms (1)

References for longer-term symptoms (2)

References for longer-term symptoms (3)