Strategies for Zika Response
A Retrospective Analysis of Population-Level Responses and Infant Health Outcomes
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Background
- The Zika virus is a flavivirus that may be spread to humans by mosquitos, and through vertical transmission, sexual contact, and blood transfusion.
- Zika infection may result in Guillain-Barré syndrome and flu-like symptoms in adults and serious health effects upon congenital infection, including microcephaly, Guillain-Barré syndrome, and other birth defects in infants.
- Objective: This study compares societal costs of interventions used in the 2016 Zika response with lifelong Zika-associated costs and outcomes for infants born to mothers pregnant in Miami-Dade County.

2016 Florida Zika Outbreak
Areas of active transmission in Florida - 2016
Both Local and Travel Cases
Travel Cases Only
Undetermined Cases
Active Zones

Response Strategies and Zika-Related Outcomes
- Strategy 1: Mosquito spraying (ground and aerial) employed for larvicide and adulticide.
- Strategy 2: Limiting movement. Pregnant women were advised to avoid travel to affected areas.
- Strategy 3: Zika Testing. Pregnant women with Zika symptoms were recommended for Zika testing. Testing can inform women who would to terminate a pregnancy and for closer monitoring.
- Strategy 4: Condom provision. Condom use may prevent sexual transmission from infected partners.
- Strategy 5: No action (reference). In the absence of other strategies, the Florida Health Department promotes Zika prevention awareness raising.

Decision Tree and Markov Chain
Step 1: Decision Tree to determine probability of Zika infection under each strategy
Step 2: Markov Chain of Infant Outcomes

Cost-Effectiveness Results
- Mosquito spraying was the most effective but most costly strategy.
- Sensitivity analyses varying the probability of Zika transmission by infected mosquitoes did not change the cost-effectiveness ranking of strategies.
- Cost-effectiveness of limiting movement is dependent upon societal costs, especially for tourism economies less robust to travel restrictions.
- Economic analyses should be considered when selecting prevention strategies for future epidemics.

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