



Multinational Influenza Seasonal Mortality Study (MISMS)

MISMS investigators analyze national and global mortality patterns associated with influenza virus circulation. Through the expanded support of IIU funding, MISMS research has:

- Used vital statistics data from over 15 countries on six continents to elucidate the direct and indirect impact of influenza viruses on pneumonia and chronic co-morbid conditions in multiple age groups and in temperate and tropical environments for both seasonal and pandemic periods.
- Assessed the low effectiveness of vaccines among elderly populations, leading to new strategies to optimize direct and indirect protection for vulnerable populations. MISMS also increased interest in vaccine dosages, multiple doses, and the use of vaccine adjuvants in certain populations.
- Evaluated the global patterns of transmission and evolution for A(H3) and A(H1) influenza across time and space, accounting for shift and drift patterns of influenza in tropical and temperate areas. Findings demonstrate the sink-source ecological role of temperate and tropical regions in virus evolution and transmission.
- Elucidated patterns of antiviral resistance that were not due to antiviral overuse but rather due to the reassortment of resistant gene segments with those coding for more fit hemagglutinin proteins.
- Analyzed age-specific patterns of past pandemics to underscore the importance of virus subtype reemergence and the phenomenon of relative immunity in older populations. These findings have helped establish priorities for control towards younger populations in resource-constrained pandemic settings.
- Ascertained the transmission patterns of influenza viruses associate with geographical climatologic conditions, rather than expected demographic patterns in Brazil; established a prospective cohort influenza study in Central America.

Global map of MISMS research activities and regional workshops (as of September 2011):



Multinational and bilateral collaborations created by MISMS researchers facilitate the collection, collation, and analysis of international influenza data and help disseminate findings through scientific publications, conference presentations, and interactive workshops for investigators and decision-makers. Research findings inform numerous national governments, multilateral organizations, and research stakeholders on interventions for the control of both pandemic and seasonal influenza viruses. To date, data have been acquired from more than 30 countries (representing ~3.2 billion people), resulting in over 100 publications. Workshops explore regionally-relevant issues related to influenza research and highlight the research and surveillance efforts of local collaborators. Additionally, MISMS helps international collaborators share their influenza genomic sequence data in the public domain via the NIH Genbank website. Consequently, the number of influenza viral genome sequences placed in Genbank has increased exponentially from about 500 to over 100,000, greatly expanding our understanding of how these viruses circulate and recombine globally, further demonstrating the value of sharing critical public health data.

Distinguishing features and significant research findings of MISMS include:

- Effective recruitment of international partners who remain well-connected to the USG at little to no cost. These collaborators have been critical in offering essential data and rapid assistance during public health emergencies.
- Extraordinary leveraging of resources, allowing open access to real-time and historical data.
- Rapid communication of findings to key policy makers with parallel dissemination through peer-reviewed literature.
- Active science diplomacy through individual and organizational connections.
- Refined disease burden estimates of the 2009 H1N1 influenza pandemic based on age-structure and life-years lost.

For more information about MISMS, please visit our website: origem.info/misms/