

and polyomavirus KI was most prevalent in adults 25–64 that died, which is the group most affected by HIV. No fatal cases due to the coronaviruses were detected in single infections in any age group. Influenza A and RSV was most detected in fatal cases in the elderly.

Conclusion: Influenza, RSV, hMPV and rhinovirus infection is associated with severe respiratory disease in South Africa if compared to healthy controls. In fatal disease, rhinovirus and RSV may be true pathogens in children however in HIV positive adults the role of viruses such as KI polyomaviruses and Adenovirus needs further investigation.

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Earthquake in Haiti creates cholera epidemic disease and potential economic disaster: Why it is not curable?



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Background: An unwelcome guest after the devastating 2010 earthquake in Haiti was the shocking emergence of cholera. Four months after the earthquake, 215936 cases had been reported and of these 4131 patients had been infected and died. Mathematical models have been developed to predict the spread of cholera across the entire country and to explore the effects of disease-control interventions.

Methods & Materials: Objective: to predict the timing and spread of regional cholera epidemics in Haiti using a mathematical model and to examine the efficacy of disease-controlled interventions.

Design: A mathematical model was employed showing person-to-person within and between the 10 geographic regions of the country. Data was obtained from Haitian hospitalization sources plus the 2009 census data. The model involves both waterborne and person-to-person transmission of cholera in order to predict its spread across the country. The model also attempts to assess the effects of 2 distinct interventions, namely vaccination on a limited scale and the provision of clean water.

Results: The model predicted a rate of transmission between 2.06 to 2.78 and this closely matched empirical observations. The model also suggested an intervention would reduce the risk of cholera spreading by 3%, and this was estimated to be twice the reduction that would result from simply implementing clean water to the same number of individuals. Although the model purports to project the spread of cholera and offer an intervention, it also acknowledges cholera continuing to take a toll on the population for the near future.

Conclusion: Despite limited surveillance data, the model comes close to reported disease patterns. The model is a tool that planners can use to manage the epidemic, gain insights into the behavior of this infectious disease, and provide a useful tool for decision making. The possibility of eradicating cholera is yet to be determined. Should cholera become epidemic in Haiti, it will represent a threat to other countries in the region.

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Management of epidemiological research data on brucella strain collection in KSCQZD with PACS software



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Background: A large 3,000-strain *Brucella* collection is used for epidemiological research in the Kazakh Scientific Center of Quarantine and Zoonotic Diseases (KSCQZD) in Kazakhstan. The tens of thousands-element pool of epidemiological research data support research of genetic variation, clinical signs in sick humans and eco-characteristics of the environment. The large number of received *Brucella* strains and their characteristics requires creation of electronic catalogs with detailed genetic and epidemiological information or each strain with capability to add more characteristics from lab analysis results.

Methods & Materials: Pathogen Asset Control System (PACS) is an electronic system for accounting of the pathogen collection preservation and inventory control (transfer, temporary storage and duplicates destruction) in the KSCQZD research laboratories participating in routine surveillance activities. The system features registration, transfer and destruction of strains performed by a network of 12 workstations in the KSCQZD research laboratories securely linked to PACS database. A few typical templates with 60–70 parameters were created in PACS in order to accurately record all *Brucella* strain characteristics. Number of search templates with 10–20 parameters was also created to accelerate researchers' work.

Results: The electronic system of documenting the microbial collection was installed in the KSCQZD repository of live *Brucella* cultures (3,000 strains) that meets the international and Kazakhstan requirements, uses barcodes and provides control over registration, storage, movement operations (inside KSCQZD laboratories) and transfer of pathogens to other entities. This system helps recording all data received at different stages of epidemiological research, in particular genetic variation determined by species (genus) of the animals sick with brucellosis, particulars of clinic features of the humans sick with brucellosis, and natural and climatic conditions. This data recorded in PACS is particular important in the research of the dangerous diseases such as Brucellosis (overall 60–70 parameters).

Conclusion: PACS use in *Brucella* epidemiological research allowed improving the principles and structure of *Brucella* collection content by enhancing the accounting of strains of the especially dangerous pathogens and introduction of scientific and methodical procedure of documentation and cataloging of *Brucella* strains. PACS provided quick search of the required characteristics for surveillance studies compared to previous paper-based archive.

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