Comparison of sequences of NP gene reflected Val(V)33Ile(I) substitution that have been identified as phylogenetically important position (PIP). M2 protein had human like amino acid Val(V)28. M1 protein showed presence of Ile(I) at position 15 which is a characteristic of HPAI. NS1 protein of tiger isolate and other viruses of 1E lineage showed deletion of 5 amino acids while viruses of 2A lineage had no deletion. Sequence ESEV at C terminus of NS1, characteristic of HPAI viruses, was conserved.

Microscopic examination revealed loss of epithelium from alveolar and bronchiolar walls (thickened by the presence of edema fluid, fibrin and RBCs). In the brain tissue, multiple randomly distributed foci of necrosis were observed. Immunohistochemistry results showed positive signals for antigen expression in both brain and lung tissues. In the lung, virus antigen expression was seen in pneumocytes, bronchiolar and bronchial epithelial cells. In the brain, virus antigen expression was seen in many neurons and glial cells.

**Conclusion:** Molecular characterization of all gene segments revealed characteristics of highly pathogenic influenza A viruses. These results may contribute to identify molecular determinants of virulence and highlight the necessity for continuous surveillance.

http://dx.doi.org/10.1016/j.ijid.2014.03.974

**Type:** Poster Presentation

**Influenza infections in live pig market, Nigeria**

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**Background:** The zoonotic and public health threat pose by emerging and pandemic swine influenza virus presents occupational risk for pig handlers. This is particularly important in live pig markets and trade points in Nigeria where people and pigs comes together in close proximity at weekly fair in a country with over 10 million pigs. This close range intermingling increases aerosol transmission of respiratory pathogens especially influenza at the human-animal interface.

**Methods & Materials:** A cross-section of pigs and pig fair attendants were sampled prospectively at weekly interval for four weeks in January 2013 during the cold dry season. The population include pig owners, pig buyers, pig restrainers and pork vendors who collectively spend between 6 to 10 hours with the animals at market days. Sera samples collected were screened with IDEXX commercial ELISA kit for the detection of influenza A antibody and positive samples were subtyped by haemagglutination Inhibition test using reference antigen and antiseraum supplied in WHO/CDC Influenza surveillance kit.

**Results:** Eighteen out of 144 (12.5%) human sera collected were positive for influenza A antibody. 13 (9.2%) were subtype A/H1 while 5 (3.4%) were A/H3. Ninety four (35%) out of 268 swine sera collected were positive for influenza A antibody. 71 (75.5%) and 23 (6.3%) were positive for A/H1 and A/H3 subtypes respectively by haemagglutination Inhibition test.

Influenza A seroprevalence was higher in pigs than human contacts (p < 0.05) and lower than was previously observed in an intensive commercial piggery in southwest Nigeria. This may be due to lower influenza virus activity at live pig market than in husbandry settings.

**Conclusion:** This study however demonstrates the risk of zoonotic transmission of swine influenza virus in pig fair similar to reports from North America and that reassortment of swine and human influenza virus at this interface poses a significant public health risks requiring occupational health management programme including vaccination.

http://dx.doi.org/10.1016/j.ijid.2014.03.975

**Type:** Poster Presentation

**Bacteraemic Staphylococcus aureus at Charlotte Maxeke Johannesburg Academic Hospital**

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**Background:** S. aureus is a formidable pathogen, implicated in both community-acquired and nosocomial infections. CMJAH is a large tertiary hospital with both paediatric and adult units.

**Methods & Materials:** The case definition included all blood cultures positive for S. aureus (with repeat cultures within 21 days excluded). Patient clinical information was extracted from GERMS-SA enhanced surveillance data. Laboratory data for isolates was captured from Disa (laboratory information system).

**Results:** Over the 12-month period, September 2012- August 2013, 202 cases of bacteraemic S. aureus were identified. Forty two percent (84/202) of these were from paediatrics, with the remainder from adults. Half (101/202) of all the bacteraemias were methicillin-susceptible S. aureus (MSSA) in origin whilst the other half (101/202) were caused by methicillin-resistant S. aureus (MRSA). The proportion of MRSA infections in paediatrics was higher (67%), in comparison to that in adults (40%). In paediatrics, the majority of the MRSA infections were from neonatal and surgical units. Documented risk factors for MRSA in the paediatric patients, in order of decreasing frequency, included prematurity, surgery, burns and underlying cardiac conditions. For the adult patients, the trauma units had a high number of MRSA infections in comparison to the other units. Common MRSA risk factors in the adult patients included surgery, immunosuppressive therapy, metabolic disease and haematological abnormalities.

Bacteraemias without a focus, followed by pneumonia, were the most common clinical diagnoses documented. The overall inpatient mortality rate was 32%. The mortality rate for patients with MRSA infections (37%) was higher than that in patients with MSSA (27%).

The overall rates of resistance to erythromycin, cotrimoxazole, rifampicin and fucidic acid were, 51%, 46%, 16% and 6% respectively. For MRSA isolates, the vancomycin MIC50 and MIC90 was 1
Conclusion: The MRSA rate for bacteraemic *S. aureus* infections at CMJAH is high (50%). There is a substantial burden of *S. aureus*, and MRSA specifically, in the paediatric units. Prematurity in the neonatal population is a common risk factor for MRSA.

http://dx.doi.org/10.1016/j.ijid.2014.03.976

Type: Poster Presentation

Final Abstract Number: 53.018
Session: Infectious Disease Surveillance II
Date: Friday, April 4, 2014
Time: 12:45-14:15
Room: Ballroom

Using syndromic surveillance for early detection of hand-foot-mouth diseases epidemics

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Background: Hand-foot-mouth disease (HFMD) is a common acute viral illness and has become a public health problem. Studies suggested syndromic surveillance has advantage in early detection of outbreaks or epidemics. Here, we are conducting a chief complaint-based syndromic surveillance system to early detect of HFMD epidemics in rural China.

Methods & Materials: Detailed information on outpatients were collected daily and entered into the surveillance system. From 1 April 2012 to 31 March 2013, symptomatic data were collected from 152 health facilities in six towns of two counties of Hubei Province, by the database of the system. Data of HFMD cases were obtained from the China Information System for Disease Control and Prevention for the same period and region. The specific symptomatic data (HFMD-suspected patients, rash + aged ≤5 years old + time interval from onset date to visit date ≤7 d) with the HFMD cases were compared to explore the correlation by daily and weekly. A seven-day moving average was used to minimize the day-of-the-week effect of daily data. Cross-correlation function was used to examine the correlation, and lag periods were set from -14 d to +14 d in daily data and from -7 to +7 weeks in weekly data.

Results: Totally, 240 HFMD-suspected patients and 193 HFMD cases were included in this study. The number of HFMD-suspected patients was moderately correlated with that of HFMD cases both in the daily (r = 0.536; 95% CI: 0.436 to 0.619; P < 0.01) and weekly data (r = 0.567; 95% CI: 0.286 to 0.762; P < 0.01). In addition, a slightly higher correlation was identified by moving symptomatic data backward by several days/weeks. The highest correlation was found when the lag was 9 d in the daily data (r = 0.584, P < 0.01) and one week in the weekly data (r = 0.598, P < 0.01).

Conclusion: The results indicate that symptomatic data might precede of infectious case data for several days in HFMD activity. Longer follow up and more comparisons are needed to evaluate the system comprehensively.

http://dx.doi.org/10.1016/j.ijid.2014.03.977

Epidemiological analysis of mumps from 2008 to 2012 in Qianjiang City, China

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Background: Mumps is an acute infectious disease caused by a paramyxovirus and is usually spread by respiratory droplets. Despite the availability of a mumps vaccine, the epidemics and outbreaks of mumps continue to occur in China every year. Mumps still poses a serious threat to the health of children and susceptible populations. Our aim is to describe the epidemiological characteristics of mumps in Qianjiang City, Hubei Province, which provides scientific basis and suggestions for mumps control.

Methods & Materials: Descriptive epidemiological methods were used for analysis on the incidences and outbreaks of mumps in Qianjiang City from 2008 to 2012 and the data was collected from the China Information System for Disease Control and Prevention (CISDPC).

Results: A total of 2196 mumps cases were reported during this period with the average annual incidence of 46.00/100,000. The cases occurred all the year round, but more than half of them occurred from April to July (69.88%) and another small peak appeared in November. Totally 1307 cases occurred in males, and 889 cases occurred in females with the sex ratio of 1.47:1. The age of cases ranged from 5 months to 67 years old. Up to 73.45% of the total cases occurred in the 3-10 years old group. They were children in primary school, in kindergarten and in community and 62.06% of them were pupils. Four mumps outbreaks with 262 cases were reported in 2010–2012. All the outbreaks occurred in the primary schools and concentrated in the 7-10 age group. Male to female ratio was 1.03:1 and the attack rate was 5.39%. The average reporting time and duration of the epidemic situation were 4 days and 38 days, respectively.

Conclusion: The incidence of mumps is still high in Qianjiang City, China. The major vulnerable population was primary school students. Dynamic surveillance and health education should be enhanced on focus groups in school, kindergarten and community, particularly in peak months so as to take early and comprehensive preventive measures.

http://dx.doi.org/10.1016/j.ijid.2014.03.978