Swine influenza in Africa - Updates, 2015

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Background

- Influenza A/H1N1pdm09 was also detected in pigs in Africa
- First in Cameroon - (Njabo et al., 2012)
- Next in Nigeria - (Meseko et al., 2014)
- Other countries in Africa are Kenya and Togo (Munya et al., 2015; Ducatez et al., 2015)
- These represent earlier reports of swine influenza virus from the continent
Background

• Influenza A/H1N1 pdm09 circulates in the African ecological regions, particularly where pig are intensively reared (reverse zoonoses)
• The potential for interspecies infection and virus reassortment exist
• Not much data on classical influenza in the region
• However, the potential for pandemic swine influenza virus circulation and possible reassortment with epizootic avian influenza in Nigeria and other West African countries need to be monitored
Swine influenza worldwide

- Vincent et al., 2013. Review of Influenza A Virus in Swine Worldwide
Countries with reported influenza H1N1pdm09 in pigs - Africa
Background

- Though Africa as a continent has less number of pigs compared to Asia, Europe and America
- Yet there are over 32 million pigs in the continent (FAO, 2011)
- Nigeria alone accounts for 30% pig production in Africa with over 10 million pigs in intensive and free range husbandry
- Need for more virological and genomic data describing status of classical or pandemic influenza in this region cannot be overemphasized
State of the art...

• Pandemic Influenza A/H1N1pdm09 reported in four countries in Africa with sequence data in the GenBank
• No virological or genomic data on classical swine influenza from Africa as at November 2015
• Known isolates of swine flu are pandemic strains detected in pigs
• These may probably be the source of endemic swine flu strains in the region
• Potential risks of circulation, reassortment of human, avian and swine strains are high
Cross border-trade in pigs (Nigeria, Benin and Togo)
Feral pigs- North Central Nigeria
Live pig market - Kaduna Sate

3/10/2016
Backyard pig production system - Plateau State
Mixed farming - Risk of avian and swine flu reassortment - Lagos
Current surveillance efforts

• Targeted surveillance in live pig markets and abattoirs (nasal swabs, lung tissues and sera)
• Targeted surveillance in major commercial farms and pig settlement centers
• Surveillance in major pig producing States
• Feral pigs surveillance
• Analysis of sera samples collected for ASF surveillance
Findings

• As at March 2015, H1N1pdm09 cases are still being detected in Lagos piggery estate (8 isolates)
• Samples from 7 major pig producing States and major live pig market were positive (15) for swine influenza (matrix gene ... subtyping underway)
• Serology in commercial farms, 303 sera – 29.4% flu A (98.9% pandemic H1, 25.8% H1 and 1.1% H3), Meseko et al., unpublished
Findings...

- Serology at farms and abattoirs -372 sera- (11.8% seroprevalence), Michael et al., 2015
- Serology in Live pig markets-540 sera 10.4 seroprevalence), Ijomanta et al, 2014)
- ELISA detection of H3 antigen in commercial pig farms Adeola et al., 2015
- Backyard pig surveillance - 1400 sera collected
- ASF surveillance sera- 2350 sera collected from 7 States-(analysis ongoing)
Implications

- Evidence of infection and potential reassortment of pandemic influenza with human, swine and avian strains in Africa
- Feral pigs exposure to carcasses from currently circulating H5N1 in West Africa
- Mixed farming (pigs and chickens) in some locations is evident
Challenges

• Government policy focuses more on avian influenza H5N1 surveillance
• The need for more rigorous and sustained surveillance for swine flu
• Virus isolation in less sensitive in eggs for swine flu virus (chicken eggs appeared to be less supportive) need to explore other medium
• Need for effective collaboration with swine flu reference centers for subtype identification and sequencing
Conclusion

• Some countries in Africa (e.g., Nigeria) have been described as zoonotic hotspots (Grace et al., 2012)
• The criteria used include:
  - Large human population
  - Large and diverse livestock population
  - Human-animal interface—intermingling
  - Biosecurity levels—usually poor
• These factors are inherently important in viral evolution and emergence (swine flu)
• Intensification of surveillance and early detection + control is important
• “... better understanding of the key determinants of influenza infection and transmission dynamics...” - Offlu
Thank you for listening - pigs matter matters
References and acknowledgement

- Njabo et al., 2012
- Meseko et al., 2014
- Munya et al., 2015
- Ducatez et al., 2015
- FAOSTAT, 2011
- Vincent et al., 2013
- Michael et al., 2015
- Ijomanta et al., 2015
- Adeola et al., 2015
- Grace et al., 2012

- Executive Director, National Veterinary Research Institute, Vom

- OFFLU Secretariat