



International Journal of
Virology

ISSN 1816-4900



Academic
Journals Inc.

www.academicjournals.com

H1N1 Influenza Epidemic: Public Health Implications for Nigeria

¹T.T. Sar, ²P.T. Aernan and ¹R.S. Houmsou

¹University of Mkar, Mkar, Gboko, Benue State, Nigeria

²University of Agriculture, Makurdi, Benue State, Nigeria

Abstract: This study is a review that explores the Swine influenza pandemic, its public Health implications on Nigeria, assesses the Nigerian health authorities response to the pandemic and proffers recommendations on effective means of prevention and control. In April 2009, an old and ancient infectious agent that has for centuries plagued man, oftentimes with disastrous consequences, resurfaced: this time as the H1N1 influenza virus. It was quickly, though erroneously, tagged the Swine flu. It quickly spread through the world, leaving behind a number of casualties. Its rapid spread forced the World Health Organization to declare it a pandemic by June of 2009. Though much of the current wave of attack has been outside the shores of Nigeria, where in most cases, professional expertise and the resources to deploy in stemming the tide of the pandemic is backed by the political will to fight the pandemic, this cannot be said to be the case in Nigeria, a developing West African country, with a population of about 150 million, mostly poor and illiterate, with poorly developed health system, problems compounded by oftentimes poor government response to emerging world health problems, without the necessary will to effectively combat them. If the Nigerian health authorities do not wake up to their responsibilities and adopt far reaching strategies to contain this and other infectious diseases, the health of the citizens may be at great risk.

Key words: *Orthomyxoviridae*, H1N1 pandemic, control, malnutrition, influenza, developing nation

INTRODUCTION

First was the Severe Acute Respiratory Syndrome (SARS) epidemic in 2003 (Brown, 2009), then the H5N1 avian flu, with high fatality rates and the recent 2009 Swine Influenza A epidemic, which has claimed a number of lives and like the others before it, caused widespread global panic (WHO, 2009b). The panic and mass hysteria surrounding these diseases are mostly fuelled and propelled by over-information, under-information misinformation and ignorance (Kurtz, 2009). In Nigeria, for instance, the populace cannot be said to have been adequately informed about these infections. Even among the elitist scientific community, those not directly concerned or involved in the efforts to manage the situation may be wont to pay little attention to available information.

Influenza is a disease of the respiratory system caused by negative strand RNA viruses of the family *Orthomyxoviridae*, which comprises four groups: influenza A, B, C and Thogoto viruses. Influenza A causes the most serious infections, followed by type B. Type C does not cause epidemics and is restricted to common-cold-like infections. They mutate with rapidity and apart from HIV, are the only other group of viruses that mutate with great frequency (Willey *et al.*, 2008).

Corresponding Author: T.T. Sar, University of Mkar, Mkar, Gboko, Benue State, Nigeria

Influenza A infections are responsible for the majority of clinical influenza infections. They are widely distributed in a variety of mammal and avian hosts and are further classified into subtypes (strains) based on surface membrane glycoproteins; hemagglutinin (HA) and neuraminidase (NA). 16 HA and 9 NA antigenic forms are known, which can combine in various forms to form HA/NA subtypes of influenza. Influenza A subtypes H1N1, H1N2, H3N1, H3N2 and H2N3 cause Swine influenza. In pigs, subtypes H1N1, H3N2 and H1N2 are most common worldwide (WHO, 2003).

The name Swine Influenza is both misleading and a misnomer. Though the current strain of swine flu virus is derived from one that originally lived in Pigs, it is transmitted and spread by human to human contact and requires no contact with pigs or pork (WHO, 2009b).

HISTORICAL PERSPECTIVE

The Influenza Virus Has Plagued Man for Ages

The pseudo-pandemic of 1947, the 1976 swine flu outbreak, the 1977 Russian flu. Swine influenza was first identified as a human infection in 1918, following the simultaneous infection of both pigs and humans (Barry, 2005). It caused an epidemic in Europe and infected about 1 billion persons with 20-100 million fatalities. The subtype H2N2, between 1956-1958, caused Asian flu, with about 2 million deaths, while subtype H3N2 caused over 1 million deaths between 1968 and 1969 (Kilbourne, 2006).

In the USA, before 1998, H1N1 was the only strain in pigs. However, as from 2004, type H3N2 was recovered showing gene re-assortments from human, swine and avian lineages (Yassine *et al.*, 2007). The current epidemic was first reported in March, 2009, in the USA, though health officials opine that it probably surfaced in Mexico before then (WHO, 2009a) 3.0 Symptoms.

According to CDCP (2009), symptoms of H1N1 infection are similar to those of ordinary flu and may include; fever, coughing, headaches, muscle or joint pains, sore throat, chills, fatigue, runny nose, diarrhoea and vomiting in some cases. Certain symptoms such as dehydration, rapid breathing, excessive sleeping, shortness of breath, chest or abdominal pain and sudden dizziness are however regarded as critical symptoms and require urgent medical attention. Respiratory failure, pneumonia and cytokine storms (overreacting immune system) often lead to deaths (Morens *et al.*, 2008). Individuals older than 65 and younger than 5 are particularly at risk, as are pregnant women, diabetics, asthmatics, the obese, heart disease patients and HIV+ persons (WHO, 2009a,b).

CONTROL MEASURES

According to CDCP (2009) control measures available to individuals are simple and include the following: avoiding hand contact with nose and mouth after contact with diverse individuals, regular hand-washing, covering the mouth when coughing and sneezing, staying away from public places when infected to protect others from infection, avoiding over-crowded places, seeking prompt medical attention when suspect symptoms appear, avoiding non-essential travel to areas hit by the epidemic and heeding health agencies cautions and warnings on the infection, where available. In the home, household surfaces can also be disinfected with a disinfectant or household bleach (WQHC, 2009).

Control measures for adoption by government agencies and corporate bodies include: declaring the real infection rates within the country, as countries are known to hide infection figures (Chew, 2007), provision of modern and effective equipment for diagnosis, ensuring

effective screening of immigrants and emigrants at borders and where necessary quarantining to contain infection spread, establishing of surveillance centres to monitor and report infections, providing widely available and affordable anti-flu medications like Tamiflu® and Relenza® and provision of vaccinations.

SPREAD

The WHO (2009a) projects that H1N1 virus is almost certain to spread to every country and continent, though this may take a while. By June 2009, 90 countries had officially reported swine flu infection and the list continues to increase. Indeed by June 11, 2009 WHO declared a pandemic alert Level of 6/6 for Influenza A to indicate the rapidity of its spread. Much of this is probably due to the fact that populations lack immunity against the current strain, as this takes time to develop. Table 1 shows some confirmed H1N1 cases and deaths from some countries of the world as at June 2009. Much of the figures declared by national authorities are however controversial, as countries are thought to hide real infection rates. The CDCP (2010) estimates that in the USA alone as at March, 2010, 12, 000 deaths had been caused by H1N1. According to recent estimates, as at January 2010, there were currently 14, 286 confirmed H1N1 deaths worldwide (Nebhay, 2010).

The first case of Swine influenza was reported in Nigeria by the country's health main health agency, the Federal Ministry of Health (FMH) on 4/11/2009 and involved an American child returning to Lagos from holidaying abroad. The first death from the infection was also recently announced, involving a 38 year woman resident in Lagos, who had returned from the USA 3 months earlier (FMH, 2010).

How Prepared is the Nigerian Nation to Combat a Possible Epidemic Outbreak?

According to CDCP (2010), one of the areas with the most stable transmission of 2009 H1N1 flu transmission are parts of West Africa, which incidentally includes Nigeria. Nigeria

Table 1: H1N1 cases and deaths by country

Country	Cases		Deaths

	Laboratory confirmed		
USA	30,836		186
Mexico	10,894		119
Argentina	2800		46
Canada	8,508		31
Chile	7,376		14
Australia	4,958		10
Thailand	1,710		6
United Kingdom	7,447		4
Uruguay	195		4
Guatamala	262		2
Costa Rica	227		2
Dominican Republic	108		2
Colombia	101		2
Philippines	1709		1
China	960		1
Spain	760		1
Brazil	737		1
El Salvador	276		1
Honduras	123		1
Paraguay	103		1
	93		0

Source: WHO (2009a,b)

is a developing country with a weak medical system (The Nation, 2010) and insufficient supplies of anti-virals and other medications. Where available, there is the added problem of fake or adulterated products. Moreover, confirming a Swine flu diagnosis requires sophisticated laboratory testing and equipment which are largely not available in Nigeria (ICAP, 2009). Again, in Nigeria, most infections are diagnosed largely by symptomology (Bruce-Chwatt, 1980). This leaves margin for misdiagnosis, which could lead to widespread H1N1 infection before its true nature is determined.

Also, a good percentage of the population is already weakened by malnutrition and high HIV/AIDS prevalence rate and rising poverty (Amuta and Houmsou, 2009; ICAP, 2009). These would in effect rob the community of its herd immunity, which would in turn predispose it to infection, rapidly incapacitating large sections.

Effective public health measures regarding containment and management of emergencies including information dissemination are at best slow acting and limited largely to the urban centres. This leaves the larger proportion of rural population at ignorant risk of infections to which they lack basic information on preventive measures. Compounding this is apathy to warnings and cautions, when given, from health authorities by the largely illiterate populace. In Nigeria, there is the major problem of self medication, patronage of quacks and other unqualified health care providers. This is a measure of the poor health care availability. This attitude and practice has the result that it will ensure uncontrolled spread of H1N1 virus due to inevitably wrong diagnosis.

RECOMMENDATIONS

One critical requirement is for technocrats to ensure availability of the necessary equipment and logistics to effectively monitor and contain H1N1 infection in Nigeria.

- An agency of government akin to the Centres for Disease Control (CDC) in the USA, dedicated solely to epidemiology of infections and diseases and their control should be established and empowered to adequately carry out its functions. This will go a long way towards enhancing capacity to combat infections of pandemic proportions. Existing agencies saddled with the responsibilities of ensuring monitoring and policing of borders and other entry points will do well to effectively do so. It is arguable that with effective screening at the Airports, as other nations have done the incident involving the American could largely have been avoided or better managed
- The capacity of local pharmaceutical firms to produce and sustain supply of adequate quantities of anti flu medications and vaccines should be enhanced and strengthened. In the USA, for example, the government has budgeted \$8 billion for 2 shots of flu vaccine for every American (CDCP, 2009)
- A robust and effective means of reaching the rural hinterland with necessary information on health matters should developed as a matter of priority. This is especially so as Nigeria is rich in cultural and traditional belief systems and practices which fuel (erroneously) information on health issues obtained from dubious sources. Even in urban areas correct information on H1N1 and other infections should be thoroughly disseminated such that individuals in these areas could serve as sources of information to the hinterland
- Well stocked, equipped and dedicated quarantine treatment centres should be set up across the country to handle H1N1 and other emerging health challenges. This will help ensure that regular health centers are not overrun in times of emergencies. Furthermore these will serve to protect individuals not infected from mingling with potential sources of infection

- Very close technical and logistic cooperation and collaboration between the Nigerian health authorities and other world health bodies and organisations around the globe versed in H1N1 (and other pandemic) control should be established and developed to advise and assist Nigeria in the event that the pandemic threatens to overrun the country

CONCLUSIONS

Nigeria is not immune from the effects of the H1N1 or other pandemics. Government and the public should therefore do all within their power to protect her citizens and themselves as much as possible from this disease, if the country is to be spared a repeat of the agony of the Spanish flu epidemic of 1918 which left scores dead or incapacitated in its wake.

ACKNOWLEDGMENTS

The authors are grateful to all sources of references for the review.

REFERENCES

- Amuta, E.U. and R.S. Houmsou, 2009. Assessment of nutritional status of school children in makurdi, Benue State. *Pak. J. Nutr.*, 8: 691-694.
- Barry, J.M., 2005. The Story of Influenza: 1918 Revisited: Lessons and Suggestions for Further Inquiry. In: *The Threat of Pandemic Influenza: Are We Ready?*, Knobler, S., A. Mack, A. Mahmoud and A. Lemon (Eds.). The National Academies Press, Washington, DC., pp: 62.
- Brown, D., 2009. System set up after SARS epidemic was slow to alert global authorities. <http://www.washingtonpost.com/wp-dyn/content/article/2009/04/29/AR2009042904911.html>.
- Bruce-Chwatt, L.J., 1980. *Essential Malariology*. 1st Edn., William Heinemann Medical Books Ltd., London.
- CDCP, 2009. What to do if you get flu-like symptoms. <http://www.cdc.gov/h1n1flu/sick.htm>.
- CDCP, 2010. 2009 H1N1 flu: International situation update. <http://www.cdc.gov/h1n1flu/updates/international/>.
- Chew, S.K., 2007. SARS: How a global epidemic was stopped. *Bull. World Health Org.*, 85: 324-324.
- FMH, 2010. Nigeria reports first swine flu related death. <http://abcnews.go.com/International/wireStory?id=9599160>.
- ICAP, 2009. Nigeria. <http://www.columbia-icap.org/wherewework/nigeria/index.html>.
- Kilbourne, E.D., 2006. Influenza pandemics of the 20th century. *Emerg. Infect. Dis.*, 12: 9-14.
- Kurtz, H., 2009. Media coverage of swine flu is feverish. <http://www.newsday.com/news/health/media-s-coverage-of-swine-flu-is-feverish-1.1220617?qr=1>.
- Morens, D.M., K.T. Jeffery and A.S. Fauci, 2008. Predominant role of bacterial pneumonia as a cause of death in pandemic influenza: Implications for pandemic preparedness. *J. Infect. Dis.*, 198: 962-970.
- Nebehay, S., 2010. Flu pandemic easing, but Risks Remain. <http://www.asiaone.com/Health/News/Story/A1Story20100119-192904.html>.
- The Nation, 2010. General hospital where surgery is done with torchlight. *Nation*, 5: 19-20.
- WHO, 2003. Influenza: Fact sheet. <http://www.who.int/mediacentre/factsheets/fs211/en/>.

- WHO, 2009a. Joint FAO/WHO/OIE statement on influenza A(H1N1) and the safety of pork. http://www.who.int/mediacentre/news/statements/2009/h1n1_20090430/en/index.html.
- WHO, 2009b. Situation updates-Pandemic A (H1N1). Epidemic and Pandemic Alert and Response. <http://www.who.int/csr/disease/swineflu/updates/en/index.html>.
- WQHC, 2009. Chlorine bleach: Helping to manage the flu risk. http://www.waterandhealth.org/newsletter/new/winter_2005/chlorine_bleach.html.
- Willey, J.M., L.M. Sherwood and C.J. Woolverton, 2008. Prescott, Harley and Kleins Microbiology. 7th Edn., McGraw Hill Co. Inc., Boston, ISBN: 978-007-126727-4.
- Yassine, H.M., M.Q. Al-Natour, C.W. Lee and Y.M. Saif, 2007. Interspecies and intraspecies transmission of triple Re-assortment H3 N2 influenza a viruses. *Virol. J.*, 4: 129-129.