

# THE A H1N1 INFLUENZA PANDEMIC.

## A SYSTEMIC ANALYSIS OF ITS GENESIS, EVOLUTION AND SOCIO-ECONOMIC, CULTURAL AND HEALTH CONSEQUENCES IN MEXICO.

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### ABSTRACT

In April 2009 a health emergency was declared in Mexico City, as a new influenza virus (AH1N1) began to spread. This new virus was similar to the Spanish Influenza virus which caused the death of more than 40 million persons in 1918-1919.

The 2009 health emergency declaration in Mexico imposed the suspension of activities in crowded areas such as schools, restaurants, sports and recreational areas, during several days, causing important economic loses and deep seated fears in many persons.

This paper presents a systemic analysis of the genesis and evolution of this pandemic and proposes some preliminary conclusions and recommendations.

This pandemic situation was not as grave as expected, but the alert flags continue to be raised, at the world level, because the spread a very dangerous influenza epidemic is feared by the World Health Organization specialists.

**Keywords:** A H1N1 Virus, Influenza, Epidemic, Health and Socio-Economic Consequences.

### INTRODUCTION

Thursday, April 23rd, 2009 will be long-remembered in the history of public health in Mexico. That was the day in which the suspension was declared of all school activities in the Federal District (Mexico City) and several states of the Mexican Republic, due to the declaration of a health emergency provoked by an outbreak of atypical influenza. This suspension of activities had various effects, both positive, such as in the public health sphere (the exponential expansion of the epidemic was successfully contained), and negative, as in the socio-economic dimension (incomes were lost in the tourism, restaurant and bar, and entertainment sectors).

The reaction (or overreaction) of Mexico to the epidemic has served as reference for other countries, which refrained from imposing such drastic measures as the closure of public activities, with subsequent collapse of economic income, even when the influenza had an important impact on public health.

This essay analyzes the situation originated by the A H1N1 influenza in Mexico, through a social approach and based on available information. A comparison is made

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with Argentina, which was the country with the highest case fatality rate. Finally, a set of solution measures are proposed.

Every crisis has two facets: the challenge, and the opportunity. In response to this epidemic, we may resign ourselves to compiling a list of complaints and regrets, or we can choose to react actively, proposing and implementing a healthier and more effective model of sustainable development.

### GENESIS OF THE PANDEMIC

According to reports, beginning in March 2009, already well in to Spring, in the small town of La Gloria, Municipality of Perote, in the Mexican state of Veracruz, an epidemic of atypical (out of season) influenza spread through the population. More than half the town's inhabitants came down with the symptoms of a very intense flu. The symptoms of this influenza are outlined in Annex 1, and Annex 2 compares them with those of the seasonal flu common in Mexico. Annex 3 presents a series of recommendations issued by Mexico's Ministry of Health (*Secretaria de Salud*) designed to avoid infection by the A H1N1 virus.

Many members of the La Gloria community pointed fingers at the industrial pork plant known as Granjas Carrols (subsidiary of the world's largest pork company, the United States transnational corporation, Smithfields Foods) as possible source of the illness, given the propagation of foul odors and swarms of flies emanating from its facilities. For that reason, the illness was first identified as "**swine flu.**" This reference led many people to refrain from consuming pork, originating the protest of the pork industry.

The illness later came to be referred to as the "**Mexican flu,**" in the style of the Spanish influenza that killed more than 40 million people shortly after World War I. However, this new name had even more adverse effects on the Mexican economy as tourists cancelled their Mexican vacations. For this motive, the WHO decided to opt for the more neutral name, "**AH1N1 influenza,**" thereby avoiding stigmatization of the pork industry and of Mexicans.

On April 2nd, 2009, a five-year-old boy in La Gloria named Edgar Hernández was identified as the first Mexican infected by this virus, and one year later a monument has now been erected in his hometown in his honor. However, a few days before, on 30 March, a ten-year-old boy in San Diego, California had already been identified with the AH1N1 influenza virus, and on 1 April a similar case was reported in Imperial, California involving a nine-year-old girl (Source: M. A. Cevallos, *Influenza A / H1 N1, la nueva epidemia, ¿Cómo ves?*, No.127, p. 10). The first confirmed death was of a woman from the southern Mexican state of Oaxaca, who died on April 13th, 2009. (Source: Wikipedia, [es.wikipedia.org/wiki/Pandemia\\_de\\_gripe\\_A\\_\(H1N1\)\\_de\\_2009](http://es.wikipedia.org/wiki/Pandemia_de_gripe_A_(H1N1)_de_2009)).

Mexican health authorities have clarified that they did not declare the health emergency sooner because they needed to reliably confirm the origin of this death. For

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that purpose, biopsy specimens were sent to the Epidemiological Reference Centers in Atlanta in the United States and in Vancouver, Canada.

After existence of a new strain of influenza virus was confirmed, and in response to the exponential growth of the number of infected persons, the alarm was sounded on April 23<sup>rd</sup> and suspension of school activities was decreed beginning the following day. In the days that followed, and to reinforce these infection-prevention measures, the suspension order was expanded in Mexico City to include all types of public activities, such as those held in theaters or stadiums and in particular restaurants, which were only allowed to sell food for carry-out.

After ten days of suspension of public activities and following evaluation of the results, the determination was reached to allow a return to normal activities, with the recommendation to apply preventative health measures including surveys in the schools to detect possible infections, repeated hand washing with antibacterial liquid, avoidance of such social practices as greeting with a handshake or kiss, and other recommendations outlined in Annex 3.

### **Background**

An important antecedent of the AH1N1 influenza is the Spanish influenza that provoked the death of more than 40 million people between 1918 and 1920 (almost 3% of the world population, which at the time was around 1.5 billion people), with a mortality rate among those infected of between 2.5 and 5% (source: [/es.wikipedia.org/wiki/Gripe\\_española](http://es.wikipedia.org/wiki/Gripe_espa%C3%B1ola)).

### **Description of the virus A H1N1**

The virus is an organism that staggers the limit between life and death. Strictly speaking, it is neither living nor dead, but rather latent. To fulfill its vital cycle, it must enter into contact with an appropriate living cell which it proceeds to invade and take advantage of as breeding ground to allow it to reproduce.

The A H1N1 influenza consists of a coat of proteins that enshrouds its genetic material constructed of eight fragments of ribonucleic acid (RNA) (source: E. Burgos, and S. de Regules, *El virus de abril, ¿cómo ves?* No. 127, p. 16-19).

It is called influenza A and not B or C because it is the only type capable of causing pandemics, given its ability to easily mutate and transmit itself to humans, birds, and pigs, among other animals. It is called H1 in reference to its coat of Hemagglutinine, and N1 because it has a layer of Neuraminidase.

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### **THE MEXICAN EXPERIENCE**

The reaction to the A H1N1 influenza epidemic was relatively fast due to the fact that the WHO had issued a global recommendation to governments and responsible entities to be prepared for the possible appearance of new and highly dangerous virus strains. Following those warnings, in late 2007 a drill was organized in which the precautionary measures recommended by the WHO were applied within a very specific protocol of emergency response activities.

The federal Secretariat of Health, Dr. José Ángel Córdoba Villalobos, commissioned by the President of Mexico, assumed the responsibility to issue the emergency declaration and to follow up on all the activities recommended in the protocol for emergencies derived from respiratory-type illnesses.

Several blunders occurred; including the announcement made the first day of the emergency decree and retracted a few days later that twenty deaths had already been confirmed.

The most recent report from the month of April 2010 indicates that 732 persons have died in Mexico due to this illness, most often from complications from pneumonia, and 66,415 people have been infected, with a mortality rate of 1.1% of infected persons (see Annex 4). Mortality has not been higher thanks to the existence of antiviral medications such as Tamiflu and Relenza, which if administered on time are able to cure the illness (Source: M. A, Cevallos, Influenza A/H1N1 la nueva epidemia, ¿cómo ves?, year 11, No. 127, p. 10-15)

Thanks to the successful efforts to control the epidemic, the emergency declaration was lifted after ten days of intense prevention activity. One year after this fact, in April 2010, a balance can be made of what happened, and some conclusions and recommendations can be extracted.

Several very important facts were revealed in the Mexican case:

- 1- Mexico lacked self-sufficiency to verify the type of virus that was causing the epidemic. It was necessary to deliver biopsy specimens to Atlanta and Vancouver, and this delayed the adoption of decisions regarding prevention measures. This situation was corrected after a month with the acquisition of several sets of laboratory equipment that were installed in different locations in the country.
- 2- Mexico did not have, and will not have in the near future, the hospital capacity to attend to all of those persons possibly infected by the virus. Some deaths were originated by lack of timely medical or paramedical care or by intra-hospital infections.

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- 3- The Mexican population does not have the cultural practice of seeking medical attention in a prompt manner. The reasons behind this include the common preference for home remedies to treat cold or flu symptoms, the high cost of a doctor visit, and the lack of sufficient hospital capacity.
- 4- Hygiene practices of Mexicans were (and continue to be) slack. There is a high level of physical contact among persons; social norms include greeting with a handshake and/or a kiss; beverage cups are shared among persons, and people commonly attend crowded activities and events such as movies, soccer games, concerts, etc.
- 5- In the 1970s, Mexico was leader in Latin America in vaccine production. The imposition of neoliberal policies beginning in the 1980s led to cancellation of this infrastructure, and almost all types of vaccines must now be imported. With support from the French government, a vaccine production company has recently been created.
- 6- Sufficient support does not exist from either official or business-sector sources for scientific research or for technological development. Mexico is therefore forced to wait for information and medications to arrive from abroad.
- 7- The public education level is very poor, occupying one of the lowest levels among OECD members and in Latin America.
- 8- The neoliberal model applied in Mexico since the 1980s has provoked an increase in the poverty level. More than 50% of Mexicans are poor, situation that forces them to live in very risky conditions, with poor nutrition, precarious housing, and high levels of stress in peoples' daily struggles to fulfill basic needs. These conditions favor the appearance of infectious epidemics such as the one we are now addressing.
- 9- The development model followed in the past three decades is not sustainable. It does not respect ecological cycles, it depletes resources, and it pollutes the environment, further favoring the appearance of infectious diseases and other ills.

## **OTHER EXPERIENCES**

At the global scale, the epidemic that officially began in the month of March 2009 converted into a pandemic in less than three months, and the WHO has already declared a maximum alert level 6, in order to carry out the monitoring and control of this illness, which can be catastrophic in the absence of sufficient prevention measures.

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At the world level, the Argentinean experience is very symptomatic. After discriminatory and vexatious measures were imposed against Mexicans, with the suspension of commercial flights to Mexico during the month of May 2009 in order, according to Argentinean authorities, to reduce the risk of infection, one year later, in April 2010, Argentina has a much higher case fatality rate than Mexico (5.18 versus 1.1, see Annex 4).

Argentina has the aggravating circumstance that its winter season is June-September, facilitating the transmission of respiratory illnesses such as influenza during this period. On the other hand, thanks here also to application of the neoliberal development model over the past years, Argentina has a poverty level similar to that of Mexico, debilitating the biological defenses of the poorly-nourished, inadequately-housed, and heavily-exploited poor population, which is also poorly attended by insufficient hospital services. In fact, Argentina reports the highest A H1N1 influenza case fatality rate in the world (5.18), followed by Brazil (3.02), the United States (2.94), Canada (1.38), and the United Kingdom (1.2), well above the rate reported by Mexico (1.1). Annex 4 presents the statistics related to confirmed infections and deaths.

The A H1N1 influenza case fatality rate at the global level has been calculated at 0.8, similar to that of the seasonal flu, which in the United States is responsible for 36,000 deaths each year in a population of 307 million, in other words, 1.1% (Source: M. A. Beyer, *Salud desigual, ¿cómo ves?*, year 11, No. 127, pp. 22-24).

### **SOME INTERESTING QUESTIONS**

Questions remain regarding the origin of this pandemic. Some rumors suggest that the epidemic in fact emerged in the United States (whose authorities did not report it to the WHO) and from there was transmitted to Mexico, whose authorities did report it almost immediately. This notification was initially extra-official, in reference to the early report by a group of independent sentinel scientists of a case of atypical, out-of-season influenza in the town of La Gloria, Perote, Veracruz, dating to the month of March 2009.

The WHO has been preparing for the appearance of a dangerous respiratory illness since the 1980s, when SARS (Severe Acute Respiratory Syndrome) and the avian flu were detected. The current WHO Director, Dr. Margaret Chan of China, acquired significant experience directly attending to the 1988 epidemic in Hong Kong.

Since 2007, the Mexican government has been preparing for the appearance of a serious epidemic of respiratory illnesses. An emergency response drill was held in late 2007 for this purpose, thanks to which it was possible to contain the exponential growth of the latest epidemic, albeit with some errors.

The vaccine against the A H1N1 influenza has converted into a multi-million dollar business for a small number of transnational pharmaceutical companies that have

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developed and now offer it at a price ranging between 5 and 10 Euros each. The intense publicity dedicated to this illness, which in fact is about as lethal as the normal flu (killing around 1% of those infected), helps to assure that demand is already guaranteed.

A total of 30 million doses of the vaccine have been imported to Mexico and continue to be applied. On the other hand, the possible risks of application of this new vaccine have not been clarified, despite the fact that deadly reactions to certain vaccines occasionally occur among some susceptible persons.

To what degree might application of this solution (the vaccine) be worse than the illness? One might ask: Wouldn't it be better to invest this amount of money (around 200 million Euros, or almost 4 billion Mexican pesos) in works with greater social impact, such as health, scientific, and technological infrastructure, and the creation of a higher standard of health and hygiene practices?

On the other hand, a degree of suspicion exists in the European community of a conspiracy or at least an overreaction that represented billions in payment for vaccines. These theories would be difficult to prove, but it is known that Donald Rumsfeld, former cabinet member of the United States government, is an important shareholder in the pharmaceutical company that markets Tamiflu, the medication of choice for treatment of A H1N1 influenza (Source: Ignacio Ramonet, in "La gran amenaza del virus A H1N1" (*Le Monde diplomatique en español*, June 2009), wrote: "The world medications market represents some 700,000 million Euros, and a dozen gigantic companies, among them the so-called "Big Pharma" -Bayer, GlaxoSmithKline (GSK), Merck, Novartis, Pfizer, Roche, Sanofi-Aventis-, control half of this market. Their profits are superior to those obtained by the powerful groups of the military-industrial complex. For each Euro invested in the fabrication of a name-brand medication, the monopolies earn one thousand in the market. And three of these firms, GSK, Novartis and Sanofi, are preparing to earn billions of Euros more in the coming months thanks to the massive sales of the vaccine against the new A H1N1 flu virus).

## **CONCLUSIONS AND RECOMMENDATIONS**

Every crisis has two faces: the negative or problematic aspects, and the opportunities to effect the changes that lead to solutions.

The case of the A H1N1 influenza, originally referred to as "swine flu" and later "Mexican flu," due to its initial association with pigs raised in Mexico, illustrated both the country's capacities and its limitations.

Realities revealed by this experience range from the industrial pig-raising practices involving overuse of antibiotics and unhygienic waste management, provoking excessive sanitary risks, to the quality of life endured by many Mexicans, the majority of them poor, with insufficient resources to properly nourish and house themselves or to promptly and effectively attend to their illnesses.

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Evidence also became clear that the neoliberal development model applied in Mexico dating to the 1980s has produced an increase in the numbers of poor and also of the risks of disastrous epidemics. The low level of public education and the lack of healthy hygiene practices also came clearly into light.

Mexico's current rachitic scientific and technological levels were also revealed, attributable to the inadequate level of resources dedicated to these sectors. On the other hand, the application of a neoliberal policy has effectively destroyed the achievements which had been reached, including the leadership role once held by Mexico in production of very high quality vaccines.

It is therefore clear that the response to the situation demands the change of the current development model for a more sustainable and just model, in which the Mexican people have a higher and healthier level of quality of life, in harmony with nature.

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### ANNEXES

#### Annex 1- Symptoms of A H1N1 influenza

No.	Symptom
1	Very high fever, above 39 degrees C
2	Body aches, very intense muscle and joint pain, prostration
3	Sneezing
4	Ocasionally diarrhea
5	If not treated promptly (with Tamiflu or a similar antiviral medication), can evolve into pneumonia, which may lead to death.

#### Annex 2- Comparative analysis of symptoms of the common cold or flu versus A H1N1 influenza.

Number	Symptom	Common cold or flu	A H1N1 influenza
1	Fever	Up to 39 C in children	Can reach 40 C, lasts 3-4 days
2	Headache	Rarely	Sudden onset and high intensity
3	Muscle pains	Light or moderate	High intensity (generally)
4	Fatigue	Light or moderate	May last 2-3 weeks
5	Weakness	Light	Sudden onset and high intensity
6	Nasal congestion	Frequent	Sometimes
7	Sore throat and/or throat pain	Frequent	Sometimes
8	Cough	Light or moderate	Almost always

Source: SEP, published in *El Universal*, 10 August 2009, Supplement “Regreso a Clases” p. 64.

#### Annex 3- AH1N1 influenza infection prevention measures recommended by the Mexican Ministry of Health.

(Source: [http://es.wikipedia.org/wiki/Pandemia\\_de\\_gripe\\_A\\_\(H1N1\)\\_de\\_2009](http://es.wikipedia.org/wiki/Pandemia_de_gripe_A_(H1N1)_de_2009))

- Stay away from persons who have a respiratory infection.
- Refrain from greeting with a kiss or handshake (unless with close family members and well-known persons who do not present symptoms).
- Refrain from touching one’s face, in particular the areas in which the mucous membranes are exposed (eyes, mouth, inside the nose, inside the ears).
- Do not share food, cups or utensils.
- Air out and allow the sun to enter homes, offices, and other enclosed places.
- Keep clean kitchen and bathroom surfaces, doorknobs and handrails, and toys, telephones, and commonly-used objects.

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- Go immediately to the doctor or the closest health clinic in case of the following symptoms: sudden high fever, or the simultaneous appearance of cough, headache, and muscle and joint pain.
- Protect oneself adequately from the elements and avoid extreme temperature changes.
- Eat fruits and vegetables rich in vitamins A and C (carrot, papaya, guava, orange, mandarin, lime, lemon, pineapple).
- In case of lack of access to the mentioned foods, take supplements containing vitamins C and D.
- Wash hands frequently with soap and water (although the soap will not produce any chemical effect against the virus particles, they will be eliminated from the hands by the physical action of rubbing with soap and water).
- In offices, call centers, and cybercafés, clean computer keyboards and mouse controls with alcohol to disinfect and avoid a possible propagation of the virus, especially if they have been used in the past hours or if used by several people throughout the day.
- Disinfect doorknobs and handrails in public places with sodium hypochlorite.
- Avoid exposure to environmental pollutants.
- Refrain from smoking in closed spaces and around children, the elderly, or the ill.

**Annex 4-** Statistics of confirmed cases and deaths for the 7 countries with highest mortalities

(Source: [http://es.wikipedia.org/wiki/Pandemia\\_de\\_gripe\\_A\\_\(H1N1\)\\_de\\_2009](http://es.wikipedia.org/wiki/Pandemia_de_gripe_A_(H1N1)_de_2009), consulted on 5 May 2010, with additional information completed by the authors).

No.	Country	No. infected	No. deaths	Case fatality rate % deaths /infect.
1	United States	115,310	3,401	2.94
2	Brazil	51,820	1,568	3.02
3	Mexico	66,415	732	1.1
4	Argentina	12,080	626	5.18
5	India	18,772	200	1.01
6	Canada	25,828	357	1.38
7	United Kingdom	22,444	270	1.2