

Consequences of Pandemic Influenza A (H1N1)pdm2009

Introduction

This is a report focusing on the different kinds of impacts of the pandemic Influenza A(H1N1) in 2009 as well as in the present. A brief Review regarding the (economic) facts and abstracting lessons in different sectors is the main goal and content. Conclusions are concentrating on the gaps which have to be closed in order to have an appropriate pandemic preparedness plan thinking ahead facing the next pandemic, which will be only a matter of time.

Substantial remaining consequences, which lasted over this two and half years since outbreak are rare, it is more a lot of knowledge and lessons, which were gained out of mistakes, mismanagement and measures in need of improvement.

Mexico

In April of 2009 the WHO reported an increasing amount of cases of a new influenza A(H1N1) in Mexico and the United States of America. The Mexican government closed subsequently schools in the most affected states. Public places and events, such as restaurants, cinemas, gyms, cultural events, etc had to submit to the same order, leaving streets completely empty. The economic impact was big and long lasting. Tourism and inflow of workers from abroad decreased, the export sector was hit the most, especially goods to the United States, which represented during the last ten years 80% of the non-oil export products. Because of the lack of knowledge and rumors there was a big tendency to classify products made in Mexico as contagious and dangerous. Biggest delusion was to think swine products would contain the pandemic virus.

Mexico's total exports in the second quarter of 2009 were 24% lower than during the high peak quarter 2 years earlier.

In November 2009 the World Bank pushed the Mexican economy with a \$1.5 billion loan due to the economic recession, and an extra \$491 million were provided against the pandemic flu.

So far Mexico's economy, especially tourism, has recovered from 2009.

Economics worldwide

During the pandemic different factors had influence into countries economy. Direct measures like organize and run a pandemic plan, material (masks, gloves, disinfectant fluid, antivirals, vaccines, etc.) produced financial and logistic efforts. Some countries had a financial decline in specific sectors (tourism, trade, closure of public places/events). And finally all the absence of working people due to several reasons (ill, dead, caring for ill relatives, being afraid of going out of the house because of contagion), which reduced the workforce considerably.

An Assumption of Oxford Economics in June 2009 estimated that the world GDP would decrease by US\$ 2.5 trillion (3.5%). According to other experts these numbers apply to a severe scenario of the pandemic, whereas in a moderate scenario the world GDP would fall by US\$ 1.3 trillion (2%) and US\$ 400 billion in a mild scenario. Industries selling non-essential goods and services were affected mostly, like already experienced in 2003 when SARS provoked a decrease in international travel and tourism in Asia of 60%. The growth rate of real GDP in China dropped by 2.4% in the second quarter of 2003.

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The USA had a decline in GDP of 1.5-5% in 2009, which is moderate and comparable to a normal flu season according to a report of RMIT School of Business Information Technology. Australia has numbers of 0.5-1.3% decreasing.

According to the Oxford Economics Report there was a significant risk that the conjuncture, which was at that point in slow recovery of the financial crisis, would relapse and the impact lasting longer than expected. Households would wait with spending its money, companies, which were already in a fragile situation, would face existential problems when economic situation and workforce would decrease further. The world would have been expected falling into deflation with a falling world GDP of approximately 8%.-

The sectors with the biggest part on the whole worldwide economic burden were the travel and tourism industry (50%).

Communication

In case of an extraordinary happening, which affects the whole population, an open and early flow of information must be established by authorities and experts leaving no room for doubts and misunderstandings. This is a key element in guiding population towards a sufficient coverage of indicated behavior from the government. People, in need of information, sought information as well in non-official sources, which sometimes led to controversial and counterproductive discussions. Because of the huge amount of articles (almost 4000), which was published in the period of 27. 04. - 03. 05. 2011 in 31 European countries, it might have been difficult for some to assess the source credibility.

Overall European media reported in most of the cases information, which was provided by the public health institutes (75% of all articles). 94% had neutral and informative character, only little percentage (6%) criticized measures determined by authorities.

The WHO recognized in the internet a useful resource to inform, but in the same time realized that a lot of rumors, misinformation, speculations and fear were spread out through any kind of social media. Anti-vaccine voices were strong and made it sometimes hard for public health institutions to convince the people of the vaccination benefits. Because of rumors regarding the safety of the vaccine and possible influence of pharmaceutical industries and as well a mild development of the pandemic not that many people were vaccinated as initially expected.

In Germany experts criticize governmental information policy regarding the vaccine, which was promoted with uncertain facts. For example vaccination was declared as absolutely safe, although side effects and efficacy were not yet completely known, which is totally normal for a medical drug in the beginning of use in humans. High insecurity among population was the consequence and as a result vaccination rate was lower than expected.

Vaccination

An early available vaccine is a key element in fight against a wide spread of a pandemic. A Swedish economic simulation calculated a cost reduction of €250 million if at least 60% of the population would be vaccinated, under the a little bit unrealistic circumstances that everyone offered the vaccine would accept being vaccinated.

As already mentioned above vaccination rate was so low that a lot of efforts were taken afterwards to analyze the reasons, which were:

- Personal risk sensitivity
 - Severity of Illness in general, having no awareness how serious the situation is.
 - Intensity of personal consequences in case of contagion: A lot of people thought the influenza virus A(H1N1) to be harmless like seasonal flu virus and therefore willing to hazard the probability and the consequences of a possible infection.
 - Fear of adverse side effects from the vaccine (one of the strongest reason to refuse vaccination). A lot of people couldn't even name a specific adverse effect, they were afraid of.
- Attitude regarding Vaccination in general
 - No acceptance of previous vaccinations (positive Attitude is strongest effect on intention to vaccinate).
 - Lack of recognition of necessity of vaccine / lack of confidence in efficacy of vaccine.
- Communication / Information
 - Insufficient flow of information regarding vaccine and its safety.
 - Receiving Information from mass media provoked rather a refusal, while getting information from a health professional institute led rather to acceptance.
 - Controversial opinions regarding vaccination in public/media.
- Access
 - Not to be willing to pay for the vaccination, in the case insurance would not cover it.
 - In some cases vaccine was provided pretty late while case rate was already decreasing and therefore people tend to skip it completely.

Economic models to calculate financial benefit of vaccination include a lot of variables. In comparison to other preventive health interventions vaccination of children and young adults turned out to be cost-effective, although the delayed availability of vaccine decreased the economic cost-saving. Basically cost-effectiveness depends mainly on the moment of vaccination campaign and the speed of outspread of the pandemic virus. In a scenario with early vaccination cost savings are higher with fast developing pandemic than with a slower spreading virus. According to a micro simulation in the United States vaccination of 40% of the population in October would have saved \$629 million.

At the beginning of pandemic WHO recommended two vaccinations per person. At the end of October it was discovered, that one vaccine dose is enough to provide contagion safety. Because of the orders, which were already made, and the low vaccination rate, countries had a big stock left. In November 2011 for example Germany disposed of 28.7 million not used vaccine (value €239 millions), which had exceeded the date of expiry.

Resolutions/Conclusions

Mass gatherings

It is still unsure whether canceling mass gathering had any significant effect in slowing down the spread of the influenza pandemic. The impact is of course bigger if the closure is applied together with other measures.

The present guidelines for planning mass gatherings were used a lot. Since every mass event is unique and different, guidelines needed to be customized taking into consideration characteristic of the event (crowd density, duration, location, infrastructure, etc.). There is still a need for more precise tools for different aspects (risk assessment, surveillance systems, evaluation of effectiveness, and estimation of economic costs).

Travel and trade

Currently globalization with such high international traffic allows the spread of an illness in a very short time.

The International Health Regulation (IHR 2005) is a tool to have under law and coordinate appropriate measures depending on WHO guidelines/recommendations and severity of the situation. During the pandemic almost every country increased sanitary control at every point of entry into the country in order to keep the virus outside from own territory. Thermal scanners were used a lot, to assess its effectiveness further research must be conducted. Once the pandemic spread out in the country, these kinds of measures were reduced. The efficacy of this border screening is not proven, since any protocol and studies relating to this were realized, but it might have delayed community transmission by around a week in most of the cases.

Looking back on the pandemic the IHR 2005 resulted to be an adequate mean. The biggest challenge was to ensure sufficient qualified human resource at every point of entry. The focus on screening at the airport was overproportional, while land travelers had not to go through detailed screening. International communication between the points of entry still has to improve for the future.

WHO came to the conclusion to modify its guideline to be more flexible, especially application at a sub-national level, which, in contrast to national level, has to be further elaborated.

In May 2011 WHO started an influenza pandemic preparedness framework. It connects WHO with Member States, Industry and other stakeholders to push forward global collaboration against influenza pandemic threat by improving the WHO Global Influenza Surveillance and Response System (GISRS). It allows a more efficient worldwide distribution of pandemic influenza vaccine and other material (antiviral drug, diagnostic kits), especially to countries of lower income, regularly industrial contributions are therefore essential which should covering around 50% of the costs per year.

Another main purpose is sharing influenza viruses samples within the WHO Laboratory Global Influenza Surveillance Network (GISN) to improve global monitoring and risk assessment with regard to a possible influenza pandemic and hence develop corresponding vaccine.

The conclusion, which has already been discussed, that it is difficult, even almost impossible, to have the appropriate measures ready for the next pandemic, came up again since the last recent discussion

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about the discovery of the Scientist Dr. Ron Fouchier and his colleagues hit the same topical direction. Fouchier managed to convert the avian influenza virus (H5N1) with a few mutations on its genome so that the virus can easily spread through airborne transmission and therefore would have disastrous consequences.

Opinions regarding the legitimacy of such kind of research and especially its publication differ fairly. A lot of Experts welcome Fouchier's work. Also does Prof. A. Reingold, a renowned Epidemiologist at the University of California, who considers the new gained findings of a higher value than the risk of potential misuse. It has to be discussed if, to who and how detailed the result are going to be published.

According to Prof. A. Reingold the pandemic threat is higher from a naturally evolved Influenza-virus than from that isolated "supervirus" in the laboratory. Although of his point of view, despite of 2009, we are not prepared sufficiently for a new worldwide pandemic, there is no need to panic. Due to our medical knowledge and infrastructure such fatal dimensions like during the spanish influenza will never be witnessed again.

This report includes inputs from a variety of sources.
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