INFLUENZA A FROM THE RATIONAL CHOICE THEORY: PROPOSALS FOR DECISION MAKING IN PREVENTION POLICIES

Francisco Garrido Peña (1), Luis Andrés López Fernández (2) and Eugenia Gil García (3).


ABSTRACT

This article is a reflection on the social uncertainty caused by Influenza A and on the consequences that it can have on decision making in health promotion policies. We use concepts and metaphors of the Rational Choice Theory, among them, the “ingratitude effect” or the “distrust effect”, as we analyse how these can become obstacles for the efficiency of prevention policies. Then, we focus on the information asymmetry of the principal-agent relationship, and we propose measures to diminish the “moral risk” that they cause. We finish by advancing some proposals for designing lines and strategies of action in health promotion policies.

Keywords: Influenza A Virus, H1N1 Subtype. Health promotion. Risk. Uncertainty. Information dissemination. Health policy.

RESUMEN

La gripe A desde la teoría de la elección racional: propuestas para la toma de decisiones de políticas preventivas

El artículo que presentamos es una reflexión sobre la incertidumbre social que gira en torno a la Gripe A y las consecuencias que puede generar en las decisiones sobre las políticas de promoción de salud. Utilizamos conceptos y metáforas de la Teoría de la Elección Racional, entre ellas el “efecto ingratitud” y el “efecto desconfianza” y analizamos cómo estas pueden constituir obstáculos para la eficacia de las políticas preventivas. Posteriormente nos centramos en la asimetría informacional de la relación agente principal y proponemos medidas para disminuir el “riesgo moral” que ocasionan. Por último, avanzamos algunas propuestas para el diseño de líneas y estrategias de actuación en políticas de promoción de salud.

Palabras clave: Subtipo H1N1 del Virus de la Influenza A. Promoción de salud. Riesgo. Incertidumbre. Difusión de la información. Política de salud.

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INTRODUCTION

Influenza A (H1N1), also known as Swine Flu, was identified in the United States on the 15th and 17th of April of 2009 in samples obtained from two patients that were not epidemiologically related. The same virus strain was parallely identified in other countries such as Mexico and Canada. The letter A designates its origin, from human, porcine and aviary flu viruses. The letters H and N represent the proteins it contains. Another feature of the A/H1N1 virus is that it has an unprecedented combination of four different viruses, originating in three different species (porcine - two viruses -, aviary and human). A combination that had never been identified until now according to the American Center for Disease Control and Prevention (CDC)\(^1\).

One of the peculiarities of the AH1N1 virus is that is composed of RNA and not DNA. RNA viruses, using the RNA as an intermediary for replication, have more replication capacity than those composed of DNA. The obtained experimental evidence points to the lack of corrective functions and nucleic acid repair, functions associated with DNA\(^2\). Viruses that have a high replication rate also present a high mutation rate. Let's not forget that mutations are just errors in the virus's copying or replication process. The higher the replication rate is, the higher the mutation rate is too. The fact that the Influenza A virus has a high replication and mutation rate doesn't necessarily imply that it will produce greater morbidity or mortality. Occasionally, fast and profuse mutations can be negative for the survival of a virus and condemn it to extinction\(^1\). Sometimes, a high replication rate can cause a negative feedback process and produce a great number of non-viable mutants.

The mortality rate of the AH1N1 virus is lower than seasonal influenza's. However, the actions taken in order to prevent and minimise the pandemic are conditioned by the current morbidity and the effects caused by the virus's potential evolutionary strategies.

Negative replication, mutation and feedback makes it impossible, at the current state of scientific development, to establish the existing degree of probability of the virus's likely development. Any outcome is enhanced by the increasing speed of mobility and migration in current society as a result of the process of globalisation\(^3,5\).

The media has echoed the uncertainty in the scientific community and, fostered by the lack of news over the summer, has detailed the morbidity and mortality of the virus, frequently causing social alarm. Uncertainty and social alarm have favoured the articulation, in specific sectors of society, of a conspiracy discourse focusing on the pharmaceutical industry's guilt. Supported and fostered by the media, this creates and/or exaggerates false risks with the aim of manipulating public opinion in favour of their own interests\(^6\). Notwithstanding the fact that the conspiracy discourse still hasn't affected public administration or health policies, its persistence might hamper the efficacy of prevention campaigns and health promotion policies by encouraging passive attitudes, as well as the boycotting of educational potential of public health campaigns.

But which elements will health policy makers have to consider in order to establish a strategy in the present situation? To answer this question we will use conceptual tools from the Rational Choice Theory (RCT)\(^7\), incorporating tools from micro-economy to analyse "current public opinion" on public health policies.

According to RCT there are two types of decision and four types of choice criteria\(^8\) (table 1). We must also take into account that health policy decision makers are individuals belonging to the sphere of collective choice and perform inside what Peacock calls the "political market"\(^9\) (table 2).

In any case, those who decide health policies face strategic decisions which aim at maximising the well-being of "public health" by combining other interests and social operators, since they work in the policy decision-making market.
If we look at the current state of scientific development there are three possibilities for the evolution of the virus: that there is no mutation and that the current rate of infection continues to be steady as in the case of seasonal influenza; that the virus mutates and becomes more resistant and aggressive or rather; that the virus's mutations lead to a progressive weakening of its infectious and harmful potential. We are facing a typical case of making a choice under conditions of uncertainty. It is not a case of maximising efficiency, the usefulness of the goods or the preferred option, but rather to minimise risks or to maximise safety. The type of recommended choice would be conservative. Therefore we must apply the precautionary principle, connatural to choice under conditions of uncertainty, where there is reasonable evidence of health or environmental risk and no probability calculation is unfeasible.

Table 1
Choice types and criteria (RCT)

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<tr>
<th>Type of choice</th>
<th>Description</th>
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<tbody>
<tr>
<td>Strategic</td>
<td>Type of choice where there are two or more decision makers and their actions and interests can be opposed.</td>
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<tr>
<td>Parametric</td>
<td>Type of choice where one decision maker chooses among different alternatives.</td>
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<table>
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<tr>
<th>Choice criteria</th>
<th>Description</th>
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<tbody>
<tr>
<td>Maximax</td>
<td>The decision maker must choose the alternative with the highest degree of maximisation of his/her preferences. It is one's own criterion in an optimal and assured scenario.</td>
</tr>
<tr>
<td>Maximin (Wald's criterion)</td>
<td>The decision maker must choose the alternative which worse consequences are better than the worse consequences of the other alternatives. This criterion maximises safety and it is the most appropriate for choosing under conditions of uncertainty.</td>
</tr>
<tr>
<td>Laplace criterion</td>
<td>From a set of alternatives we choose the most likely to happen, in case there are two or more alternatives with the same probabilities, the most rational option would be to choose the alternative with higher degree of maximisation according to the described utility. This criterion is ideal for low risk choice.</td>
</tr>
<tr>
<td>Savage criterion</td>
<td>The decision maker will have to choose from that alternative whose opportunity cost, in relation to other alternatives, with which it shares a single “state of nature”, is lower.</td>
</tr>
<tr>
<td>Hurwicz criterion</td>
<td>It's a mixed criterion between maximax and maximin. The decision maker must order the alternatives according to a weighted mean between the maximisation and safety levels.</td>
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In these conditions, the precautionary principle opts for that type of action whose worst effects and consequences are the best and less costly. We must always choose the best of the worse, which is precisely what the maximin criterion dictates.

The maximin criterion's choice is dictated by the nature of the knowledge and information we have about the consequences of each of our possible actions. But, does it mean that the success of the preventive measures is guaranteed? The success would be guaranteed if, when applying the maximin criterion, there was a single decision maker (the public administration), that is if we were taking a parametric decision in the political offer market. However, we have to make a strategic decision in the market of policy execution in which
negotiations between the administration and the affected operators (consumers, patients, companies, social collectives, aid beneficiaries, etc.) take place. It is a market of multiple interactions, desirable and perverse effects in which decision makers will have to take into account the design of prevention policies.

2. From the “ingratitude effect” to the “distrust effect”: the risk of asymmetric information.

Two perverse effects can result from the maximin criterion: the “ingratitude effect” and the so called “The Boy Who Cried Wolf” effect.

Table 2

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<tr>
<th>Political Markets</th>
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<tr>
<td>“Primary political market”</td>
<td>Identified with the “electoral market” where politicians and parties trade offers for votes.</td>
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<tr>
<td>“Market of political offers”</td>
<td>Here the administration takes decisions to promote the completion of the government's political objectives and the parliament's legislative objectives. For example, to ban or not the consumption of tobacco, legalise active euthanasia or drug consumption. This type of decision has a normative support.</td>
</tr>
<tr>
<td>“Political executive market”</td>
<td>Here take place the negotiations between the administration, which makes decisions about the completion of programmes (“market of political offers”) and actors/operators affected by this decisions as consumers, patients, companies, social collectives, aid beneficiaries, etc. In this market there is interaction between the regulators and the regulated.</td>
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The first comes as a result of the success of the preventive measures which make the non-desired outcomes invisible.\(^\text{10,11}\) When these outcomes don’t occur it is possible to think that a health problem or potential danger never existed, when what actually happened was that the right decisions were taken and the cause was thwarted.

The “The Boy Who Cried Wolf” effect (from Aesop’s fable about the false alarms raised by a shepherd boy) occurs when there are alarm calls in prevention of a potential effect that undermine confidence and, as a result, create a passive and un-cooperative attitude.

The generalisation of the “ingratitude effect” in some social sectors can be interpreted as a “false positive” and generates a “distrust effect” (“The Boy Who Cried Wolf”). This is, precisely, the most feared and dangerous consequence of the “maximin criterion” strategy, since its manifestation comes along with success and not with failure. To avoid it, there must be strategies and mechanisms designed to minimise the “ingratitude effect” and prevent them from turning into a “distrust effect”.

Another issue to consider is the information asymmetry that unavoidably exists between the public and the authorities, healthcare professionals or the media. In order to analyse the informational asymmetry we use the “principal-agent” concept.\(^\text{13,14}\) The agent is the person or institution in charge of defending
the interest of another person or institution, known as principal. Between them a delegation of functions due to the difference of information at one’s disposal takes place. Being the informational asymmetry part of this relationship, there is danger of “moral risk”\(^\text{13}\), in other words, abuse or misuse of the agent’s confidence. This risk is minimised when there is knowledge of the consequences of one’s action's and is maximised when the agent’s confidence is undermined.

The principal’s (the public’s) response can follow two paths\(^\text{15}\), the build up of an alternative official “voice” by means of the articulation of a reflective discourse, or “exit” through actions and non-cooperative conduct. To avoid a non-cooperative “exit” it is necessary to minimise the cognitive strength of the alternative “voice” and also, to establish cooperation outlets by designing mechanisms\(^\text{16}\) and institutional\(^\text{17}\) schemes in order to lower the costs of the actions put forward.

Now, in the aforementioned qualitative research carried out in Andalusia, Southern Spain\(^\text{6}\), we have identified a conspiracy discourse based on distrust towards the media and the pharmaceutical industry. This discourse negates the seriousness of the pandemic and considers that behind the alarm there are “obscure interests” (“to sell vaccinations”, “distract the public attention”, “to sell newspapers”). Although this discourse is still not associated with healthcare policies, there is a danger of aligning it with and furnishing it with a “voice” and arguments for distrusting the healthcare system, thus legitimising the “exit” and non-cooperative attitude to health promotion proposals.

The conspiracy discourse identified by the qualitative research, like any discourse, cuts through social strata and therefore it has gender. In this case, fundamentally masculine although there are also elderly women and people with a lower educational level\(^\text{6}\). We believe this is due to the fact that larger information asymmetry concerning health prevention practices is concentrated in these two groups. We have also detected, in the aforementioned research, a lack of the principal’s information related, more than available quantity, to the type of information required by the principal with a customised communicative format\(^\text{6}\).

### 3. Proposals for policies and healthcare management of Influenza A

In order to consider the management of prevention policies and health promotion campaigns of Influenza A, the first thing to take into account is that we are facing a strategic choice in which several agents are concerned, and that their interests can be opposed. That decision making is anchored to the policy execution market in which negotiations take place as well as being affected by the interaction between the regulators and the regulated. And that in the current state of scientific development, we face a case of choice under conditions of uncertainty.

In these circumstances the rational choice is to minimise risks, in other words, to maximise safety. The recommendation is to apply the precautionary principle and opt for actions or alternatives whose worst effects or consequences are the best or less costly. To choose the best of the worse, which is what the maximin criterion dictates.

But the maximin criterion also brings perverse effects\(^\text{18,19}\), that will have to be taken into account to prevent them. Among them, the “ingratitude effect” and its consequence: a “distrust effect” towards healthcare policies and the use of the incentives scheme set up by mechanism design\(^\text{19}\) and institutional design\(^\text{17,18}\). To minimise them we propose:

1. To reduce the “ingratitude effect” the situation must be communicated with transparency, preventive policies and efficient protection should be made visible. An information system should also be established, able to visualise the costs, associated with campaigns, which have been avoided, programmes and executive actions. The aim is to reduce asymmetric information between the principal and the agent, and thus attenuate the...
transformation of “ingratitude effect” into “distrust effect” (“The Boy Who Cried Wolf”)

2. To establish an incentive system that rewards cooperative actions to healthcare campaigns. An example could be the public healthcare system incentives for blood donors. It is about fostering collaboration to hamper “exit” strategies.

3. Setting up incentives for the public's participation (user's associations, professional bodies, parent's associations... ) encouraging the involvement of social actors in decision making.

4. Carrying out information campaigns requiring low cost and effort, such as opening a direct phone line (as the Health Secretariat of the Regional Government of Andalusia has done) or mailing customised letters with healthcare information and recommendations.

5. To avoid “moral risk” or abuse of information asymmetry between agent and principal. In this respect, we propose the study of the agent's opinions by means of qualitative research related to different social groups and the informational needs they have.

6. To consider communicative formats to avoid turning campaigns into an accumulation of information senseless to the recipients. We suggest the assessment and survey of campaigns.

7. Lastly, and taking into account that globalisation and risk society foster healthcare situations which require quick and effective responses, we propose the development of public administration mechanisms able to perceive the public's voice. This would improve the knowledge healthcare bodies have of emerging social discourses and the establishment of mechanisms that would avoid the discourse, the “voice”, turning into an “exit” or, in other words, to allow for designing action lines and strategies before the discourse legitimises non-cooperation with health promotion policies.

BIBLIOGRAPHY


