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**Title:**

Vaccine hesitancy and coercion: all eyes on France

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## MANUSCRIPT

### Abstract

With record levels of vaccine hesitancy, France faces the challenges of the contemporary crisis of trust in vaccines in a heightened form. For this reason, a closer look at its situation helps to highlight some often overlooked factors behind the rise of vaccine hesitancy. The prevalence of hesitancy among medical professionals, and doctors in particular, is one of them. The changing landscape of vaccine-critical activism is another. The French context also underlines the limitations of the current tools available to public health actors. As in many countries, traditional top-down communication efforts have proved unable to restore trust in vaccines. This led French public health authorities to conclude that extending the list of vaccines required for daycare and school entry was necessary to reach satisfactory vaccine coverage. This extension of mandatory vaccination constitutes a live experiment to test the effectiveness of coercion in the so-called “post-truth era”. Where vaccine hesitancy is so prevalent, vaccine-critical arguments circulate widely and trust in public authorities is low, this type of measure could polarize attitudes toward vaccines. There is a risk that the public health authorities will become complacent and rely upon coercion to do all the work. Coercive measures must be part of a comprehensive plan aimed at restoring trust in vaccines and not just at increasing vaccine coverage. The goal should still be to build a healthcare system immunized against doubts about vaccination.

## **Manuscript**

In late February, 2019, a French family went on holiday to Costa Rica. They brought with them more than their heavy suitcases. Their unvaccinated child was infected with measles. This was Costa Rica's first documented case in five years. Fortunately, the authorities placed the family in quarantine quickly enough to avoid the spread of the disease throughout Central America. The fact that France is at the center of this story is not surprising. In the past 10 years, epidemics of measles have multiplied in Europe, and in France in particular, largely because of what has come to be called "vaccine hesitancy".

The concept of vaccine hesitancy was forged over the past 10 years as more and more research has focused on the worldwide surge of doubts about vaccines<sup>1-3</sup>. It designates the various negative attitudes to vaccines that fall short of a radical refusal of all vaccines. In the past five years, France has had one of the highest rates of vaccine hesitancy in the world (between 25% and 70% of the population, depending on how and when the surveys were performed<sup>4-6</sup>). While France is obviously faced with a heightened form of the contemporary crisis of confidence in vaccines, it would be a mistake to see it as an extreme outlier. On the contrary, a closer look at the French context helps highlight some often overlooked factors behind the rise of vaccine hesitancy and underlines the limits of the current tools available to public health actors.

### **The rise of vaccine hesitancy in France**

One reason why there is so much to learn from the French experience is that public authorities and researchers started monitoring attitudes to vaccination relatively early. In many countries, because data collection only started after vaccine hesitancy had become an important issue, it was difficult to identify precisely the origins of this trend. In France, although no studies were conducted before the first scare emerged, that happened early: claims that the Hepatitis B vaccine causes multiple sclerosis made the front pages in 1998, and consistent monitoring of vaccine hesitancy started in 2000. This early monitoring thus captured the moment when doubts first soared, although they remained at a relatively low level between 2000 and the pandemic flu vaccination campaign of 2009-2010, when they skyrocketed before stabilizing at a high level<sup>4,7</sup>.

The two causes cited most often for this surge are the increased use of the Internet as a source of information and the growing distrust of public authorities<sup>4</sup>. The former increases the likelihood of exposure to vaccine-critical arguments and the latter the likelihood of believing them. These factors are a significant piece of the puzzle of hesitancy everywhere it emerges<sup>1,2,8</sup>. But they tend to overshadow other important features, which are particularly striking in France.

#### A multiplication of controversies in the traditional news media:

In this digital age, we tend to forget that traditional news media still have a strong influence on belief formation<sup>9</sup>. Their role is often easily recognized for older vaccine scares, such as the belief that the MMR vaccine causes autism<sup>10,11</sup>. But the explanation of the contemporary rise of vaccine hesitancy has tended to focus on the web 2.0 and the interactive social media platforms accessible via the Internet, such as Twitter, Facebook, and Pinterest<sup>12</sup>.

In the case of France, traditional news media played a crucial role in the surge of vaccine hesitancy. Its sudden rise coincides with the public controversy in 2009 over the pandemic A/H1N1 influenza vaccination campaign. This controversy ushered in an era of perpetual debate over vaccination. Since then, the issue of vaccine safety has been in the news almost continuously, with the media raising doubts about the papillomavirus vaccine, multivalent vaccines and the use of aluminum-based adjuvants<sup>7</sup>.

#### Doctors can also be vaccine hesitant:

In France, as in most countries, doctors are the most trusted source of information on vaccination, and other categories of healthcare professionals come close behind.<sup>13,14</sup> Public health authorities rely heavily on them to improve vaccine coverage. Decision-makers in this area too often think of hesitancy as the product of a lack of knowledge or understanding of vaccination and consequently assume medical professionals are immunized against doubts.

But even doctors can be vaccine-hesitant. In a study conducted in 2014, we found that 14% of French GPs had doubts regarding the utility and/or safety of various vaccines (e.g., against flu, hepatitis B, and vaccines containing aluminum), and 20% considered that children were vaccinated against too many diseases.<sup>14</sup> Hesitancy is also widespread among other healthcare workers, including nurses. In a 2018 study, we observed that around 40% of nurses were hesitant – mainly towards

vaccines against seasonal influenza, hepatitis B, and papilloma viruses. In particular, almost two thirds believed that a causal link between the hepatitis B vaccine and multiple sclerosis was probable, even though this vaccine has been required for healthcare workers since 1991<sup>15</sup>. By conducting interviews with general practitioners, we also found that even among those who did not express doubts towards vaccines, many trusted vaccines only reluctantly. They felt they could not really doubt vaccines because vaccination is such an integral part of their work. But they were also aware of how little they knew about these vaccines and how difficult they found it to answer patients' concerns over technical subjects such as adjuvants.

In the past 30 years, the relationship between public health authorities and a portion of the medical profession has degraded in France, at least in part because of the multiplication of health scandals around purported or documented episodes mishandled by public agencies, a growing crisis of funding for public hospitals, and a succession of tense negotiations around the price of medical interventions. These developments have alienated part of the medical profession. It is important to bear in mind that, in France and elsewhere, doctors are not experts in vaccinology<sup>16</sup>; thus, the less they trust public health authorities, the more likely they are to be hesitant or to trust vaccines only reluctantly<sup>17</sup>. This means that their fragile knowledge about vaccines can be shaken, when exposed, often via patients, to vaccine-critical arguments.

#### A new generation of vaccine-critical activists:

Across the world, the development of the Internet has given antivaccine activists new tools to organize and reach wider audiences.<sup>8,12,18</sup> But it would be a mistake to reduce the contemporary crisis of trust in vaccines to another episode of the “age-old struggle against the antivaccinationists”<sup>19</sup>, at least in France.

Indeed, French antivaccine movements have historically been relatively powerless, as shown by the absence of any significant public controversy over vaccines before the middle of the 1990s<sup>20,21</sup>. The groups of activists at the inception of all the recent controversies here have chosen to distance themselves from traditional antivaccinationism and to restrict their criticism to a limited number of vaccines and substances contained in vaccines (aluminum, for example)<sup>7,20,22</sup>. These activists are closer to mainstream social movements, such as patients' rights and environmental health, than to the radical

movements associated with antivaccinationism (alternative medicine, religious fundamentalism, conspiracy theories, and radical libertarianism).

Too little attention has been paid to the evolution over time of the social profile of vaccine critics and of their communication strategies, even though these elements have played a crucial role in the emergence of vaccine scares in the past. The American historian Elena Conis, for example, showed that the constitution of a large antivaccination movement in the US during the 1980s was at least in part the consequence of prominent consumer safety movement activists moving into the domain of vaccine criticism<sup>23</sup>. The debates over the DTP vaccine and later over the MMR vaccine were pushed forward by a new generation of activists who used new political tools and changed the way vaccination was criticized. While traditional antivaxxers tended to focus their critique on the biological matter in vaccines — stressing fears of the “animalization” of humans — these activists tapped into the growing concerns for the environment and focused their arguments on the chemicals present in vaccines, on their unnatural nature.

In the case of contemporary France, the shift has been from arguments targeting vaccination in general to arguments applicable only to one or a limited number of vaccines, and this particular trend does not appear to be limited to France alone. A similar shift appears to have taken place in other countries, including the USA and Great Britain. Journalists and academics have reported the growing success of critics who use slogans such as “green our vaccines”, make statements such as “I am not an antivaxxer but...” and who promote so-called “alternative vaccination schedules”<sup>24-26</sup>. In France, the emergence of this new generation of vaccine critics had a crucial impact on attitudes to vaccines. Their less radical stance has made them appear credible to journalists and thus resulted in the succession of vaccine scares in the media we described before<sup>27</sup>. They also appear more credible to the wider public, including medical professionals. This is reflected in the pattern of French hesitancy. Doubts are mainly focused on these “controversial” vaccines, while a very small proportion of the population rejects vaccination in general (around 2%).<sup>4</sup> Again, this pattern is not specific to France. Qualitative research has showed that doubts are focused on some vaccines in many developed countries<sup>2,28,29</sup>. The French experience shows the need to analyze the course of the public’s hesitancy in relation to that of vaccine-critical activism.

## **Is coercion THE solution?**

The French situation testifies to the challenges faced by public health authorities and the limitations of the tools available to them. It is tempting to attribute the rise of doubts to their failure to coordinate interventions on social media, and it is true that French public health authorities have only recently devised a comprehensive strategy against vaccine hesitancy on the Internet. Nevertheless, such campaigns do not solve the issues we described above, especially not the lack of GP involvement. Furthermore, exposing people to pro-vaccine messages and information on vaccination can only do so much and can even backfire. Many ways of communicating on vaccination have been found to have very limited effects and even to be counterproductive<sup>30,31</sup>.

Faced with the limitations of the traditional communication tools at their disposal, coercion is an enticing solution for public health authorities to attain satisfactory vaccine coverage. In the past five years, many countries and several US states have reinforced sanctions against parents who do not vaccinate their children, eliminated non-medical exemptions, or extended the number of mandatory vaccines (e.g., Italy, Australia, and California), and many others are debating these options (Germany, Poland, and others).<sup>32,33</sup> The decision by the French government to extend the list of mandatory vaccines was part of this international trend. All children born since January 1, 2018, must be up to date for all 11 recommended vaccines to have access to collective child care and schools.

Coercive measures have often proved effective in improving vaccination coverage<sup>32-34</sup>. But they are also known to regularly generate large antivaccine mobilization and durable distrust of authorities in sections of the public.<sup>35,7</sup> For example, the implementation of legal mandates was at the origin of the first large antivaccine movements in England in the 19th century and led to violent riots in Brazil at the beginning of the 20<sup>th</sup> century<sup>36</sup>. More recently, the reinforcement of penalties for non-compliers in Poland, Germany, and Serbia since 2015 has prompted the constitution of large antivaccine fronts that are gaining grounds in the media and public opinion<sup>18</sup>. In settings where vaccine hesitancy is so prevalent, where vaccine-critical arguments circulate widely, and where trust of public authorities is low, this type of measure may polarize attitudes toward vaccines.<sup>35,37</sup>



To limit the risk of such a backfiring effect, the French Ministry of Health strived to make the extension of mandatory vaccination only a part of a comprehensive plan aiming to improve trust in vaccines. This scheme includes providing all medical actors with standard arguments and leaflets to help them focus on improving persuasion rather than resort to threats of sanctions. It also includes regular monitoring of attitudes toward vaccination and vaccine coverage. The results after one year of implementation are encouraging. Vaccine coverage has risen and negative attitudes are slightly less prevalent.<sup>38</sup> But we must not claim victory yet. One third of parents still oppose the law and more than 20% still display some form or another of vaccine hesitancy<sup>5,38</sup>.

### **The risk of complacency**

The case of France should continue to provide insights into the dynamics of vaccine hesitancy. The recent extension of mandatory vaccination constitutes a live experiment to test the effectiveness of coercion in the so-called “post-truth era”. Perhaps the greatest risk in the coming years is to become complacent and let coercion do all the work. To avoid a possible breakdown of trust in the healthcare system as a whole, it is crucial to continue to monitor attitudes. It is even more important to invest in new forms of intervention that have proved effective in reducing vaccine hesitancy among patients and healthcare workers in other countries. Recent experiments of training healthcare workers to perform “motivational interviews” with patients suggest this could be part of the solution<sup>39</sup>. Such techniques, based on interactions with patients, have the advantage of going beyond the simple transmission of scientific information: they help to build trust. Helping doctors change the way they communicate with patients would be a step towards what should be seen as one of the top priorities for the French healthcare system today: rebuilding trust between medical professionals and public health authorities.

Moving toward this goal is all the more essential given that the current government promised the mandate extension would only be temporary. Across the political spectrum, three of the four main opposition parties have expressed criticism of mandatory vaccination or uncertainty about the safety of some vaccines. The abrogation of the French mandatory vaccinations could come sooner than expected. Now is the time to build a healthcare system immunized against doubts about vaccination.

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## **Author contributions**

All authors participated in the literature search, the analysis and the writing of the paper.

## **Competing Interests statement**

The authors have no conflicts of interests to declare.

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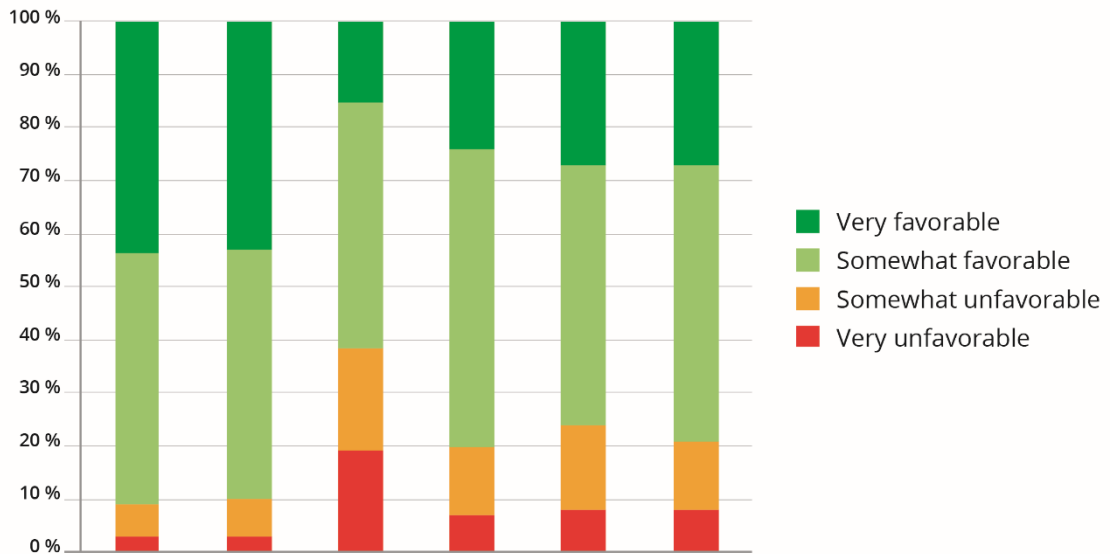
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**Figure 1. Opinions regarding vaccination in general: trends since 2000**  
 (France, adults 18+ years)



Source: Health Barometers from 2000 to 2017, Santé Publique France

Figure 1.

Title. Opinions regarding vaccination in general: trends since 2000 (France, adults 18+ years, N=15 000 to 30 000)

Legend. Source: Health barometers from 2000 to 2017, Santé Publique France. Health barometers are national surveys of representative samples of the general population; the size of each survey varies from about 15 000 to 30 000 individuals. They show the evolution of the public opinions regarding vaccination general.