

Vaccines are not seat belts, and motor vehicles are not human beings

Juan Gérvas, médico general rural jubilado, Equipo CESCO, Madrid, España

jjgervas@gmail.com www.equipocesca.org @JuanGrvas

Mercedes Pérez-Fernández, Especialista en Medicina Interna, médico general jubilada, Equipo CESCO, Madrid, España. mpf1945@gmail.com

Seat bealt versus vaccines

The debate on the coercive vaccination is raised many times with the example of the acceptance of the implementation of the mandatory use of seat belts in motor vehicles. It is a very popular approach usually led by those who lack scientific training in vaccines¹.

Verbatim: “Seat belt requirements raise many of the same ethical issues as vaccination requirements, and seat belt laws initially encountered some opposition from the public that is very similar to some of the current opposition to vaccine mandates. The analogy suggests that the risks of vaccines do not constitute strong enough reasons against coercive vaccination policies and that the same reasons that justify compulsory seat belt use—a measure now widely accepted and endorsed—also justify coercive vaccination policies”².

But: “The possibility of saving resources in health care does not usually apply in our societies, and the paternalist mentality that contributed to the implementation of seat belt-wearing obligation was predominant 30 years ago, but it does not apply at this moment. Furthermore, the risk/benefit analysis is totally different in both scenarios. In the case of seat belts, there is no way to discriminate between the users. In the case of vaccines, individuals present with unique circumstances that may differ substantially from those of another and might be foreseen a priori”³.

Seat belts are no vaccines, and motor vehicles are not human beings

The safety belt analogy with vaccines is meaningless. Why? Because:

1. Vaccines change the very complex relationships with germs and modify the delicate dynamic equilibrium established over hundreds of thousands of years between humans and germs (viruses and bacteria, fundamentally). The seat belt is implanted on an inert mechanical structure.
2. Vaccines are injected, they are not "removable" medications, you cannot take on and off.

1 <https://www.fnlonon.com/articles/why-vaccination-should-be-like-wearing-a-seat-belt-compulsory-20210813>

2 <https://academic.oup.com/phe/advance-article/doi/10.1093/phe/phz014/5602463#165094945>

3 <https://link.springer.com/article/10.1007/s11019-022-10068-1>

Vaccines, once placed, cannot be "stopped". The seat belt, of course, is removable. In that sense, vaccines and seat belt could be compared when said belt "implants" in the body and crosses it under the skin, for example, from left armpit to right groin, and stays that way forever.

3. The seat belt can never act "a posteriori"; that is, its utility is marked by wearing it correctly in case of an accident. On the contrary, there are vaccines, such as rabies, which are used frequently in therapeutic form (post-exposure treatment) just after the bite by rabid animal⁴. There are also vaccines that are used to "fence" outbreaks (ring vaccination strategy), as in the case of Ebola⁵. That is, they are used "a posteriori", an unthinkable fact regarding the seat belt.
4. The seat belt can never kill anyone in the act of buckling it, and there is no need to locate the people who are going to die just by putting it on. There are vaccines whose immune reaction can damage and even kill if they are put in people with/without previous natural immunity. Pre-vaccination screening is necessary to identify who can be vaccinated. This is the case of the Q fever vaccine⁶. To avoid the risk of a severe reaction the vaccine should only be given to those who have not been in contact with the bacteria in the past. On the contrary pre-vaccination screening is necessary to identify people without immunity in the case of the dengue vaccine as the vaccine is directed exclusively to seropositive individuals^{7, 8}.
5. The seat belt can have rare adverse effects, in the sense of being harmful when properly worn in the event of an accident, and such rare adverse effects are only in the case of an accident. The adverse effects of vaccines can occur from the moment of the shot, and they are frequent but the spontaneous declarations of adverse effects of the vaccines barely reach 1%. For example, in Spain, the spontaneous reporting rate of adverse events associated with pandemic influenza vaccines was 322-fold lower than that identified through the follow-up study; when considered the severe cases, it was 37-fold lower⁹.
6. The seat belt is one, it is not mixed with other similar straps. Vaccines are often in groups, combined in the same injection and most cannot be taken one at a time. Thus, for example,

4 <https://www.gov.uk/government/publications/rabies-the-green-book-chapter-27>

5 <https://www.who.int/emergencies/diseases/ebola/frequently-asked-questions/ebola-vaccine>

6 <https://www.health.nsw.gov.au/Infectious/factsheets/Pages/q-fever-vaccine.aspx>

7 <https://www.tandfonline.com/doi/full/10.1080/14760584.2017.1276831>

8 <https://www.ema.europa.eu/en/medicines/human/EPAR/dengvaxia>

9 <https://www.sciencedirect.com/science/article/pii/S0264410X10015689>

when adults aged 40 to 50 are revaccinated against "measles", they are actually given the triple viral vaccine, measles, rubella and mumps. In another example, when the pregnant woman's "pertussis" vaccine is given, it is actually against pertussis, tetanus and diphtheria. In vaccines you can not usually choose one at a time.

7. The seat belt is included in the benefits of cars, which are required by law to have insurance that compensate for damages in the event of an accident, including those of adverse effects. In Spain, there is no compensation system for associated vaccine damage, but it must be prosecuted on a case-by-case basis. In fact, the Spanish Parliament rejected in 2013 the implementation of a compensation system, such as that which exists in most developed countries, from Germany and Italy to the United States^{10,11}. Thus, parents vaccinate, for example against measles without knowing that there will be one encephalitis per million vaccinated, and without knowing that it will take decades to compensate them for the harm.
8. The seat belt produces individual, and very indirectly, public benefits (by reducing the social costs of accidents as by not wearing seat belts someone will pose an extra cost on the health care system in case is injured in a way that could have been prevented by the use of seat belts), but does not produce public harms. Some vaccines produce indirect protection from infectious diseases to third parties that are not vaccinated, what is called population-herd immunity, a positive externality, such as measles vaccine. On the contrary, other vaccines produce public harm, to third parties that are not vaccinated (and to the vaccinated themselves), a negative externality, such as the pertussis vaccine, which has caused the artificial evolution of the bacteria to strains of greater aggressiveness related to new outbreaks in vaccinated populations^{12,13}. In another example, the oral polio vaccine has resulted in a type 2 virus derived from said vaccine; at present, the vast majority of cases of polio in the world are caused by the virus derived from the oral vaccine^{14,15,16}.
9. The routine use of a seat belt has required rules and laws through coercion and fines. However, and Spain is a good example, norms and laws are not required to voluntarily obtain vaccination coverage almost technically 100% (in many practical cases, as for measles and rubella vaccines in Madrid, more than 97%¹⁷). Coercive paternalism must be reserved for issues that require it, such as paying taxes, the yellow fever vaccine for visits to specific geographical areas and complying with speed limitations on road cars. Of course,

10 http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0213-91112015000100019

11 <https://www.who.int/bulletin/volumes/89/5/10-081901/en/>

12 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6304978/>

13 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9863224/>

14 <https://www.who.int/features/qa/64/en/>

15 [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(19\)30012-X/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(19)30012-X/fulltext)

16 <https://polioeradication.org/this-week/variant-polio-cvdpv-cases/>

17 <https://www.ncbi.nlm.nih.gov/pubmed/25957894>

there are norms and laws that allow coercive vaccination in situations of public health crisis.

10. Seat belt used correctly by 100% of the population in 100% of the cases would achieve its maximum effect, without decreasing its effect over time. With respect to vaccines, there will always be a small number of people who fail to make an immune response to a particular vaccine. If their body has not made an immune response, then those people remain vulnerable to the disease. Vaccines do not usually provide protection ‘for ever’. Levels of protection may naturally decrease over time, or may be reduced because of medical conditions, medications or ageing, when the immune system may work less well. Remember the cases of tetanus in vaccinated patients and with well developed antibodies¹⁸. Seat belts are mechanical structures, vaccines deal with biology.
11. Vaccines are very complex biological medications by comparison with the safety belt, a mechanical device without further ado. To talk about "vaccines" in general is to ignore its complexity and variety, each one has an appropriate use. In addition, comparing vaccines and safety belts is to accept a mechanical vision of the human being, as if it were a machine similar to a car. Such a vision reflects an idealistic mechanistic ideology of living, getting sick and dying characteristic of the 18th century¹⁹. While the seat belt makes sense in all countries of the world, there are many vaccines that are not justified in some countries-situations, such as tuberculosis, rotavirus and meningitis B vaccines in Spain²⁰. There is a rational use of vaccines that include their rejection in some cases, since it is based on the best science, such as the influenza vaccine because “the scientific failure of industry and governments to address the most important clinical outcomes for patients” repeatedly demonstrated by the Cochrane Reviews²¹.
12. Vaccines pose equity problems without parallels in the seat belt use. All motor vehicles have factory belts installed, regardless of whether they are Maserati or Lada. However, vaccines are usually denied by the facts to those who need them most, as evidenced by the case of measles outbreaks in marginalized populations in Seville (Spain, in 2011)²² or the general population in Madagascar (in 2018 and 2019)^{23, 24}. It is not enough if there are vaccines, or even if they are free, they must be taken for reasons of equity to those who need them most,

18 <https://www.bmj.com/content/320/7231/383.1.full>

19 <https://journals.sagepub.com/doi/abs/10.1177/140349489101900211>

20 https://www.mscbs.gob.es/profesionales/saludPublica/prevPromocion/vacunaciones/docs/CalendarioVacunacion_Todalavida.pdf

21 <https://www.cochrane.org/news/featured-review-three-updated-cochrane-reviews-assessing-effectiveness-influenza-vaccines>

22 http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1135-57272015000400009

23 <https://www.independent.co.uk/news/world/africa/measles-outbreak-madagascar-africa-vaccination-health-a8870816.html>

24 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7250232/>

which is sometimes difficult due to situations of war and rejection of the vaccine intervention itself, as in the Democratic Republic of Congo, in 2019^{25, 26}. It is not surprising that mortality from infectious diseases basically concerns the poor and that equity is a central issue in their control (in Spain, mortality from infectious disease is threefold among the poor compared to the rich²⁷). In addition, if we leave the core of essential classic vaccines, the new vaccines become prohibitively priced and change their focus from populations to individuals, which modifies the focus of their ethical analysis of justice and non-maleficence to that of beneficence and autonomy, and everything goes from a social ethic (little studied) to an individual ethic (overrated). With high prices, vaccines lose their “innocence” and move from collective good to business, from Public Health to Pediatrics and from social ethics to individual ethics.

13. The seat belt is always a necessary response to accidents. In the case of vaccines, the vaccine is not always necessary and is often “the least bad option”. For example, with respect to cholera, the vaccine is an interim solution that can be deployed in advance of, or together with, investments in water sanitation and hygiene. Such a good supply is preferable to cholera vaccination because address cholera in tandem with other diarrhoeal diseases²⁸.

Are ethically justified coercive vaccination policies for the same reasons why coercive seat belt laws are ethically justified? No

Seat belts are no vaccines, and motor vehicles are not human beings so the ethical foundation of coercive seat belts laws does not apply to coercive vaccination policies.

Mandatory vaccination, which already exists in some countries, is being promoted when the outbreaks of vaccine preventable diseases are presented as the responsibility of the “anti-vaccines”. But “anti-vax” are residuals in the world. For example we have problems with measles but the key question is not the acceptance of the vaccine, but access to it and problems with its effectiveness. The measles vaccine produces immunity that fades after some years. There is a continuous waning of vaccine-induced immunity²⁹. For this reason, in New Zealand has being calculated that additional immunisation beyond childhood programs to target naïve individuals is economically beneficial even when childhood immunisation rates are high^{30, 31, 32}. In Madagascar with 146,000 cases and 1,200 deaths the challenge was one of affordability and accessibility in the middle of a nutritional

25 <https://www.unicef.org/press-releases/measles-deaths-democratic-republic-congo-top-4000-unicef-rushes-medical-kits-health>

26 <https://www.nejm.org/doi/full/10.1056/NEJMp1902682>

27 <https://jech.bmj.com/content/56/9/682>

28 <https://www.who.int/news-room/fact-sheets/detail/cholera>

29 <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0170257>

30 <https://www.sciencedirect.com/science/article/pii/S0264410X17310034>

31 <http://equipocesca.org/en/english-measles-outbreaks-a-public-health-focus/>

32 <https://www.tandfonline.com/doi/full/10.1080/21645515.2018.1517074>

crisis^{33, 34}.

Each country should find the most suitable way to keep up with vaccination coverages according to own cultural and organizational background³⁵. Before thinking in vaccination mandatory policies, think in improving access and effectiveness. This without considering that compulsory policies have problems and do not ensure the achievement of better coverage^{36, 37, 38, 39, 40}.

Current mandatory policies [for covid19] “may lead to a widening of health and economic inequalities, detrimental long-term impacts on trust in government and scientific institutions, and reduce the uptake of future public health measures, including covid19 vaccines as well as routine immunisations. Mandating vaccination is one of the most powerful interventions in public health and should be used sparingly and carefully to uphold ethical norms and trust in institutions”⁴¹.

33 <https://www.reuters.com/article/us-madagascar-measles/without-vaccine-hundreds-of-children-die-in-madagascar-measles-outbreak-idUSKCN1QP0MK>

34 <https://reliefweb.int/report/madagascar/madagascar-humanitarian-situation-report-june-2019>

35 <https://www.tandfonline.com/doi/full/10.1080/14760584.2021.1912603>

36 <https://www.sciencedirect.com/science/article/pii/S0264410X1831171X>

37 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6703989/>

38 <https://www.tandfonline.com/doi/full/10.1080/13814788.2018.1561849>

39 <https://www.sciencealert.com/as-effective-as-they-might-be-making-vaccines-mandatory-breaks-trust-in-healthcare>

40 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6607742/>

41 <https://gh.bmj.com/content/7/5/e008684>