

# Plan B for coronavirus: Research on vaccine and drug alternatives is urgently needed

April 21 2020, by Tammy Hoffmann and Paul Glasziou

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Credit: AI-generated image ([disclaimer](#))

The curve of the COVID-19 epidemic has been flattened in many countries around the world, and it hasn't been new antivirals or a vaccine that has done it. We are being saved by non-drug interventions such as quarantine, social distancing, handwashing, and—for health-care workers—masks and other protective equipment.

We are all hoping for a vaccine in 2021. But what do we do in the meantime? And more importantly, what if no vaccine emerges?

The world has bet most of its [research funding](#) on finding a vaccine and effective drugs. That effort is vital, but it must be accompanied by research on how to target and improve the non-drug interventions that are the only things that work so far.

Debates still rage over basic questions such as whether the public should use face [masks](#); whether we should stand 1, 2 or 4 meter apart; and whether we should wash our hands with soap or sanitizer. We need the answers now.

## **What about non-drug intervention research?**

Across all [health research](#), non-drug interventions are the subject of about [40% of clinical trials](#). Yet they receive far less attention than drug development and testing.

In the COVID-19 pandemic, millions of dollars have already been given to research groups around the world to develop vaccines and trial potential drug cures. Hundreds of [clinical trials](#) on drugs and vaccines are under way, but we could find only a handful of trials of non-drug [interventions](#), and no trials on how to improve the adherence to them.

## **While holding our breath for the vaccine ...**

We all hope the massive global effort to develop a vaccine or drug treatment for COVID-19 is successful. But many experts, including Ian Frazer, who developed Australia's HPV vaccine, think it will not be easy or [quick](#).

If an effective vaccine or drug doesn't materialize, we will need a Plan B that uses only non-drug interventions. That's why we need high-quality research to find out which ones work and how to do them as effectively as possible.

## **Aren't non-drug interventions straightforward?**

You might think [hand washing](#), masks and [social distancing](#) are simple things and don't need research. In fact, non-drug interventions are often very complex.

It takes research to understand not only the "active components" of the [intervention](#) (washing your hands, for example), but also how much is needed, how to help people start and keep doing it, and how to communicate these messages to people. Developing and implementing an effective non-drug intervention is very different from developing a vaccine or a drug, but it can be just as complex.

To take one example, there has been a #Masks4All campaign to encourage everyone to wear [face masks](#). But what type of mask, and what should it be made of? Who should wear masks—people who are ill, people who are caring for people who are ill, or everyone? And when and where? There is little agreement on these detailed questions.

Washing your hands also sounds simple. But how often? Twice a day, 10 times a day, or at specific trigger times? What's the best way to teach people to wash their hands correctly? If people don't have perfect technique, is hand sanitizer better than soap and water? Is wearing masks and doing hand hygiene more effective than doing just either of them?

These are just some of the things that we don't know about non-drug interventions.

## Existing research is lacking

We recently reviewed all the randomized [controlled trials](#) for physical interventions to interrupt the spread of respiratory viruses, including interventions such as masks, hand hygiene, eye protection, social distancing, quarantining, and any combination of these. We found a messy and varied bunch of trials, many of low quality or small sample size, and for some types of interventions, no randomized trials.

Other non-drug options to research include the built environment, such as heating, ventilation, air conditioning circulation, and surfaces (for example, the SARS-CoV-2 virus "dies" much more rapidly on [copper](#) than other hard surfaces).

Are some of the things we are doing now ineffective? Probably. The problem is we don't know which ones. We need to know this urgently so we're not wasting time, effort, and resources on things that don't work.

At a time when we need to achieve rapid behavior change on a massive scale, inconsistent and conflicting messages only creates confusion and makes achieving behavior change much harder.

## What about the next pandemic?

If a successful COVID-19 vaccine is developed, we're out of the woods for now. But what happens when the next pandemic or epidemic arrives? Vaccines are virus-specific, so next time a new virus threatens us, we will again be in the same situation. However, what we learn now about non-drug interventions can be used to protect us against other viruses, while we wait again for another new vaccine or drug.

We have had opportunities to study non-drug interventions for

respiratory viruses in the recent past, particularly during the Severe Acute Respiratory Syndrome (SARS) epidemic in 2003 and the H1N1 influenza pandemic in 2009. However, the chances for rigorous studies were largely wasted and we now find ourselves desperately scrambling for answers.

## What about research for Plan B?

To prepare for the future and Plan B, the case where a vaccine doesn't arrive, we need to conduct randomized trials into non-drug interventions to prevent the spread of respiratory viruses. The current pandemic is presenting us with a rare opportunity to rapidly conduct [trials](#) to answer many of the unknowns about this set of non-[drug interventions](#).

Concentrating all our funding, efforts, and resources into [vaccine](#) and [drug](#) research may turn out to be a devastating and costly mistake in both healthcare and economic terms. The results will be felt not only in this pandemic, but also in future ones.

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