

# Covid-19 Vaccine: Perception vs Science

Dr Krathish Bopanna

President & Director

Reicuri Pvt Ltd, Bangalore

[www.reicuri.com](http://www.reicuri.com)

[krathishbopanna@gmail.com](mailto:krathishbopanna@gmail.com)

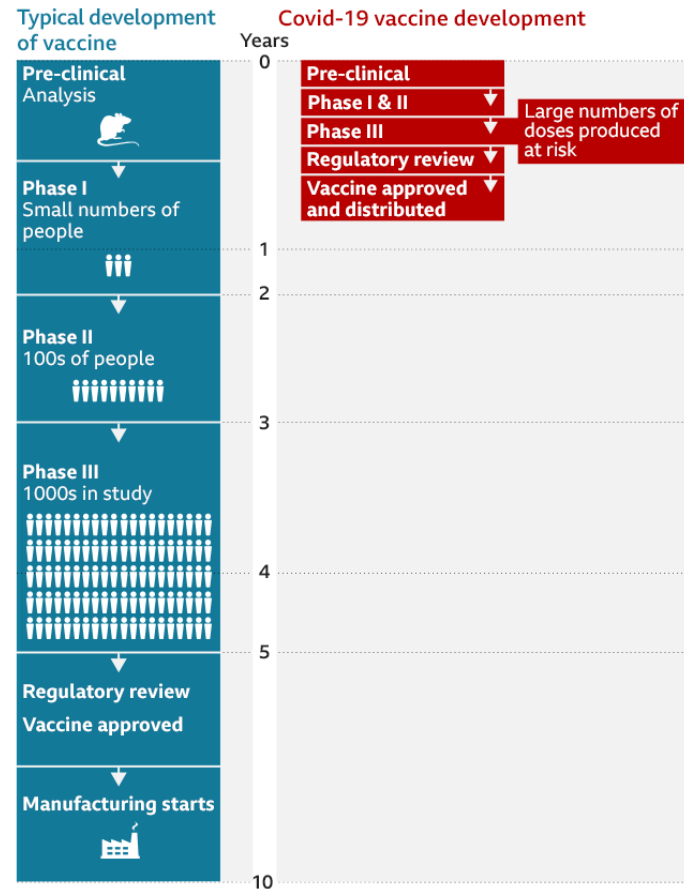
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# Overview

- ▶ Basic understanding of vaccine with regards to COVID-19
- ▶ Process of vaccine development and approval process
- ▶ Why this topic is so controversial?
  - For:** Protection against COVID 19 for a short duration
  - Against:** Human life is too valuable to take a vaccine which has limited clinical data and protection offered is too less

## Vaccine development



## How some of the Covid-19 vaccines compare

Company	Type	Doses	How effective*	Storage
<b>Oxford Uni-AstraZeneca</b>	Viral vector (genetically modified virus)	x2	62-90%	Regular fridge temperature
<b>Moderna</b>	RNA (part of virus genetic code)	x2	95%	-20C up to 6 months
<b>Pfizer-BioNTech</b>	RNA	x2	95%	-70C
<b>Gamaleya (Sputnik V)</b>	Viral vector	x2	92%	Regular fridge temperature

\*preliminary phase three results, not yet peer-reviewed

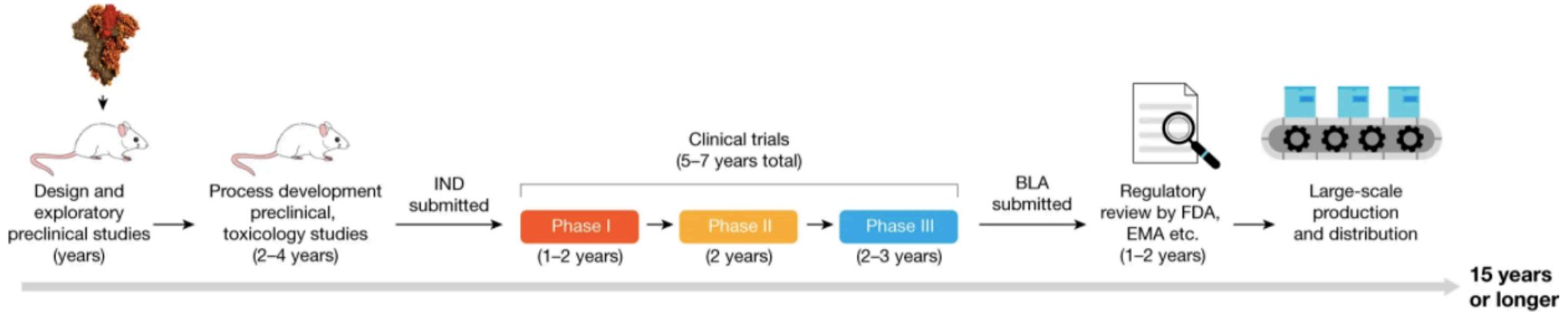
Source: Respective companies, WHO

BBC

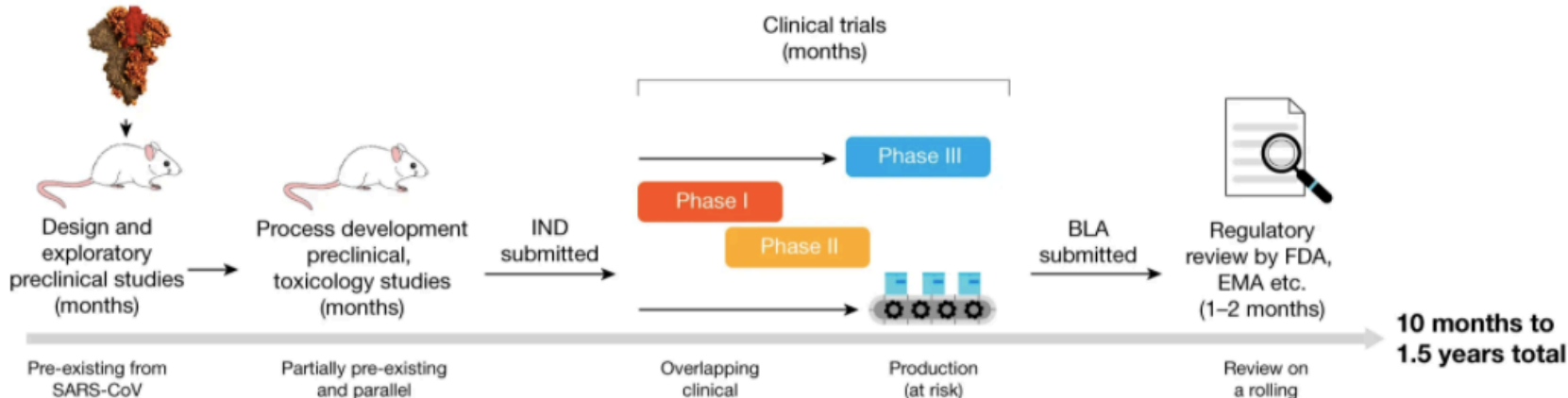
**Four COVID-19 vaccines are at the advanced stage of clinical cycle to be administered in <12 months**

## From: SARS-CoV-2 vaccines in development

### Traditional development



### SARS-CoV-2 vaccine development

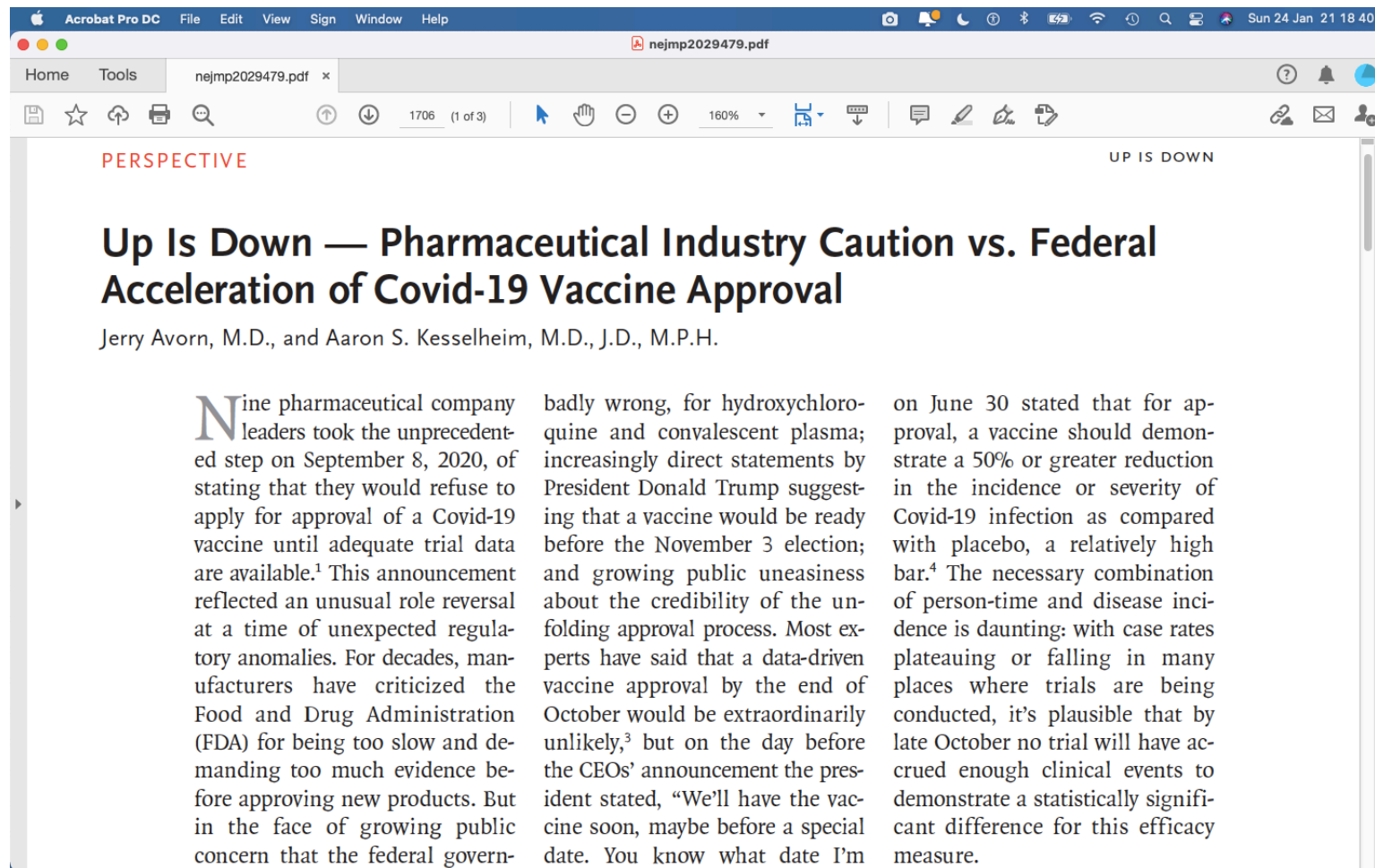


***Cause of public concern for accelerating science, review and approval process***

# Current perceptions

- ▶ Is data provided by the research organisations or Pharma companies enough for public to take vaccine from both safety and efficacy point of view
- ▶ Vaccine discovery to development (bench to bed is about 10-15 years)
- ▶ Regulatory agencies (US FDA/ UK MHRA/India CDSCO) approving these vaccines in record time of less than 1 year is against convention?
- ▶ Can the public take this studies and approval process seriously?
- ▶ US Immediate past President Mr Trump suggested the possibility of an “October surprise” approval, the more concerned the public becomes about the soundness of the vaccine development and evaluation process.

***Process vs Politics is the biggest public debate?***



PERSPECTIVE

UP IS DOWN

## Up Is Down — Pharmaceutical Industry Caution vs. Federal Acceleration of Covid-19 Vaccine Approval

Jerry Avorn, M.D., and Aaron S. Kesselheim, M.D., J.D., M.P.H.

Nine pharmaceutical company leaders took the unprecedented step on September 8, 2020, of stating that they would refuse to apply for approval of a Covid-19 vaccine until adequate trial data are available.<sup>1</sup> This announcement reflected an unusual role reversal at a time of unexpected regulatory anomalies. For decades, manufacturers have criticized the Food and Drug Administration (FDA) for being too slow and demanding too much evidence before approving new products. But in the face of growing public concern that the federal govern-

ment was acting badly wrong, for hydroxychloroquine and convalescent plasma; increasingly direct statements by President Donald Trump suggesting that a vaccine would be ready before the November 3 election; and growing public uneasiness about the credibility of the unfolding approval process. Most experts have said that a data-driven vaccine approval by the end of October would be extraordinarily unlikely,<sup>3</sup> but on the day before the CEOs' announcement the president stated, "We'll have the vaccine soon, maybe before a special date. You know what date I'm

on June 30 stated that for approval, a vaccine should demonstrate a 50% or greater reduction in the incidence or severity of Covid-19 infection as compared with placebo, a relatively high bar.<sup>4</sup> The necessary combination of person-time and disease incidence is daunting: with case rates plateauing or falling in many places where trials are being conducted, it's plausible that by late October no trial will have accrued enough clinical events to demonstrate a statistically significant difference for this efficacy measure.

- ▶ Is the vaccine developed by the companies provide adequate protection against SARS-COV2 without compromising clinical trial design, immunological parameters, statistics, health and welfare of the people involved.
- ▶ Is the data driven by these research organization gives more than assurance >50% of the patients gets cured from SARS CoV2 compared to placebo (dummy vaccine)
- ▶ Endpoints like increased antibody titer values like IgG/IgM post vaccination results confer increased protection against SARS-COV2
- ▶ Influence of religion/faith in countering COVID-19 across regions from science perspective

**Facts to build  
positive  
perception**



- ▶ Public get scarred how people in politics can move an immovable object like clinical trial outcome closer to election date?
- ▶ Is the approval process followed non-clinical efficacy parameters by using surrogate markers or laboratory results to show efficacy: May be due to pressure by political bosses and patient advocacy groups?
- ▶ In some regulatory agencies one can approve based on risk associated or due to public emergencies, one call rule- out all the claims or counterclaims of scientists or advisors in the public agencies
- ▶ **People in higher-income countries tend to show the highest rate of vaccine distrust**, while in countries, notably in Africa, where preventable diseases still spread, such as Bangladesh and Rwanda, there is greater trust in vaccination.

Pertinent  
questions?

# The Role of Religion in Covid Prevention Response: Where Angels Fear to Tread

by Richard Seifman & Claude Forthomme

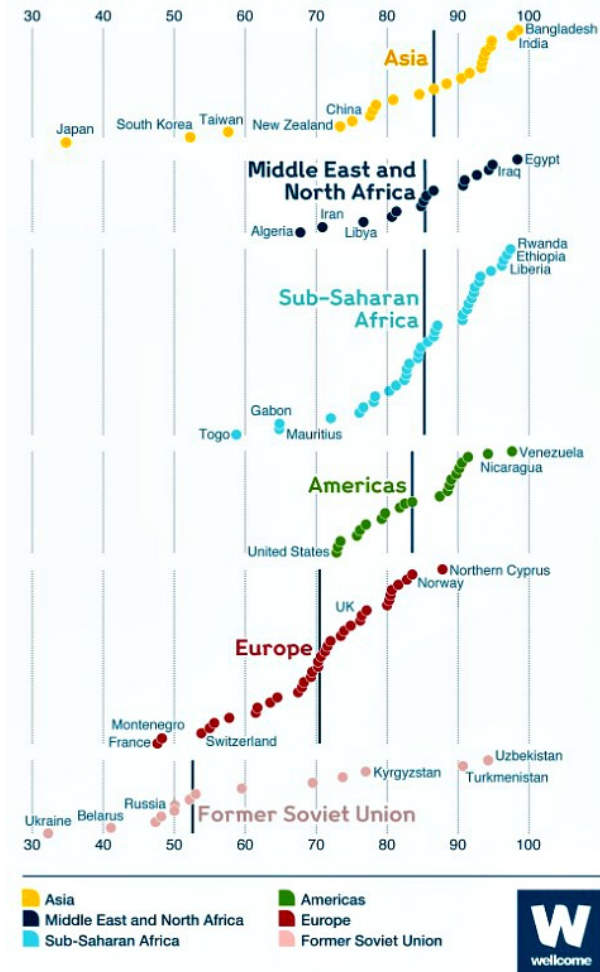
While bench scientists around the world continue to work on designing a safe and effective vaccine and therapeutics, drug manufacturing companies deal with the production aspects, and public health systems grapple with future distribution constraints, a different factor may await in the wings, one which can either help or hinder the achievement of prevention goals, namely religious tenets. World religions can make a difference in the race to distribute vaccines, for better or for worse, and we are already seeing their impact around the world.

Vaccine hesitancy is a worldwide problem that is, of course, not linked just to religion – many other factors enter into the equation. A major study on vaccine hesitancy was carried out in 2018 by the [Wellcome Global Monitor](#), a UK health research nonprofit, covering 140,000 people ages 15 and older in more than 140 countries and seeking their views on religion, science, and health, including their attitudes toward vaccines.

Pope made his position known early in the pandemic and [said it loud and clear](#) in his third general audience focused on the pandemic (19 August 2020), never putting in doubt that vaccination was required

% of people who believe vaccines are safe, by country and global region

Dark vertical lines represent region medians

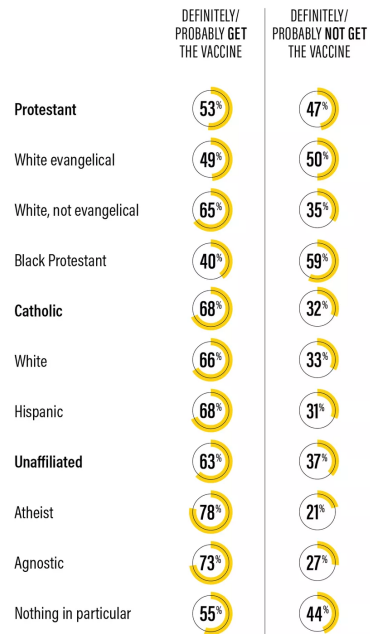


Source: Wellcome Global Monitor, part of the Gallup World Poll 2018

## Intent to get a COVID-19 vaccine



% of U.S. adults who say if a vaccine to prevent COVID-19 were available today, they would ...



NOTE: Survey conducted Nov. 18-29, 2020.

SOURCE: Pew Research Center

# Will religious leaders fight for — or against — COVID-19 vaccinations?

As the first COVID-19 vaccines roll out, experts note that religious leaders play a crucial role in public health

By Mya Jaradat | Dec 19, 2020, 10:00pm MST



# Mini Conclusion

- ▶ Many health care workers are prone to get infected virus especially those who attend to infected patients or in diagnostic labs
- ▶ Elderly people considered vulnerable with concomitant diseases like diabetes or hypertension, or lung diseases are more prone to get infected
- ▶ Clinical data shows currently up to 90% protection so the aforesaid population can be protected.
- ▶ In a poll conducted in US, 78% respondents said vaccine development is driven more by politics than science. Similarly, in EU 68% of the respondents felt that the agency will approve only that is in the best interest of the public which is quite contrary to American public opinion on regulatory agencies.
- ▶ The aforesaid response is a perception measure of credibility and it is linked to vaccine program uptake.

***Perception is important for treatment adherence and greater compliance***

## # Perception 1

Shorter testing process, cutting corners in clinical trials due to Govt Pressure. Compromised Govt Safety review and approval process

Science claim

Modern reliable scientific tools were used to accelerate vaccine research process, world wide synchronisation in collaboration, production and distribution. Large number of volunteers participated in the clinical trial program, Government agreed to companies upfront for assuring the production/distribution. Public health was in serious and immediate risk so Govt took this at highest priority within the norms of regulatory framework.



# Perception Vs Science

## # Perception 2

mRNA based vaccines may change DNA of person. Chance of a chimera or transhuman, Male mRNA vaccine transfused to female may have characteristics of male

Science claim

mRNA gets decoded by structures in cells called ribosomes which are outside nucleus. Once mRNA is decoded, garbage disposal comes into play and mRNA gets broken down. It doesn't stay intact and can't find a way into nucleus. Benefits of vaccine to reduce COVID 19 outweighs the chances of mRNA entering DNA which is one in billion!

Perception Vs  
Science

### # Perception 3

COVID 19 vaccines can cause short fever, headache, fatigue, sore arm or chills especially after the second dose other reactions can include some serious anaphylaxis.

Science claim

Vaccines work by getting the immune system to fight. All the symptoms are good sign to show that its working. Anaphylaxis are rare and cannot be claimed as a property solely with COVID 19 vaccines.



# Perception Vs Science

## # Perception 4

Mutations or new varieties of corona virus cannot be protected by Covid-19 vaccines.

Science claim

Multiple studies have shown that vaccines work on the spike proteins of the corona virus there by making them ineffective. Changes or mutations are very specific to each spike proteins which are not specific target for vaccines. Hence new mutations did not outsmart the vaccines yet!

Perception Vs  
Science



## # Perception 5

Vaccines do contain live or whole corona, microchips, tracer technology, fetal tissue, stem cells, mercury, aluminium. Luciferase, the mark of beat, pork products as preservatives

Science claim

It doesn't contain any of these perceptions which can trace the person who is injected nor it interferes in any religious beliefs or it contains tissue which have higher molecular weight and cannot be used as injectable for this purpose. Heavy metals do not have a place in injectables.



# Perception Vs Science

# How do we connect perception to reality?

Accelerated approval process is good but it produces suspicion in minds of public

- It may deter public health initiatives like vaccine drive or faith reposed by the public on health agencies.
- Sufficient declaration of the fact that ongoing data and studies to statistically justify data over next 2 to 3 years is essential to get public confidence.

***To Mitigate immediate risk and to provide public confidence***

## Conclusion

- ▶ Considering the pandemic and immediate risk involved Government in consultation with public and healthcare agencies have accelerated approval process
- ▶ Some of the perceptions are natural and needs to be addressed by opening up channels of communication.
- ▶ Biggest challenge is to see how many are ready to take this vaccine which should be 90-100% in vulnerable population?
- ▶ Government should seek continuous data on the protection from corona virus for more than current 30 to 60 days!
- ▶ Continuous monitoring and reporting of adverse events is important for public knowledge

***Science, religion, faith and public needs to merge ideas and seek confidence***

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