

New Ebola vaccine trial starts in humans – but how safe is it?

An epidemic of the Ebola virus disease (EVD) is ongoing in West Africa. Ebola virus is one of the two members of the Filovirus family. It causes a severe hemorrhagic fever with 50–90% human mortality¹. No vaccines or treatments are commercially available yet. Its high prevalence among wildlife and ease of transfer makes it a significant public health concern¹. According to a WHO report², Ebola first appeared in 1976 in two simultaneous outbreaks, in Nzara, Sudan, and in Yambuku, Democratic Republic of Congo. The latter was in a village situated near the Ebola River, from which the disease takes its name².

A team of researchers from The National Institutes of Health (NIH), USA reported that promising results were obtained when the experimental vaccine for Ebola virus was tested on monkeys³. As a result, a small clinical trial is ongoing with healthy human volunteers in the US. Researchers mention that the vaccine treatment includes a booster shot to help the immune system fight the virus for months after it is first administered. Earlier, researchers injected the experimental vaccine in Rhesus monkeys and found that it could protect the animals for as long as 10 months. This is the longest that any Ebola vaccine has been shown to provide protection against the deadly virus. NIH has begun to test the vaccine to healthy people since the first week of September this year for the first time⁴. NIH declares that the experimental

vaccine designed by the Vaccine Research Center contains no infectious Ebola virus material. The virus material is a chimpanzee adenovirus vector vaccine (non-replicating viral vector) into which two Ebola genes have been inserted. The vaccine enters a cell, delivers the gene inserts and does not make functional viral pathogens. This vaccine was developed in a joint effort by researchers from NIH and Okairo, a Swiss-based biotech company which was bought by the British drug company GlaxoSmith-Kline Pharmaceuticals Ltd recently⁵. The results of successful phase-I trials of chimpanzee adenovirus vector Ebola vaccine on humans (11 women and 9 men) were published recently⁶. The report shows promising results with no severe side effects⁶.

The major parameters for developing a vaccine are its long-term efficacy, long-term safety, cost-effectiveness, etc. Usually, developing a vaccine and bringing it to commercial level takes 5–10 years, but in the present case researchers are trying to develop it in a short duration as Ebola cases are on the rise. Hence, there is a chance of compromise with the safety parameters in developing the vaccine for the market. According to the experts, pharmaceutical companies are unlikely to invest huge resources needed to develop new drugs, when these would probably be used only occasionally in relatively small numbers of people. Hence investment from international agencies is

needed for any realistic chance of success in the future⁷. These time-limited and expense-limited endeavours need to be carefully justified before bringing the product to the common man.

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Modi(the)ology in science

This is with reference to the note by Patra¹ in *Current Science*.

A century is considered great in cricket. A century of days in power is good for any government in the 21st century. Narendra Modi's hundred days in office, his presence in various scientific functions and his speeches seem to have inspired Patra¹.

India is a great country with a long history. Our heritage leads to various thought processes in the form of 'schools

of knowledge' and often of 'wisdom'. In this context the note by Patra¹ is pertinent and starts with the optimistic words 'ache din'. The emphasis on the Prime Minister's visit to various scientific functions and his speeches on science and scientific policy have prompted Patra to cohesively use words like calibrate, innovate, collaborate and integrate. It has also been suggested that 'science for society' should be replaced by 'science and society'^{1,2}. Further 'sabka saath sabkaa

vikas' seen as a 'message of 100 days', focuses on emerging opportunities for science and scientists. How to make this a reality? Consider the following list:

- A 4% hike in allocation in S&T (with a austerity tag).
- Decentralizing the process of scientific decision-making.
- Putting young people below 35 years at the helm of affairs.
- 'Make in India' campaign.

- Bottom-up and top-down processes.
- Developing robust interface between science and end-users.
- Integrating different processes of governance and increasing confidence building.
- ‘Expert’ advice.
- Pathways and systems which would embolden Indian science and help restore some of its *lost trajectories*.
- Multi-level and multi-stakeholder initiatives.

Synergy of all of the above may provide us some clue.

When we look back in time, scientific policy since independence visualized all these options. Increasing use of technology has changed the face of science today and the way it is pursued has altered as well. It is time for a multi-disciplinary, multi-thronged, multi-collaborative, multi-tasked approach in science. Scientists suffer from ‘multi-proxy data syndrome’. It is easy to generate data and publish multi-authored research papers. Original creative minds seem to be disappearing now.

Ordinary Indian lives are centred around mythology, technology and commerce. We see a technology wave but not a science wave. ‘Modiwave’ should have

been converted to science wave³. Success of mission-mode projects in space and atomic energy sectors in India is due to persistent dedication and sacrifices of some people over a period of time and the vision of great thinkers. Science should progress with emerging realities. We must not get carried away by political leadership, rather we must build leadership in science. The future may witness such a scenario with more incentives to scientists, since the market dictates potential areas of science. We should be vigilant about grossroot realities of our people before framing significant science policies. Public perception of science and scientists in India is far from encouraging while science may be an individual activity, technology is a coordinated activity⁴.

Concerted efforts are required to infuse ethics and scientific temper in our country. Original thinking in young minds should be nurtured. We have produced ‘laptop’ scientists rather than ‘total’ scientists. Science is a creative venture and the time has come to invest in thinking minds. The lack of innovation nowadays is a testimony to our myopic thinking. Ethical component needs top priority in this confounded world⁵. Modi-ology may answer our predicament in near future. Let the ‘100 days’

dream become a reality by 2020. It is rightly put:

‘For want of a nail the shoe was lost.
For want of a shoe the horse was lost.
For want of a horse the rider was lost.
For want of a rider the message was lost.
For want of a message the battle was lost.
For want of a battle the kingdom was lost.
And all for the want of a horseshoe nail.’

(*JLA: The Nail DC Comics*, 1998)
(*Wikipedia* – the free encyclopedia).

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