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Guest Editorial

Covid 19 vaccination – A must to end the pandemic

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1. Introduction

When we source data from history, it is evident that humanity has been irrevocably stalked by infectious diseases. The Black Death or the Bubonic Plague of the 14th century killed 30% of the world's population notoriously becoming the most dangerous pandemic in history.¹ The Spanish flu of 1918 wreath havoc targeting young adults fervently - most commonly due to secondary bacterial infection.² The ongoing COVID 19 pandemic has again posed a threat to us: physically, emotionally, socially and economically.

With the Spanish Flu pandemic, it was only in the 1930's that the researchers could establish the causative agent of influenza being a virus and not a bacterium having taken several years for an effective vaccine to come in action.³ If we contrast this with the present scenario, the developments in virology, microbiology, genome sequencing, biotechnology, research, early diagnosis and better scientific infrastructure has resulted in COVID 19 vaccine getting launched as early as January 2021 – less than a year after WHO declared it a pandemic.

2. Why is Vaccination Important?

There have been 167 million confirmed coronavirus cases and 34.6 lakh deaths worldwide from the time COVID-

19 started till 23rd May 2021. Talking about India, the total number of confirmed COVID cases have been 26.8 million with nearly 3.04 lakh deaths so far.⁴ The 7-day average in India reached its highest on the 8th of May with an alarming volume of 3,91,232 and later a slow downward trend.⁵ Herd immunity against COVID 19 can be achieved by getting vaccinated and breaking the chain of transmission rather than getting exposed to the pathogen.⁶ It would be downright bizarre to leave ourselves to the Darwinian principle of survival of the fittest. Thus attempts to reach 'herd immunity' by getting infected are scientifically unethical leading to unnecessary infections, suffering and death.

3. Vaccines

WHO's Emergency Use Listing (EUL) is a prerequisite for COVAX Facility vaccine supply. The EUL assesses the quality, safety and efficacy of COVID-19 vaccines, as well as cold chain requirements. The WHO has listed the Pfizer/BioNTech, AstraZeneca-SK Bio, Serum Institute of India, Janssen and Moderna vaccines for emergency use. The latest in the list added by WHO has been Sinopharm COVID-19 vaccine on 7th of May.⁷

In India the 3 vaccines approved to be used are Covishield by Serum Institute of India (SII), Covaxin by Bharat Biotech /ICMR/NIV and the recently approved by the Drug Controller General of India Sputnik V vaccine. This has been developed by Gamaleya Research Institute

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of Epidemiology and Microbiology. In India presently Dr Reddy's Laboratories is the marketing partner.

4. Types of Vaccines

1. Covaxin is a whole virion inactivated vero cell derived viral vaccine. It has an efficacy of nearly 80%. Stored at 2 – 8 degrees, given intramuscular in 2 doses 4 to 6 weeks apart.
2. Covishield is a viral vector vaccine modifying the chimpanzee adenovirus to enable carry the COVID-19 spike protein. Stored at 2-8 degrees, its efficacy is 70% given intramuscularly in 2 doses. The efficacy of the vaccine can increase to nearly 90% if doses are taken many weeks apart. The National Technical Advisory Group on Immunization in India has recently revised the guidelines and asked the second dose to be taken 12-16 weeks apart.
3. Sputnik V vaccine is a two-vector-vaccine using a recombinant replication defective human adenovirus of 2 different serotypes. This has been modified to include the spike protein expressing gene of SARS-CoV-2. Stored at 2 to 8 degrees, this has an efficacy of 91.6%, given intramuscularly 3 weeks apart.
4. Pfizer, Moderna and Janssen vaccines have been approved for use in USA by CDC and FDA. Pfizer and Moderna are the mRNA vaccines with efficacy of 95%. Pfizer can be given to anyone >12 years of age. Janssen is a single shot viral vector vaccine which came under scrutiny after blood clots as side effects.
5. Novavax is a protein subunit based vaccine.

5. Safety

Possible vaccines go through an intensive testing process. There are preclinical trials done. The clinical trials on humans are done in 3 phases to check for safety profile, adverse effects, dose required and immunogenicity. Trials in all the phases have to follow strict safety guidelines set by national regulatory authorities that prioritize participant safety. Post vaccine release there is also a post-market surveillance. This ensures that the vaccines meet similar safety, performance and quality parameters.

6. Side Effects

Common side effects observed are pain or tenderness at injection site, fatigue, headache, fever, body ache and nausea which can be treated with adequate rest, hydration, good nutrition, Paracetamol and a positive mindset. Some of the fatal side effects reported from AstraZeneca and Janssen from around the world have been the blood clots called cerebral venous sinus thrombosis (CVST) and splanchnic vein thrombosis (SVT). In most of the patients identified so far, these clots occurred in combination with thrombocytopenia. However, having reviewed data from

190 million AstraZeneca vaccinations, the World Health Organization's (WHO) Global Advisory Committee for Vaccine Safety (GACVS) issued an interim advisory that a causal relationship has not been confirmed. WHO stressed that the benefits of the vaccine in terms of preventing deaths and serious disease from COVID-19 is much superior to the risks.⁸ Adverse event following immunization (AEFI) data in India has reported clotting and bleeding incidents of only 0.61 cases per million doses of Covishield thus making a period of 28 days important post vaccination to observe for any unusual side effects.

7. Salient Features

Here we shall discuss about the 3 vaccines being used in India namely Covishield, Covaxin and Sputnik V which as on 23rd may 2021 have been authorized to be used only in a population of >18 years of age.

1. As of now there is no scientific evidence or study to promote interchangeability of the vaccines.
2. No vaccine is superior to the other and administration must be done depending on the availability.
3. The vaccine can be administered to immunocompromised patients, diabetics, patients with heart diseases, stents, pacemakers, asthmatics, cancer patients, patients on renal replacement therapies. There are no contraindications except severe anaphylaxis earlier to any of the vaccine components or if the patient is suffering from any acute illness presently which requires hospitalization. In that case a gap of 4 to 8 weeks to be observed post discharge.
4. According to the latest advisory from National Technical Advisory Group on Vaccination; pregnant ladies must be adequately counselled about the risk and complications of covid 19 during pregnancy and they can be administered the vaccine safely after consent.
5. The vaccine can be safely taken by lactating mothers.
6. If someone has had covid infection; the active natural immunity in the body lasts for 3 to 6 months. The latest advisory says to get vaccinated after 6 months of RTPCR positive. It is further important to get vaccinated after infection knowing that reinfection from mutant strains of the virus is a high possibility.
7. It is exactly the reason why a booster dose will be required later.
8. The total protection offered by vaccination is for 9 to 12 months and it becomes complete after 2 to 3 weeks of second dose of vaccine. But vaccine does not provide sterile immunity. It does provide immunity from serious disease, complications and death.
9. For patients who have undergone plasma therapy the vaccine can be given after 3 months from discharge from hospital considering the high titres of anti covid antibodies already present in the blood.

10. Blood donation must be done after 3 months of receiving vaccination.
11. As of now there is no vaccine available against covid 19 for children in India. Bharat Biotech Covaxin has entered phase 2, 3 trials for children between 2 to 12 years of age. Zydus Cadilla's ZyCOV D is being tested in children >12 years. Hoping these trials conclude soon so that vaccination is available to children marking a critical step ensuring break of transmission of the virus. Some of the nasal vaccines that are going to be made in India could be game changers for children.

8. Conclusion

The government of India has allocated 35000 crores for the COVID 19 vaccination drive. India is a country of 1366.4 million people. In spite of vaccinating nearly 191 million people; the percentage population with at least 1 dose of the vaccine is 10.9%.⁹ The percentage of population fully vaccinated is a meagre 3%. Thus the huge population, logistics associated with it, lack of supplies and the unwillingness from rural India to receive vaccination has brought the figure per day to 0.10/100 people getting vaccinated in 7 day average as on 23rd May 2021. It is thus imperative for healthcare workers to educate, spread awareness, quote authentic data, motivate, communicate and bring clarity in the minds of all who are doubting this process of vaccination. Along with this, the main preventive measures of S-Sanitation, M-mask wearing and S-Social

distancing is the only way forward to save us from the catastrophe of corona virus infection.

9. Conflict of Interest

None.

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