Vaccine for Covid-19 Infection

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With the availability of vaccine for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection healthcare providers may expect some relief in their workplace. Though process of development of vaccine and their emergency use approval with limited evidence based data raises doubts, but till date this appears to be a way forward in dealing with Covid-19 infection.[1] WHO has recently given the emergency use approval in late December 2020.[2] Currently two vaccines are approved of vaccine for general use which include those developed by Pfizer-BioNTech and Moderna.[2] These are mRNA type of vaccines. There are other vaccines currently undergoing phase 3 trials that include Oxford/AstraZeneca, Chinese CanSino covid and Sinopharm vaccines. Chinese vaccines are undergoing trials in Pakistan and Sinopharm vaccine is expected to be used by the Pakistani government in first quarter of 2021. Same vaccine is already in use in United Arab Emirates after clinical trials.

The availability of vaccine also raises many ethical issues. Currently supposedly the safest Pfizer-BioNTech vaccine is not expected to be available for people from developing countries as it requires special method for transportation and storage in addition to the cost. Secondly supply may be short and waiting time may be long. United Kingdom was the first country to authorize its use on emergency grounds. Two doses are needed for producing immunity however there is now controversy in United Kingdom whether to give second dose or delay it and vaccinate other people. There is also an issue as to who will get the vaccine first. It appears reasonable to vaccinate frontline healthcare providers as well as vulnerable persons of high risk groups on priority. However there should be no discrimination based upon gender, race, socioeconomic status etc. Currently vaccine is provided free of cost in almost all countries but this adds to the burden on already stretched healthcare resources. The safety and affordability are real challenges in this context. It is well known fact that people living in many Asian and African countries have to wait till late 2021 to get their share of vaccination. World Health Organization has already alerted to this fact.

Currently the nucleic acid based vaccines are the focus of research. Vaccines based upon messenger RNA (mRNA) technology are considered safe. They are targeted for only cytoplasmic delivery. This helps in avoiding risk of genomic integration in comparison with DNA based vaccines that require delivery into the nucleus of the cell. There are chances of integration of this nuclear material into the nucleus DNA and can lead to mutagenesis.[3] The new technology also obviates the need of vector, the microbes and cultured cells. Thus safety of vaccine produced is enhanced. The two vaccines in use, namely Pfizer-BioNTech and Moderna, are of mRNA type and thus expected to cause fewer side effects though allergic reactions are unpredictable and they are at present not recommended in people below 18 years of age.[4] With all these limitations these are still recommended. It is too early to comment with regards to safety as long term results are awaited and may not be available for number of years.

The level of immunity attained and for how long after vaccination is another issue. It is still not clear if an individual is going to be protected after vaccination or additional doses may be needed. There is also a fear that a person after receiving vaccine may not adopt safety measures. There is always a risk of infection and thus emphasis should be made on wearing masks, keeping safe distance, observing hygiene practices and avoiding unnecessary travelling and visiting public places. The emergence of second wave and of new strain of virus which is reported to be more contagious, is a testimony that danger is still not over. The life style adjustments in new normal therefore should continue.

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