

## Vaccine Immunology- Potentially the Biggest Game Changer in Asian Healthcare

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There is a common pearl of Indian wisdom that encourages parents to let their children play outside in the sun, rain, gardens and mud. The premise is that it allows children to grow closer to nature and natural elements, but it also helps them build immunity and become tough. In modern science, various medical research has reported the benefits of environmental exposure in early childhood for developing immunity. Conceptually, natural exposure to certain types of common microbes, germs, and allergens contributes to immune development rather than an excessive hygiene lifestyle.

However, these immunity-building efforts are not enough for the millions of more potent and more infectious new and existing pathogens like Dengue and Zika virus that have till now gone under the radar. Historically, such viruses have caused considerable losses to life and the economy and continue to impact the world order today. The ongoing COVID-19 pandemic is the most definitive example of how a flu-like virus can wreak havoc in the world, and that's where vaccine immunology comes in. After the two deadly COVID-19 waves, the awareness of adult immunization has started to develop and as a result, the demand for adult vaccination, even for vaccines such as Hepatitis B soared.

Vaccines are deservedly credited as the only effective solution that has stopped and contained disease spread or eradicated diseases globally. Complete eradication of smallpox and 99.9% decline in polio cases worldwide are its most significant achievements with immunization preventing 4 to 5 million child deaths annually. However, 1.5 million children younger than five years still die due to vaccine-preventable deaths. The challenge becomes even more unique with emerging diseases and new infection outbreaks making global health more vulnerable.

The development of new and better vaccines targeted at more common and deadly diseases like HIV, TB, etc., can help

transform the current state of public health tremendously. It will help bring equity to healthcare and strengthen social care infrastructure. The development of new vaccines would reduce disease morbidity and mortality, help eradicate diseases, build overall herd immunity, reduce secondary infections, and prevent antibiotic resistance in people.

The more successful immunological research is in developing new vaccines for various infectious diseases, the stronger the possibilities will be to safeguard global public health and boosting economies. Vaccinating the public would increase financial savings and national productivity, minimize the socio-economic impact of the cost of treatment, and enable economic growth and development. However, vaccine immunology will not only benefit public health and the economy at large, but it can also be a game-changer for the healthcare industry in several ways.

### **Open new frontiers & make prevention central in healthcare**

While the world has been conducting mega vaccination drives against some diseases in recent decades, the medical services industry has focused on curative healthcare to treat the infected population. Undoubtedly, the curative medical field is essential for any healthcare ecosystem, but it has specific challenges. Remedial measures in terms of deadly diseases are far from perfect. The solutions are short-term, are draining on public and healthcare resources, have adverse health effects, lead to more complicated conditions due to prolonged treatment regimens, and so on.

On the contrary, conscious focus on vaccination immunology will open new frontiers of research and development in hundreds of disease areas. With over 7 billion people in the world required to be immunized against numerous diseases, the industry will benefit from constant revenue generation. It will put prevention back at the heart of all healthcare, truly realigning preventive medical care to global healthcare objectives.

### **Reduce disease burden and enhance the quality of care**

In most countries the world over, the healthcare services are largely inadequate to serve the regional population. The pandemic is a testimony of how healthcare systems of even developed and evolved economies appear as fragile in times of public health crisis. In developing nations, the challenges are more extensive in terms of affordability and accessibility. Furthermore, any stressed service delivery system compromises quality, which can be life-threatening or severely damaging when healthcare services are concerned. Investment in vaccination immunology and successes in various disease areas can be a game-changer in reducing disease burden drastically.

Also, a sharp focus on upgrading the entire immunology infrastructure, institutions, technologies and developing vaccines for existing diseases will put in place a global ecosystem that can be leveraged during a health crisis. The cost of arming vaccine immunology programs is far less than the cost of the pandemic of scale and proportions of COVID-19.

### **The Asian Perspective**

The largest continent on earth has a significant role to play in driving this transformation. Asia has to lead the vaccination immunology space because it needs to. Historically, it is one of the most severely impacted regions by both communicable and non-communicable diseases.

The continent has been housing over 50 per cent of the global population for over 70 years now, with almost 30 per cent of the international land area. Presently, it comprises 5 out of the top 10 highest populated countries globally and is home to about 60 per cent of the global population. Southern, Eastern and South-Eastern Asia include about 55 per cent of the global population within the continent. With the median age being 28-30 years, these Asian regions will remain the most populated for decades to come. Consequently, despite all the economic progress, the region's people have one of the lowest access to healthcare services. The challenges of recovery from a crisis are more remarkable for an area of such size. The demographic factors are reasons enough for the region to invest heavily and collectively in public health, vaccination, and immunization policies.

There's one more reason. Asian economies have shown the tremendous potential of doing remarkable work in any field under the sun. India and China lead the space in development along with countries like Japan, South Korea, Singapore, and smaller powerhouses like Honk Kong and Taiwan. India already has a remarkable distinction of being the world's largest manufacturer of vaccines, and its Indradhanush and Polio immunization programs have garnered appreciation the world over.

With the potential and capabilities Asian countries hold, it only fits that they develop seamless cross-border collaboration on vaccine immunology and steer the game-changing movement in the healthcare space.

### **Making vaccine immunology a success**

Immunization is deservedly credited as a game changer in the healthcare industry. The need of the hour is to invest in research and development for major breakthroughs in the vaccine development.

At the same time, collaborations in the industry can take us closer to transformations. Public-private partnerships can be the key to counter vaccine hesitancy in the population and accelerate unique solutions for improved patient care. Such collaborations can assist in streamlined and accelerated approval of innovative vaccines that targets unmet needs in Asia. The vaccines with proven efficacy must be included in the National Immunization Program (NIP) so that they are accessible to everyone and can create larger public health impact. With concerted efforts, vaccine immunology can play an important role in transforming the medical industry and reducing the disease burden, serving the highest populated region in the process.

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