



Impediments of innovation in Vaccines Development

Vaccines Arguably have had an Enormous Impact on Public Health in Modern History Comparable Only to Fresh Water and Sanitation

- Nicholas Jackson, Head of Global research for Sanofi Pasteur.

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With the ever-present threat of pandemics caused by emerging infectious diseases, the ability to quickly and effectively design, produce and administer novel vaccines is crucial. Vaccines play a central role in health fortification and progresses in biotechnologies now offers numerous innovative approaches for vaccine development. The objective of developing new vaccines to vaccinate people against infectious diseases has long been a key priority for the world's medical authorities.

But despite the success of vaccines to prevent disease, there are still significant unmet medical prerequisites. Vaccines have been used from long back to combat infectious disease; however the last epoch of few years has perceived a revolution in the approach to vaccine design and development.

The past 20 years have comprehended a rejuvenation of innovation in vaccines, including vaccines for pneumococcus, rotavirus, human papillomavirus (HPV), and varicella. The World statistics are coherent with the historically in elevation of growth rate of the vaccine industry—12 to 15 % year on year over the past two decades—which is twofold the rate of the rest of the pharmaceutical industry.

Conversely, we have been witnessing four signs of slackening innovation over the last five years:

- Profits of the vaccine industries have decelerated to below 5 % in the last five years.
- Flattening of Pipeline development in launching of new vaccine (50% in 2011 has been reduced to 15% in 2017).
- Higher attrition rates for vaccine-development programs.
- Unmet needs of developing multiple categories of vaccines, including diseases endemic to high-income regions (such as HIV) and those endemic to low-income regions (for instance, tuberculosis and malaria).

Owing to these vital impediments, the external market expects reduced development of new vaccines, with analysts forecasting 6 to 9 % growth in the global vaccine market over the next five years. The vital question is whether the vaccine industry could overcome numerous challenges that are currently affecting innovation.

Researchers suggest reinvigorating vaccine innovation will require addressing three underlying issues:

- Better investment requirements for mid- and late-stage R&D and manufacturing;
- Enhanced opportunity cost as relative investment economics converge with other biologics;
- Advanced technical intricacy and commercial uncertainty associated with recent innovations.

These tasks have the potential to affect diverse categories of vaccine manufacturers in numerous ways. On one side, they could create opportunities for innovation by new industries. On the other side, they may build structural barriers that offer benefit to prevailing industries.

However, we trust there remain substantial opportunity for vaccine manufacturers and other stakeholders (regulators, policy makers, and payers) to facilitate the succeeding wave of vaccine invention.

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