

The evolution of vaccines: global and African perspectives in the pharmaceutical industry

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Introduction

One of the greatest contributions to public health has been the development of vaccines, which provide immunity to infectious diseases and save millions of lives every year. The development, manufacturing, and distribution of vaccinations have been greatly aided by the global pharmaceutical industry. The environment of the sector has clearly changed in the last few years, particularly with regard to Africa. With an emphasis on the function of the International Pharmaceutical Federation (FIP), this article examines the perspectives that are emerging in the pharmaceutical industries in Africa and around the world.

1. *The global pharmaceutical industry: a changing landscape*

Major companies in North America, Europe, and Asia have long held a dominant position in the global pharmaceutical sector. In the African continent, Northern Part of Africa (Morocco, Algeria, Tunisia), sub-Saharan Africa (a part of South Africa) have improved in access to health insurance, well-organised health systems and well-established pharmaceutical industries; Recent patterns, however, point to a more inclusive and diverse environment.

The COVID-19 pandemic accelerated the need for rapid vaccine development and distribution, highlighting the importance of global collaboration and the potential of emerging markets and the pivotal role of vaccines, particularly in preventing COVID-19 infections.

2. *Innovations and technological advances*

One of the most notable changes in the global pharmaceutical industry is the rapid advancement in vaccine technology. mRNA vaccines, developed by companies like Pfizer-BioNTech and Moderna, have revolutionised vaccine development. The success of mRNA vaccines during the COVID-19 pandemic has spurred further research into their potential applications, including vaccines for other infectious diseases and cancer.

3. *Global collaboration and equity*

The pandemic also underscored the need for global cooperation to ensure equitable access to vaccines. Initiatives like COVAX, co-led by Gavi, the Vaccine Alliance, the World Health Organization (WHO), and the Coalition for Epidemic Preparedness Innovations (CEPI), have aimed to provide fair access to COVID-19 vaccines

for all countries, regardless of income. While challenges remain, such as supply chain issues, sub-standard medicines, medicines costs and vaccine hesitancy, these efforts have highlighted the importance of solidarity and shared responsibility in global health.

4. *The African pharmaceutical industry: a growing force*

Previously, rather than manufacturing vaccines, Africa was simply a beneficiary of them. However, this dynamic is changing as African countries invest in developing their pharmaceutical industries. This shift is driven by the recognition that self-sufficiency in vaccine production is crucial for public health security and economic growth.

Another initiative is the African Vaccine Manufacturing Accelerator (AVMA), a high-level event co-hosted in Paris by the Government of France, the African Union, and Gavi, the Vaccine Alliance, along with the support of Team Europe. This initiative will provide a finance mechanism established to make up to US\$ 1.2 billion available over ten years commencing with AVMA's launch in June 2024 to accelerate the expansion of commercially viable vaccine manufacturing in Africa.

5. *Building capacity and infrastructure*

Several African nations have made significant strides in building the necessary infrastructure for vaccine production. South Africa, Algeria, Morocco, Egypt, and Senegal are emerging as key players in this space. For example, South Africa's Biovac Institute is collaborating with international partners to produce COVID-19 vaccines locally. These efforts are part of a broader trend to reduce reliance on imports and strengthen the continent's ability to respond to health emergencies.

6. *Partnerships and technology transfer*

Collaboration with global pharmaceutical companies and international organisations has been essential in developing Africa's vaccine production capacity. Technology transfer agreements, joint ventures, and partnerships have enabled African countries to acquire the expertise and technology needed to manufacture vaccines. The African Union and the Africa Centers for Disease Control and Prevention (Africa CDC) have been instrumental in facilitating these collaborations and advocating for increased investment in the continent's pharmaceutical sector.

7. *The role of the International Pharmaceutical Federation (FIP)*

The FIP is a global organisation representing pharmacists, pharmaceutical scientists, and pharmaceutical educators. FIP plays a crucial role in shaping the pharmaceutical industry's future by promoting best practices, supporting research and innovation, and advocating for policies that improve public health.

The FIP Development Goals supporting vaccination programme worldwide are:



8. *FIP's efforts in vaccine advocacy and education*

FIP has been active in promoting the importance of vaccines and supporting pharmacists' role in vaccination. Pharmacists are increasingly recognised as key players in the vaccine delivery chain, providing access to vaccines and educating the public about their benefits. FIP has developed guidelines and resources to support pharmacists in these roles, helping to improve vaccine coverage and combat misinformation. Some of the programmes and activities are highlighted below:

- Transforming Vaccination Globally, Regionally, Nationally: Accelerating equity, access and sustainability through policy development and implementation. <https://transformingvaccination.fip.org/>

- FIP's vaccine equity programme centred around advancing vaccine equity and life-course immunisation. <https://equityrx.fip.org/vaccine-equity>
- The FIP vaccination reference guide. <https://www.fip.org/file/5158>
- The FIP Global Roadmap 2030: Sustainable advancement for pharmacy worldwide. <https://developmentgoals.fip.org/globalroadmap2030/>

9. *Global partnerships and collaboration*

FIP collaborates with various international organisations, including the WHO, to advance global health initiatives. Through these partnerships, FIP advocates for policies that enhance vaccine access and equity. The organisation also emphasises the importance of research and innovation in developing new vaccines and improving existing ones.

Conclusion

The global and African pharmaceutical industries are undergoing significant transformations, with new perspectives emerging on vaccine development, production, and distribution. The rapid advancement of vaccine technology, increased global collaboration, and the growing capacity of African countries to produce vaccines are reshaping the industry's landscape. The FIP continues to play a vital role in advocating for vaccines and supporting the pharmaceutical community in addressing public health challenges. As the world faces ongoing and emerging health threats, the importance of vaccines and the pharmaceutical industry's role in safeguarding global health cannot be overstated.