Access to Vaccines

GRI Standards:

416-1, 416-2: Customer Health and Safety

EXECUTIVE SUMMARY

Vaccines have a great impact on public health. The World Health Organization considers immunization to be one of the most effective and cost-effective health interventions. It has eradicated smallpox, reduced the global incidence of polio by 99% to date[1], and dramatically reduced morbidity, disability and mortality due to diphtheria, tetanus, pertussis, tuberculosis and measles.

Despite these important achievements, there is still a long way to go: 19.7 million children worldwide still have no access to a full cycle of basic vaccines[2]. Due to lower immunization coverage in some countries, we are witnessing a resurgence of diseases that had almost disappeared, such as measles or pertussis. This affects people around the world, including in high-income countries.

True to its vision of a world where no one suffers or dies from a vaccine-preventable disease, Sanofi is committed to improve sustainable access to vaccines, with the help of key partnerships to provide effective and affordable vaccines and protection for all populations.

This document presents some of our key commitments and initiatives illustrating our longstanding dedication to global access to health through prevention and vaccination.

[1] WHO Factsheet on Poliomyelitis, last updated July 2019. https://www.who.int/news-room/fact-sheets/detail/poliomyelitis

[2] WHO Factsheet on Immunization, last updated July 2020. https://www.who.int/en/news-room/fact-sheets/detail/immunization-coverage

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1. Background

1.1. VACCINES BRING LONG-TERM SOCIETAL BENEFITS

Immunization through vaccines is one of modern medicine's greatest success stories for global health and development, currently saving 4 to 5 million lives every year.[3] Vaccines are powerful tools that help control diseases. Today, more than 26 common infectious diseases are vaccine preventable.[4]

In addition to its impact on mortality, vaccination is one of the most successful and cost-effective public health interventions.[5]

Vaccines generate savings by reducing visits to the doctor and hospitalization. Between 2016 and 2030, vaccines will help prevent 24 million people in some of the world's poorest countries from slipping into poverty, by allowing families to avoid the often-heavy healthcare costs that diseases can bring.[6]

Immunization brings broad, long-term economic and societal benefits, including increased educational attainment and productivity gains, as vaccination reduces the time needed for parents to take care of a sick child, for instance during disease outbreaks.

Looking at the future, vaccines are a critical component of the battle against emerging and re-emerging infections. Climate change exposes new populations to vector-borne diseases and may alter the patterns and intensity of seasonal diseases. Preventing infectious disease threats are therefore key to global health security and a better readiness for the next pandemic.[7] The COVID-19 pandemic highlighted the importance of vaccination to protect our society and economies.

Expanding the use of immunization has also been identified as a solution to contain antimicrobial resistance, one of the ten health threats that we are facing according to the WHO.[8]

1.2. WHAT VACCINES HAVE BROUGHT TO SOCIETY[9]

The impact of vaccines on global public health has been impressive. Smallpox was declared eradicated by the World Health Organization (WHO) in 1979 after a global vaccination effort. In 1988, polio was endemic in 125 countries, paralyzing an estimated 350,000 children every year. In 2021, poliomyelitis remains endemic only in parts of two countries with only six wild polio virus cases reported (compared with 140 in 2020).[10] Between 2000 and 2018, estimated measles-related deaths, mostly among children under the age of five, decreased by 73%.[11] Since the launch of the Global Alliance for Vaccines and Immunization (GAVI) in 2000, an increasing number of developing countries have introduced hepatitis B, Hib, pneumococcal and rotavirus vaccines into their routine vaccination programs, in line with WHO recommendations. Together, the original Expanded Program for Immunization (EPI) vaccines plus hepatitis B and Hib vaccines prevent more than 4 million deaths each year.[12]

[3] https://www.who.int/news-room/facts-in-pictures/detail/immunization
[4] https://www.sanofi.com/en/your-health/vaccines/value-of-vaccines
[5] https://www.who.int/news-room/facts-in-pictures/detail/immunization
[6] https://www.gavi.org/vaccineswork/value-vaccination
[7] https://www.who.int/docs/default-source/immunization/strategy/ia2030/ia2030-document-en.pdf
[8] https://www.who.int/news-room/spotlight/10-global-health-issues-to-track-in-2021;
[9] Investing in immunization through the GAVI Alliance evidence report.
[10] https://extranet.who.int/polis/public/CaseCount.aspx
[11] WHO Factheet on Measles, last updated December 2019. https://www.who.int/news-room/fact-sheets/detail/measles
[12] https://www.gavi.org/programmes-impact/our-impact/measuring-our-performance/2011-2015-indicators

1.3. REMAINING CHALLENGES

Despite these significant achievements, there is still a long way to go. An additional 1.5 million deaths could be avoided if global vaccination coverage improves[13].

In addition, COVID-19 pandemic led to major backsliding on childhood vaccinations in 2020. Infants immunization coverage (three doses of diphtheria-tetanus-pertussis -DTP3_ vaccine) dropped back to 2009 levels (83%) globally, with Asia being hit most. In addition, 23 million children missed out on basic vaccines through routine immunization services in 2020 (3.7 million more than in 2019), and most of these – up to 17 million children – did not receive a single vaccine (called the "zero dose children")[14].

As a consequence of lower vaccination coverage, we are witnessing the resurgence of diseases that had almost disappeared, such as measles or pertussis. This affects populations across the world including in high-income countries. As a concrete example, as of April 2022, large and disruptive outbreaks of measles have occurred in at least 19 countries during the past 12 months[15].

1.4. OUR COMMITMENT TO SUSTAINABLE ACCESS TO VACCINES

Access to vaccination is hampered by multiple barriers that may be structural (e.g. health systems, conflicts, affordability) or societal (behaviors, education, beliefs). This multifactorial challenge can only be addressed by committed partnerships between all those who have a stake in the sustained success of vaccination and prevention programs.

The world of vaccines has significantly evolved in recent years, especially due to the COVID-19 pandemic. We are evolving too in our ambition to change the practice of medicine through our vaccines to respond to the ever-evolving global health needs and further improve people's lives, investing in: best- and first-in-class vaccines, innovative R&D such as our mRNA Center of Excellence and innovative manufacturing platforms such as the Evolutive Vaccine Facilities, allowing us to rapidly produce vaccines at a massive scale to address fast evolving medical needs. We are implementing this essential evolution while remaining committed to working on multiple levels to optimize the impact of vaccination:

- developing a broad portfolio of vaccines and immunization solutions to address worldwide epidemiological challenges;
- playing an active role in key public-private partnerships such as GAVI, the Vaccine Alliance;
- providing effective and affordable vaccines and protection to all populations; and
- contributing to local capacity building of healthcare systems to prevent infectious diseases.

This document presents some of our key commitments and initiatives illustrating our longstanding dedication to global access to health through prevention and vaccination.

More information on our commitment can be found in the 2022 Access to Medicine Index report https://accesstomedicinefoundation.org/access-to-medicine-index/report-cards/sanofi#

2. Polio: partner in the end-game eradication strategy

[13] https://www.who.int/news-room/facts-in-pictures/detail/immunization
[14] https://www.who.int/news-room/fact-sheets/detail/immunization-coverage
[15] https://cdn.who.int/media/docs/default-source/reproductive-health/sage_april2022meetinghighlights_11apr2022_final.pdf?sfvrsn=21bcfb4f_3

2.1. POLIO ERADICATION IS IN SIGHT

Poliomyelitis is a contagious disease mainly attacking children under five. One in 200 infections leads to irreversible paralysis, usually in the legs. Among those paralyzed, 5% to 10% die when their breathing muscles become immobilized. Over the last 30 years, under the Global Polio Eradication Initiative (GPEI),

2.5 billion children have been immunized against polio resulting in a 99% reduction in the number of cases worldwide. In 2022, globally there remain only three genetic clusters of WPV1, a major reduction in the genetic diversity of WPV1, represented by one cluster in Pakistan, one in Afghanistan, and one in Africa.[16] As a result of the global effort to eradicate the disease, almost 20 million people have been saved from paralysis.

2.2. A LONG-TERM PARTNER IN THE GLOBAL POLIO ERADICATION INITIATIVE

Since 1988, Sanofi has been a key partner of the Global Polio Eradication Initiative and has supplied more than 14 billion doses of Oral Polio Vaccine (OPV) and 1.5 billion doses of Inactivated Polio Vaccine (IPV) in the world.

2.3. SANOFI: COMMITTED TO MAKING INJECTABLE-INACTIVATED POLIO VACCINE (IPV) ACCESSIBLE TO EVERY CHILD IN THE WORLD

In April 2013, the WHO's committee on policy on immunization (SAGE) recommended that all countries introduce at least one dose of IPV into their routine immunization programs to mitigate the risk of circulating vaccine-derived poliovirus. The introduction of IPV is a key component of the Polio End Game Strategy with 2023 as the target year for polio eradication.[17] In October 2020, SAGE recommended a second IPV dose to be introduced in all countries that were currently administering one IPV dose in their routine immunization schedules.[18]

Sanofi has expanded its IPV production capacities in France and is able to greatly contribute to the demand of doses needed for this unprecedented global rollout.

[16] https://www.who.int/news/item/02-02-2023-statement-of-the-thirty-fourth-polio-ihr-emergency-committee
[17] GPEI webpage accessed March 2020: http://polioeradication.org/news-post/to-succeed-by-2023-extraordinary-joint- statement-to-polio-eradicators/
[18] Weekly Epidemiological Record. N°48, 2020, 95, 585-608

3. *Yellow fever: a longstanding commitment to help prevent and contain epidemics in tropical regions*

3.1. A LASTING THREAT TO THE POOREST COMMUNITIES

Yellow fever is a viral hemorrhagic fever transmitted by infected mosquitoes, with no specific treatment. Currently, the yellow fever virus is estimated to cause an estimated 109,000 severe cases of disease and 51,000 deaths each year, with more than 90% occurring in Africa. Mass vaccination activities have substantially reduced the number of cases and deaths, with deaths reduced by 47 % in Africa.[19] However, Yellow fever disease remains a major public health concern in both Africa and South America where vaccination is recommended to prevent and fight epidemics together with vector control programs. It is also recommended for travelers visiting endemic regions.

3.2. TO GUARANTEE ACCESS TO YELLOW-FEVER VACCINE FOR LARGE POPULATIONS FOR PREVENTION AND IN RESPONSE TO OUTBREAKS

Since sustained vector control is extremely difficult, and the nonhuman primate reservoir cannot be targeted to eliminate yellow fever transmission, the most important means to contain yellow fever is by vaccination of at-risk populations and emergencies preparedness.

Our vaccine against yellow fever produced in France has been used since 1979. It is registered in more than 100 countries with more than half a billion doses distributed to residents and travelers to endemic areas. A single dose confers life-long protection against yellow fever. It is prequalified by the World Health Organization (WHO) for procurement by the United Nations.

We joined the WHO Eliminate Yellow fever Epidemics (EYE) initiative in 2016, are committed to routine programs and Preventive Mass Vaccination Campaigns and are contributing to 50% of the yellow fever vaccine emergency stockpile reserved for outbreak response. In 2028, a record of more than 42 million yellow fever vaccine doses are planned to be delivered to UNICEF & PAHO.

We are also continuously investing in yellow fever. In response to a demand from GAVI in 2016, Sanofi launched a significant investment to double its production capacity of yellow fever vaccine, enabling the first doses shipment to Africa to help fight a major outbreak on the continent. We are also the only manufacturer, at this stage, of development of a new generation vaccine produced on Vero cells to improve the legacy egg-based vaccine and enable a more robust manufacturing process.

It will provide insurance to vaccine supply in an unprecedent speed and scale, in case of unexpected outbreaks and potential development of a public health emergency, which is a critical added value, especially at a time when threats from mosquito-borne diseases, including yellow fever, are increasing as a consequence of climate change.[20] For example, modelling studies show that changing temperature and rainfall across Africa could increase yellow fever deaths by up to 25 percent by 2050.

[19] Katy AM Gaythorpe, The global burden of yellow fever, 2021, elife, available at: https://elifesciences.org/articles/64670, Last accessed in March 2023.
[20] https://cdn.who.int/media/docs/default-source/world-health-data-platform/technical-advisory-groups/arbovirus/glai-launch-meeting-summary_webinar_31-march-2022.pdf?sfvrsn=91734bcf_3

4. Dengue: the first vaccine solution to a disease with growing global incidence

4.1. A GROWING CONCERN TO POPULATIONS IN ENDEMIC AREAS

Dengue is prevalent in tropical regions, and the global incidence has significantly increased over recent years due to rapid urbanization and rising temperatures. About half of the world's population is now at risk, and there are an estimated 100 to 400 million infections each year.[21]

Because there are four types of the dengue virus (serotypes), it is possible to be infected with dengue up to four times. While the first infection with dengue is often asymptomatic or only produces mild, flu-like illness, secondary infections carry an increased risk of developing a potentially lethal complication, called severe dengue. Dengue affects most Asian and Latin American countries and has become a leading cause of hospitalization and death among children and adults in these regions.

4.2. MAKING AN EFFECTIVE VACCINE AND DIAGNOSTIC TOOL AVAILABLE

In 2015, after over 20 years of R&D, Sanofi launched Dengvaxia® (CYD-TDV).

Dengvaxia® is approved in EU, US, and approved and used in several endemic countries in Latin America and Asia.

Dengvaxia® underwent rigorous efficacy and safety evaluations which led to its licensure. It provides efficacy across all four dengue virus serotypes, and is effective at reducing the risk of symptomatic, hospitalized, and severe dengue in people with a past dengue infection: it prevents approximately eight out of ten cases of severe and hospitalized dengue, with long-term protection up to six years.[22] It has been well tolerated in clinical trials and in a real-world setting, with a favorable safety profile in people with a past dengue infection confirmed in public vaccination programs. Nearly 3 million vaccine doses have been distributed worldwide since launch.

The value of Dengvaxia® for preventing subsequent, potentially more severe dengue has been endorsed by internationally recognized public health and recommending bodies including the World Health Organization (WHO),[23] and the US Advisory Committee on Immunization Practices (ACIP) that unanimously approved recommendations on the use of Dengvaxia® in June 2021.[24]

To facilitate a "screen and vaccinate" approach that will allow for the introduction of Dengvaxia® in targeted immunization programs, Sanofi collaborated with a serotest manufacturer (CTK) to co-develop an optimized point of care rapid diagnostic test (RDT) designed specifically to detect prior dengue infections. Our goal was to ensure higher sensitivity compared to currently available tests to detect acute dengue infections while maintaining high specificity. This CTK RDT is CE-marked since September 2020 and is currently registered in several endemic countries in Latin America and Asia.

Despite the current low demand from countries, we remain committed to playing an important role in the fight against dengue and we remain committed to supplying this vaccine whenever requested.

[21] WHO Factsheet on Dengue and Sever Dengue, accessed April, 2020: https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue
[22] Forrat R., 2021. https://academic.oup.com/cid/article/73/6/1003/6210060
[23] WHO position paper dated Sep. 2018: https://www.who.int/publications/i/item/dengue-vaccines-who-position-paper-september-2018
[24] MMWR Dec. 2021: https://www.cdc.gov/mmwr/volumes/70/rr/rr7006a1.htm

5. *Influenza: reducing its burden especially in the most vulnerable*

5.1. A CONSIDERABLE HUMAN AND SOCIETAL BURDEN

Influenza can be very serious, especially for high-risk groups, such as people with chronic conditions like diabetes or cardiovascular disease, older adults, and pregnant women. Influenza can also lead to severe complications in people of any age, including healthy people. Every year, influenza claims between 290,000 and 650,000 lives, across Northern and Southern Hemispheres, presenting a significant burden and cost to society.[25] The WHO recommends vaccination as the most effective way to prevent influenza.

5.2. BUILDING LOCAL INFLUENZA VACCINE PRODUCTION FACILITIES TO PROVIDE HIGH QUALITY VACCINES CONTINUOUSLY

As a global leader in influenza vaccination, Sanofi manufactures around 250 million doses of seasonal flu vaccines every year for both hemispheres' seasons.

Sanofi continues to invest in its production capacity in France and North America, as well as in transfer of technology for local production in countries such as China, Mexico, and Brazil. These facilities are designed to switch from seasonal influenza vaccine production to pandemic vaccine production in the event of a pandemic.

Sanofi switched to supply of quadrivalent vaccine as an improvement over the trivalent formulation, adding a second B strain, per the WHO strain change recommendations. We have supported countries transitioning to the use of this improved standard of protection.

5.3. PARTNERING GLOBALLY TO STRENGTHEN DISEASE UNDERSTANDING AND PUBLIC HEALTH ACTION

Concerned by the threat of concurrent influenza vaccination and other respiratory viruses (SARS-CoV-2, RSV…) Sanofi is committed to not only maintaining but increasing vaccination coverage while working continuously to increase understanding of health care professionals through partnerships such as with FIP, on the need to protect people from the broader effects of influenza, through immunization.

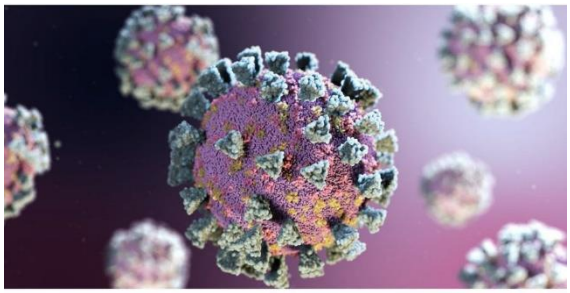
A key area of work through partnerships is the improved understanding of the burden of disease. In 2014, Sanofi initiated the Global Influenza Hospital Surveillance Network (GIHSN),[26] a platform of 100+ hospitals and 20+ countries that is generating epidemiological evidence on influenza severity and to support vaccine strain selection through timely sharing of clinical and laboratory data.

GIHSN was set up to inform policy decisions and serve as a network for improved respiratory viruses surveillance capacity building and response, notably in low to middle income countries (LMICs). Several sites are now also testing for a full range of respiratory viruses including SARS-Cov-2. The activity and the output of the network is regularly discussed with health authorities including WHO and US CDC. New funders have recently joined the network (Illumina, CSL, IFPMA).

[25] WHO Factsheet on Influeza, accessed April 2023: https://www.who.int/news-room/fact-sheets/detail/influenza-(seasonal)
[26] www.gihsn.org

Sanofi also works closely with health care professionals' associations and civil society to improve understanding of the disease, and their ability to communicate on flu immunization benefits especially for people at risk. To that end Sanofi is supporting IFA[27] in its project using ECHO methodology on "Adult Influenza Vaccination" with the potential to scale up the learning communities and improve the adult vaccination rates in at-risk communities.

6. COVID-19: playing our role in the response to the pandemic



6.1. PANDEMIC PREPAREDNESS

Sanofi is a long-term partner in epidemic and pandemic preparedness, through vaccine stockpiles for epidemic responses with UNICEF and WHO's ICG (International Coordinating Group), through development of a pandemic flu vaccine in collaboration with US BARDA, plus capacity to rapidly switch to influenza pandemic vaccine manufacture, including supply to LMICs through the PIP Framework.

COVID-19 has underlined the importance of end-to-end public-private collaboration from R&D through till manufacturing and supply. Hence, Sanofi's commitment to Pandemic Preparedness through the following initiatives:

- Fostering innovation with investments in state-of-the-art mRNA technology with the launch of the Centre of Excellence, which will ensure acceleration of end-to-end R&D for next-generation vaccines and facilitate development of response capacities.
- Taking our diversified industrial footprint to the next level with Evolutive Facilities, which are setting a new standard for manufacturing of biologics, both in terms of flexibility and speed.
- Stimulating public–private partnership excellence in respiratory disease surveillance notably with the AIOLOS consortium which uses real-time multi-source data to detect, monitor and support the response to potential respiratory virus outbreaks.

6.2. PUTTING OUR SCIENTIFIC EXPERTISE IN THE DEVELOPMENT OF A VACCINE

Sanofi's protein-based adjuvanted booster (VidPrevtyn Beta) developed in collaboration with US BARDA, and in partnership with GSK (for the adjuvant), is approved in Europe and the UK. VidPrevtyn Beta is available for vaccination campaigns in Europe and the UK in spring and the coming fall 2023.

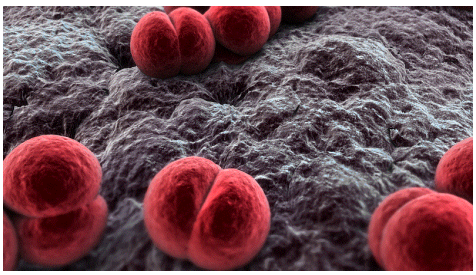
6.3. PARTNERING TO SUPPORT GLOBAL ACCESS

In a challenging and evolving environment, Sanofi has made efforts to ensure that its COVID-19 vaccine will be available to people. Sanofi has engaged in discussions with Team Europe and GAVI, COVAX (the global pooled procurement mechanism) to work towards a framework for dose sharing bilaterally or through COVAX; supply of doses through these mechanisms are pending demand from recipient countries.

[27] Vaccines 4 Life (IFA)

7. *Invasive meningococcal disease: committed to defeating meningitis*

7.1. GLOBAL GOAL TO DEFEAT MENINGITIS



Invasive Meningococcal Disease, IMD, is caused by infection with the bacterium *N. meningitidis*. While the incidence can vary significantly around the world, IMD can be deadly and debilitating. The disease can cause epidemics, can strike quickly, affects people of all ages, can lead to death within 24 hours and leaves one in five patients with lifelong disability. However, IMD is vaccine preventable.

When it comes to vaccination, progress with the use of vaccines to prevent IMD lags behind that of other vaccine-preventable diseases. Although significant progress has been made in recent years but there were still an estimated 5 million new cases and 290,000 deaths from meningitis in 2017.

For these reasons the WHO launched a call for action in September 2021 – the Defeating Meningitis by 2030: A Global Road Map. Sanofi is proud to support the WHO and partners in implementing the Road Map as we work towards a shared vision of a world free from meningitis by 2030.

7.2. SANOFI'S COMMITMENT AND PORTFOLIO IN IMD

Sanofi Vaccines has played a major role in the development of vaccines to prevent invasive meningococcal disease. Our commitment spans over 45 years during which time we launched five vaccines beginning with the first ever serogroup A vaccine in 1974, through to our quadrivalent conjugated ACWY vaccine, MenQuadfi® in 2021. Since 2005 Sanofi Vaccines has supplied over 150 million doses to prevent meningococcal disease worldwide.

Vaccine technology continues to advance with the goal of developing vaccines with improved effectiveness, broader protection with the inclusion of multiple serogroups, and for all ages. We remain invested in delivering the vaccines of today to prevent IMD, as well as developing the vaccines of tomorrow.

7.3. OUR COLLABORATION IN OUTBREAK CONTROL

The nature of N. meningitidis and its ability to cause outbreaks is a cause for concern worldwide. In sub-Saharan Africa, often referred to as the meningitis belt, outbreaks of meningococcal meningitis occur regularly putting millions of lives at risk of infection and the potential devasting consequences.

Following major outbreaks of meningitis in Africa, the International Coordinating Group (ICG) on Vaccine Provision was established in 1997 as a response to controlling epidemics. The ICG manages medications for emergency use including the management of security stocks of vaccines that are rapidly deployed in the case of an outbreak. ICG has shipped over 20 million doses of vaccines to 13 countries as an emergency response during the period 2009 to 2016. Sanofi Vaccines is proud to have been part of this response to controlling outbreaks and protecting lives in the meningitis belt.