

# Sanofi

This table is part of a [November 2023 report](#) that looks at what actions each company in scope of the Antimicrobial Resistance (AMR) Benchmark has taken with regards to each of the Opportunities set out in its 2021 AMR Benchmark Report Card. The full 2021 Report Card is also included in this PDF.

| 2021 OPPORTUNITY<br>What was the Opportunity shared in the AMR Benchmark?  | 2023 UPDATE<br>What progress has been made on this Opportunity?   |
|--|---|
| <p><b>Expand breadth of R&amp;D pipeline into more pathogens.</b><br/>Sanofi has antibacterial vaccines and medicines in late-stage clinical development that target, e.g., <i>S. pneumonia</i> and <i>M. tuberculosis</i>. Sanofi can expand the focus of its pipeline to target resistant pathogens for which R&amp;D is limited, such as <i>Campylobacter spp.</i> and <i>H. pylori</i>. It can do so by investing in in-house R&amp;D, through acquisition or collaboration with other companies, or by joining existing public private partnerships.</p>  | <p>Sanofi has reported progress on its pipeline, with its conjugate pneumococcal vaccine candidate (SPo2o2) advancing to Phase III in 2024.</p> <p>In October 2023, Sanofi announced a development and commercialisation agreement with Johnson &amp; Johnson for ExPECgV, a vaccine candidate for extraintestinal pathogenic <i>E. coli</i>, currently in Phase III of clinical development.</p> <p>The company has further added vaccine projects to its R&amp;D pipeline that target bacteria not included in the priority lists published by the US Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO). This includes a <i>Cutibacterium acnes</i> mRNA vaccine candidate moving to Phase I/II in 2023 and a chlamydia mRNA vaccine candidate moving to Phase I/II in 2024.</p> |
| <p><b>Expand and tailor access and stewardship plans for late-stage R&amp;D projects.</b><br/>Sanofi has both vaccines and medicines in late-stage clinical development. It can improve access to these new products, by developing plans for registration, affordability and sustainable supply. For example, for their phase II vaccine, Skypac, Sanofi can develop equitable pricing plans that consider ability-to-pay and apply supply chain best practices including buffer and safety stocks and shortage mitigation strategies. In addition, Sanofi can expand its stewardship plans for its medicine R&amp;D projects by getting involved in comprehensive surveillance activities resistance trends information to their products as well as other medicines often given alongside them in the long multidrug treatments required for this disease, and to do it in relevant geographical regions where limited evidence is available.</p> | <p>Sanofi's conjugate pneumococcal vaccine candidate (SPo2o2/Skypac) is currently undergoing review under Sanofi's Global Access Plan commitment.</p> <p>The company did not report any further progress on its late-stage R&amp;D projects for bacteria that are included in the priority lists published by the CDC and WHO.</p> <p>Sanofi has acquired worldwide commercial rights to ExPECgv from Johnson &amp; Johnson. It is too early for Sanofi and Johnson &amp; Johnson to disclose access plans for the ExPECgV vaccine candidate.</p>   |
| <p><b>Ensure compliance with antibacterial discharge limits at suppliers' sites by tracking and publicly disclosing progress and results specific to antibacterials for all sites.</b><br/>Sanofi can quantify discharge levels at all suppliers' sites and track compliance with set limits, as it does at own sites, and publicly disclose the results. To provide clear evidence of its progress it can publicly report compliance at all sites. Disclosure of information, including the results of audits and antibacterial discharge levels of its own sites and suppliers' sites, is important. It can also publicly disclose the names and locations of its suppliers and waste-treatment plants for increased transparency.</p>   | <p>Sanofi continues to report implementing the AMR Industry Alliance guidelines. The company publicly reports that 72% of its own manufacturing sites launched a programme to monitor, manage, and reduce pharmaceutical discharges. However, Sanofi does not report any developments on the number of its own and supplier sites that are compliant with voluntary discharge limits.</p> <p>Similar to 2021, Sanofi does not publicly disclose audit results that specify antibacterial discharge levels of its own sites and suppliers' sites. It also does not disclose the names and locations of its suppliers.</p>  |

| 2021 OPPORTUNITY<br>What was the Opportunity shared in the AMR Benchmark?   | 2023 UPDATE<br>What progress has been made on this Opportunity?   |
|---|---|
| <p><b>Expand registration of antibacterial and antifungal medicines.</b><br/>Sanofi can expand filing for registration of its off-patent antibiotics and antifungals listed on the 2021 WHO EML, such as colistin and fosfomycin, to more countries, including low-income countries, with a high burden of disease.</p>   | <p>Sanofi did not report any specific developments regarding the registration filings of antibacterial and antifungal medicines. Sanofi reports that cefotaxime, ceftriaxone and colistin – all listed on the 2023 WHO Model List of Essential Medicines (EML) – are no longer part of the company's portfolio.</p> <p>To increase the availability of its products in LMICs, Sanofi launched its non-profit Global Health Unit in 2021. This initiative supplies 30 of its most essential medicines, including metronidazole (Access antibiotic listed on WHO EML 2023) and rifampicin (Watch antibiotic listed on WHO EML 2023), to 40 LMICs. Furthermore, the Impact® brand was launched in 2022 to provide standard care medicines on a non-profit basis to 40 LMICs.</p> |
| <p><b>Publicly share raw data from surveillance programme.</b><br/>Sanofi supports a national programme focused on <i>S. pneumoniae</i>, the Observatoires Régionaux du Pneumocoque (ORP) programme, managed by the National Reference Centre for Pneumococci (NRCP). Either Sanofi or the NRCP can publicly share raw data from this surveillance programme.</p> | <p>Sanofi reported it is no longer partnering with the Observatoires Régionaux du Pneumocoque (ORP) programme in France since the contract has expired.</p>   |

**Overall Performance**

|      |      |
|------|------|
| 2020 | 2021 |
| 42%  | 60%  |

# Sanofi

Large R&D-based pharmaceutical company

Stock exchange: EPA • Ticker: SAN • HQ: Paris, France • Employees: 99,412

## PERFORMANCE

Sanofi performs average overall in its evaluated Research Areas compared to the other large research-based pharmaceutical companies in scope.

**R&D:** Sanofi performs less well in the R&D Research Area. Its six-project pipeline has three vaccines and three medicines. No project targets critical and/or urgent pathogens. Sanofi has four projects in late-stage development for which it reports having access plans.

**Responsible Manufacturing:** Performs well. Reports environmental risk-management strategy for own sites and suppliers; quantifies discharge levels at all own sites

**Appropriate Access:** Performs strongly. Files its on-and off-patent products for registration in access countries. Reports several strategies to expand access and ensure continuous supply of its relevant products.

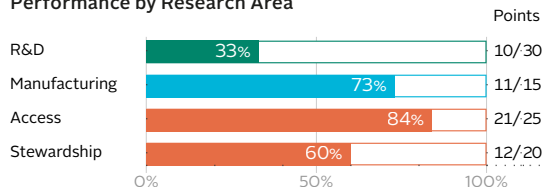
**Stewardship:** Middle-performing. It does not promote antibacterial and/or antifungal medicines to healthcare professionals outside France.

It supports a surveillance programme in France of which aggregated results are publicly shared. It reports comprehensive conflict of interest mitigation for its educational programme. It does not adapt brochures or packaging for patients.

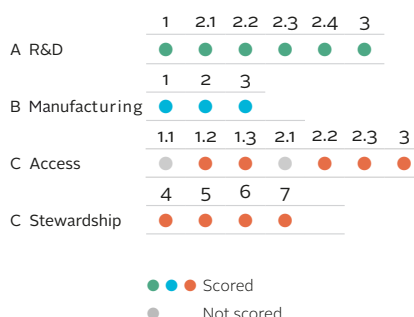
### Performance in the Benchmark



### Performance by Research Area



### How Sanofi was evaluated



## OPPORTUNITIES FOR SANOFI

**Expand breadth of R&D pipeline into more pathogens.** Sanofi has antibacterial vaccines and medicines in late-stage clinical development that target, e.g., *S. pneumonia* and *M. tuberculosis*. Sanofi can expand the focus of its pipeline to target resistant pathogens for which R&D is limited, such as *Campylobacter* spp. and *H. pylori*. It can do so by investing in in-house R&D, through acquisition or collaboration with other companies, or by joining existing public private partnerships.

**Expand and tailor access and stewardship plans for late-stage R&D projects.** Sanofi has both vaccines and medicines in late-stage clinical development. It can improve access to these new products, by developing plans for registration, affordability and sustainable supply. For example, for their phase II vaccine, Skypac, Sanofi can develop equitable pricing plans that consider ability-to-pay and apply supply chain best practices including buffer and safety stocks and shortage mitigation strategies. In addition, Sanofi can expand its stewardship plans for its medicine R&D projects by getting involved in comprehensive surveillance activities resistance trends information to their products as well as other medicines often given alongside them in the long multidrug treatments required for this disease, and to do it in relevant geographical regions where limited evidence is available.

**Ensure compliance with antibacterial discharge limits at suppliers' sites by tracking and publicly disclosing progress and results specific to antibacterials for all sites.** Sanofi can quantify discharge levels at all suppliers' sites and track compliance with set limits, as it does at own sites, and publicly disclose the results. To provide clear evidence of its progress it can publicly report compliance at all sites. Disclosure of information, including the results of audits and antibacterial discharge levels of its own sites and suppliers' sites, is important. It can also publicly disclose the names and locations of its suppliers and waste-treatment plants for increased transparency.

**Expand registration of antibacterial and antifungal medicines.** Sanofi can expand filing for registration of its off-patent antibiotics and antifungals listed on the 2021 WHO EML, such as colistin and fosfomycin, to more countries, including low-income countries, with a high burden of disease.

**Publicly share raw data from surveillance programme.** Sanofi supports a national programme focused on *S. pneumoniae*, the Observatoires Régionaux du Pneumocoque (ORP) programme, managed by the National Reference Centre for Pneumococci (NRCP). Either Sanofi or the NRCP can publicly share raw data from this surveillance programme.

## CHANGES SINCE 2020

- Since 2020, Sanofi reports requesting its suppliers to conduct risk assessments according to the guidelines of the AMR Industry Alliance including quantification of discharge levels against limits.
- In November 2019, Sanofi and Cyclamed launched the AnTRiBiotics campaign, which encourages the general public to bring expired or unused antibiotics back to the pharmacy.

**SALES AND OPERATIONS**

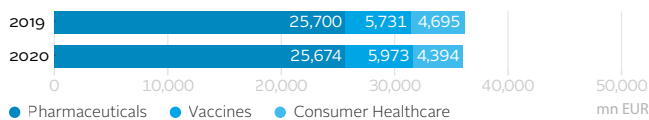
**Therapeutic areas:** Cardiovascular diseases, Diabetes, Infectious diseases, Inflammatory & immune diseases, Oncology, Rare Diseases & Rare Blood disorders, Neurology.

**Business segments:** Pharmaceuticals, Vaccines, Consumer healthcare

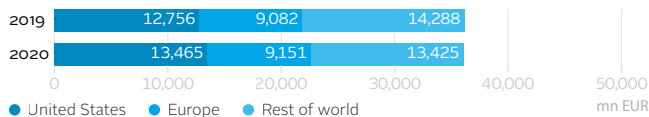
**Product categories:** Consumer health products, Generic medicines, Innovative medicines, Vaccines

**M&A since 2020:** None in the antibacterial and/or antifungal sectors

**Net sales by business segment**



**Net sales by region**



**PIPELINE for pathogens in scope**

**Pipeline size:** 6 projects targeting pathogens in scope\* (3 antibacterial medicines; 3 antibacterial vaccines).

**Development stages:** 4 clinical projects, including the Phase II pneumococcal conjugate vaccine (Skypac) candidate; and Shan6, a Phase III hexavalent vaccine targeting among others *H. influenzae* and *B. pertussis*, for which Sanofi has already obtained marketing authorization.

**Novelty:** 0 novel clinical-stage medicine projects.

**'Critical' and/or 'urgent' pathogens:** 0 projects targeting 'critical' and/or 'urgent' pathogens.

**Regulatory approvals:** 1 approval. In May 2021 the Indian regulatory authorities approved Shan6®, a paediatric hexavalent vaccine targeting *H. influenzae* and *B. pertussis*.

**PORTFOLIO for pathogens in scope**

**Mid-sized portfolio:** At least 47 products: 33 antibacterial medicines; 11 antibacterial vaccines; 3 antifungal medicines

**On-patent vaccines:** 3 (Hexaxim®, Menactra®, Shan5™)

**Off-patent/generic medicines:** 10 of 44 were selected for analysis\* (amoxicillin [A], cefotaxime [W], ceftriaxone [W], clotrimazole [F], colistin [R], Fosfomycin [R], isoniazid [T], metronidazole [A], nystatin [F], rifampicin [T])

**AWaRe medicines\*\*:** 7 Access group; 14 Watch group; 2 Reserve group

**Anti-TB medicines\*\*:** 7

**Pipeline for priority pathogens**



**Products on the market**



**PERFORMANCE BY RESEARCH AREA**

**A RESEARCH & DEVELOPMENT** Evaluated: medicine & vaccine pipelines for priority\* bacteria & fungi

**A.1 Investments in R&D**

Sanofi reports to the Benchmark the amount invested during 2019 and 2020 in R&D for antibacterial and antifungal medicines and/or vaccines for pathogens in scope. Specific investment figures were provided under confidentiality. As a proportion of its revenues, Sanofi reports lower R&D investments than other companies assessed in this indicator. In absolute terms, however, the amount it invests is the second largest.

**A.2.1 Small pipeline**

The company reports six projects targeting pathogens in scope: three medicines and three vaccines, all targeting bacterial pathogens. Out of the six projects, three are in clinical development and one received marketing approval.

**A.2.2 No clinical-stage novel projects**

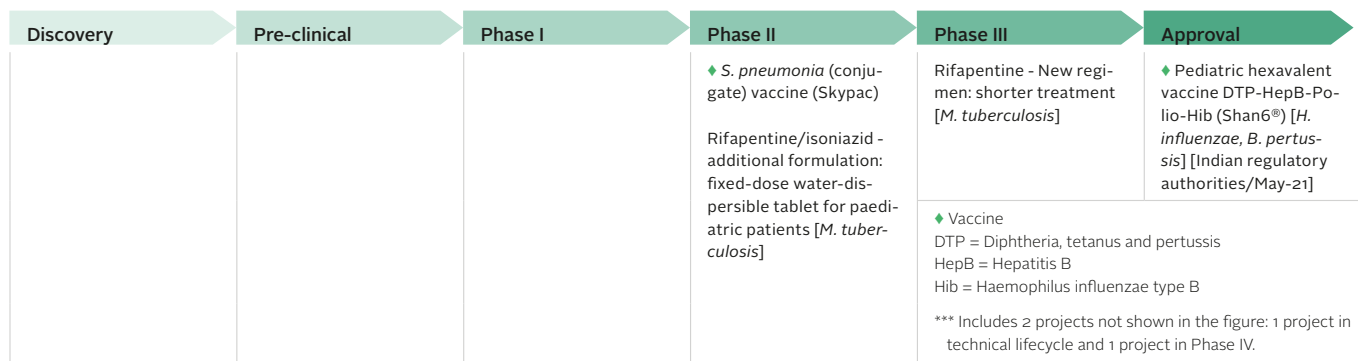
Sanofi's clinical-stage medicine pipeline consists of two adaptive projects developing formulations and optimising treatment regimens

for antituberculosis medicines. A new water dispersible formulation of rifapentine/isoniazid for improved dosing in latent tuberculosis in children is in Phase II. In Phase III, rifapentine is included in a trial aiming at optimising the treatment of latent and active tuberculosis with a shorter and simpler dosing regimen.

**A.2.3 Three vaccine candidates**

Sanofi reports three vaccine projects in its pipeline. It includes one innovative candidate in

Pipeline targeting priority pathogens: 6\*\*\* As at 24 September 2021



\* See Appendix V for information about eligibility for R&D projects and Appendix VII for eligibility criteria of products.

\*\* Listed on the 2019 WHO EML.

\*\*\* Includes 2 projects not shown in the figure: 1 project in technical lifecycle and 1 project in Phase IV.

Phase II of clinical development targeting *S. pneumoniae* (Skypac), and an adaptive vaccine candidate targeting *H. influenzae* and *B. pertussis*: Shan6®.

#### A.2.4 No candidates targeting critical and/or urgent priorities

Sanofi does not have any candidates in its R&D pipeline targeting pathogens defined as 'critical'

by WHO's list of priority pathogens and/or characterised as 'urgent' threats by the US Centers for Disease Control and Prevention (CDC).

#### A.3 Access plans for late-stage projects

Sanofi has four projects in late-stage development: two tuberculosis medicines and two vaccines.

Sanofi has ongoing clinical trials in access coun-

tries† for three out of its four late-stage projects. Sanofi plans to apply for WHO prequalification for both of its vaccine projects (paediatric DTP-HepB-Polio-Hib hexavalent vaccine Shan6®, and pneumococcal conjugate vaccine Skypac) to ensure access in GAVI-eligible countries. Sanofi does not report stewardship activities for its late-stage antituberculosis medicine projects.

## B RESPONSIBLE MANUFACTURING Evaluated: antibacterials manufacturing (APIs and drug products)

### B.1 Environmental risk-management for own sites and suppliers; tracks compliance with limits at own sites

Sanofi reports a strategy to minimise the environmental impact of wastewaters and solid waste from antibacterial manufacturing at its sites, including audits every three years. It reports setting discharge limits in the receiving environment for all antibacterials manufactured at its sites, based on PNECs to limit AMR, as recommended by the AMR Industry Alliance. Discharge levels are quantified at all sites using a mass balance approach, verified by chemical analysis if applicable. It reports that compliance of own sites with discharge limits is tracked.

Sanofi requires third-party suppliers of antibacterials APIs and drug products to follow similar standards, including limits based on PNECs. It reports conducting on-site audits every 1-5 years. It also requests and reviews the discharge levels of its suppliers. It reports 103 of 117 suppliers' sites, or 88% have been audited on various HSE topics including AMR. As part of such audits, suppliers are asked whether they have quantified discharge levels but it is unclear how many suppliers have done so.

There is limited information on the require-

ments it makes of external private waste-treatment plants. It does report auditing these plants which includes checking the suitability of technologies used for processing waste. It also reports employing conservative measures for effluents sent to external private and public wastewater plants.

### B.2 Publicly discloses some information on environmental risk management and commitment to setting limits

Sanofi publishes some components of its environmental risk-management strategy. It is a member of the AMR Industry Alliance, which publishes a list of recommended antibacterial discharge targets. Sanofi publishes its commitment to setting these targets and assessing pharmaceutical levels in wastewaters. It publishes information on the progress towards its risk-management strategy for pharmaceuticals in the environment and HSE audits for priority suppliers (including antibacterial suppliers). Sanofi does not publish: (1) the results of environmental audits, conducted at its own sites, the sites of suppliers and/or external private and public waste-treatment plants; (2) a list of these suppliers and plants; or (3) the levels of antibac-

terial discharge from its own or suppliers' sites that manufacture antibacterials.

### B.3 System in place to maintain production quality for own and suppliers' sites; no requests for official corrective action

Sanofi reports that its own sites and suppliers have a system to maintain high-quality antibacterial production consistent with international GMP standards. This includes periodic risk-based audits and tracking of corrective and preventive actions. Sanofi also requires its suppliers to audit their own suppliers. The Benchmark found no requests for official corrective action from the FDA or EMA related to non-conformities with cGMP at Sanofi's own sites or any subsidiaries that manufacture antibacterials.

## C APPROPRIATE ACCESS & STEWARDSHIP – ACCESS

Evaluated: access activities relating to antibacterial & antifungal medicines & vaccines in 102 access countries†

Sanofi is not eligible for indicators: C.1.1 and C.2.1. For more information, see Appendix VII.

### C.1.2 Filed to register off-patent/generic medicines in 13 access countries on average

Sanofi performs above average, filing all its 10 off-patent/generic medicines for registration in access countries. Its most widely filed relevant product is the antifungal metronidazole, filed in 48 access countries. Five of its relevant products are filed in less than ten access countries. Four of its relevant products are filed for registration in at least one LIC.

### C.1.3 Filed to register on-patent vaccines in 40 access countries on average

Sanofi performs above average, filing all its three relevant on-patent vaccines for registration in access countries. Its most widely filed relevant vaccine is Hexaxim®, filed in 54 access countries.

Hexaxim® is followed by the meningococcal conjugate vaccine Menactra®, filed in 48 countries. Sanofi filed all its three relevant on-patent vaccines for registration in at least one LIC.

### C.2.2 Several strategies to expand access to off-patent/generic medicines

Sanofi performs above average, with access strategies reported for five of its 10 relevant off-patent/generic medicines. It expands access to its off-patent/generic medicines in access countries through a voluntary licensing agreement, donations and tenders. In 2020, Sanofi coordinated the donation of 9,300 packs of metronidazole for emergency kits preparation and 55,000 packs of amoxicillin in Colombia. In 2020, it supplied more than 9 mn packs of isoniazid and more than 1.2 mn packs of rifampicin containing regimens through a government tender for tuberculosis in South Africa, with

prices up to 45% lower than those offered in the private sector.

### C.2.3 Several strategies to expand access to on-patent vaccines

Sanofi performs above average, with access strategies reported for all its three relevant on-patent vaccines. It expands access in access countries through equitable pricing, tenders and public or private partnerships. Sanofi has a tiered pricing policy where price is defined by the channel of distribution and countries' GNI per capita. It partners with UNICEF to provide Shan5™ at a defined price. Sanofi provides evidence of patient reach and geographic reach for some of its reported approaches. In 2020, it estimates to have reached more than 5 mn people worldwide with Hexaxim®.

† 102 low- and middle-income countries where better access to medicine is most needed.

### C.3 Several strategies to ensure continuous supply

Sanofi performs above average, with strategies reported in all four areas assessed. Sanofi ensures accurate demand planning and data sharing by having a monthly process for supply planning with a 36-month time horizon. Sanofi has a “zero out-of-stock” objective with short-term (up to 36 months) and long-term (36 months to 5-10 years) forecasts. Sanofi mitigates against shortage risks by keeping buffer stocks. It produces some of its APIs in-house and ensures dual sourcing for all other APIs.

Sanofi reports four capacity building or technology transfer initiatives, in India, Nigeria and Vietnam. To mitigate against substandard and falsified products, Sanofi has an anti-counterfeiting coordination network, a security department to detect online illicit sales and a central laboratory of counterfeit analysis.

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## C APPROPRIATE ACCESS & STEWARDSHIP – STEWARDSHIP

Evaluated: stewardship activities relating to antibacterial & antifungal medicines globally

### C.4 Comprehensive COI mitigation strategies in place for its educational programme

Sanofi performs strongly in conflict of interest (COI) mitigation for the one AMR-related educational programme for HCPs assessed by the Benchmark. The programme has all three COI mitigation strategies looked for by the Benchmark: (1) content is developed independently from its marketing department; (2) participants are not provided financial or material incentives (as it is a website); and (3) a policy of not using branded materials.

reports that it partly decouples incentives for sales agents from sales volumes of this product.

Sanofi engages in marketing practices that aim to address the appropriate use of its antibacterial and/or antifungal medicines. Its marketing materials reflect emerging resistance trends and/or include treatment guidelines for healthcare professionals: for pristinamycin (Pyostacine®).

### C.5 Engages in sales and marketing practices to address appropriate use

Sanofi performs above average in sales practices. It does not deploy any sales agents to promote its antibacterial and/or antifungal medicines to healthcare professionals outside of France. However, for its sales in France, which are only for pristinamycin (Pyostacine®), Sanofi

### C.6 Does not report adapting brochures and/or packaging to facilitate appropriate use by patients

Sanofi does not report adapting brochures and/or packaging to facilitate the appropriate use of its antibacterial and/or antifungal medicines by patients.

### C.7 Active in one AMR surveillance programme; openly publishes aggregated results

Sanofi funds a national programme managed by the National Reference Centre for Pneumococci (NRCP) with the French Regional Pneumococcal Observatories. It is focused on *S. pneumoniae* in France and has been running since 2000. Only the aggregated results are shared by NRCP through peer-reviewed open-access journal articles.