

# THE GLOBAL HEALTH IMPACT INDEX

COMPANY



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# ABOUT US

## GLOBAL HEALTH IMPACT

Imagine a world where people everywhere have access to the life-saving drugs they need to fight diseases like tuberculosis, malaria, and HIV/AIDS. To help extend access on essential medicines, we have to understand the problem. The Global Health Impact Index opens the door to positive change by considering how essential medicines for TB, HIV/AIDS, and malaria are affecting global health.

## THE INDEXES

The Drug Index ranks the drugs by their impact scores. The Disease Index looks at the size of the drugs' impact on each of the diseases. The Country Index looks at the amount of need in each country that is alleviated by the drugs used in that country. The Company Index ranks companies by the sum the impact of the drugs each company makes. For more general information on the construction of each Index, see resources and for technical papers

## EVALUATING DRUGS

There are three main considerations that go into evaluating each drug's potential impact. These are 1) the need for the drug, 2) its effectiveness, and 3) how many people who need a drug can access it around the world. In the Global Health Impact model, the drug impact scores feed into four Indexes that provide essential information about the access to medicines problem.

## POTENTIAL USES

There are many ways Global Health Impact information might be useful to policy makers, researchers, companies investors, consumers, and other people interested in global health. For some information about potential uses of the Index, see Resources and News. Together we can leverage the Global Health Impact Index to save millions of lives.

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# COMPANY DESCRIPTION

## SANOFI



Sanofi is a global pharmaceutical company founded in 1973, headquartered in Paris, France, and formed from the mergers of several companies between 1999 and 2011. In their effort to reduce the global disease burden Sanofi has: collaborated with the Drugs for Neglected Diseases Initiative to create the ASAQ Winthrop®, an anti-malaria drug that has enabled the treatment of over 450 million cases at preferential pricing since 2007, worked with national malaria control programs and various NGOs to develop the Schoolchildren against Malaria Program aimed at promoting prevention behavior in schools in Africa, and is currently running a clinical trial, in collaboration with the Medicines for Malaria Venture, to develop Ferroquine, a potential alternative to artemisinin-based treatments that are being increasingly resisted.

Sanofi produces seven drugs that are used in our 2015 company report: Rifampicin (R or RMP), Artesunate/Amodiaquine (AS+AQ), Artesunate/Sulfadoxine-pyrimethamine (AS+SP), Chloroquine + Primaquine (CQ+PQ), Artesunate + Mefloquine + Primaquine (AS+AQ+PQ), Artesunate + Amodiaquine + Primaquine (AS+AQ+PQ), and Artesunate + Sulfadoxine + Primaquine (AS+SP+PQ). These drugs are used to treat Drug Susceptible TB (R), P.Falc malaria (AS+AQ, AS+SP, CQ + PQ, AS + MQ + PQ, and AS + SP + PQ), and P.Vivax malaria (CQ + PQ and AS + AQ + PQ). Sanofi's drugs alleviate 23.59% of the DALYs lost to Drug-susceptible TB, 18.37% of the DALYs lost to P.Falc malaria, and 15.37% of the DALYs lost to P.Vivax malaria. The total impact score of these drugs is 18633104.45 DALYs averted, giving Sanofi the highest impact score of all of the companies evaluated in our 2015 report.

## KEY DRUGS

### ARTESUNATE-SULFADOXINE-PYRIMETHAMINE (AS+SP)

Artesunate-Sulfadoxine-Pyrimethamine (AS+SP) is an artemisinin-based combination therapy recommended by the WHO as one of the primary treatments for both uncomplicated and severe malaria. It is generally as safe and effective AS+AQ, but resistance to this combination significantly reduces its efficacy in the treatment of P.vivax malaria. Hoechst, which later became a part of Sanofi, filed a patent for AS+AP in 1988.

### ARTESUNATE+AMODIAQUINE (AS+AQ)

Artesunate+Amodiaquine (AS+AQ) is an artemisinin-based combination therapy (ACT) recommended by the WHO as one of the primary treatments for both uncomplicated and severe malaria. It is relatively safe and effective with the recommended dosing and 3-day duration. The first patent for AS+AQ was filed in 1988 by Hoechst which is now a part of Sanofi.

# COMPANY RANKING EXPLANATION

## RIFAMPICIN (R)

Rifampicin (R), also called rifampin, a semisynthetic antibiotic, is a first line drug used in the treatment of drug-susceptible tuberculosis. Rifampicin has broad bactericidal activity and a good safety profile. Side effects include jaundice and fever. It was patented in 1965 by Gruppo Lepetit, a subsidiary of Sanofi.

## CHLOROQUINE + PRIMAQUINE (CQ+PQ)

Chloroquine + Primaquine (CQ+PQ) is a combination therapy of chloroquine and primaquine recommended in the treatment of uncomplicated *P. vivax* malaria. Primaquine, when paired with chloroquine, proves to be a cost effective method of combating drug-resistant malaria. The combination was developed by Hoechst AG which became a part of Sanofi.

## ARTESUNATE + AMODIAQUINE + PRIMAQUINE (AS + AQ) + PQ

Artesunate + Amodiaquine + Primaquine (AS + AQ + PQ) is an artemisinin-based combination therapy recommended by the WHO for the addition of primaquine to the standard AS+AQ ACT. This is due to primaquine's effects of reducing the transmissibility of treated *P. falciparum* infections and in reducing the likelihood of relapse of uncomplicated malaria. However, it is not always used for its potential hemolytic toxicity and other adverse reactions, along with considerations based on potential for transmission and/or relapse.

## ARTESUNATE + MEFLOQUINE + PRIMAQUINE (AS + MQ + PQ)

Artesunate + Mefloquine + Primaquine (AS + MQ + PQ) is an artemisinin-based combination therapy recommended by the WHO for the addition of primaquine to the standard AS+MQ ACT. This is due to primaquine's effects of reducing the transmissibility of treated *P. falciparum* infections and in reducing the likelihood of relapse of uncomplicated malaria. However, it is not always used for its potential hemolytic toxicity and other adverse reactions, along with considerations based on potential for transmission and/or relapse.

## ARTESUNATE + SULFADOXINE-PYRIMETHAMINE + PRIMAQUINE (AS + SP + PQ)

Artesunate + Sulfadoxine-Pyrimethamine + Primaquine (AS + SP + PQ) is an artemisinin-based combination therapy recommended by the WHO for the addition of primaquine to the standard AS+SP ACT. This is due to primaquine's effects of reducing the transmissibility of treated *P. falciparum* infections and in reducing the likelihood of relapse of uncomplicated malaria. However, it is not always used for its potential hemolytic toxicity and other adverse reactions, along with considerations based on potential for transmission and/or relapse.

# COMPANY RANKING EXPLANATION

## 2015

### 1<sup>ST</sup>

Sanofi is ranked 1 place in our index for 2015. Sanofi's drugs have a total impact score of 18,633,104.45. Sanofi treats 3 diseases in our model - p.falc malaria, p.vivax malaria, DS-TB - with 7 total drugs - Rifampicin (R or RMP), Artesunate/Amodiaquine (AS + AQ), Artesunate / Sulfadoxine-pyrimethamine (AS + SP), Chloroquine + Primaquine (CQ + PQ), Artesunate + Mefloquine + Primaquine (AS + MQ + PQ), Artesunate + Amodiaquine + Primaquine (AS + AQ + PQ), Artesunate + Sulfadoxine + Primaquine (AS + SP + PQ). Sanofi receives credit for 5 treatments against p.falc malaria - Artesunate/Amodiaquine (AS + AQ), Artesunate + Sulfadoxine + Primaquine (AS + SP + PQ), Artesunate / Sulfadoxine-pyrimethamine (AS + SP), Artesunate + Mefloquine + Primaquine (AS + MQ + PQ), Chloroquine + Primaquine (CQ + PQ). These 5 drugs averted 9,792,177.01 of the total DALYS for p.falc malaria, which is 43.05% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2015 in the absence of effective treatment. Sanofi's drug portfolio placed it 2 in terms of total averted DALYS for p.falc malaria. Sanofi receives credit for 2 treatments against p.vivax malaria - Chloroquine + Primaquine (CQ + PQ) and Artesunate + Amodiaquine + Primaquine (AS + AQ + PQ). These 2 drugs averted 370,800.53 of the total DALYS for p.vivax malaria, which is 95.08% of the worldwide DALYS that we estimate would have been lost due to p.vivax malaria in 2015 in the absence of effective treatment. Sanofi's drug portfolio placed it 1 in terms of total averted DALYS for p.vivax malaria. Sanofi receives credit for 1 treatment against DS-TB - Rifampicin (R or RMP). This 1 drug averted 8,470,126.91 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYS that we estimate would have been lost due to DS-TB in 2015 in the absence of effective treatment. Sanofi's drug portfolio placed it tie for 1 in terms of total averted DALYS for DS-TB.

# COMPANY RANKING EXPLANATION

**2010**  
**1<sup>ST</sup>**



Sanofi is ranked 1st place in our index for 2010. Sanofi's drugs have a total impact score of 36,214,390.24. Sanofi treats 3 diseases in our model - p. vivax Malaria, p. falc Malaria, DS-TB - with 5 total drugs - Rlfampicin (R or RMP), Artesunate/Amodiaquine (AS + AQ), Artesunate / Sulfadoxine-pyrimethamine (AS + SP), Chloroquine + Primaquine (CQ + PQ), Artesunate+Mefloquine+Primaquine (AS + MQ + PQ). Sanofi receives credit for 2 treatments against p. vivax Malaria - Artesunate/Amodiaquine (AS + AQ), Chloroquine + Primaquine (CQ + PQ) . These 2 drugs averted 212,419.29 of the total DALYS for p. vivax Malaria, which is 40.21% of the worldwide DALYs that we estimate would have been lost due to p. vivax Malaria in 2010 in the absence of effective treatment. Sanofi's drug portfolio placed it 2nd in terms of total averted DALYs for p. vivax Malaria. Sanofi receives credit for 4 treatments against p. falc Malaria - Artesunate / Sulfadoxine-pyrimethamine (AS + SP), Artesunate/Amodiaquine (AS + AQ), Artesunate+Mefloquine+Primaquine (AS + MQ + PQ), Chloroquine + Primaquine (CQ + PQ). These 4 drugs averted 22,603,516.66 of the total DALYS for p. falc Malaria, which is 43% of the worldwide DALYs that we estimate would have been lost due to p. falc Malaria in 2010 in the absence of effective treatment. Sanofi's drug portfolio placed it 2nd in terms of total averted DALYs for p. falc Malaria. Sanofi receives credit for 1 treatment against DS-TB -Rlfampicin (R or RMP) . This 1 drug averted 13,398,454.29 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYs that we estimate would have been lost due to DS-TB in 2010 in the absence of effective treatment. Sanofi's drug portfolio placed it tie for 1st in terms of total averted DALYs for DS-TB.

**2013**  
**1<sup>ST</sup>**



Sanofi is ranked 1 place in our index for 2013. Sanofi's drugs have a total impact score of 19,955,248.48. Sanofi treats 3 diseases in our model - DS-TB, p.falc malaria, p.vivax malaria - with 7 total drugs - Rlfampicin (R or RMP), Artesunate/Amodiaquine (AS + AQ), Artesunate / Sulfadoxine-pyrimethamine (AS + SP), Chloroquine + Primaquine (CQ + PQ), Artesunate + Mefloquine + Primaquine (AS + MQ + PQ), Artesunate + Amodiaquine + Primaquine (AS + AQ + PQ) and Artesunate + Sulfadoxine+Primaquine(AS+SP+PQ). Sanofi receives credit for 1 treatment against DS-TB - Rlfampicin (R or RMP). This 1 drug averted 10,842,565.11 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYs that we estimate would have been lost due to DS-TB in 2013 in the absence of effective treatment. Sanofi's drug portfolio placed it tie for 1 in terms of total averted DALYs for DS-TB. Sanofi receives credit for 5 treatments against p.falc malaria - Artesunate/Amodiaquine (AS + AQ), Artesunate + Sulfadoxine + Primaquine (AS + SP + PQ), Artesunate / Sulfadoxine-pyrimethamine (AS + SP), Chloroquine + Primaquine (CQ + PQ), Artesunate + Mefloquine + Primaquine (AS + MQ + PQ). These 5 drugs averted 8,525,377.81 of the total DALYS for p.falc malaria, which is 43.72% of the worldwide DALYs that we estimate would have been lost due to p.falc malaria in 2013 in the absence of effective treatment. Sanofi's drug portfolio placed it 2 in terms of total averted DALYs for p.falc malaria. Sanofi receives credit for 3 treatments against p.vivax malaria - Chloroquine + Primaquine (CQ + PQ), Artesunate + Amodiaquine + Primaquine (AS + AQ + PQ), Artesunate/Amodiaquine (AS + AQ). These 3 drugs averted 587,305.56 of the total DALYS for p.vivax malaria, which is 76.96% of the worldwide DALYs that we estimate would have been lost due to p.vivax malaria in 2013 in the absence of effective treatment. Sanofi's drug portfolio placed it 1 in terms of total averted DALYs for p.vivax malaria.

# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 18,633,104.45

### MAIN DRUGS

(R OR RMP), (AS+AQ),  
(AS+SP), (CQ+PQ).  
(AS+MQ+PQ),  
(AS+AQ+PQ),  
(AS+SP+PQ)

### TREATS

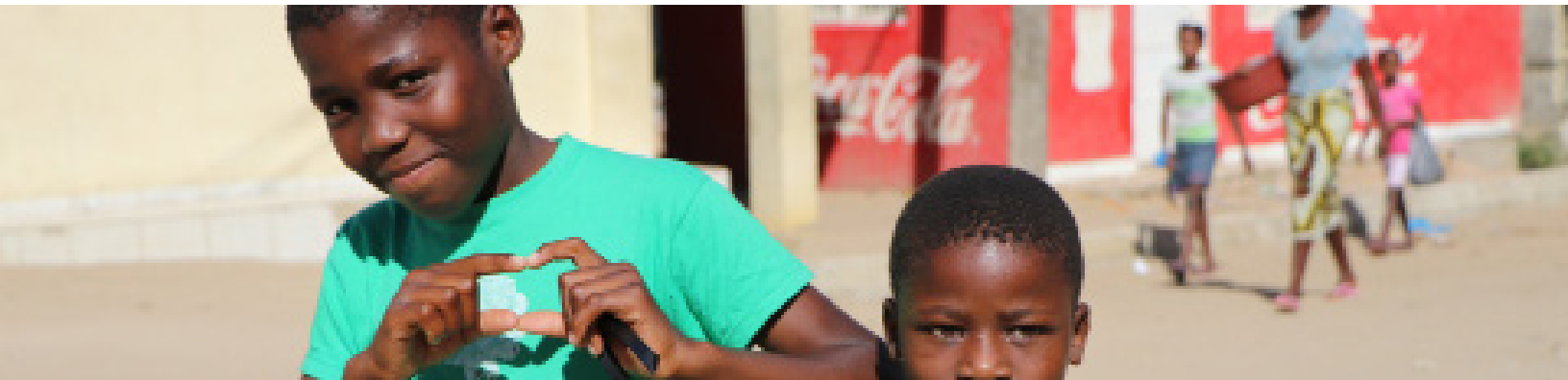
P.FALC MALARIA, P.  
VIVAX MALARIA, DS-TB

### FINAL IMPACT BY DISEASE

P. FALC MALARIA  
9,792,177.01  
P.VIVAX MALARIA  
370,800.53  
DS-TB  
8,470,126.91



# COMPANY RANKING EXPLANATION



**2010**

TOTAL IMPACT SCORE OF

**36,214,390.24**

**2013**

TOTAL IMPACT SCORE OF

**19,955,248.48**

**MAIN DRUGS**

(R OR RMP),  
(AS+AQ), (AS+SP),  
(CQ+PQ).  
(AS+MQ+PQ),  
(AS+AQ+PQ),  
(AS+SP+PQ)

**MAIN DRUGS**

(R OR RMP),  
(AS+AQ), (AS+SP),  
(CQ+PQ).  
(AS+MQ+PQ),  
(AS+AQ+PQ),  
(AS+SP+PQ)

**TREATS**

P.FALC MALARIA,  
P. VIVAX MALARIA,  
DS-TB

**TREATS**

P.FALC MALARIA,  
P. VIVAX MALARIA,  
DS-TB

**FINAL IMPACT BY DISEASE**

P.FALC MALARIA  
22,603,516.66  
P. VIVAX MALARIA  
212,419,29  
DS-TB  
13,398,454.29

**FINAL IMPACT BY DISEASE**

P.FALC MALARIA  
8,525,377.81  
P. VIVAX MALARIA  
587,305.56  
DS-TB  
10,842,565.11

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# COMPANY DESCRIPTION

## NOVARTIS



Novartis is a global pharmaceutical company headquartered in Basel, Switzerland and established in 1996 by the merger of Ciba-Geigy and Sandoz Laboratories. Novartis works to expand access to medicines for malaria through several initiatives including a zero-profit model to malaria endemic countries that reached 43.7 million people in 2017, clinical trials researching two novel antimalarial drug candidates, and a renewed, 5-year, \$100 million R&D investment to help reach the WHO's 2030 malaria elimination targets. Novartis also expands access to medicine by not enforcing patents in LICs and LDCs and through the Novartis Access Program which treats public-sector customers with chronic illnesses for one USD per treatment, per month. In 2017 they had 126,000 employees in 155 countries and a revenue of \$49.1 billion.

Novartis produces one drug that is used in our 2015 company report: Artemether-Lumefantrine (AL), which is used to treat P.Falc malaria and P.Vivax malaria. Artemether-lumefantrine alleviates 24.24% of the DALYs lost to P.Falc malaria and 0.01% of the DALYs lost to P.Vivax malaria. The total impact score of artemether-lumefantrine is 12918868.72 DALYs averted, giving Novartis the second highest impact score out of all of the companies evaluated in our 2015 company report.

## KEY DRUGS

### ARTEMETHER+LUMEFANTRINE (AL)

Artemether+Lumefantrine (AL) is an artemisinin-based combination therapy recommended by the WHO as one of the primary treatments for both uncomplicated and severe malaria. It is generally as safe and effective as AS+MQ, but is more likely to cause earlier relapses because lumefantrine is eliminated more rapidly than some other ACTs such as mefloquine. AL was patented by Novartis in 1993.

# COMPANY RANKING EXPLANATION

## 2015

### 2<sup>ND</sup>

Novartis is ranked 2nd place in our index for 2015. Novartis's drugs have a total impact score of 12,918,834.00. Novartis treats 2 diseases in our model - p.falc malaria, p.vivax malaria - with 1 drug - Artemether-Lumefantrine (AL). Novartis receives credit for 1 treatment against p.falc malaria - Artemether-Lumefantrine (AL). This 1 drug averted 12,918,639.54 of the total DALYS for p.falc malaria, which is 56.81% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2015 in the absence of effective treatment. Novartis's drug portfolio placed it 1st in terms of total averted DALYS for p.falc malaria. Novartis receives credit for 1 treatment against p.vivax malaria - Artemether-Lumefantrine (AL). This 1 drug averted 194.46 of the total DALYS for p.vivax malaria, which is 0.05% of the worldwide DALYS that we estimate would have been lost due to p.vivax malaria in 2015 in the absence of effective treatment. Novartis's drug portfolio placed it 4th in terms of total averted DALYS for p.vivax malaria.

## 2010

### 2<sup>ND</sup>

Novartis is ranked 2nd place in our index for 2010. Novartis's drugs have a total impact score of 29,747,257.66. Novartis treats 2 diseases in our model - p.falc malaria, p.vivax malaria - with 1 drug - Artemether-Lumefantrine (AL). Novartis receives credit for 1 treatment against p.falc malaria - Artemether-Lumefantrine (AL). This 1 drug averted 29,694,047.36 of the total DALYS for p.falc malaria, which is 56.76% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2010 in the absence of effective treatment. Novartis's drug portfolio placed it 1st in terms of total averted DALYS for p.falc malaria. Novartis receives credit for 1 treatment against p.vivax malaria - Artemether-Lumefantrine (AL). This 1 drug averted 53,210.30 of the total DALYS for p.vivax malaria, which is 10.07% of the worldwide DALYS that we estimate would have been lost due to p.vivax malaria in 2010 in the absence of effective treatment. Novartis's drug portfolio placed it 3rd in terms of total averted DALYS for p.vivax malaria.

## 2013

### 3<sup>RD</sup>

Novartis is ranked 3rd place in our index for 2013. Novartis's drugs have a total impact score of 10,944,211.60. Novartis treats 2 diseases in our model - p.falc malaria, p.vivax malaria - with 1 drug - Artemether-Lumefantrine (AL). Novartis receives credit for 1 treatment against p.falc malaria - Artemether-Lumefantrine (AL). This 1 drug averted 10,940,106.05 of the total DALYS for p.falc malaria, which is 56.11% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2013 in the absence of effective treatment. Novartis's drug portfolio placed it 1st in terms of total averted DALYS for p.falc malaria. Novartis receives credit for 1 treatment against p.vivax malaria - Artemether-Lumefantrine (AL). This 1 drug averted 4,105.55 of the total DALYS for p.vivax malaria, which is 0.54% of the worldwide DALYS that we estimate would have been lost due to p.vivax malaria in 2013 in the absence of effective treatment. Novartis's drug portfolio placed it 4th in terms of total averted DALYS for p.vivax malaria.

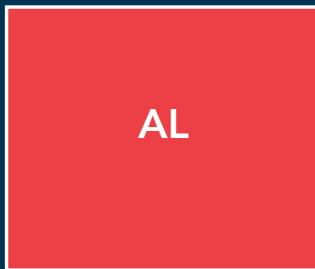
# COMPANY RANKING EXPLANATION

## 2015

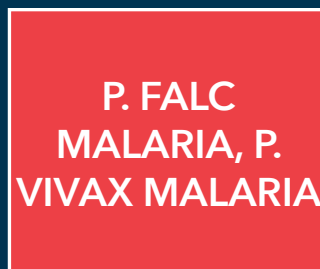
TOTAL IMPACT SCORE OF

# 12.919,834.00

MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 29,747,257.66

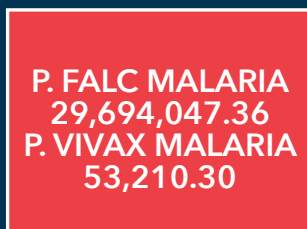
MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 10,944,211.60

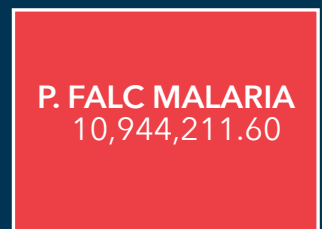
MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE



# COMPANY DESCRIPTION

## PFIZER INC



Pfizer Inc is a global pharmaceutical company headquartered in New York, NY and founded in 1849 by Charles Pfizer and Charles Erhart. Pfizer's products delve into many therapeutic areas such as: pain management, respiratory, digestive, inflammation, immunology, rare disease, cardiovascular, oncology, and anti-infection. Major products include Lyrica®, Prevnar 13®, and Ibrance®. Pfizer works to reduce the disease burden with programs such as: the International Trachoma Initiative, co-founded in 1998 with the Edna McConnell Clark Foundation that treated over 100 million people in 2017, the Diflucan Partnership Program, launched in 2000, that has donated over 100 million treatments for HIV-related infection, and cash grants/investments through the Pfizer Foundation that funds initiatives aimed at improving health care delivery in low and middle income countries. Pfizer Inc. has over 90,000 employees in over 125 countries and earned a revenue of approximately \$52.5 billion in 2017.

## KEY DRUGS

### CYCLOSERINE (CS)

Cycloserine (Cs) an analogue of amino acid D-alanine,, is a Group C second-line agent used in the treatment of rifampicin-resistant and multidrug-resistant tuberculosis. Cs is, relative to other second-line treatments, weakly effective against TB and has a high toxicity profile. Side effects include acute psychosis and seizure. In 1952 Pfizer first applied for a patent for Cs.

### DIETHYLCARBAMAZINE (DEC)

Diethylcarbamazine (Dec) is an anti-filarial drug used to treat many worm infections including Onchocerciasis and Schistosomiasis. Because of adverse reactions such as fever, hypotension, increased eosinophilia, proteinuria and splenomegaly, diethylcarbamazine is rarely used for treatment, and must only be done so in a regulated setting, such as a hospital. Diethylcarbamazine was discovered in 1947, and its mechanism of action is irreversible cytotoxic effect which leads to an inhibition of the parasite motility and viability. Pfizer was its most recent patent holder, but this patent has since expired.

# COMPANY RANKING EXPLANATION

## DOXYCYCLINE (D)

Doxycycline (D): Doxycycline is a slow-acting treatment agent, and acts as an effective prophylactic against *P. vivax* and *P. falciparum* malaria when used in combination therapy with quinine, side effects may include fever, headaches, dizziness. Doxycycline was first patented by Pfizer in 1962.

## ETHAMBUTOL (E)

Ethambutol (E) is a first line semisynthetic antibiotic used in the treatment of drug-susceptible tuberculosis and as an add-on agent in drug-resistant TB. Due to its high safety profile and broad antibiotic activity it is a companion drug in the core TB treatment regimen. Side effects include blurred vision and gastrointestinal upset. The earliest patent for E was by the American cyanamid Company in 1976 and is currently held by Pfizer.

## ETHIONAMIDE (ETO)

Ethionamide (Eto) a thioamide antibiotic, is a Group C second-line agent used in the treatment of rifampicin-resistant and multidrug-resistant tuberculosis. Eto is moderately effective against TB but has a high toxicity profile. Side effects include seizure and blurred vision, was first patented by pfizer in 1982.

## NELFINAVIR (NFV)

Nelfinavir (NFV) is a widely used protease inhibitor often combined with other reverse transcriptase inhibitors for the treatment of HIV, but is no longer recommended for use in the U.S. Major toxicity concerns include new-onset diabetes and ketoacidosis. It was developed by Agouron Pharmaceuticals and, in 1998, Agouron was sold to Warner Lambert, which later merged with Pfizer.

## PAS (4-AMINOSALICYLIC ACID)

PAS (4-aminosalicylic acid) is used as an add-on agent to treat rifampicin-resistant and multidrug-resistant tuberculosis. While PAS was first developed in 1902, its antituberculosis properties were not discovered until 1943. Due to its high toxicity it is rarely used and is in the WHO's last group of recommended treatment for MDR-TB, Group D3. PAS was first patented by Pfizer in 1948.

# COMPANY RANKING EXPLANATION

## 2015

### 3<sup>RD</sup>

Pfizer Inc. is ranked 3rd place in our index for 2015. Pfizer Inc.'s drugs have a total impact score of 9,712,455.96. Pfizer Inc. treats 5 diseases in our model - DS-TB, MDR-TB, XDR-TB, p. falc malaria, LF - with 7 total drugs - Ethambutol (E or EMB), Ethionamide (Eto), Cycloserine (Cs), p-aminosalicylic acid (PAS), Diethylcarbamazine (DEC), Nelfinavir (NFV), Doxycycline (D). Pfizer Inc. receives credit for 1 treatment against DS-TB - Ethambutol (E or EMB). This 1 drug averted 8,470,126.91 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYS that we estimate would have been lost due to DS-TB in 2015 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it tie for 1 in terms of total averted DALYS for DS-TB. Pfizer Inc. receives credit for 3 treatments against MDR-TB - Cycloserine (Cs), Ethionamide (Eto), p-aminosalicylic acid (PAS), , . These 3 drugs averted 1,213,914.04 of the total DALYS for MDR-TB, which is 60.70% of the worldwide DALYS that we estimate would have been lost due to MDR-TB in 2015 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 1 in terms of total averted DALYS for MDR-TB. Pfizer Inc. receives credit for 1 treatment against XDR-TB - Cycloserine (Cs), , . This 1 drug averted 26,589.80 of the total DALYS for XDR-TB, which is 37.50% of the worldwide DALYS that we estimate would have been lost due to XDR-TB in 2015 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 1 in terms of total averted DALYS for XDR-TB. Pfizer Inc. receives credit for 1 treatment against HIV - Doxycycline (D), . This 1 drug averted 1,579.82 of the total DALYS for HIV, which is 0.06% of the worldwide DALYS that we estimate would have been lost due to HIV in 2015 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 8 in terms of total averted DALYS for HIV. Pfizer Inc. receives credit for 1 treatment against p. falc malaria - Doxycycline (D). This 1 drug averted 1579.815452 of the total DALYS for p. falc malaria, which is 0.01% of the worldwide DALYS that we estimate would have been lost due to p. falc malaria in 2015 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 5 in terms of total averted DALYS for p. falc malaria. Pfizer Inc. receives credit for 1 treatment against LF - Diethylcarbamazine (DEC). This 1 drug averted 245.39 of the total DALYS for LF, which is 4.94% of the worldwide DALYS that we estimate would have been lost due to LF in 2015 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 3 in terms of total averted DALYS for LF.

# COMPANY RANKING EXPLANATION

**2010**  
4<sup>TH</sup>

Pfizer Inc. is ranked 4th place in our index for 2010. Pfizer Inc.'s drugs have a total impact score of 13,425,167.60. Pfizer Inc. treats 6 diseases in our model - DS-TB, MDR-TB, XDR-TB, LF, p.falc malaria, HIV - with 7 total drugs - Ethambutol (E or EMB), Ethionamide (Eto), Cycloserine (Cs), p-aminosalicylic acid (PAS), Diethylcarbamazine (DEC), Nelfinavir (NFV), and Doxycycline (D). Pfizer Inc. receives credit for 1 treatment against DS-TB - Ethambutol (E or EMB). This 1 drug averted 13,398,454.29 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYs that we estimate would have been lost due to DS-TB in 2010 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it in a tie for 1st in terms of total averted DALYs for DS-TB. Pfizer Inc. receives credit for 3 treatments against MDR-TB - Cycloserine (Cs), Ethionamide (Eto), and p-aminosalicylic acid (PAS). These 3 drugs averted 14,752.32 of the total DALYS for MDR-TB, which is 65.38% of the worldwide DALYs that we estimate would have been lost due to MDR-TB in 2010 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 1st in terms of total averted DALYs for MDR-TB. Pfizer Inc. receives credit for 1 treatment against XDR-TB - Cycloserine (Cs). This 1 drug averted 9,751.68 of the total DALYS for XDR-TB, which is 37.50% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2010 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 1st in terms of total averted DALYs for XDR-TB. Pfizer Inc. receives credit for 1 treatment against LF - Diethylcarbamazine (DEC), . This 1 drug averted 1,446.60 of the total DALYS for LF, which is 41.07% of the worldwide DALYs that we estimate would have been lost due to LF in 2010 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 2nd in terms of total averted DALYs for LF. Pfizer Inc. receives credit for 1 treatment against p.falc malaria - Doxycycline (D). This 1 drug averted 731.95 of the total DALYS for p.falc malaria, which is 0.001% of the worldwide DALYs that we estimate would have been lost due to p.falc malaria in 2010 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 4th in terms of total averted DALYs for p.falc malaria. Pfizer Inc. receives credit for 1 treatment against HIV - Nelfinavir (NFV). This 1 drug averted 30.75 of the total DALYS for HIV, which is 0.001% of the worldwide DALYs that we estimate would have been lost due to HIV in 2010 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 8th in terms of total averted DALYs for HIV.

**2013**  
4<sup>TH</sup>

Pfizer Inc. is ranked 4 place in our index for 2013. Pfizer Inc.'s drugs have a total impact score of 10,897,633.53. Pfizer Inc. treats 5 diseases in our model - DS-TB, MDR-TB, XDR-TB, p.vivax malaria, LF - with 6 total drugs - Ethambutol (E or EMB), Ethionamide (Eto), Cycloserine (Cs), p-aminosalicylic acid (PAS) Diethylcarbamazine (DEC), and Doxycycline (D). Pfizer Inc. receives credit for 1 treatment against DS-TB - Ethambutol (E or EMB). This 1 drug averted 10,842,565.11 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYs that we estimate would have been lost due to DS-TB in 2013 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it tie for 1 in terms of total averted DALYs for DS-TB. Pfizer Inc. receives credit for 3 treatments against MDR-TB - Cycloserine (Cs), Ethionamide (Eto), p-aminosalicylic acid (PAS), , . These 3 drugs averted 34,919.04 of the total DALYS for MDR-TB, which is 56.80% of the worldwide DALYs that we estimate would have been lost due to MDR-TB in 2013 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 1 in terms of total averted DALYs for MDR-TB. Pfizer Inc. receives credit for 1 treatment against XDR-TB - Cycloserine (Cs). This 1 drug averted 18,576.25 of the total DALYS for XDR-TB, which is 37.50% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2013 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 1 in terms of total averted DALYs for XDR-TB. Pfizer Inc. receives credit for 1 treatment against p.vivax malaria - Doxycycline (D), . This 1 drug averted 1,092.39 of the total DALYS for p.vivax malaria, which is 0.14% of the worldwide DALYs that we estimate would have been lost due to p.vivax malaria in 2013 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 5 in terms of total averted DALYs for p.vivax malaria. Pfizer Inc. receives credit for 1 treatment against LF - Diethylcarbamazine (DEC). This 1 drug averted 480.74 of the total DALYS for LF, which is 25.54% of the worldwide DALYs that we estimate would have been lost due to LF in 2013 in the absence of effective treatment. Pfizer Inc.'s drug portfolio placed it 2 in terms of total averted DALYs for LF.



# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 9,712,455.96

### MAIN DRUGS

ETHAMBUTOL (E OR EMB), ETHIONAMIDE (ETO), CYCLOSERINE (CS), P-AMINOSALICYLIC ACID (PAS), DIETHYLCARBAMAZINE (DEC), NELFINAVIR (NFV), AND DOXYCYCLINE (D).

### TREATS

DS-TB, MDR-TB, XDR-TB, HIV

### FINAL IMPACT BY DISEASE

DS-TB  
8,470,126.91  
MDR-TB  
1,213,914.04  
XDR-TB  
26,589.80  
HIV  
1,579.82

# COMPANY RANKING EXPLANATION

## 2010

TOTAL IMPACT SCORE OF

### 13,425,167.60

#### MAIN DRUGS

ETHAMBUTOL (E OR EMB), ETHIONAMIDE (ETO), CYCLOSERINE (CS), P-AMINOSALICYLIC ACID (PAS), DIETHYLCARBAMAZINE (DEC), NELFINAVIR (NFV), AND DOXYCYCLINE (D)

#### TREATS

DS-TB, MDR-TB, XDR-TB, LF, P.FALC MALARIA, HIV

#### FINAL IMPACT BY DISEASE

DS-TB  
13,398,454.29  
MDR-TB  
14,752.32  
XDR-TB  
9,751.68  
LF  
1,446.60  
P.FALC MALARIA  
731.95  
HIV  
30.75

## 2013

TOTAL IMPACT SCORE OF

### 10,897,633.53

#### MAIN DRUGS

ETHAMBUTOL (E OR EMB), ETHIONAMIDE (ETO), CYCLOSERINE (CS), P-AMINOSALICYLIC ACID (PAS), DIETHYLCARBAMAZINE (DEC), AND DOXYCYCLINE (D)

#### TREATS

DS-TB, MDR-TB, XDR-TB, P.VIVAX MALARIA, LF

#### FINAL IMPACT BY DISEASE

DS-TB  
10,842,565.11  
MDR-TB  
34,919.04  
XDR-TB  
18,576.25  
P.VIVAX MALARIA  
1,092.39  
LF  
480.74

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## COMPANY DESCRIPTION

# MERCK & CO., INC



Merck & Co., Inc. is global pharmaceutical company founded in 1891 and headquartered in Kenilworth, New Jersey. The company focuses their products in the areas of diabetes, cancer, vaccines and hospital acute care. Major drugs include Januvia<sup>®</sup>, Keytruda<sup>®</sup>, and Isentress<sup>®</sup>. Their research efforts focus on cancer, HIV, HPV, hepatitis C, cardio-metabolic disease, antibiotic-resistant infection, and Alzheimer's disease. Merck attempts to make HIV medication, primarily Isentress<sup>®</sup>, accessible by offering pricing to countries based on disease burden and country income, licensing generics production, and, since 2017, making pediatric raltegravir available at zero profit in least-developed/low-income countries until generics become available. Their Institutional Business Africa unit works to ensure access to essential medicines in Africa; in 2015 they vaccinated 1 million girls in Rwanda and Uganda for HPV. In 2017, 42 of Merck's products were available at differential pricing to improve access in LICs and LDCs including Gardasil<sup>®</sup>, Atripla<sup>®</sup>, and MMR-II<sup>®</sup> and \$90 million was put into patient-provider education programs. They employ approximately 69,000

## KEY DRUGS

### STREPTOMYCIN (S)

Streptomycin (S), an aminoglycoside antibiotic, was formerly a first line tuberculosis treatment, but due to toxicity and widespread resistance it is now used as a second-line injectable agent to treat rifampicin-resistant and multidrug-resistant tuberculosis. Side effects include auditory and renal dysfunction. Streptomycin was patented by Merck in 1945.

## **IVERMECTIN (IVM)**

Ivermectin (Ivm) is a an anti-filarial medication used to treat parasitic onchocerciasis through the gradual killing of microfilariae; because of its safety and effectiveness, it is a common treatment. most common side effects include itching, fever, muscle and gland swelling, aches and ocular reactions, It is manufactured by Merck under the brand name Mectizan®.

## **EFAVIRENZ (EFV)**

Efavirenz (EFV) is an ARV drug recommended by the WHO in the treatment of HIV as a part of preferred first-line regimens for children, adolescents, and adults, and for children also being treated for TB. Major toxicity concerns include hepatotoxicity, CNS toxicity, and hypersensitivity reactions. EFV was developed and patented by Dupont Merck, which then licensed it to Bristol-Myers-Squibb.

## **PYRAZINAMIDE (Z)**

Pyrazinamide (Z), an analogue of nicotinamine, is a first line antibiotic used in the treatment of drug-susceptible tuberculosis and as an add-on agent in treating drug-resistant TB. It has a high sterilizing effect and is effective at treating tuberculosis with the ability to reduce the duration of treatment by several months. Side effects include gastrointestinal upset and fatigue. It was first patented by Merck & Co Inc in 1949.

# COMPANY RANKING EXPLANATION

## 2015

## 4<sup>TH</sup>

Merck is ranked 4th place in our index for 2015. Merck's drugs have a total impact score of 9,365,938.36. Merck treats 7 diseases in our model - HIV, roundworm, MDR-TB, DS-TB, whipworm, onchocerciasis, LF - with 4 total drugs - Streptomycin (S or STR), Efavirenz (EFV), Ivermectin (IVM), Pyrazinamide (Z or PZA). Merck receives credit for 1 treatment against HIV - Efavirenz (EFV). This 1 drug averted 430,899.98 of the total DALYs for HIV, which is 16.82% of the worldwide DALYs that we estimate would have been lost due to HIV in 2015 in the absence of effective treatment. Merck's drug portfolio placed it 3 in terms of total averted DALYs for HIV. Merck receives credit for 1 treatment against roundworm - Ivermectin (IVM). This 1 drug averted 34,644.98 of the total DALYs for roundworm, which is 14.41% of the worldwide DALYs that we estimate would have been lost due to roundworm in 2015 in the absence of effective treatment. Merck's drug portfolio placed it 2 in terms of total averted DALYs for roundworm. Merck receives credit for 1 treatment against MDR-TB - Streptomycin (S or STR), Pyrazinamide (Z or PZA). This 1 drug averted 198,422.39 of the total DALYs for MDR-TB, which is 19.06% of the worldwide DALYs that we estimate would have been lost due to MDR-TB in 2015 in the absence of effective treatment. Merck's drug portfolio placed it 3 in terms of total averted DALYs for MDR-TB. Merck receives credit for 1 treatment against DS-TB - Pyrazinamide (Z or PZA). This 1 drug averted 8,470,126.91 of the total DALYs for DS-TB, which is 25.00% of the worldwide DALYs that we estimate would have been lost due to DS-TB in 2015 in the absence of effective treatment. Merck's drug portfolio placed it tie for 1 in terms of total averted DALYs for DS-TB. Merck receives credit for 1 treatment against whipworm - Ivermectin (IVM). This 1 drug averted 2,086.22 of the total DALYs for whipworm, which is 19.46% of the worldwide DALYs that we estimate would have been lost due to whipworm in 2015 in the absence of effective treatment. Merck's drug portfolio placed it 2 in terms of total averted DALYs for whipworm. Merck receives credit for 1 treatment against onchocerciasis - Ivermectin (IVM). This 1 drug averted 2,790.64 of the total DALYs for onchocerciasis, which is 100.00% of the worldwide DALYs that we estimate would have been lost due to onchocerciasis in 2015 in the absence of effective treatment. Merck's drug portfolio placed it 1 in terms of total averted DALYs for onchocerciasis. Merck receives credit for 1 treatment against LF - Ivermectin (IVM). This 1 drug averted 2,238.64 of the total DALYs for LF, which is 45.06% of the worldwide DALYs that we estimate would have been lost due to LF in 2015 in the absence of effective treatment. Merck's drug portfolio placed it 2 in terms of total averted DALYs for LF.

# COMPANY RANKING EXPLANATION

**2010**  
**3<sup>RD</sup>**



Merck is ranked 3rd place in our index for 2010. Merck's drugs have a total impact score of 13,912,623.84. Merck treats 6 diseases in our model - HIV, MDR-TB, Roundworm, Whipworm, DS-TB, LF - with 4 total drugs - Streptomycin (S or STR), Efavirenz (EFV), Ivermectin (IVM), Pyrazinamide (Z or PZA). Merck receives credit for 1 treatment against HIV - Efavirenz (EFV). This 1 drug averted 505,527.31 of the total DALYS for HIV, which is 13.20% of the worldwide DALYS that we estimate would have been lost due to HIV in 2010 in the absence of effective treatment. Merck's drug portfolio placed it 5 in terms of total averted DALYS for HIV. Merck receives credit for 2 treatments against MDR-TB - Pyrazinamide (Z or PZA), Streptomycin (S or STR). These 2 drugs averted 2,893.73 of the total DALYS for MDR-TB, which is 12.82% of the worldwide DALYS that we estimate would have been lost due to MDR-TB in 2010 in the absence of effective treatment. Merck's drug portfolio placed it 3rd in terms of total averted DALYS for MDR-TB. Merck receives credit for 1 treatment against Roundworm - Ivermectin (IVM). This 1 drug averted 80,811.00 of the total DALYS for Roundworm, which is 23.06% of the worldwide DALYS that we estimate would have been lost due to Roundworm in 2010 in the absence of effective treatment. Merck's drug portfolio placed it 2nd in terms of total averted DALYS for Roundworm. Merck receives credit for 1 treatment against Whipworm - Ivermectin (IVM). This 1 drug averted 1,189.21 of the total DALYS for Whipworm, which is 23.37% of the worldwide DALYS that we estimate would have been lost due to Whipworm in 2010 in the absence of effective treatment. Merck's drug portfolio placed it 2nd in terms of total averted DALYS for Whipworm. Merck receives credit for 1 treatment against DS-TB Pyrazinamide (Z or PZA). This 1 drug averted 13,398,454.29 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYS that we estimate would have been lost due to DS-TB in 2010 in the absence of effective treatment. Merck's drug portfolio placed it tie for 1st in terms of total averted DALYS for DS-TB. Merck receives credit for 1 treatment against LF - Ivermectin (IVM). This 1 drug averted 590.33 of the total DALYS for LF, which is 14.49% of the worldwide DALYS that we estimate would have been lost due to LF in 2010 in the absence of effective treatment. Merck's drug portfolio placed it 3rd in terms of total averted DALYS for LF.

**2013**  
**2<sup>ND</sup>**



Merck is ranked 2 place in our index for 2013. Merck's drugs have a total impact score of 11,364,353.30. Merck treats 7 diseases in our model - DS-TB, HIV, roundworm, MDR-TB, LF, whipworm, onchocerciasis - with 4 total drugs - Streptomycin (S or STR), Efavirenz (EFV), Ivermectin (IVM), and Pyrazinamide (Z or PZA). Merck receives credit for 1 treatment against DS-TB - Pyrazinamide (Z or PZA). This 1 drug averted 10,842,565.11 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYS that we estimate would have been lost due to DS-TB in 2013 in the absence of effective treatment. Merck's drug portfolio placed it tie for 1 in terms of total averted DALYS for DS-TB. Merck receives credit for 1 treatment against HIV - Efavirenz (EFV). This 1 drug averted 485,058.31 of the total DALYS for HIV, which is 8.86% of the worldwide DALYS that we estimate would have been lost due to HIV in 2013 in the absence of effective treatment. Merck's drug portfolio placed it 6 in terms of total averted DALYS for HIV. Merck receives credit for 1 treatment against roundworm - Ivermectin (IVM). This 1 drug averted 2,500.47 of the total DALYS for roundworm, which is 10.54% of the worldwide DALYS that we estimate would have been lost due to roundworm in 2013 in the absence of effective treatment. Merck's drug portfolio placed it 2 in terms of total averted DALYS for roundworm. Merck receives credit for 2 treatments against MDR-TB - Streptomycin (S or STR), Pyrazinamide (Z or PZA). These 2 drugs averted 14,921.57 of the total DALYS for MDR-TB, which is 24.27% of the worldwide DALYS that we estimate would have been lost due to MDR-TB in 2013 in the absence of effective treatment. Merck's drug portfolio placed it 2 in terms of total averted DALYS for MDR-TB. Merck receives credit for 1 treatment against onchocerciasis - Ivermectin (IVM). This 1 drug averted 1,979.86 of the total DALYS for onchocerciasis, which is 100.00% of the worldwide DALYS that we estimate would have been lost due to onchocerciasis in 2013 in the absence of effective treatment. Merck's drug portfolio placed it 1 in terms of total averted DALYS for onchocerciasis. Merck receives credit for 1 treatment against whipworm - Ivermectin (IVM). This 1 drug averted 361.80 of the total DALYS for whipworm, which is 7.70% of the worldwide DALYS that we estimate would have been lost due to whipworm in 2013 in the absence of effective treatment. Merck's drug portfolio placed it 3 in terms of total averted DALYS for whipworm. Merck receives credit for 1 treatment against LF - Ivermectin (IVM). This 1 drug averted 460.25 of the total DALYS for LF, which is 24.46% of the worldwide DALYS that we estimate would have been lost due to LF in 2013 in the absence of effective treatment. Merck's drug portfolio placed it 3 in terms of total averted DALYS for LF.

# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 9,365,938.36

### MAIN DRUGS

STREPTOMYCIN (S OR STR), EFAVIRENZ (EFV), IVERMECTIN (IVM), PYRAZINAMIDE (Z OR PZA)

### TREATS

HIV, ROUNDWORM, MDR-TB, DS-TB, WHIPWORM, ONCHOCERCIASIS, LF

### FINAL IMPACT BY DISEASE

HIV  
430,899.98  
ROUNDWORM  
75,097.84  
MDR-TB  
381,162.97  
DS-TB  
8,470,126.91  
WHIPWORM  
3,621.48  
ONCHOCERCIASIS  
2,790.64  
LF  
2,238.64

# COMPANY RANKING EXPLANATION

## 2010

TOTAL IMPACT SCORE OF

### 13,912,623.84

#### MAIN DRUGS

STREPTOMYCIN (S OR STR), EFAVIRENZ (EFV), IVERMECTIN (IVM), AND PYRAZINAMIDE (Z OR PZA)

#### TREATS

DS-TB, HIV, ROUNDWORM, MDR-TB, WHIPWORM, LF

#### FINAL IMPACT BY DISEASE

DS-TB  
13,398,454.29  
HIV  
505,527.31  
ROUNDWORM  
31,330.63  
MDR-TB  
2,893.73  
WHIPWORM  
1,941.88  
LF  
590.33

## 2013

TOTAL IMPACT SCORE OF

### 11,364,353.30

#### MAIN DRUGS

STREPTOMYCIN (S OR STR), EFAVIRENZ (EFV), IVERMECTIN (IVM), AND PYRAZINAMIDE (Z OR PZA)

#### TREATS

DS-TB, HIV, ROUNDWORM, MDR-TB, WHIPWORM, ONCHOCERCIASIS LF

#### FINAL IMPACT BY DISEASE

DS-TB  
10,842,565.11  
HIV  
485,058.31  
ROUNDWORM  
18,709.28  
MDR-TB  
14,921.57  
ONCHOCERCIASIS  
1,979.86  
WHIPWORM  
658.91  
LF  
460.25



## COMPANY DESCRIPTION

# F. HOFFMAN- LA ROCHE LTD.



Headquartered in Switzerland, Hoffman-LaRoche is a global pharmaceutical company founded by Fritz Hoffmann-La Roche in 1896. They focus primarily on in-vitro diagnostics, cancer medication, and drugs for viral infections, inflammatory diseases and CNS disorders. Some of their key products include Herceptin®, MabThera®/Rituxan® and Perjeta®. In 1934, they became the first company to mass-produce synthetic vitamin C, which was branded as Redoxon. Roche, in collaboration with the Clinton Health Care Initiative and other organisations, supervise the Global Access Programme for HIV as they work to diagnose and treat individuals in low and middle income countries. In collaboration with the Medicine Patent Pool, they have made Valcyte available for HIV/AIDS programs at close to non-profit prices in 138 countries. They have several projects running that aim to improve cancer care in developing countries. Currently, the Swiss firm Novartis owns a third of its shares. In 2017, Hoffman LaRoche reported revenue of about \$53 billion with 93,700 employees in more than 100 countries.

## KEY DRUGS

### ISONIAZID (H)

Isoniazid (H) is the most common front line treatment for drug-susceptible tuberculosis, first introduced in 1954, and is also used as an add-on agent to treat multidrug-resistant TB. Side effects include hepatitis and gastrointestinal upset. The earliest patent for Isoniazid was by Hoffman La Roche in 1952.

### SULFADOXINE - PYRIMETHAMINE (SP)

Sulfadoxine - Pyrimethamine (SP) is a combination of a diamino-pyrimidine, similar in structure and activity to proguanil, and a sulfonamide, known to have synergistic antimalarial effects with pyrimethamine. While still used to treat patients with sensitivity to other antimalarial agents, due to high rates of resistance and a high potential hepatotoxicity, it is recommended by the WHO only as a part of artemisinin-based combination therapy or in intermittent preventive therapy of special risk groups such as pregnant women and infants.

# COMPANY RANKING EXPLANATION

## 2015

### 5<sup>TH</sup>

F. Hoffmann-La Roche Ltd is ranked 5 place in our index for 2015. F. Hoffmann-La Roche Ltd's drugs have a total impact score of 8,470,126.91. F. Hoffmann-La Roche Ltd treats 1 disease in our model - DS-TB - with 1 total drug - Isoniazid (H or INH). F. Hoffmann-La Roche Ltd receives credit for 1 treatment against DS-TB - Isoniazid (H or INH). This 1 drug averted 8,470,126.91 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYs that we estimate would have been lost due to DS-TB in 2015 in the absence of effective treatment. F. Hoffmann-La Roche Ltd's drug portfolio placed it tie for 1 in terms of total averted DALYs for DS-TB.

## 2010

### 5<sup>TH</sup>

F. Hoffmann-La Roche Ltd is ranked 5th place in our index for 2010. F. Hoffmann-La Roche Ltd's drugs have a total impact score of 13,398,454.84. F. Hoffmann-La Roche Ltd treats 2 diseases in our model - DS-TB, p. falc Malaria - with 2 total drugs - Isoniazid (H or INH), Sulfadoxine-pyrimethamine (SP). F. Hoffmann-La Roche Ltd receives credit for 1 treatment against DS-TB - Isoniazid (H or INH). This 1 drug averted 13,398,454.29 of the total DALYS for DS-TB, which is 25.000% of the worldwide DALYs that we estimate would have been lost due to DS-TB in 2010 in the absence of effective treatment. F. Hoffmann-La Roche Ltd's drug portfolio placed it 1st in terms of total averted DALYs for DS-TB.

## 2013

### 5<sup>TH</sup>

F. Hoffmann-La Roche Ltd is ranked 5th place in our index for 2013. F. Hoffmann-La Roche Ltd's drugs have a total impact score of 10,842,565.11. F. Hoffmann-La Roche Ltd treats 1 disease in our model - DS-TB - with 1 total drug - Isoniazid (H or INH). F. Hoffmann-La Roche Ltd receives credit for 1 treatment against DS-TB - Isoniazid (H or INH). This 1 drug averted 10,842,565.11 of the total DALYS for DS-TB, which is 25.00% of the worldwide DALYs that we estimate would have been lost due to DS-TB in 2013 in the absence of effective treatment. F. Hoffmann-La Roche Ltd's drug portfolio placed it in a tie for 1st in terms of total averted DALYs for DS-TB.

# COMPANY RANKING EXPLANATION

## 2015

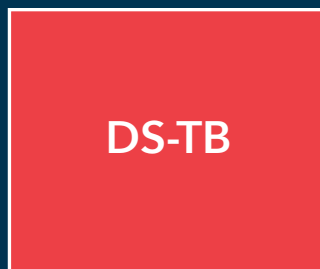
TOTAL IMPACT SCORE OF

# 8,737,406.554

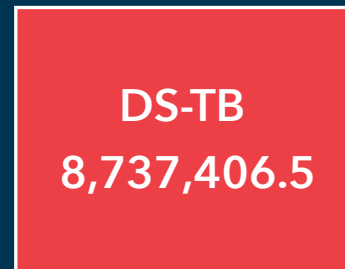
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 13,398,454.84

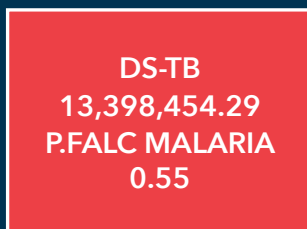
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE

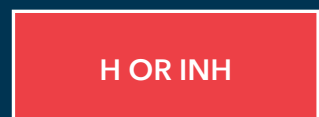


## 2013

TOTAL IMPACT SCORE OF

# 10,817,525.45

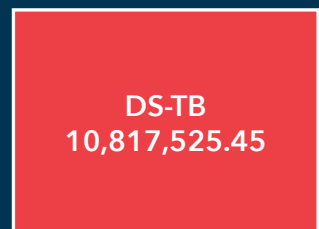
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



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## COMPANY DESCRIPTION

# SHIRE PHARMACEUTICALS



Shire Pharmaceuticals is a global pharmaceutical company, headquartered in Massachusetts and founded in 1986 by a group of entrepreneurs, specializing in the treatment of rare diseases. Shire, in collaboration with Canada's Access to Medicine Regime, has recently allowed royalty-free access to HIV/AIDS medicines for Rwanda to improve health and save lives in the developing world. Shire Pharmaceuticals produces one drug that is used in our 2015 company report: Lamivudine (3TC), which is used to treat HIV. Further, Lamivudine is part of the recommended regimen used to treat adults, adolescents, and children who are also being treated for TB or HBV in cases of coinfection. Lamivudine alleviates 1.10% of the DALYs lost to HIV. Although this may not seem like a huge impact, Shire Pharmaceuticals has an impact score of 726553.63 DALYs alleviated, ranking it sixth in our 2015 company reports.

## KEY DRUGS

### LAMIVUDINE (3TC)

Lamivudine (3TC) is an ARV drug recommended by the WHO in the treatment of HIV as a part of preferred first-line regimens for adults, adolescents, and children, as part of the recommended regimen for children also being treated for TB, and in cases of HBV coinfection. Major toxicity concerns include lactic acidosis and disorders of lipid metabolism. IAF Biochem first patented 3TC, changed its name to Biochem Pharma, and merged with Shire Pharmaceuticals in 2000.

# COMPANY RANKING EXPLANATION

## 2015

### 6<sup>TH</sup>

Shire Pharmaceuticals is ranked 6 place in our index for 2015. Shire Pharmaceuticals's drugs have a total impact score of 705,778.12. Shire Pharmaceuticals treats 1 disease in our model - HIV - with 1 total drug - Lamivudine (3TC). Shire Pharmaceuticals receives credit for 1 treatment against HIV - Lamivudine (3TC). This 1 drug averted 726,553.57 of the total DALYS for HIV, which is 27.54% of the worldwide DALYS that we estimate would have been lost due to HIV in 2015 in the absence of effective treatment. Shire Pharmaceuticals's drug portfolio placed it 1 in terms of total averted DALYS for HIV.

## 2010

### 6<sup>TH</sup>

Shire Pharmaceuticals is ranked 6 place in our index for 2010. Shire Pharmaceuticals's drugs have a total impact score of 1210432.271. Shire Pharmaceuticals treats 1 disease in our model - HIV - with 1 total drug - Lamivudine (3TC). Shire Pharmaceuticals receives credit for 1 treatment against HIV - Lamivudine (3TC). This 1 drug averted 1,210,432.27 of the total DALYS for HIV, which is 31.61% of the worldwide DALYS that we estimate would have been lost due to HIV in 2010 in the absence of effective treatment. Shire Pharmaceuticals's drug portfolio placed it 1 in terms of total averted DALYS for HIV.

## 2013

### 7<sup>TH</sup>

Shire Pharmaceuticals's drugs have a total impact score of 1,657,585.18. Shire Pharmaceuticals treats 1 disease in our model - HIV - with 1 drug - Lamivudine (3TC). Shire Pharmaceuticals receives credit for 1 treatment against HIV - Lamivudine (3TC). This 1 drug averted 1,657,585.18 of the total DALYS for HIV, which is 30.27% of the worldwide DALYS that we estimate would have been lost due to HIV in 2013 in the absence of effective treatment. Shire Pharmaceuticals's drug portfolio placed it 2nd in terms of total averted DALYS for HIV.

# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 705,778.12

MAIN DRUGS

LAMIVUDINE

TREATS

HIV

FINAL IMPACT BY DISEASE

HIV  
705,778.12

## 2010

TOTAL IMPACT SCORE OF

# 1,210,432.271

MAIN DRUGS

LAMIVUDINE

TREATS

HIV

FINAL IMPACT BY DISEASE

HIV  
1,210,432.271

## 2013

TOTAL IMPACT SCORE OF

# 1,657,585.18

MAIN DRUGS

LAMIVUDINE

TREATS

HIV

FINAL IMPACT BY DISEASE

HIV  
1,657,585.18

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## COMPANY DESCRIPTION

# GLAXOSMITHKLINE LTD.



GlaxoSmithKline is a global pharmaceutical company headquartered in Brentford, London, and founded in 2000 after the merger of GlaxoWellcome and SmithKline Beecham. In 2009, GlaxoSmithKline and Pfizer Inc. partnered to form ViiV Healthcare, a joint-venture pharmaceutical company focusing on advancing care and delivering treatment to HIV communities. ViiV's approach to improving access to their portfolio of HIV medicines involves not applying for patents in LDCs or LICs, voluntary licensing (royalty-free) for all least developed, low-income, lower-middle income, and Sub-Saharan African countries, and providing at-cost pricing in LDCs, LICs and SSAs (until generics are available), while focusing their R&D to improve HIV care and prevention. GlaxoSmithKline is also responsible for innovations in malaria treatments: in partnership with Medicine for Malaria Ventures, a GlaxoSmithKline program developed a new P.Vivax malaria treatment, the only new treatment for this strain in the past 60 years.

There are four drugs produced by GlaxoSmithKline that are used in our 2015 company report: Albendazole (ALB), Atovaquone + Proguanil (AT + PG), Zidovudine (AZT), and Abacavir (ABC). These drugs are used to treat whipworm (ALB), roundworm (ALB), hookworm (ALB), LF (ALB), P.Falc malaria (AT+PG), and HIV (AZT and ABC). Atovaquone + Proguanil has a negligible effect on the disease burden of P.Falc malaria. Albendazole alleviates 29.45% of the DALYs lost to roundworm, 5.97% of the DALYs lost to hookworm, 7.07% of the DALYs lost to whipworm, and 0.20% of the DALYs lost to LF. Zidovudine and Abacavir alleviate 0.58% of the DALYs lost to HIV. GlaxoSmithKline's total impact score is 622327.37 DALYs averted.

## KEY DRUGS

### ABACAVIR (ABC)

Abacavir (ABC) is an ARV drug recommended by the WHO as a part of the preferred first-line regimen to treat HIV in children less than 10 years old, as a part of an alternative first-line regimen in adolescents, and as part of the recommended regimen for children also being treated for TB. Major toxicity concerns include hypersensitivity reactions. The Wellcome Foundation Limited first patented Abacavir. It is now a part of GlaxoSmithKline, the current patent holder.

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# COMPANY DESCRIPTION

## ALBENDAZOLE (ALB)

Albendazole (Alb) is used in many worm treatments and works by keeping the worms from absorbing sugar, which causes them to starve. Adverse effects include Transient gastrointestinal discomfort and headache, It was patented in 1974 by the Smithkline corporation. It is on the WHO's list of essential medicines.

## ATOVAQUONE-PROGUANIL (AT+PG)

Atovaquone-Proguanil (AT+PG) is a combination therapy used in the treatment and prophylaxis of *P. falciparum* malaria. The WHO recommends that AT+PG be used as a prophylactic drug, in combination with other antimalarials. The combination was patented by GlaxoSmithKline in 2000.

## ZIDOVUDINE (AZT)

Zidovudine (AZT) is an ARV drug recommended by the WHO in the treatment of HIV as a part of alternative first-line regimens for adults, adolescents, and children older than 3 years, as a part of the preferred first-line regimen for children younger than three, and in the recommended treatments for children also being treated for TB, and in patients with HBV coinfection. Major toxicity concerns include severe anemia, neutropenia, and lactic acidosis. The first patent for Zidovudine was filed in 1992 by Glaxo, which is now a part of GlaxoSmithKline.



# COMPANY RANKING EXPLANATION

## 2015

### 7<sup>TH</sup>

GlaxoSmithKline is ranked 7th place in our index for 2015. GlaxoSmithKline's drugs have a total impact score of 691,516.23. GlaxoSmithKline treats 6 diseases in our model - HIV, roundworm, hookworm, whipworm, LF, p.falc malaria - with 4 total drugs - Albendazole (ALB), Atovaquone + Proguanil (AT + PG), Zidovudine (AZT), Abacavir (ABC). GlaxoSmithKline receives credit for 2 treatments against HIV - Zidovudine (AZT), Abacavir (ABC). These 2 drugs averted 375,309.79 of the total DALYS for HIV, which is 14.71% of the worldwide DALYs that we estimate would have been lost due to HIV in 2015 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 4th in terms of total averted DALYs for HIV. GlaxoSmithKline receives credit for 1 treatment against roundworm - Albendazole (ALB). This 1 drug averted 201,983.17 of the total DALYS for roundworm, which is 84.00% of the worldwide DALYs that we estimate would have been lost due to roundworm in 2015 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for roundworm. GlaxoSmithKline receives credit for treatments against hookworm - Albendazole (ALB). These drugs averted 24,366.12 of the total DALYS for hookworm, which is 87.88% of the worldwide DALYs that we estimate would have been lost due to hookworm in 2015 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for hookworm. GlaxoSmithKline receives credit for 1 treatment against whipworm - Albendazole (ALB). This 1 drug averted 6,784.35 of the total DALYS for whipworm, which is 63.28% of the worldwide DALYs that we estimate would have been lost due to whipworm in 2015 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for whipworm. GlaxoSmithKline receives credit for 1 treatment against LF - Albendazole (ALB). This 1 drug averted 2,484.03 of the total DALYS for LF, which is 50.00% of the worldwide DALYs that we estimate would have been lost due to LF in 2015 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for LF. GlaxoSmithKline receives credit for 1 treatment against p.falc malaria - Atovaquone + Proguanil (AT + PG). This 1 drug averted 0 of the total DALYS for p.falc malaria, which is 0.00% of the worldwide DALYs that we estimate would have been lost due to p.falc malaria in 2015 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 8th in terms of total averted DALYs for p.falc malaria.

# COMPANY RANKING EXPLANATION

## 2010

### 8<sup>TH</sup>

GlaxoSmithKline is ranked 7th place in our index for 2010. GlaxoSmithKline's drugs have a total impact score of 557,418.08. GlaxoSmithKline treats 5 diseases in our model - HIV, Roundworm, Hookworm, Whipworm, LF - with 3 total drugs - Albendazole (ALB), Abacavir (ABC), Zidovudine (AZT). GlaxoSmithKline receives credit for 2 treatments against HIV - Abacavir (ABC), Zidovudine (AZT). These 2 drugs averted 519,926.58 of the total DALYS for HIV, which is 13.58% of the worldwide DALYs that we estimate would have been lost due to HIV in 2010 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 4th in terms of total averted DALYs for HIV. GlaxoSmithKline receives credit for 1 treatment against Roundworm - Albendazole (ALB). This 1 drug averted 268,425.53 of the total DALYS for Roundworm, which is 76.60% of the worldwide DALYs that we estimate would have been lost due to Roundworm in 2010 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for Roundworm. GlaxoSmithKline receives credit for 1 treatment against Hookworm - Albendazole (ALB). This 1 drug averted 12,564.85 of the total DALYS for Hookworm, which is 99.08% of the worldwide DALYs that we estimate would have been lost due to Hookworm in 2010 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for Hookworm. GlaxoSmithKline receives credit for 1 treatment against Whipworm - Albendazole (ALB). This 1 drug averted 3,604.69 of the total DALYS for Whipworm, which is 70.85% of the worldwide DALYs that we estimate would have been lost due to Whipworm in 2010 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for Whipworm. GlaxoSmithKline receives credit for 1 treatment against LF - Albendazole (ALB). This 1 drug averted 2,036.92 of the total DALYS for LF, which is 50.00% of the worldwide DALYs that we estimate would have been lost due to LF in 2010 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for LF.

## 2013

### 6<sup>TH</sup>

GlaxoSmithKline is ranked 6th place in our index for 2013. GlaxoSmithKline's drugs have a total impact score of 1,689,100.62. GlaxoSmithKline treats 6 diseases in our model - HIV, roundworm, hookworm, whipworm, LF, p.falc malaria - with 4 total drugs - Albendazole (ALB), Atovaquone + Proguanil (AT + PG), Abacavir (ABC), and Zidovudine (AZT). GlaxoSmithKline receives credit for 2 treatments against HIV - Zidovudine (AZT), Abacavir (ABC). These 2 drugs averted 889,737.92 of the total DALYS for HIV, which is 16.42% of the worldwide DALYs that we estimate would have been lost due to HIV in 2013 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 3rd in terms of total averted DALYs for HIV. GlaxoSmithKline receives credit for 1 treatment against roundworm - Albendazole (ALB). This 1 drug averted 21,201.50 of the total DALYS for roundworm, which is 89.41% of the worldwide DALYs that we estimate would have been lost due to roundworm in 2013 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for roundworm. GlaxoSmithKline receives credit for 1 treatment against hookworm - Albendazole (ALB). This 1 drug averted 9,280.15 of the total DALYS for hookworm, which is 87.36% of the worldwide DALYs that we estimate would have been lost due to hookworm in 2013 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for hookworm. GlaxoSmithKline receives credit for 1 treatment against whipworm - Albendazole (ALB). This 1 drug averted 3,115.28 of the total DALYS for whipworm, which is 66.32% of the worldwide DALYs that we estimate would have been lost due to whipworm in 2013 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for whipworm. GlaxoSmithKline receives credit for 1 treatment against LF - Albendazole (ALB). This 1 drug averted 940.99 of the total DALYS for LF, which is 50.00% of the worldwide DALYs that we estimate would have been lost due to LF in 2013 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 1st in terms of total averted DALYs for LF. GlaxoSmithKline receives credit for 1 treatment against p.falc malaria - Atovaquone + Proguanil (AT + PG). This 1 drug averted 9.52 of the total DALYS for p.falc malaria, which is 0.00% of the worldwide DALYs that we estimate would have been lost due to p.falc malaria in 2013 in the absence of effective treatment. GlaxoSmithKline's drug portfolio placed it 6th in terms of total averted DALYs for p.falc malaria.

# COMPANY RANKING EXPLANATION



## 2015

TOTAL IMPACT SCORE OF

# 691,516.23

### MAIN DRUGS

ALB, AT + PG, AZT, ABC

### TREATS

HIV, ROUNDWORM,  
HOOKWORM,  
WHIPWORM,  
LF, P.FALC  
MALARIA

### FINAL IMPACT BY DISEASE

HIV  
375,309.79  
ROUNDWORM  
281,499.93  
HOOKWORM  
24,366.12  
WHIPWORM  
7,856.36  
LF  
2,484.03  
P.FALC MALARIA  
0.00

# COMPANY RANKING EXPLANATION

## 2010

TOTAL IMPACT SCORE OF  
**557,418.08**

**MAIN DRUGS**

ALB, AT + PG,  
AZT, ABC

**TREATS**

HIV, ROUNDWORM,  
HOOKWORM,  
WHIPWORM,  
LF

**FINAL IMPACT BY  
DISEASE**

HIV  
519,926.58  
ROUNDWORM  
231,908.57  
HOOKWORM  
12,564.85  
WHIPWORM  
4,129.21  
LF  
2,036.92

## 2013

TOTAL IMPACT SCORE OF  
**1,689,100.62**

**MAIN DRUGS**

ALB, AT + PG,  
AZT, ABC

**TREATS**

HIV,  
ROUNDWORM,  
HOOKWORM,  
WHIPWORM,  
LF, P.FALC  
MALARIA

**FINAL IMPACT BY  
DISEASE**

HIV  
889,735.92  
ROUNDWORM  
787,880.04  
HOOKWORM  
9,280.15  
WHIPWORM  
3,253.99  
LF  
940.99  
P.FALC MALARIA  
9.52

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# COMPANY DESCRIPTION

## GILEAD SCIENCES, INC.



Gilead Sciences, Inc. is a biotechnology company founded in 1987 by Michael Rourdan and headquartered in California that develops and sells pharmaceuticals. Currently, the company is highly invested in drugs for HIV/AIDS, working to improve access to HIV medicine in low/middle income countries with tiered pricing schemes, voluntary licensing agreements, and financial support to HIV/AIDS programs in various countries. They are currently the top manufacturer of HIV drugs and are in the process of testing a possible cure to HIV. Gilead Sciences produces two drugs for HIV that are used in our 2015 company report: Emtricitabine (FTC) and Tenofovir (TDF). Both drugs are part of a preferred first line regimen for adults and adolescents, as an alternative first-line regimen for children, and in cases of HBV coinfection. Emtricitabine and Tenofovir have alleviated 0.97% of the DALYs lost to HIV. The total impact score of Gilead Sciences's drugs is 642317.08 DALYs averted, ranking them seventh among the companies evaluated in our 2015 company report.

## KEY DRUGS

### EMTRICITABINE (FTC)

Emtricitabine (FTC) is an ARV drug recommended by the WHO in the treatment of HIV as a part of preferred first-line regimens for adults and adolescents, as part of an alternative first-line regimen for children, and in cases of HBV coinfection. Major toxicity concerns include lactic acidosis and neutropenia. It was first developed by scientists at Emory University and Gilead Sciences Inc paid \$525 million for the royalties.

### TENOFOVIR (TDF)

Tenofovir (TDF) is an ARV drug recommended by the WHO in the treatment of HIV as a part of preferred first-line regimens for adults and adolescents, as a part of alternative first-line regimens for children older than 3 years, and as part of the recommended regimen in cases of HBV coinfection. Major toxicity concerns include chronic kidney disease, lactic acidosis, and decreases in bone mineral density. Tenofovir was first patented by Gilead Sciences Inc.

# COMPANY RANKING EXPLANATION

## 2015

### 8<sup>TH</sup>

Gilead Sciences, Inc. is ranked 8 place in our index for 2015. Gilead Sciences, Inc.'s drugs have a total impact score of 621,283.28. Gilead Sciences, Inc. treats 1 disease in our model - HIV - with 2 total drugs - Tenofovir (TDF), Emtricitabine (FTC). Gilead Sciences, Inc. receives credit for 2 treatments against HIV - Tenofovir (TDF), Emtricitabine (FTC). These 2 drugs averted 642,317.01 of the total DALYS for HIV, which is 24.25% of the worldwide DALYs that we estimate would have been lost due to HIV in 2015 in the absence of effective treatment. Gilead Sciences, Inc.'s drug portfolio placed it 2 in terms of total averted DALYs for HIV.

## 2010

### 11<sup>TH</sup>

Gilead Sciences, Inc. is ranked 11th place in our index for 2010. Gilead Sciences, Inc.'s drugs have a total impact score of 283,852.97. Gilead Sciences, Inc. treats 1 disease in our model - HIV - with 2 total drugs - Emtricitabine (FTC) and Tenofovir (TDF). Gilead Sciences, Inc. receives credit for 2 treatments against HIV - Tenofovir (TDF), Emtricitabine (FTC). These 2 drugs averted 283,852.97 of the total DALYS for HIV, which is 7.42% of the worldwide DALYs that we estimate would have been lost due to HIV in 2010 in the absence of effective treatment. Gilead Sciences, Inc.'s drug portfolio placed it 4th in terms of total averted DALYs for HIV.

## 2013

### 10<sup>TH</sup>

Gilead Sciences, Inc. is ranked 10th place in our index for 2013. Gilead Sciences, Inc.'s drugs have a total impact score of 537,061.94. Gilead Sciences, Inc. treats 1 disease in our model - HIV - with 2 total drugs - Emtricitabine (FTC) and Tenofovir (TDF). Gilead Sciences, Inc. receives credit for 2 treatments against HIV - Tenofovir (TDF) and Emtricitabine (FTC). These 2 drugs averted 537,061.94 of the total DALYS for HIV, which is 9.81% of the worldwide DALYs that we estimate would have been lost due to HIV in 2013 in the absence of effective treatment. Gilead Sciences, Inc.'s drug portfolio placed it 5th in terms of total averted DALYs for HIV.

# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 621,283.28

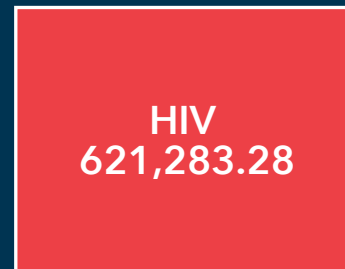
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 283,852.97

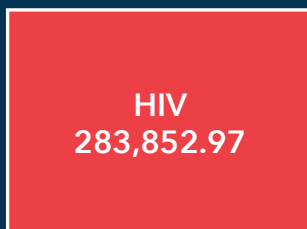
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 537,061.94

MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



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# COMPANY DESCRIPTION

## DAIICHI SANKYO



Daiichi Sankyo is the second largest pharmaceutical company in Japan and was founded in 2005 by the merger of Sankyo Co. and Daiichi Pharmaceutical. They have been funding the Global Health Innovative Technology Fund since it was established in 2013 to promote the development of drugs for infectious diseases in developing countries. The Global Health Innovative Technology Fund's investment capabilities and its partnerships within the global network are able to undertake a number of projects, including exploring new treatments for NTDs and tuberculosis.

Two drugs circulated by Daiichi Sankyo are used in our 2015 company report: Ofloxacin (Ofx) and Levofloxacin (Lfx). Ofloxacin has mostly been replaced by later generation fluoroquinolone antibiotics; however, it is still used to treat extensively drug resistant tuberculosis (XDR-TB). Levofloxacin, a fluoroquinolone antibiotic, is a Group A second line drug used to treat rifampicin-resistant, multidrug-resistant, and extensively drug-resistant tuberculosis (MDR/RR-TB and XDR-TB). Both drugs have alleviated 3.34% of the DALYs lost to extensively drug-resistant tuberculosis (XDR-TB). Levofloxacin has alleviated 10.68% of the DALYs lost to multidrug-resistant TB (MDR-TB). Daiichi Sankyo's drugs have a total impact score of 417932.92 DALYs alleviated.

## KEY DRUGS

### LEVOFLOXACIN (LFX)

Levofloxacin (Lfx), a fluoroquinolone antibiotic, is a Group A second line drug used in the treatment of rifampicin-resistant and multidrug-resistant tuberculosis. It has a good safety profile and is relatively highly effective against TB. Side effects include hallucinations and diarrhea. Lfx was patented by Daiichi Sankyo in 2006.

### OFLOXACIN (OFX)

Ofloxacin (Ofx), a fluoroquinolone antibiotic, has widely been replaced as a treatment for TB by later generation fluoroquinolone antibiotics. Due to its toxicity, its primary use is now as an ophthalmic in ear and eye drops. Ofloxacin was patented by Daiichi Pharmaceutical Co., Ltd. in 1980.



# COMPANY RANKING EXPLANATION

## 2015

### 9<sup>TH</sup>

Daiichi Sankyo is ranked 9th place in our index for 2015. Daiichi Sankyo's drugs have a total impact score of 417,932.92. Daiichi Sankyo treats 2 diseases in our model - XDR-TB, MDR-TB - with 2 total drugs - Levofloxacin (Lfx), Ofloxacin (Ofx). Daiichi Sankyo receives credit for 2 treatments against XDR-TB - Levofloxacin (Lfx), Ofloxacin (Ofx). These 2 drugs averted 13,294.90 of the total DALYS for XDR-TB, which is 18.75% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2015 in the absence of effective treatment. Daiichi Sankyo's drug portfolio placed it 2 in terms of total averted DALYs for XDR-TB. Daiichi Sankyo receives credit for 1 treatment against MDR-TB - Levofloxacin (Lfx). This 1 drug averted 404,638.01 of the total DALYS for MDR-TB, which is 20.23% of the worldwide DALYs that we estimate would have been lost due to MDR-TB in 2015 in the absence of effective treatment. Daiichi Sankyo's drug portfolio placed it 2 in terms of total averted DALYs for MDR-TB.

## 2010

### 14<sup>TH</sup>

Daiichi Sankyo is ranked 14th place in our index for 2010. Daiichi Sankyo's drugs have a total impact score of 9,793.28. Daiichi Sankyo treats 2 diseases in our model - MDR-TB, XDR-TB - with 2 total drugs - Ofloxacin (Ofx) and Levofloxacin (Lfx). Daiichi Sankyo receives credit for 1 treatment against MDR-TB - Levofloxacin (Lfx). This 1 drug averted 4,917.44 of the total DALYS for MDR-TB, which is 21.79% of the worldwide DALYs that we estimate would have been lost due to MDR-TB in 2010 in the absence of effective treatment. Daiichi Sankyo's drug portfolio placed it 2nd in terms of total averted DALYs for MDR-TB. Daiichi Sankyo receives credit for 2 treatments against XDR-TB - Levofloxacin (Lfx), Ofloxacin (Ofx). These 2 drugs averted 4,875.84 of the total DALYS for XDR-TB, which is 18.75% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2010 in the absence of effective treatment. Daiichi Sankyo's drug portfolio placed it 2nd in terms of total averted DALYs for XDR-TB.

## 2013

### 14<sup>TH</sup>

Daiichi Sankyo is ranked 14th place in our index for 2013. Daiichi Sankyo's drugs have a total impact score of 20,927.80. Daiichi Sankyo treats 2 diseases in our model - MDR-TB and XDR-TB - with 2 total drugs - Ofloxacin (Ofx) and Levofloxacin (Lfx). Daiichi Sankyo receives credit for 1 treatment against MDR-TB - Levofloxacin (Lfx). This 1 drug averted 11,639.68 of the total DALYS for MDR-TB, which is 18.93% of the worldwide DALYs that we estimate would have been lost due to MDR-TB in 2013 in the absence of effective treatment. Daiichi Sankyo's drug portfolio placed it 3rd in terms of total averted DALYs for MDR-TB. Daiichi Sankyo receives credit for 2 treatments against XDR-TB - Levofloxacin (Lfx) and Ofloxacin (Ofx). These 2 drugs averted 9,288.12 of the total DALYS for XDR-TB, which is 18.75% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2013 in the absence of effective treatment. Daiichi Sankyo's drug portfolio placed it 2nd in terms of total averted DALYs for XDR-TB.

# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 417,932.92

### MAIN DRUGS

LFX, OFX

### TREATS

XDR-TB  
MDR-TB

### FINAL IMPACT BY DISEASE

XDR-TB  
13,294.90  
MDR-TB  
404,638.01

## 2010

TOTAL IMPACT SCORE OF

# 9,793.28

### MAIN DRUGS

LFX, OFX

### TREATS

XDR-TB, MDR-TB

### FINAL IMPACT BY DISEASE

XDR-TB  
4,875.84  
MDR-TB  
4,917.44

## 2013

TOTAL IMPACT SCORE OF

# 20,927.80

### MAIN DRUGS

LFX, OFX

### TREATS

XDR-TB, MDR-TB

### FINAL IMPACT BY DISEASE

XDR-TB  
9,288.12  
MDR-TB  
11,639.68

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## COMPANY DESCRIPTION

# BOEHRINGER INGELHEIM

2015  
RANK  
10



Boehringer Ingelheim is a global pharmaceutical company headquartered in Ingelheim, Germany, founded in 1885 by Albert Boehringer. Boehringer Ingelheim works to improve access to essential medicine by collaborating with the Medicine Patent Pool to waive patent rights to needed medicines, using tiered pricing schemes, and donating anti-retroviral drugs to increase access to HIV medication. They recently began an Access to Healthcare Strategy looking to improve access to essential medicines in low and middle income countries by equipping underserved communities with sufficient knowledge, expertise, and infrastructure for access to both prevention and treatment resources. Boehringer Ingelheim produces one drug used in our 2015 company report: Nevirapine (NVP), which is used to treat HIV as a part of alternative first and second-line regimens. Nevirapine alleviated 0.51% of the DALYs lost to HIV, giving Boehringer Ingelheim a total impact score of 336061.69 DALYs averted.

## KEY DRUGS

### NEVIRAPINE (NVP)

Nevirapine (NVP) is an ARV drug recommended by the WHO in the treatment of HIV as a part of alternative first and second-line regimens for adults, adolescents, and children. Major toxicity concerns include hepatotoxicity and hypersensitivity reactions. NVP was first patented by Boehringer Ingelheim.

# COMPANY RANKING EXPLANATION

## 2015

### 10<sup>TH</sup>

Boehringer Ingelheim is ranked 10 place in our index for 2015. **Boehringer Ingelheim's** drugs have a total impact score of 326,973.43. **Boehringer Ingelheim** treats 1 disease in our model - HIV - with 1 total drug - Nevirapine (NVP). **Boehringer Ingelheim** receives credit for 1 treatment against HIV - Nevirapine (NVP). This 1 drug averted 326,973.43 of the total DALYS for HIV, which is 12.76% of the worldwide DALYS that we estimate would have been lost due to HIV in 2015 in the absence of effective treatment. **Boehringer Ingelheim's** drug portfolio placed it 5 in terms of total averted DALYS for HIV.

## 2010

### 8<sup>TH</sup>

Boehringer Ingelheim is ranked 8th place in our index for 2010. **Boehringer Ingelheim's** drugs have a total impact score of 745,182.40. **Boehringer Ingelheim** treats 1 disease in our model - HIV - with 1 total drug - Nevirapine (NVP). **Boehringer Ingelheim** receives credit for 1 treatment against HIV - Nevirapine (NVP). This 1 drug averted 745,182.40 of the total DALYS for HIV, which is 19.46% of the worldwide DALYS that we estimate would have been lost due to HIV in 2010 in the absence of effective treatment. **Boehringer Ingelheim's** drug portfolio placed it 2nd in terms of total averted DALYS for HIV.

## 2013

### 8<sup>TH</sup>

Boehringer Ingelheim is ranked 8th place in our index for 2013. **Boehringer Ingelheim's** drugs have a total impact score of 1,283,039.54. **Boehringer Ingelheim** treats 1 disease in our model - HIV - with 1 drug - Nevirapine (NVP). **Boehringer Ingelheim** receives credit for 1 treatment against HIV - Nevirapine (NVP) . This 1 drug averted 1,283,039.54 of the total DALYS for HIV, which is 23.43% of the worldwide DALYS that we estimate would have been lost due to HIV in 2013 in the absence of effective treatment. **Boehringer Ingelheim's** drug portfolio placed it 3rd in terms of total averted DALYS for HIV.

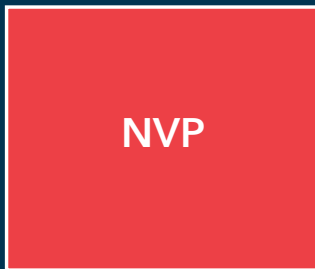
# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 326,973.43

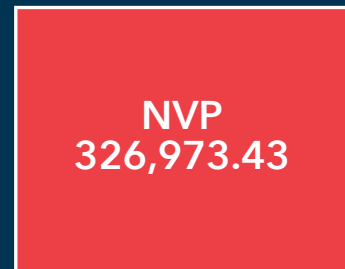
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 745,182.40

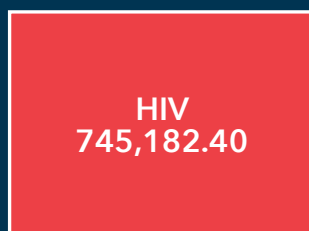
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 1,283,039.54

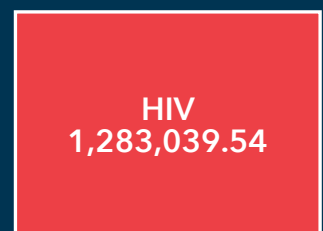
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



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## COMPANY DESCRIPTION

# BAYER HEALTHCARE

11 2015  
RANK

The Bayer Group is a global pharmaceutical company founded in Germany in 1863 by Friedrich Bayer and Johann Friedrich Weskott. Bayer Healthcare strives towards innovation, health, and sustainability in multiple fields. They are currently working on the development of a new insecticide active ingredient to improve malaria control, investigating an active substance that may be effective in patients with river blindness, engaging in a clinical study to better dose children with Chagas' disease (which is considered an NTD), as well as awaiting the WHO evaluation of Fluodora® Fusion, a product that can be used to combat insecticide resistant mosquitoes. For ten years, Bayer has been supplying WHO, free of charge, with two substances against Chagas' and African sleeping sickness.

Bayer Healthcare circulates three drugs that are used in our 2015 company report: Moxifloxacin (Mfx), Praziquantel (Pzq), and Chloroquine (CQ). These drugs are used to treat extensively drug-resistant tuberculosis (XDR-TB) (Mfx), Schistosomiasis (PZQ), and P.Vivax malaria (CQ). Bayer's drugs alleviate 1.67% of the DALYs lost to XDR-TB, 6.00% of the DALYs lost to Schistosomiasis, and 0.57% of the DALYs lost to P.Vivax malaria. Combined, these drugs have a total impact score of 134837.29 DALYs averted.

## KEY DRUGS

### CHLOROQUINE

Chloroquine (CQ) is an aminoquinoline recommended by the WHO as an alternative to ACTs in the treatment of uncomplicated malaria in areas with chloroquine-susceptible infections. Due to its good safety profile and well-documented effectiveness, it is a primary treatment of uncomplicated malaria, although resistance to chloroquine is widespread. It was first developed in 1934 by Hans Andersag, a researcher at Bayer.

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# COMPANY DESCRIPTION



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## MOXIFLOXACIN

Moxifloxacin (Mfx): A fluoroquinolone antibiotic, is a Group A second line drug used in the treatment of rifampicin-resistant and multidrug-resistant tuberculosis. It has a good safety profile and is relatively highly effective against TB. Side effects include seizure and gastrointestinal upset. The drug was patented by Bayer in 1998.

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## PRAZIQUANTEL

Praziquantel (Pzq) is an anthelmintic used to specifically treat schistosomiasis, liver flukes, and cysticercosis. It works by increasing the intra-tugument influx of Calcium which leads to rapid contractions of the worm and eventually death. Common side effects include abdominal discomfort, vertigo, and muscle aches. Praziquantel is on the WHO list of essential medicines. It is sold under the brand name Biltricide. Praziquantel was discovered by Bayer, though the patent has expired.

# COMPANY RANKING EXPLANATION

## 2015



Bayer Healthcare is ranked 11th place in our index for 2015. Bayer Healthcare's drugs have a total impact score of 134,837.29. Bayer Healthcare treats 3 diseases in our model - schistosomiasis, p.vivax malaria, XDR-TB - with 3 total drugs - Praziquantel (PZQ), Chloroquine (CQ), Moxifloxacin (Mfx). Bayer Healthcare receives credit for 1 treatment against schistosomiasis - Praziquantel (PZQ). This 1 drug averted 114,408.21 of the total DALYS for schistosomiasis, which is 100.00% of the worldwide DALYs that we estimate would have been lost due to schistosomiasis in 2015 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it 1 in terms of total averted DALYs for schistosomiasis. Bayer Healthcare receives credit for 1 treatment against p.vivax malaria - Chloroquine (CQ). This 1 drug averted 13,781.63 of the total DALYS for p.vivax malaria, which is 3.53% of the worldwide DALYs that we estimate would have been lost due to p.vivax malaria in 2015 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it 2 in terms of total averted DALYs for p.vivax malaria. Bayer Healthcare receives credit for 1 treatment against XDR-TB - Moxifloxacin (Mfx). This 1 drug averted 6,647.45 of the total DALYS for XDR-TB, which is 9.38% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2015 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it tie for 5 in terms of total averted DALYs for XDR-TB.



# COMPANY RANKING EXPLANATION

## 2010

### 10<sup>TH</sup>



Bayer Healthcare is ranked 10th place in our index for 2010. Bayer Healthcare's drugs have a total impact score of 432,312.20. Bayer Healthcare treats 3 diseases in our model - p.vivax malaria, schistosomiasis, XDR-TB - with 3 total drugs - Moxifloxacin (Mfx), Chloroquine (CQ), and Praziquantel (PZQ). Bayer Healthcare receives credit for 1 treatment against p.vivax malaria - Chloroquine (CQ). This 1 drug averted 262,623.97 of the total DALYS for p.vivax malaria, which is 49.71% of the worldwide DALYS that we estimate would have been lost due to p.vivax malaria in 2010 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it 1st in terms of total averted DALYS for p.vivax malaria. Bayer Healthcare receives credit for 1 treatment against schistosomiasis - Praziquantel (PZQ). This 1 drug averted 190,933.46 of the total DALYS for schistosomiasis, which is 100.00% of the worldwide DALYS that we estimate would have been lost due to schistosomiasis in 2010 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it 1st in terms of total averted DALYS for schistosomiasis. Bayer Healthcare receives credit for 1 treatment against XDR-TB - Moxifloxacin (Mfx). This 1 drug averted 2,437.92 of the total DALYS for XDR-TB, which is 9.38% of the worldwide DALYS that we estimate would have been lost due to XDR-TB in 2010 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it in a tie for 5th in terms of total averted DALYS for XDR-TB.

## 2013

### 11<sup>TH</sup>



Bayer Healthcare is ranked 11th place in our index for 2013. Bayer Healthcare's drugs have a total impact score of 261,389.55. Bayer Healthcare treats 3 diseases in our model - p.vivax malaria, schistosomiasis, and XDR-TB - with 3 total drugs - Moxifloxacin (Mfx), Praziquantel (PZQ), and Chloroquine (CQ). Bayer Healthcare receives credit for 1 treatment against p.vivax malaria - Chloroquine (CQ). This 1 drug averted 161,573.61 of the total DALYS for p.vivax malaria, which is 21.20% of the worldwide DALYS that we estimate would have been lost due to p.vivax malaria in 2013 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it 2nd in terms of total averted DALYS for p.vivax malaria.

Bayer Healthcare receives credit for 1 treatment against schistosomiasis - Praziquantel (PZQ). This 1 drug averted 95,171.88 of the total DALYS for schistosomiasis, which is 100.00% of the worldwide DALYS that we estimate would have been lost due to schistosomiasis in 2013 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it 1st in terms of total averted DALYS for schistosomiasis.

Bayer Healthcare receives credit for 1 treatment against XDR-TB - Moxifloxacin (Mfx). This 1 drug averted 4,644.06 of the total DALYS for XDR-TB, which is 9.38% of the worldwide DALYS that we estimate would have been lost due to XDR-TB in 2013 in the absence of effective treatment. Bayer Healthcare's drug portfolio placed it in a tie for 5th in terms of total averted DALYS for XDR-TB.

# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 134,837.29

### MAIN DRUGS

MFx, CO, PZO

### TREATS

P.VIVAX MALARIA,  
SCHISTOSOMIASIS,  
XDR-TB

### FINAL IMPACT BY DISEASE

P.VIVAX MALARIA  
13,781.63  
SCHISTOSOMIASIS  
114,408.21  
XDR-TB  
6,647.45

## 2010

TOTAL IMPACT SCORE OF

# 432,312.20

### MAIN DRUGS

MFx, CO, PZO

### TREATS

P.VIVAX MALARIA,  
SCHISTOSOMIASIS,  
XDR-TB

### FINAL IMPACT BY DISEASE

P.VIVAX MALARIA  
262,623.97  
SCHISTOSOMIASIS  
167,250.31  
XDR-TB  
2,437.92

## 2013

TOTAL IMPACT SCORE OF

# 261,389.55

### MAIN DRUGS

MFx, CO, PZO

### TREATS

P.VIVAX MALARIA,  
SCHISTOSOMIASIS,  
XDR-TB

### FINAL IMPACT BY DISEASE

P.VIVAX MALARIA  
161,573.61  
SCHISTOSOMIASIS  
95,171.88  
XDR-TB  
4,644.06

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## COMPANY DESCRIPTION

# ABBOTT LABORATORIES LTD

2015  
RANK  
12

Abbott Laboratories is a global pharmaceutical company headquartered in Illinois and founded by Dr. Wallace C. Abbott in 1888. In 1985, Abbott developed the world's first HIV blood-screen test. Currently, Abbott is the largest manufacturer of HIV rapid tests, priding itself on its focus on point-of-care testing in the fight against HIV. In 2017, they delivered more than one billion tests to healthcare professionals and patients worldwide. One drug in circulation by Abbott Laboratories is included in our 2015 company report: Lopinavir/ Ritonavir (LPV/r), which is used to treat HIV as a part of the preferred first-line regimen for children under three years old and as a part of preferred second-line regimens for adults, adolescents, and children older than three years. It is also used to treat HIV with HBV coinfection. Lopinavir/ Ritonavir has alleviated 0.13% of the DALYs lost to HIV, resulting in a total of 85896.66 DALYs averted from Abbott Laboratories's drug.

## KEY DRUGS

### LOPINAVIR/RITONAVIR (LPV/R)

Lopinavir/ritonavir (LPV/r) is an ARV combination drug recommended by the WHO in the treatment of HIV as a part of preferred second-line regimen for adults, adolescents, and children older than 3 years, as a part of the preferred first-line regimen for children under 3 years old, and recommended in cases with HBV coinfection. Major toxicity concerns include hepatotoxicity, pancreatitis and electrocardiographic abnormalities. It was patented by Abbott Laboratories in 1996.

# COMPANY RANKING EXPLANATION

## 2015

### 12<sup>TH</sup>

Abbot Laboratories is ranked 12 place in our index for 2015. Abbot Laboratories's drugs have a total impact score of 83,658.48. Abbot Laboratories treats 1 disease in our model - HIV - with 1 total drug - Lopinavir / Ritonavir (LPV/r). Abbot Laboratories receives credit for 1 treatment against HIV - Lopinavir / Ritonavir (LPV/r). This 1 drug averted 83,658.48 of the total DALYS for HIV, which is 3.26% of the worldwide DALYs that we estimate would have been lost due to HIV in 2015 in the absence of effective treatment. Abbot Laboratories's drug portfolio placed it 6 in terms of total averted DALYs for HIV.

## 2010

### 12<sup>TH</sup>

Abbot Laboratories is ranked 12th place in our index for 2010. Abbot Laboratories' drugs have a total impact score of 20,914.82. Abbot Laboratories treats 1 disease in our model - HIV - with 1 drug - Lopinavir / Ritonavir (LPV/r). Abbot Laboratories receives credit for 1 treatment against HIV - Lopinavir / Ritonavir (LPV/r). This 1 drug averted 20,914.82 of the total DALYS for HIV, which is 0.55% of the worldwide DALYs that we estimate would have been lost due to HIV in 2010 in the absence of effective treatment. Abbot Laboratories' drug portfolio placed it 7th in terms of total averted DALYs for HIV.

## 2013

### 12<sup>TH</sup>

Abbot Laboratories is ranked 12th place in our index for 2013. Abbot Laboratories's drugs have a total impact score of 49,601.99. Abbot Laboratories treats 1 disease in our model - HIV - with 1 total drug - Lopinavir / Ritonavir (LPV/r). Abbot Laboratories receives credit for 1 treatment against HIV - Lopinavir / Ritonavir (LPV/r). This 1 drug averted 49,601.99 of the total DALYS for HIV, which is 0.91% of the worldwide DALYs that we estimate would have been lost due to HIV in 2013 in the absence of effective treatment. Abbot Laboratories's drug portfolio placed it 7th in terms of total averted DALYs for HIV.

# COMPANY RANKING EXPLANATION

## 2015

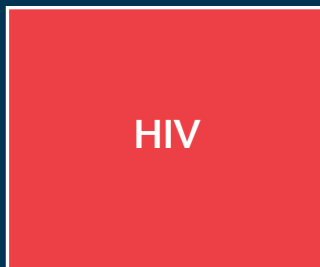
TOTAL IMPACT SCORE OF

# 83,658.48

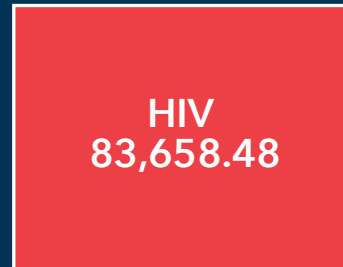
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 20,914.82

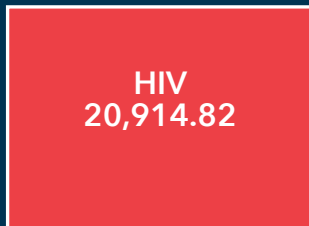
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 49,601.99

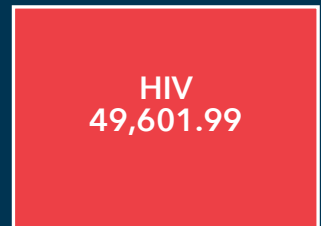
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



# COMPANY DESCRIPTION

# BRISTOL-MYERS SQUIBB

2015  
RANK  
13

Bristol-Myers Squibb was formed in 1989 from the merger of Bristol-Myers and Squibb, which were pharmaceutical companies founded in 1887 and 1858, respectively. They are focused on developing and delivering medicines that help patients with serious diseases, and our report focuses on their efforts to treat HIV. BMS's Global Access Program, in operation since 2000, improves access to their HIV medicines through a system of tiered pricing that reduces barriers to treatment access for LMICs and through a patent policy that allows for generic manufacturing and partnerships with other entities to fight HIV/AIDS. Their Secure the Future® initiative, a branch of the Bristol-Myers Squibb foundation, works to alleviate burden from HIV in communities in Africa by supporting hundreds of different projects and offering different kinds of care.

In our 2015 company report, four drugs in circulation by Bristol-Myers Squibb are evaluated: Amikacin (Amk), Didanosine (ddl), Stavudine (d4t), and Atazanavir/ Ritonavir (ATV/r). These drugs are used to treat HIV (ddl, d4t, and ATV/r) and rifampicin-resistant and multidrug-resistant tuberculosis (MDR/RR-TB) (Amk). Didanosine and Stavudine are both medications for HIV that are no longer recommended by WHO for inclusion in treatment regimens, although Didanosine can be used as a back-up in cases where there is a lack of more effective antiretroviral drugs. Amikacin alleviates 2.23% of the DALYs lost to extensively drug-resistant TB; Didanosine, Stavudine, and Atazanavir/ Ritonavir (ATV/r) alleviate 0.03% of the DALYs lost to HIV. Bristol-Myers Squibb's drugs have a total impact score of 27807.22 DALYs averted.

## KEY DRUGS

### ATAZANAVIR/RITONAVIR (ATV/R)

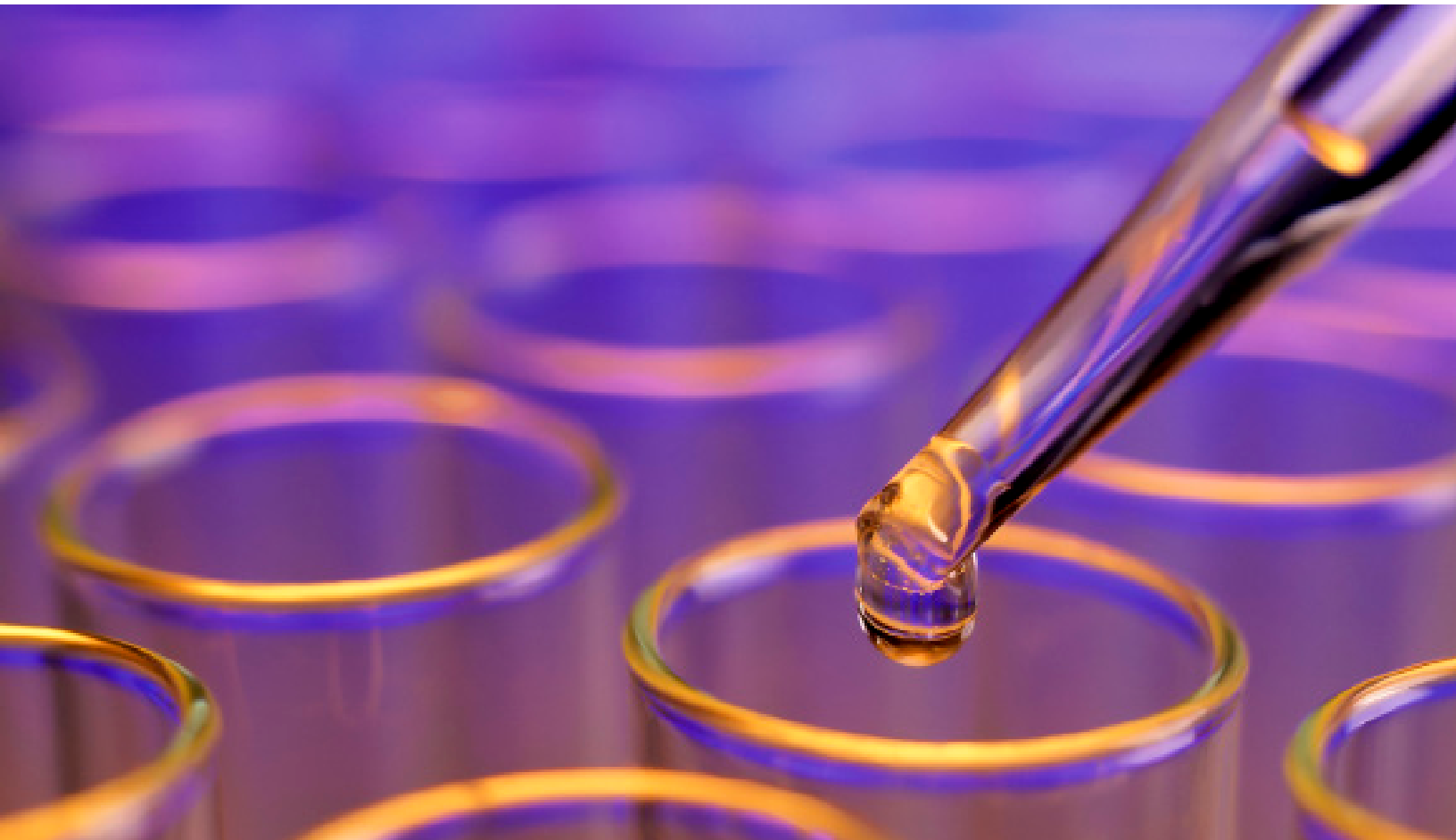
Atazanavir/Ritonavir (ATV/r) is an ARV combination drug recommended by the WHO as a part of preferred second-line regimens to treat HIV in adults and adolescents, as part of an alternative 2nd-line regimen for children, and as part of the preferred 2nd line regimen when there is an HBV coinfection. Major toxicity concerns include jaundice, nephrolithiasis, and electrocardiographic abnormalities. Atazanavir/ Ritonavir was first patented Bristol-Myers Squibb in 1998.

### AMIKACIN (AMK)

Amikacin (Amk), an aminoglycoside antibiotic, is a second-line injectable agent recommended in the treatment of rifampicin-resistant and multidrug-resistant tuberculosis. It is proven effective against TB and has a moderate safety profile. Side effects include hearing loss and damage to the kidneys. A patent for Amk was issued to Bristol Myers Squibb in 1973.

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# COMPANY RANKING EXPLANATION



## DIDANOSINE (DDL)

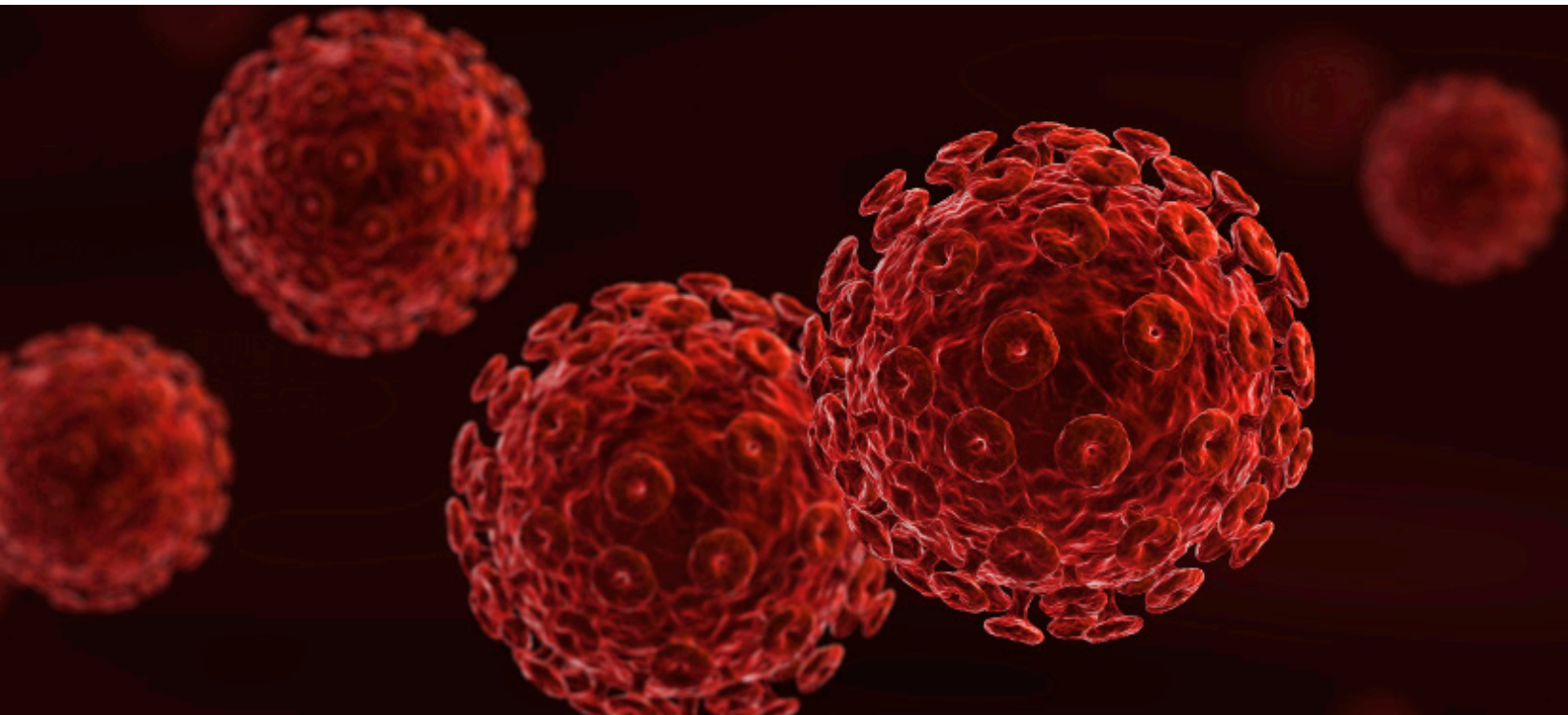
Didanosine (ddl) is an ARV drug that is no longer recommended, and should be discontinued for use, by the WHO as an alternative medicine in 2nd-line regimens because of toxicity, low efficacy, and inconvenient dosing procedure. However, it can be added as a back-up drug while lacking procurement of more effective ARVs. Didanosine was developed by researchers in the National Cancer Institute(NCI). Due to limitations as a public agency, the NCI granted Bristol-Myers Squibb Co. exclusive rights to market didanosine.

## STAVUDINE (D4T)

Stavudine (d4T) is an ARV drug that is no longer recommended for use by the WHO and should be discontinued as a part of HIV treatment regimens due to mitochondrial toxicity. It was first patented by Bristol Myers Squibb.

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# COMPANY RANKING EXPLANATION



2015

13<sup>TH</sup>

Bristol-Myers Squibb is ranked 13th place in our index for 2015. Bristol-Myers Squibb's drugs have a total impact score of 27,332.36. Bristol-Myers Squibb treats 2 diseases in our model - XDR-TB, HIV - with 4 total drugs - Amikacin (Amk), Didanosine (ddl), Stavudine (d4t), Atazanafir/Ritonavir (ATV/r). Bristol-Myers Squibb receives credit for 3 treatments against HIV - Stavudine (d4t), Atazanafir/Ritonavir (ATV/r), Didanosine (ddl). These 3 drugs averted 18,469.09572 of the total DALYS for HIV, which is 0.72% of the worldwide DALYS that we estimate would have been lost due to HIV in 2015 in the absence of effective treatment. Bristol-Myers Squibb's drug portfolio placed it 7 in terms of total averted DALYs for HIV.



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# COMPANY RANKING EXPLANATION



## 2010

### 9<sup>TH</sup>

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Bristol-Myers Squibb is ranked 9th place in our index for 2010. Bristol-Myers Squibb's drugs have a total impact score of 546,176.56. Bristol-Myers Squibb treats 2 diseases in our model - XDR-TB, HIV - with 4 total drugs - Amikacin (Amk), Didanosine (ddl), Stavudine (d4t), Atazanafir / Ritonavir (ATV/r). Bristol-Myers Squibb receives credit for 3 treatments against HIV - Stavudine (d4t), Atazanafir / Ritonavir (ATV/r), Didanosine (ddl) . These 3 drugs averted 542,926.00 of the total DALYS for HIV, which is 14.19% of the worldwide DALYs that we estimate would have been lost due to HIV in 2010 in the absence of effective treatment. Bristol-Myers Squibb's drug portfolio placed it 3rd in terms of total averted DALYs for HIV. Bristol-Myers Squibb receives credit for 1 treatment against XDR-TB - Amikacin (Amk). This 1 drug averted 3,250.56 of the total DALYS for XDR-TB, which is 12.50% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2010 in the absence of effective treatment. Bristol-Myers Squibb's drug portfolio placed it in a tie for 3rd in terms of total averted DALYs for XDR-TB.

## 2013

### 9<sup>TH</sup>

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Bristol-Myers Squibb is ranked 9th place in our index for 2013. Bristol-Myers Squibb's drugs have a total impact score of 582,301.33. Bristol-Myers Squibb treats 2 diseases in our model - HIV and XDR-TB - with 4 total drugs - Amikacin (Amk), Didanosine (ddl), Stavudine (d4t), and Atazanavir/Ritonavir (ATV/r). Bristol-Myers Squibb receives credit for 3 treatments against HIV - Stavudine (d4t), Didanosine (ddl), and Atazanavir/Ritonavir (ATV/r). These 3 drugs averted 576,109.24 of the total DALYS for HIV, which is 10.52% of the worldwide DALYs that we estimate would have been lost due to HIV in 2013 in the absence of effective treatment. Bristol-Myers Squibb's drug portfolio placed it 4th in terms of total averted DALYs for HIV. Bristol-Myers Squibb receives credit for 1 treatment against XDR-TB - Amikacin (Amk). This 1 drug averted 6,192.08 of the total DALYS for XDR-TB, which is 12.50% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2013 in the absence of effective treatment. Bristol-Myers Squibb's drug portfolio placed it in a tie for 3rd in terms of total averted DALYs for XDR-TB.

# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 27,332.36

### MAIN DRUGS

AMK, DDL,  
D4T, ATV/R

### TREATS

XDR-TB,  
HIV

### FINAL IMPACT BY DISEASE

XDR-TB,  
8,863.27  
HIV  
18,469.10

## 2010

TOTAL IMPACT SCORE OF

# 546,176.56

### MAIN DRUGS

AMK, DDL,  
D4T, ATV/R

### TREATS

XDR-TB, HIV

### FINAL IMPACT BY DISEASE

XDR-TB  
3,250.56  
HIV  
542,926.00

## 2013

TOTAL IMPACT SCORE OF

# 582,301.33

### MAIN DRUGS

AMK, DDL,  
D4T, ATV/R

### TREATS

XDR-TB, HIV

### FINAL IMPACT BY DISEASE

XDR-TB  
6,192.08  
HIV  
576,109.24

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## COMPANY DESCRIPTION

# CHONGQING HOLLEY PHARMACEUTICAL CO. LTD

14<sup>2015</sup>  
RANK

Holley Pharmaceuticals is an affiliate of the Chinese company Chongqing Holley with a manufacturing facility in California. Chongqing Holley advocates for corporate social responsibility to promote social well-being and help realize the value of life. Holley Pharmaceuticals, which established itself in the U.S. in 2002, is one of the world's largest manufacturers of artemisinin, an antimalarial.

## KEY DRUGS

### DIHYDROARTEMISININ-PIPERAQUINE (DHA-P;DHA+PPQ)

Dihydroartemisinin-Piperaquine (DHA-P;DHA+PPQ) is an artemisinin combination therapy recommended by the WHO as one of the primary treatments for both uncomplicated and severe malaria. It is generally as safe and effective as AS+AQ, but provides a longer prophylactic effect due to its longer half-life. It was developed by Sigma-Tau in partnership with Medicines for Malaria Venture (MMV). In 2004, Chongqing Tonghe Pharmaceuticals Co. Ltd was awarded the patent.

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# COMPANY RANKING EXPLANATION



2015

14<sup>TH</sup>

Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche is ranked 14th place in our index for 2015. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche's drugs have a total impact score of 25,919.53. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche treats 2 diseases in our model - p.falc malaria, p.vivax malaria - with 1 total drug - DHA-Piperaquine (DHA-PPQ). Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche receives credit for 1 treatment against p.falc malaria - DHA-Piperaquine (DHA-PPQ). This 1 drug averted 20,715.41 of the total DALYs for p.falc malaria, which is 0.09% of the worldwide DALYs that we estimate would have been lost due to p.falc malaria in 2015 in the absence of effective treatment. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche's drug portfolio placed it 3 in terms of total averted DALYs for p.falc malaria. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche receives credit for 1 treatment against p.vivax malaria - DHA-Piperaquine (DHA-PPQ). This 1 drug averted 5,204.12 of the total DALYs for p.vivax malaria, which is 1.33% of the worldwide DALYs that we estimate would have been lost due to p.vivax malaria in 2015 in the absence of effective treatment. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche's drug portfolio placed it 3 in terms of total averted DALYs for p.vivax malaria.

# COMPANY RANKING EXPLANATION



## 2010

### 13<sup>TH</sup>



Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche is ranked 13th place in our index for 2010. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche's drugs have a total impact score of 14,710.89. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche treats 1 disease in our model - p.falc malaria - with 1 drug - DHA-Piperaquine (DHA-PPQ). Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche receives credit for 1 treatment against p. falc Malaria - DHA-Piperaquine (DHA-PPQ) . This 1 drug averted 14,710.89 of the total DALYS for p. falc Malaria, which is 0.03% of the worldwide DALYS that we estimate would have been lost due to p. falc Malaria in 2010 in the absence of effective treatment. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche's drug portfolio placed it 3rd in terms of total averted DALYS for p. falc Malaria.

## 2013

### 13<sup>TH</sup>



Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche is ranked 13th place in our index for 2013. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche's drugs have a total impact score of 27,424.92. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche treats 2 diseases in our model - p.falc malaria, p.vivax malaria - with 1 drug - DHA-Piperaquine (DHA-PPQ). Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche receives credit for 1 treatment against p.falc malaria - DHA-Piperaquine (DHA-PPQ) . This 1 drug averted 18,358.96 of the total DALYS for p.falc malaria, which is 0.09% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2013 in the absence of effective treatment. Chongqing Holley Pharmaceutical Co. Ltd and Sigma Tau Industrie Farmaceutiche's drug portfolio placed it 3rd in terms of total averted DALYS for p.falc malaria.

# COMPANY RANKING EXPLANATION

## 2015

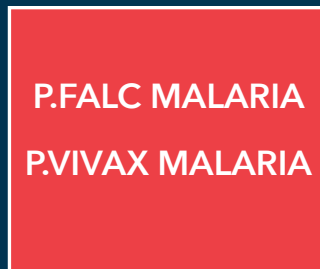
TOTAL IMPACT SCORE OF

# 25,919.53

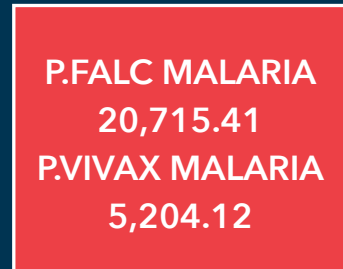
### MAIN DRUGS



### TREATS



### FINAL IMPACT BY DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 14,710.89

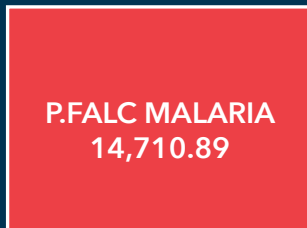
### MAIN DRUGS



### TREATS



### FINAL IMPACT BY DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 27,424.92

### MAIN DRUGS



### TREATS



### FINAL IMPACT BY DISEASE



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## COMPANY DESCRIPTION

# JOHNSON & JOHNSON

15<sup>2015</sup>  
RANK

Johnson & Johnson is a global pharmaceutical and consumer goods company headquartered in New Brunswick, New Jersey, and founded by Robert, James and Edward Johnson in 1886. Johnson & Johnson's Bedaquiline Access Program has donated bedaquiline since 2015 and is offering this MDR-TB drug at a lower, non-commercial cost for low-and-middle income nations in order to make it more accessible. They donate about 200 million doses of mebendazole each year to treat worms in underserved regions. They have over 95 products on the Access to Medicines index, are currently running a clinical trial on a potential HIV preventive vaccine regimen, and have announced collaboration with IMTECH to discover new TB medicines. Johnson & Johnson has one drug in circulation that is included in our 2015 company report: Mebendazole (MBD), which is used to treat various helminth infections (i.e., hookworm, roundworm, and whipworm). Mebendazole alleviates 0.77% of the DALYs lost to hookworm, 0.56% of the DALYs lost to roundworm, and 1.93% of the DALYs lost to whipworm, giving Johnson & Johnson a total impact score of 9052.94 DALYs averted.

## KEY DRUGS

### MEBENDAZOLE (MBZ)

Mebendazole (Mbz) is an anthelmintic used to treat various worm infections. It interferes with the reproduction and feeding capabilities of helminths. Adverse effects include transient gastrointestinal discomfort and headache. It is marketed in the US under the brand name Vermox. The drug was patented by Janssen Pharmaceuticals in 1969, whose parent company is Johnson and Johnson.

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# COMPANY RANKING EXPLANATION



## 2015

# 15<sup>TH</sup>

Johnson and Johnson is ranked 15th place in our index for 2015. Johnson and Johnson's drugs have a total impact score of 14,640.03. Johnson and Johnson treats 3 diseases in our model - roundworm, hookworm, whipworm - with 1 drug - Mebendazole (MBD). Johnson and Johnson receives credit for 1 treatment against roundworm - Mebendazole (MBD). This 1 drug averted 3,844.00 of the total DALYs for roundworm, which is 1.60% of the worldwide DALYs that we estimate would have been lost due to roundworm in 2015 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 3rd in terms of total averted DALYs for roundworm. Johnson and Johnson receives credit for 1 treatment against hookworm - Mebendazole (MBD). This 1 drug averted 3,360.12 of the total DALYs for hookworm, which is 12.12% of the worldwide DALYs that we estimate would have been lost due to hookworm in 2015 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 2nd in terms of total averted DALYs for hookworm. Johnson and Johnson receives credit for 1 treatment against whipworm - Mebendazole (MBD). This 1 drug averted 1,850.99 of the total DALYs for whipworm, which is 17.26% of the worldwide DALYs that we estimate would have been lost due to whipworm in 2015 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 3rd in terms of total averted DALYs for whipworm.



# COMPANY RANKING EXPLANATION

## 2010

### 17<sup>TH</sup>

Johnson and Johnson is ranked 17th place in our index for 2010. Johnson and Johnson's drugs have a total impact score of 1,676.25. Johnson and Johnson treats 3 diseases in our model - Roundworm, Whipworm, Hookworm - with 1 total drug - Mebendazole (MBD). Johnson and Johnson receives credit for 1 treatment against Roundworm - Mebendazole (MBD). This 1 drug averted 1,209.00 of the total DALYS for Roundworm, which is 0.34% of the worldwide DALYS that we estimate would have been lost due to Roundworm in 2010 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 3rd in terms of total averted DALYs for Roundworm. Johnson and Johnson receives credit for 1 treatment against Whipworm - Mebendazole (MBD). This 1 drug averted 326.28 of the total DALYS for Whipworm, which is 6.40% of the worldwide DALYS that we estimate would have been lost due to Whipworm in 2010 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 3rd in terms of total averted DALYs for Whipworm. Johnson and Johnson receives credit for 1 treatment against Hookworm - Mebendazole (MBD). This 1 drug averted 116.47 of the total DALYS for Hookworm, which is 0.92% of the worldwide DALYS that we estimate would have been lost due to Hookworm in 2010 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 2nd in terms of total averted DALYs for Hookworm.

## 2013

### 18<sup>TH</sup>

Johnson and Johnson is ranked 17th place in our index for 2010. Johnson and Johnson's drugs have a total impact score of 1,676.25. Johnson and Johnson treats 3 diseases in our model - Roundworm, Whipworm, Hookworm - with 1 total drug - Mebendazole (MBD). Johnson and Johnson receives credit for 1 treatment against Roundworm - Mebendazole (MBD). This 1 drug averted 10.56 of the total DALYS for Roundworm, which is 0.045% of the worldwide DALYS that we estimate would have been lost due to Roundworm in 2010 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 3rd in terms of total averted DALYs for Roundworm. Johnson and Johnson receives credit for 1 treatment against Whipworm - Mebendazole (MBD). This 1 drug averted 1,220.43 of the total DALYS for Whipworm, which is 25.98% of the worldwide DALYS that we estimate would have been lost due to Whipworm in 2010 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 3rd in terms of total averted DALYs for Whipworm. Johnson and Johnson receives credit for 1 treatment against Hookworm - Mebendazole (MBD). This 1 drug averted 1,343.28 of the total DALYS for Hookworm, which is 12.64% of the worldwide DALYS that we estimate would have been lost due to Hookworm in 2010 in the absence of effective treatment. Johnson and Johnson's drug portfolio placed it 2nd in terms of total averted DALYs for Hookworm.

# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 14,640.03

### MAIN DRUGS



### TREATS



### FINAL IMPACT BY DISEASE



## 2010

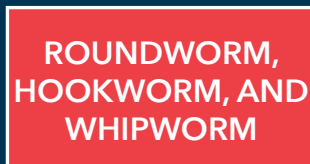
TOTAL IMPACT SCORE OF

# 1,676.25

### MAIN DRUGS



### TREATS



### FINAL IMPACT BY DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 2,640.03

### MAIN DRUGS



### TREATS



### FINAL IMPACT BY DISEASE



## COMPANY DESCRIPTION

# GUILIN PHARMACEUTICAL CO.

2015  
RANK  
16

Guilin Pharmaceutical Co., Ltd., a subsidiary of the Shanghai Fosun Pharmaceutical Group, is a global pharmaceutical company headquartered in Shanghai, China and founded in 1958. They specialize in antimalarials, antibiotics, and generics, with a mission to become a global leader in antimalarial product manufacturing and generic medicine production. Since 2006, Guilin, the largest manufacturer of artemisinin globally, has provided over 100 million Artesunate to malaria endemic areas, saving approximately 20 million lives. Guilin Pharmaceuticals circulates Artemether (AM), an artemisinin derivative, which is included in our 2015 company report. Artemether is used to treat P.Falc malaria, and has alleviated 0.02% of the DALYs lost to P.Falc malaria. The total impact of Artemether 9063.44 DALYs averted.

## KEY DRUGS

### ARTESUNATE (AS)

Artesunate (AS) is a water-soluble artemisinin derivative that can be prepared in oral, rectal, intramuscular, and intravenous forms. It is the most recommended treatment for malaria when used in combination therapy and as parenteral therapy to begin the treatment of severe malaria. Side effects include dizziness, abdominal pain and cardiac arrhythmias. A patent for Artesunate was issued to Guilin Pharmaceutical Co. Ltd in 1986.

### SULFADOXINE - PYRIMETHAMINE (SP)

Artemether (AM), an artemisinin derivative, is recommended by the WHO as an alternative to artesunate when artesunate is unavailable. Evidence suggests that artesunate is more effective than artemether when used as an intramuscular injection and in parenteral therapy, although artemether is preferred to quinine. It is a part of one of the primary treatment options for uncomplicated malaria when used in combination with lumefantrine. AM was first invented by Guilin in 1976.

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# COMPANY RANKING EXPLANATION

## 2015

### 16<sup>TH</sup>



Guilin Pharmaceutical Co., Ltd is ranked 16th place in our index for 2015. Guilin Pharmaceutical Co., Ltd's drugs have a total impact score of 9,018.93. Guilin Pharmaceutical Co., Ltd treats 1 disease in our model - p.falc malaria - with 1 total drug - Artemether (AM). Guilin Pharmaceutical Co., Ltd receives credit for 1 treatment against p.falc malaria - Artemether (AM). This 1 drug averted 9,018.93 of the total DALYS for p.falc malaria, which is 0.04% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2015 in the absence of effective treatment. Guilin Pharmaceutical Co., Ltd's drug portfolio placed it 4 in terms of total averted DALYS for p.falc malaria.

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## 2013

### 15<sup>TH</sup>



Guilin Pharmaceutical Co., Ltd is ranked 15 place in our index for 2013. Guilin Pharmaceutical Co., Ltd's drugs have a total impact score of 14,091.10. Guilin Pharmaceutical Co., Ltd treats 2 diseases in our model - p.falc malaria and p.vivax malaria - with 2 total drugs - Artesunate (AS), Artemether (AM). Guilin Pharmaceutical Co., Ltd receives credit for 1 treatment against p.falc malaria - Artemether (AM). This 1 drug averted 14,091.10 of the total DALYS for p.falc malaria, which is 0.07% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2013 in the absence of effective treatment. Guilin Pharmaceutical Co., Ltd's drug portfolio placed it 4 in terms of total averted DALYS for p.falc malaria. Guilin Pharmaceutical Co., Ltd receives credit for 1 treatment against p.vivax malaria - Artesunate (AS). This 1 drug averted 0.00 of the total DALYS for p.vivax malaria, which is 0.00% of the worldwide DALYS that we estimate would have been lost due to p.vivax malaria in 2013 in the absence of effective treatment. Guilin Pharmaceutical Co., Ltd's drug portfolio placed it 6 in terms of total averted DALYS for p.vivax malaria.

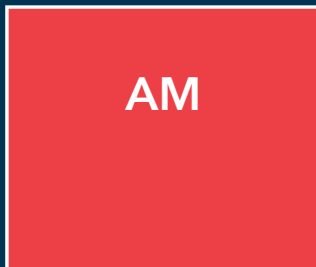
# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 9,018.93

MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE

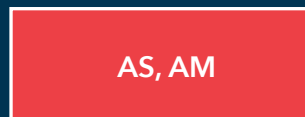


## 2013

TOTAL IMPACT SCORE OF

# 14,091.10

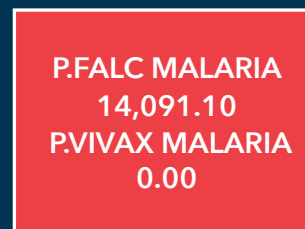
MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE



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## COMPANY DESCRIPTION

# ELI LILLY AND COMPANY LTD.

17<sup>2015</sup>  
RANK

Colonel Eli Lilly founded Eli Lilly and Company in 1876. Lilly, a global pharmaceutical company headquartered in Indiana, focuses its efforts in the areas of oncology, immunology, diabetes care, chronic pain, Alzheimer's disease and animal health. The company maintains the Lilly Open Innovation Drug Discovery Program, useful for scientists researching various diseases including multidrug-resistant tuberculosis. It was the first company to mass produce the Salk polio vaccine, insulin, and Prozac<sup>®</sup>, as well as the first to develop capreomycin. Lilly works to improve access to medicine by using differential pricing schemes, waving property rights in least-developed countries and through donations on products delivered via the Lilly TruAssist program and Life for a Child. Their products are currently sold in nearly 125 countries and include Trulicity<sup>®</sup>, Humalog<sup>®</sup>, and Alimta<sup>®</sup>. The company employs about 38,000 workers and in 2017, Eli Lilly reported revenue of over \$22.8 billion.

## KEY DRUGS

### CAPREOMYCIN (CM)

Capreomycin (Cm), a cyclic peptide antibiotic, is a second-line injectable agent recommended in the treatment of rifampicin-resistant and multidrug-resistant tuberculosis. It is proven effective against TB and has a moderate safety profile, although aminoglycosides are generally favored over capreomycin. Side effects include hearing loss and damage to the kidneys. Cm was patented by Eli Lilly & Co. in 1962.

# COMPANY RANKING EXPLANATION

## 2015

### 17<sup>TH</sup>

Eli Lilly and Company is ranked 17 place in our index for 2015. Eli Lilly and Company's drugs have a total impact score of 8,863.27. Eli Lilly and Company treats 1 disease in our model - XDR-TB - with 1 total drug - Capreomycin (Cm). Eli Lilly and Company receives credit for 1 treatment against XDR-TB - Capreomycin (Cm). This 1 drug averted 8,863.27 of the total DALYS for XDR-TB, which is 12.50% of the worldwide DALYS that we estimate would have been lost due to XDR-TB in 2015 in the absence of effective treatment. Eli Lilly and Company's drug portfolio placed it tie for 3 in terms of total averted DALYS for XDR-TB.

## 2010

### 15<sup>TH</sup>

Eli Lilly and Company is ranked 15th place in our index for 2010. Eli Lilly and Company's drugs have a total impact score of 3,250.56. Eli Lilly and Company treats 1 disease in our model - XDR-TB - with 1 drug - Capreomycin (Cm). Eli Lilly and Company receives credit for 1 treatment against XDR-TB - Capreomycin (Cm). This 1 drug averted 3,250.56 of the total DALYS for XDR-TB, which is 12.50% of the worldwide DALYS that we estimate would have been lost due to XDR-TB in 2010 in the absence of effective treatment. Eli Lilly and Company's drug portfolio placed it in a tie for 3 in terms of total averted DALYS for XDR-TB.

## 2013

### 16<sup>TH</sup>

Eli Lilly and Company is ranked 16th place in our index for 2013. Eli Lilly and Company's drugs have a total impact score of 6,192.08. Eli Lilly and Company treats 1 disease in our model - XDR-TB - with 1 total drug - Capreomycin (Cm). Eli Lilly and Company receives credit for 1 treatment against XDR-TB - Capreomycin (Cm). This 1 drug averted 6,192.08 of the total DALYS for XDR-TB, which is 12.50% of the worldwide DALYS that we estimate would have been lost due to XDR-TB in 2013 in the absence of effective treatment. Eli Lilly and Company's drug portfolio placed it in a tie for 3rd in terms of total averted DALYS for XDR-TB.

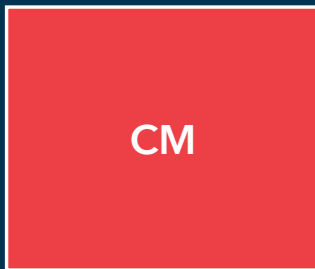
# COMPANY RANKING EXPLANATION

## 2015

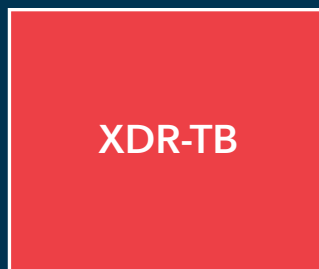
TOTAL IMPACT SCORE OF

# 8,863.27

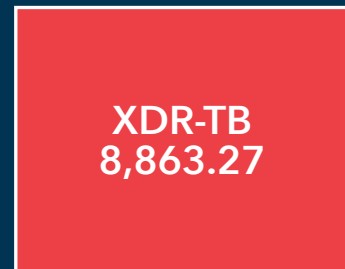
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 3,250.56

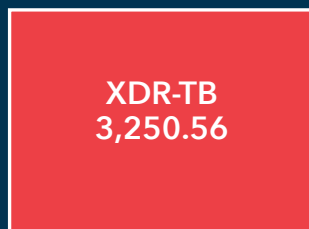
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 6,192.08

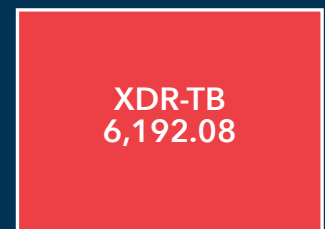
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE





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## COMPANY DESCRIPTION

# KYORIN PHARMACEUTICAL CO. LTD

18<sup>2015</sup>  
RANK

Kyorin Pharmaceutical Co. Ltd is a global pharmaceutical company founded in 1923 and headquartered in Tokyo, Japan. Kyorin Pharmaceutical Co. Ltd has a mission of benefiting society by contributing to better public health and alleviating medical burden by providing innovative drugs globally; they seek to use their products to help better global health. Kyorin originated and currently licenses Gatifloxacin (Gfx) to various pharmaceutical companies. Gatifloxacin is used in our 2015 company report– it is a fluoroquinolone antibiotic recommended as a Group A second-line agent, and it is used for the treatment of multidrug-resistant tuberculosis. Gatifloxacin alleviates 1.67% of the DALYs lost to extensively drug-resistant TB. Kyorin Pharmaceutical Co. Ltd’s total impact score is 6647.45 DALYs averted.

## KEY DRUGS

### GATIFLOXACIN (GFX)

Gatifloxacin (Gfx) is a quinolone antibiotic recommended by the WHO as a Group A second-line agent for treatment of multidrug-resistant tuberculosis. Gfx had a good safety profile and is effective against TB. However, due to adverse side effects including hepatotoxicity, Gatifloxacin was withdrawn in 2006, and is currently only available as an ophthalmic solution in the United States and Canada. Gfx was first patented by Kyorin Pharmaceuticals in 1986.

# COMPANY RANKING EXPLANATION

## 2015

### 18<sup>TH</sup>

Kyorin Pharmaceutical Co. Ltd. is ranked 18th place in our index for 2015. Kyorin Pharmaceutical Co. Ltd.'s drugs have a total impact score of 6,647.45. Kyorin Pharmaceutical Co. Ltd. treats 1 disease in our model - XDR-TB - with 1 drug - Gatifloxacin (Gfx). Kyorin Pharmaceutical Co., Ltd. receives credit for 1 treatment against XDR-TB - Gatifloxacin (Gfx). This 1 drug averted 6,647.45 of the total DALYS for XDR-TB, which is 9.38% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2015 in the absence of effective treatment. Kyorin Pharmaceutical Co., Ltd.'s drug portfolio placed it tie for 5 in terms of total averted DALYs for XDR-TB.

## 2010

### 16<sup>TH</sup>

Kyorin Pharmaceutical Co., Ltd. is ranked 16th place in our index for 2010. Kyorin Pharmaceutical Co., Ltd.'s drugs have a total impact score of 2,437.92. Kyorin Pharmaceutical Co., Ltd. treats 1 disease in our model - XDR-TB - with 1 total drug - Gatifloxacin (Gfx). Kyorin Pharmaceutical Co., Ltd. receives credit for 1 treatment against XDR-TB - Gatifloxacin (Gfx). This 1 drug averted 2,437.92 of the total DALYS for XDR-TB, which is 9.38% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2010 in the absence of effective treatment. Kyorin Pharmaceutical Co., Ltd.'s drug portfolio placed it tie for 5 in terms of total averted DALYs for XDR-TB.

## 2013

### 17<sup>TH</sup>

Kyorin Pharmaceutical Co., Ltd. is ranked 17 place in our index for 2013. Kyorin Pharmaceutical Co., Ltd.'s drugs have a total impact score of 4,644.06. Kyorin Pharmaceutical Co., Ltd. treats 1 disease in our model - XDR-TB - with 1 total drug - Gatifloxacin (Gfx). Kyorin Pharmaceutical Co., Ltd. receives credit for 1 treatment against XDR-TB - Gatifloxacin (Gfx). This 1 drug averted 4,644.06 of the total DALYS for XDR-TB, which is 9.38% of the worldwide DALYs that we estimate would have been lost due to XDR-TB in 2013 in the absence of effective treatment. Kyorin Pharmaceutical Co., Ltd.'s drug portfolio placed it tie for 5 in terms of total averted DALYs for XDR-TB.

# COMPANY RANKING EXPLANATION

## 2015

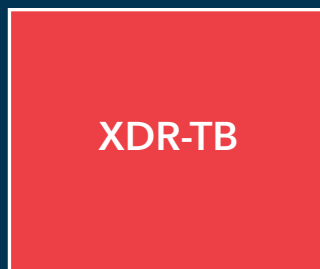
TOTAL IMPACT SCORE OF

# 6,647.45

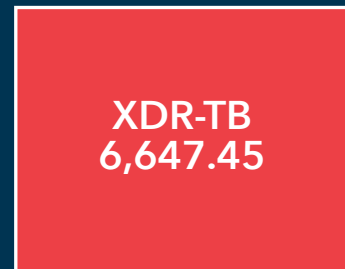
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 2,437.92

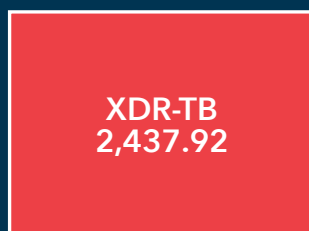
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 4,644.06

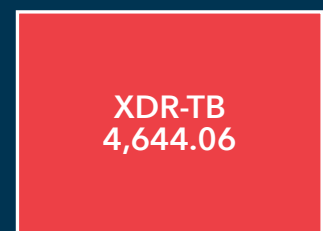
MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



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## COMPANY DESCRIPTION

# TAISHO PHARMACEUTICAL CO. LTD

2015  
RANK  
19

Clarithromycin (CL), a macrolide antibiotic, is no longer a WHO recommended drug in the treatment of tuberculosis due to ineffectiveness, although it is sometimes used in the treatment of MDR-TB and RR-TB. It is used for respiratory, soft tissue and skin infections such as pneumonia and pharyngitis and other bacterial infections by stopping bacterial growth. Clarithromycin was first patented by Taisho Pharmaceutical in 1994.



## KEY DRUGS

### CLARITHROMYCIN (CL)

Clarithromycin (CL), a macrolide antibiotic, is no longer a WHO recommended drug in the treatment of tuberculosis due to ineffectiveness, although it is sometimes used in the treatment of MDR-TB and RR-TB. It is used for respiratory, soft tissue and skin infections such as pneumonia and pharyngitis and other bacterial infections by stopping bacterial growth. Clarithromycin was first patented by Taisho Pharmaceutical in 1994.

# COMPANY RANKING EXPLANATION

## 2015

### 19<sup>TH</sup>

Taisho Pharmaceuticals is ranked 19th place in our index for 2015. Taisho Pharmaceuticals' drugs have a total impact score of 1,299.36283. Taisho Pharmaceuticals treats 1 disease in our model - p.falc malaria - with 1 drug - Clarithromycin (CL). Taisho Pharmaceuticals receives credit for 1 treatment against p.falc malaria - Clarithromycin (CL). This 1 drug averted 1,299.36 of the total DALYS for p.falc malaria, which is 0.01% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2015 in the absence of effective treatment. Taisho Pharmaceuticals' drug portfolio placed it 6th in terms of total averted DALYS for p.falc malaria.

## 2010

### 18<sup>TH</sup>

Taisho Pharmaceuticals is ranked 18 place in our index for 2010. Taisho Pharmaceuticals's drugs have a total impact score of 0. Taisho Pharmaceuticals treats 1 disease in our model - p. falc Malaria - with 1 total drug - Clarithromycin (CL). This 1 drug averted 676.73 of the total DALYS for p. falc Malaria, which is 0.001% of the worldwide DALYS that we estimate would have been lost due to p. falc Malaria in 2010 in the absence of effective treatment. Taisho Pharmaceuticals's drug portfolio placed it 5th in terms of total averted DALYS for p. falc Malaria.

## 2013

### 19<sup>TH</sup>

Taisho Pharmaceuticals' drugs have a total impact score of 994.7. Taisho Pharmaceuticals treats 1 disease in our model - p.falc malaria - with 1 drug - Clarithromycin (CL). Taisho Pharmaceuticals receives credit for 1 treatment against p.falc malaria - Clarithromycin (CL). This 1 drug averted 1,066.67 of the total DALYS for p.falc malaria, which is 0.01% of the worldwide DALYS that we estimate would have been lost due to p.falc malaria in 2013 in the absence of effective treatment. Taisho Pharmaceuticals' drug portfolio placed it 4th in terms of total averted DALYS for p.falc malaria.

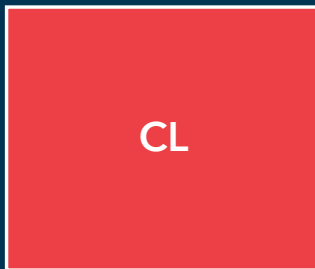
# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

# 1,299.36

MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE



## 2010

TOTAL IMPACT SCORE OF

# 0

MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE



## 2013

TOTAL IMPACT SCORE OF

# 994.7

MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE



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# COMPANY DESCRIPTION



## ARTEPHARM

Artepharm is a modern pharmaceutical company headquartered in Guangzhou, China and founded in 2005. It was jointly established by the Guangzhou University of Traditional Chinese Medicine and the Guangdong New South Group, its parent company. The Guangdong New South Group, founded in 1994, has helped to save millions of lives in a joint artemisinin project centered in Africa. Artepharm, which is expanding to comprise the core of New South Group's business, focuses on the production and research of antivirals, antimalarials, artemisinin and other herbal products. In our 2015 company report, we evaluated Artepharm's drug Artemisinin + Piperaquine (ART+PPQ), which was patented under the brand name Artequick®. Artemisinin + Piperaquine is used to treat P. Falc malaria, although it does not alleviate much of the disease burden caused by P. Falc malaria—Artepharm has a total impact score of 14.16 DALYs averted.

## KEY DRUGS

### ARTEMISININ-PIPERAQUINE (ART+PPQ)

Artemisinin-Piperaquine (ART+PPQ) is an artemisinin-based combination therapy recommended by the WHO as one of the primary treatments for both uncomplicated and severe malaria. It is generally as safe and effective as AS+AQ though there is more evidence for its effectiveness in treating uncomplicated malaria in areas with chloroquine-resistant p.vivax. In 2006 Artepharm Global filed a patent on ART+PQ under the brandname Artequick®.

# COMPANY RANKING EXPLANATION

## 2015

### 20<sup>TH</sup>

Artepharm is ranked 20th place in our index for 2015. Artepahrm's drugs have a total impact score of 14.16. Artepahrm treats 1 disease in our model - p.falc malaria - with 1 drug - Artemisinin + Piperaquine (ART + PPQ). Artepahrm receives credit for 1 treatment against p.falc malaria - Artemisinin + Piperaquine (ART + PPQ) . This 1 drug averted 14.16 of the total DALYS for p.falc malaria, which is 0.00006% of the worldwide DALYs that we estimate would have been lost due to p.falc malaria in 2015 in the absence of effective treatment. Artepahrm's drug portfolio placed it 7th in terms of total averted DALYs for p.falc malaria.

## 2010

### 19<sup>TH</sup>

Artepahrm is ranked 19th place in our index for 2010. Artepahrm's drugs have a total impact score of 43.63. Artepahrm treats 1 disease in our model - p.falc malaria - with 1 drug - Artemisinin + Piperaquine (ART + PPQ). Artepahrm receives credit for 1 treatment against p. falc Malaria - Artemisinin + Piperaquine (ART + PPQ) . This 1 drug averted 43.63 of the total DALYS for p. falc Malaria, which is 0.00008% of the worldwide DALYs that we estimate would have been lost due to p. falc Malaria in 2010 in the absence of effective treatment. Artepahrm's drug portfolio placed it 5th in terms of total averted DALYs for p. falc Malaria.

## 2013

### 20<sup>TH</sup>

Artepahrm is ranked 20th place in our index for 2013. Artepahrm's drugs have a total impact score of 63.15. Artepahrm treats 1 disease in our model - p.falc malaria - with 1 drug - Artemisinin + Piperaquine (ART + PPQ). Artepahrm receives credit for 1 treatment against p.falc malaria -Artemisinin + Piperaquine (ART + PPQ) . This 1 drug averted 63.15 of the total DALYS for p.falc malaria, which is 0.0003% of the worldwide DALYs that we estimate would have been lost due to p.falc malaria in 2013 in the absence of effective treatment. Artepahrm's drug portfolio placed it 5th in terms of total averted DALYs for p.falc malaria.



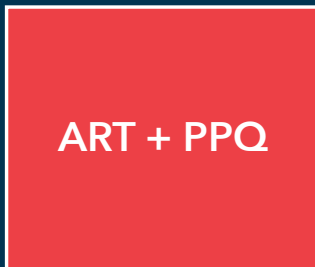
# COMPANY RANKING EXPLANATION

## 2015

TOTAL IMPACT SCORE OF

### 14.16

MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2010

TOTAL IMPACT SCORE OF

### 43.63

MAIN DRUGS



TREATS



FINAL IMPACT BY DISEASE



## 2013

TOTAL IMPACT SCORE OF

### 63.15

MAIN DRUGS



TREATS



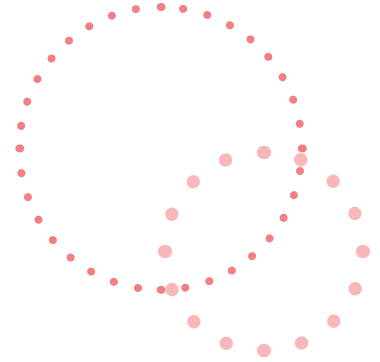
FINAL IMPACT BY DISEASE



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# COMPANY DESCRIPTION

## IMPERIAL CHEMICAL INDUSTRIES



Imperial Chemical Industries is one of the largest British chemical manufacturing companies, it was founded in 1926 by merging 4 big chemical British companies - Brunner Mond, Nobel Explosives, the United Alkali Company, and British Dyestuffs Corporation. Imperial produced chemicals, dyes, explosives, fertilizers, fibres, and paints, and the company produced a line of chemicals, paints, pharmaceuticals synthetic fibres and plastics. In 1993 the company separated its drug, pesticide and chemicals departments into a new company called Zeneca Group PLC, which was later merged by Astrazeneca in 1999. Up until 2006 ICI had a revenue of 4.85 billion pounds and approximately 29,130 employees. In 2008, Aztranobel obtained ICI.

## KEY DRUGS

### PROGUANIL (PG)

Proguanil (PG), a biguanide compound, is recommended by the WHO in combination therapy with Atovaquone for its prophylactic effects against malaria and due to higher rates of proguanil resistance that occurs after its monotherapeutic use. It was first patented by ICI in 1949.

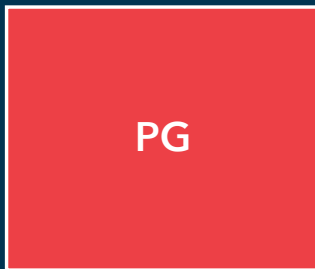
# COMPANY RANKING EXPLANATION

## 2010

TOTAL IMPACT SCORE OF

# 18.91

MAIN DRUGS



TREATS



FINAL IMPACT BY  
DISEASE



## 2010

# 20<sup>TH</sup>

Imperial Chemical Industries is ranked 20th place in our index for 2010. Imperial Chemical Industries's drugs have a total impact score of 18.91. Imperial Chemical Industries treats 1 disease in our model - p. vivax Malaria - with 1 total drug - Proguanil (PG). Imperial Chemical Industries receives credit for 1 treatment against p. vivax Malaria - Proguanil (PG). This 1 drug averted 18.91 of the total DALYs for p. vivax Malaria, which is 0.004% of the worldwide DALYs that we estimate would have been lost due to p. vivax Malaria in 2010 in the absence of effective treatment. Imperial Chemical Industries's drug portfolio placed it 4th in terms of total averted DALYs for p. vivax Malaria.