

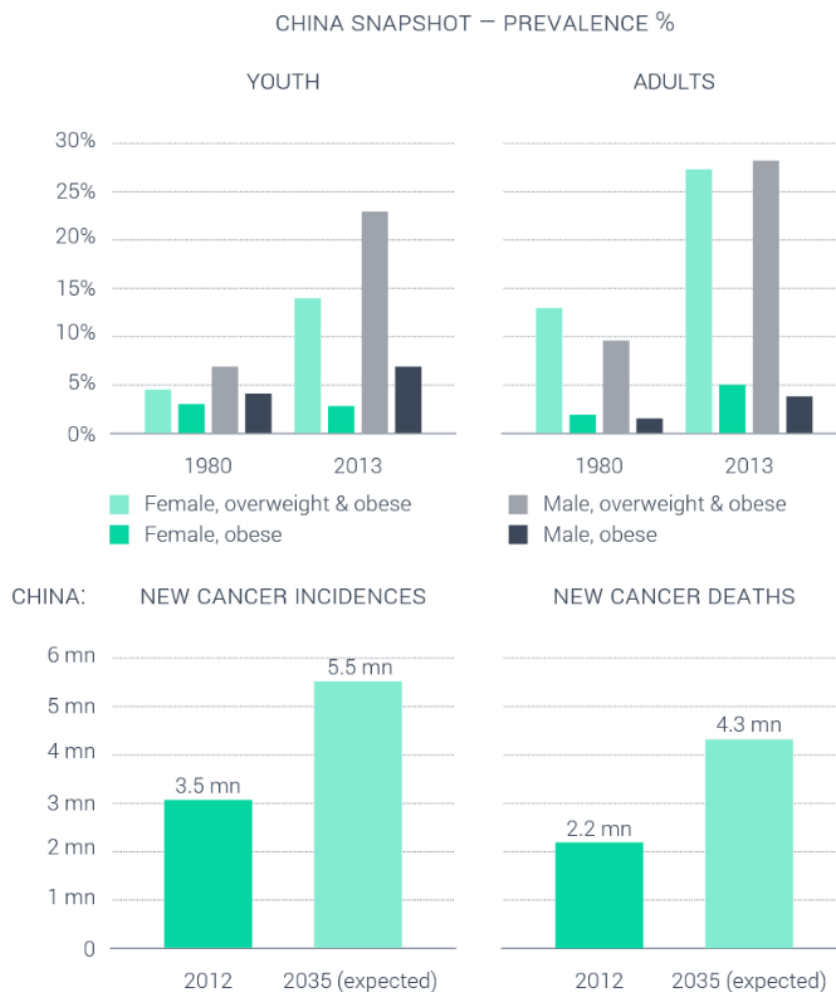
The healthcare market boom in China

The Chinese healthcare industry is undergoing a major transformation and is experiencing significant R&D growth due to government policies that encourage investing into innovative drugs and medical devices. Local players are innovating to move up the value chain and reconquer the high-end market. Chinese healthcare (Biotech and MedTech) companies are no longer imitators but innovators.

The world's fastest growing healthcare market

China is now the second-largest drug market in the world and key drivers are trending in the right direction. The U.S. remains the largest market, but China's biotech market is growing at twice the rate of the U.S., making it the fastest growing in the world and expected to reach ¥300bn (\$43bn) in 2021 from ¥152bn (\$21.7bn) in 2016. The growth is driven by the high incidence of chronic diseases in a large and rapidly ageing population. As the middle class grew and the standard of living improved, eating habits changed. As a result, obesity rates in China are rising rapidly, leading to a higher incidence of diabetes and cancers. More than 100 million Chinese have diabetes and more than 200 million have cancer.

The Chinese MedTech market is also the world's fastest growing. China, already the 4th largest MedTech market globally, showed a 12% CAGR between 2017 and 2020. As a comparison, the U.S. MedTech market showed a 4.5% CAGR over the same period.



China is embracing innovation

Government policy is being supportive through initiatives aimed at prioritizing health and promoting innovation in the industry. A wave of new reforms to boost the development of the biopharmaceutical sector have been launched these last few years. In 2015, President Jinping presented the "Made in China 2025" plan. The biopharmaceutical sector is among the ten industries in which China wants to encourage innovation and increase R&D.

President Jinping also introduced 15 reforms through the "Healthy China 2030" plan to improve healthcare access and mortality rates on major diseases.

The China FDA (CFDA) has implemented several reforms to modernize the clinical trial process and speed-up the approval of innovative drugs. Innovative drugs can now benefit from "priority review" status. Following the reform, thirty-five new biologic drugs were launched between January and October 2017 vs. around 5 in previous years. More than 30% of total applications have received this status.

CAR-T cells therapies, a new generation of immunotherapy, benefit from an orphan designation and tax deductions in China. As a result, the number of CAR-T cells therapy trials surpassed those in the U.S. due to less stringent regulations and lower cost of manufacturing.

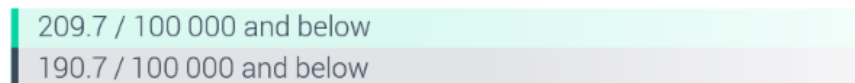
In 2018, the Chinese government introduced new guidelines to encourage the use of internet-based healthcare.

Prevent and control major diseases

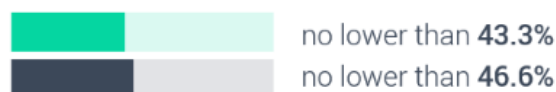
- Target by 2022
- Target by 2030



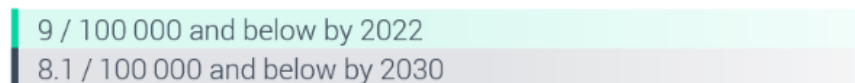
Cardiovascular and cerebrovascular diseases mortality:



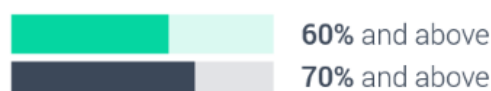
Cancer – overall five-year survival rate:



Chronic respiratory disease – mortality in people aged 70 and under



Diabetes – standard management rate of patients:



Infectious and endemic diseases

At the township (town, street) level, the vaccination coverage of the National Immunization Program Vaccines for children of appropriate age should remain above 90%.

A better access to market

The access to capital markets has also been simplified. In 2018, the Hong Kong Exchange reviewed its listing rules, allowing pre-revenue and pre-profit biotech to be listed. Therefore, significant investment capital has flowed into the sector. In 2019, the average amount of funds raised was 4 to 5 times the U.S. average, with the largest listing raising over \$900mn.

To increase their visibility and credibility, Chinese companies also raised funds in the U.S. through IPOs on Nasdaq. Last June, the IPO of Legend Biotech, which develops CAR-T cell-based therapies in partnership with J&J, raised more than \$400mn.

Thanks to the growing attractiveness of Chinese biotech companies, Chinese scientists who have been trained in the U.S. biotech industry are returning to China. Similarly, more and more U.S. and European executives are accepting positions in Chinese biopharmaceutical companies.

Promising high-tech sectors in China

The top priorities in the Chinese R&D pipeline include digital health, Artificial Intelligence, and genomics.

Digital health and Artificial Intelligence

The Chinese market benefits from several advantages, notably big data and digitization. Indeed, 58% of the population now uses the Internet (800mn internet users compared to 275mn in the United States) and more than 95% are mobile users. This large user base is a huge source of medical data, and mobile applications are a way to reach more patients. The government aims to build a "large data system" with an interconnected public health information platform.

China is still facing a shortage of medical staff, especially anesthesiologists, general practitioners (GP), and pediatricians. Indeed, in 2018, China had only about two doctors per 1,000 inhabitants.

Low physicians' density and high devices adoption by healthcare professionals have driven strong growth in innovative technologies, such as telemedicine.

Ping An Good Medical, China's largest health care platform, showed a CAGR of 106% for revenues over 2015-2019 and a nearly 900% increase in new users since December 2019.

China's tech giants have capitalized on healthcare AI opportunities: Baidu, Tencent and Alibaba focus on AI solutions for diagnostic imaging. However, thanks to recent reforms, a growing number of small companies are emerging and currently, more than 130 small Chinese companies are working on applying AI in healthcare.

China: the second largest genomics market worldwide

The Chinese Academy of Sciences launched a 14-year, \$9.2bn project to sequence more than 100mn human genomes by 2030. Sequencing technology market is maturing, and its applications show promises for oncology. BGI Genomics is the 3rd biggest global player in the sequencing technology market, after Illumina and Thermo Fisher.

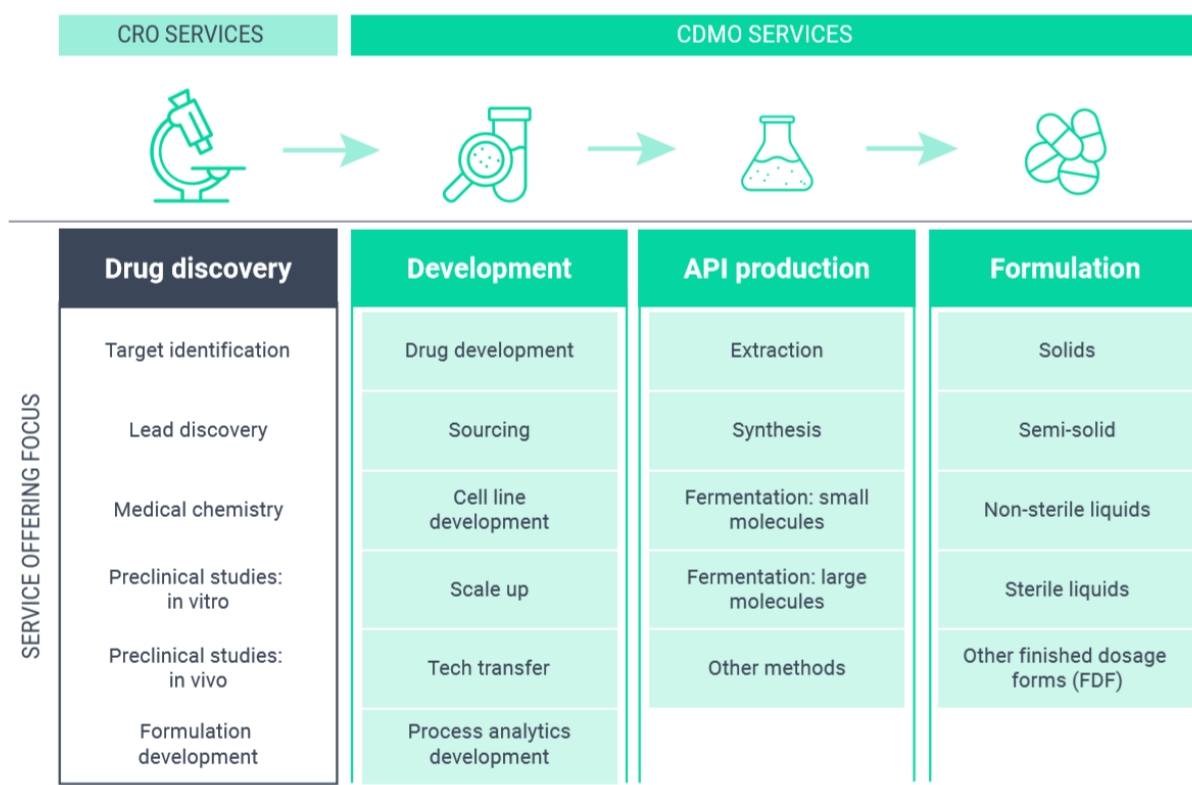
Anpac Bio Medical Science, Burning Rock Biotech and Genetron are among the most recent Chinese MedTech IPOs. They all focus on developing liquid biopsy tests, a blood test offering less invasive and faster way to identify cancers.

The healthcare supply chain: an international cooperation

R&D spending in the healthcare sector has risen sharply, pushing companies to increase outsourcing, for better cost control and higher efficiency. There are two types of outsourcing services: Contract Research Organizations (CRO) and Contract Development & Manufacturing Organizations (CDMO). CRO/CDMO work alongside biopharma companies to provide the necessary ingredients and conduct trials more efficiently. China's domestic drugmakers are keen on using these services to remain competitive and to launch innovative drugs as quickly as possible.

Lower costs and better efficiency help local players but also attract foreign companies who outsource in China. Preclinical and clinical trial costs in China can be as low as 30-60% of similar trials elsewhere.

Also, the COVID-19 epidemic has highlighted the importance of China as the world's largest producer of active pharmaceutical ingredients (APIs). It is estimated that 80% of the APIs used in the United States could come from China or India. Despite the wish to re-locate API manufacturing in Europe or the United States, costs will continue to drive the decision to outsource to China.



COVID 19: challenges turned into opportunities

Among the seven vaccines candidates already in Phase III, three are being developed by Chinese companies: CanSino, Sinopharm, and Sinovac. The CanSino vaccine has even been authorized for military use only in China.

During the COVID-19 pandemic, some collaborations between Europe and China have emerged.

In March, BioNTech, the German mRNA company, signed an agreement with Fosun Pharma to commercialize its COVID-19 vaccine in China.

The Chinese National Health Commission also recommended the use of Roche's rheumatoid arthritis drug Actemra for the treatment of patients with severe COVID with lung damage.

According to a local blog post, the large Swiss pharmaceutical company did a donation worth \$2mn of Actemra to China.

Collaborations between China and the EU are not new and existed before the pandemic. Measures to stimulate innovation in healthcare are putting China back at the center of the interests of major European pharmaceutical companies:

- Sanofi has invested in several research laboratories in Suzhou and has entered in 2020 into a collaboration with the Chinese biotech company Alphasud Oncology on breast cancer.
- Roche intends to make China its second largest market in the short term, ahead of Japan and behind the United States.
- Novartis plans to make China at least one of its top three markets, with more than 50 regulatory submissions over the next four years.

Since 2017, China's National Drug Reimbursable List (NRDL) has added more than 340 drugs to the list of reimbursable drugs, including the most expensive drugs from Novartis and Roche. The list now includes five of Roche's top blockbusters. Sales of Roche's Avastin increased 70 percent in 2018 compared to 2017.

The significant growth in R&D confirms that China is at the forefront of healthcare technologies, thanks to government incentives. China's important role in the healthcare supply chain was highlighted during the COVID-19 pandemic. However, Chinese healthcare companies are more than just suppliers, they are also true innovators in the field of medical and biotechnology technologies, as many EU-China collaborations have shown.

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