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ANTIVIRAL DRUG MARKET

Antiviral drugs are a class of medication used for treating viral infections. Most of antiviral drugs target specific viruses, while antiviral drugs with a broad-spectrum are able to treat a wide range of viruses. Without destroying the target virus, an antiviral drug inhibits its development mainly by targeting various stages in the virus life cycle. Viral infections represent one of the major therapeutic areas in the global pharmaceutical market. The global antiviral drug market increased from US$59.5 billion in 2020 to US$92.5 billion in 2025 at a CAGR of 9.2%. The market is expected to grow to US$118.4 billion in 2030 at a CAGR of 5.1% from 2025 to 2030. China's antiviral drug market grew from US$3.6 billion in 2020 to US$10.2 billion in 2025 at a CAGR of 23.2%. The market is expected to further grow to US$15.0 billion in 2030 at a CAGR of 8.0% from 2025 to 2030.

The HIV Drug Market

Overview

HIV is a virus that primarily attacks and destroys the $CD4^+$ T cells of the immune system, making the patient vulnerable to infections and other diseases. HIV infection progresses in four stages, from acute infection, through latency period and pre-AIDS period, to the end stage, *i.e.*, acquired immunodeficiency syndrome, or AIDS. HIV can be classified into two major virus types based on genetic differences: HIV-1 and HIV-2. HIV-1 is the most common type, constituting more than 90% of HIV infections worldwide. There is still no cure for HIV infection, but disease progression can be suppressed or slowed down by medication.

The number of HIV-infected patients reached 44.5 million globally in 2025 at a CAGR of 1.9% from 2020 to 2025. It is expected to reach 48.3 million in 2030, representing a CAGR of 1.7% from 2025 to 2030. In China, HIV-infected population reached 1.4 million in 2025 at a CAGR of 2.2% from 2020 to 2025. It is expected to increase to 1.6 million in 2030 at a CAGR of 3.3% from 2025 to 2030. HIV-infected patients may take years to develop AIDS without medication. In some cases, HIV-infected patients may not show any symptoms for many years before symptoms such as fever, fatigue, swollen lymph nodes, weight loss, oral yeast infection, shingles and pneumonia begin to show. With an increasing number of infected people expected to be living with HIV for extended periods of time, the fight against HIV remains a huge challenge to the global healthcare system.

The growth of the HIV drug market is supported by increasing number of patients, patients' resistance to existing drugs, favorable policies, and patients' increasing willingness and ability to pay. China's HIV drug market currently faces various challenges, including low compliance of existing therapies, patients' resistance to existing therapies, and low accessibility and affordability by patients. Going forward, China's HIV drug market is expected to evolve to combination ART and long-acting therapies. China is expected to make important progress in improving access to and affordability of HIV treatment for people living with HIV. In addition, domestic companies are anticipated to play a bigger role in the field of innovative HIV treatment.

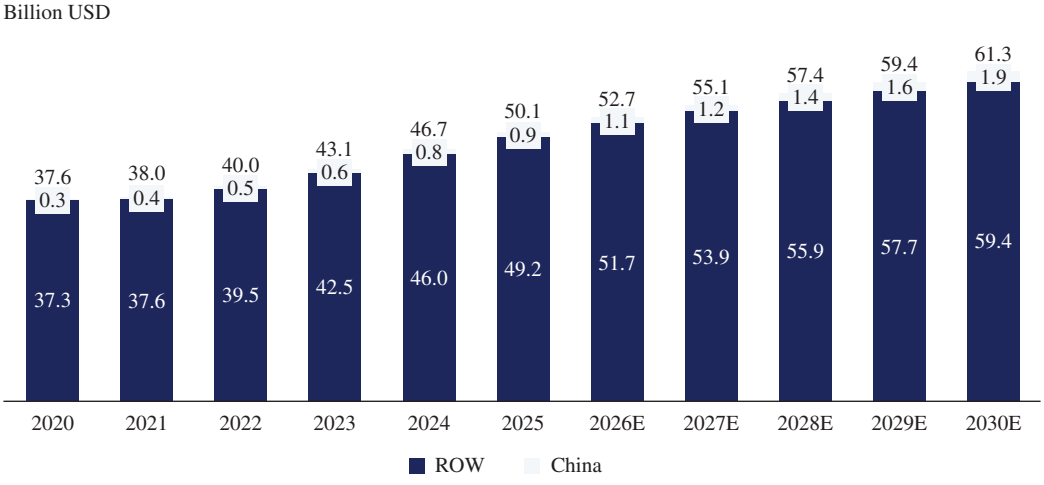
Global and China's HIV Drug Market

The global HIV drug market grew from US$37.6 billion in 2020 to US$50.1 billion in 2025, representing a CAGR of 5.9%. It is estimated to reach US$61.3 billion in 2030, representing a CAGR of 4.1% from 2025 to 2030. Innovative therapies are expected to continuously drive growth in both developed and emerging markets. In particular, nucleoside-based drugs, as the backbone drug in all first-line antiretroviral treatments recommended by the WHO for HIV-infected patients, constitute a significant component of the HIV drug market, with great growth potential.

China's HIV drug market grew from US$0.3 billion in 2020 to US$0.9 billion in 2025, representing a CAGR of 23.7%. It is expected to reach US$1.9 billion in 2030, representing a CAGR of 15.7% from 2025 to 2030, which are significantly higher than the estimated CAGRs for the global HIV drug market for the same periods. According to Frost & Sullivan, this growth reflects increased diagnosis and treatment and the anticipated inclusion of additional innovative HIV drugs in the NRDL, leading to a larger patient base receiving innovative HIV drugs. Similar to recommendations by the WHO, the HIV treatment guideline published by the Chinese Center for Disease Control and Prevention in 2024 also lists nucleoside-based drugs as the backbone drug in all first-line antiretroviral treatment options for HIV, signaling its significance in terms of HIV treatment as well as growth potential in terms of market size.

China and Global HIV Drugs Market, 2020-2030E

CAGR	China	ROW	Total
2020-2025	23.7%	5.7%	5.9%
2025-2030E	15.7%	3.9%	4.1%



Source: Frost & Sullivan analysis

China's HIV drug market comprises drugs for which patients need to pay at least a portion of the cost out of their own pockets, including drugs covered by the NRDL, and drugs supplied by the government for free under the Four-Free and One-Care Initiative ("四免一關懷"), which includes older generations of ART medications. The out-of-pocket segment represents the market for most of the innovative HIV drugs and is expected to be the main component of growth in China's HIV drug market. The market size of such segment grew from US$99.2 million in 2020 to US$595 million in 2025 at a CAGR of 43.1% from 2020 to 2025, and is expected to further grow to US$1,515.9 million by 2030 at a CAGR of 20.5% from 2025 to 2030.

Treatment Options for HIV

Currently, there is no cure for HIV infection but antiretroviral therapy (ART) can interrupt HIV replication and therefore suppress HIV viral load in infected patients, reducing the risk of HIV transmission. However, HIV patients using a single-drug ART have a high possibility of failing to

suppress viral activity due to drug resistance. Therefore, current guidelines from the WHO and the U.S. Department of Health and Human Services (DHHS) recommend ARTs that contain a combination of two or three drugs from different classes of antiretroviral drugs for the treatment of HIV infection, also known as combination ART (cART), or cocktail therapy. The recommended two-drug cART includes a nucleoside reverse transcriptase inhibitor (NRTI) as the backbone drug and an integrase strand transfer inhibitor (INSTI). The recommended three-drug cART includes two NRTIs and a third antiretroviral drug from one of three drug classes: an INSTI, a non-nucleoside reverse transcriptase inhibitor (NNRTI), or a protease inhibitor (PI) with a pharmacokinetic enhancer. According to data published by the Joint United Nations Programme on HIV/AIDS (UNAIDS), approximately 31.6 million people, accounting for 77.0% of those living with HIV globally, had access to ART in 2024.

The table below lists the recommended first-line ART regimens and alternative regimens for adults and adolescents based on antiretroviral medications available in China of the 2024 Chinese HIV/AIDS Guideline:

Major ART Drug Categories	Major Drug
Nucleoside Reverse Transcriptase Inhibitors, NRTIs	Azidothymidine (AZT)
	Lamivudine (3TC)
non-NRTIs, NNRTI	Tenofovir Disoproxil Fumarate (TDF)
	Nevirapine (NVP)
Protease Inhibitors, PIs	Efavirenz (EFV)
	Dolutegravir (DTG)
Integrase Strand Transfer Inhibitors, INSTIs	Darunavir (DRV)
	Abacavir (ABC)
Fusion Inhibitors	Tenofovir Alafenamide Fumarate (TAF)
	Emtricitabine (FTC)
Integrase Inhibitors	Raltegravir (RAL)
	Azvudine (FNC)

ART Regimens for Adults/Adolescents	
Recommended Regimens	
2 NRTIs	**Third class of drugs**
TDF+3TC(FTC)	+NNRTIs: EFV, RPV or +PIs: DRV/c, LPV/r or +INSTIs: DTG, RAL
TAF/FTC	
STR*	
TAF/FTC/BIC; TAF/FTC/EVG/c; ABC/3TC/DTG; DOR/3TC/TDF	
1 NRTIs+ 1 INSTIs	
DTG/3TC, or DTG+3TC	
Alternative Regimens	
2 NRTIs	**The Third Medication**
AZT(ABC)+3TC	+NNRTIs: EFV/RPV/DOR/Ainuovirine/NVP or +PIs: LPV/r, DRV/c or +INSTIs: DTG, RAL
TDF+3TC(FTC)	+NNRTIs: NVP
TAF/FTC	
TDF+Azuvudine**	**+NNRTIs: EFV**

Note: *STR. †EFV not recommended for patients with viral loads >5 ×105 copies/mL. ‡RPV only used in patients with viral load < 105 copies/mL and $CD4^+$ T lymphocyte count > 200/μL. §Used in patients negative for HLA-B5701. \\DTG + 3TC and DTG/3TC are used in patients tested negative for HBsAg with viral load < 5 ×105 copies/mL. For patients with baseline $CD4^+$ T lymphocyte counts > 250/μL, regimens containing NVP should be avoided where possible; for patients co-infected with HCV, regimens containing NVP should be avoided. **Conditionally approved Chinese generic drugs used in combination with NRTIs and NNRTIs for adult patients with high viral load (≥105 copies/mL).

Source: The Chinese HIV/AIDS Guideline (2024), Frost & Sullivan analysis

According to the 2024 Chinese HIV/AIDS Diagnosis and Treatment Guidelines, the only antiretroviral therapy regimen incorporating azvudine is TDF + azvudine + EFV. This regimen is listed as an "alternative regimen" rather than a "recommended first-line regimen", and its use is indicated for adult patients with a high baseline viral load. The inclusion of an azvudine-containing regimen in the national guideline reflects the recognized antiviral efficacy and clinical utility of azvudine in specific patient populations. In particular, its recommendation for patients with high viral load underscores its potential role in addressing unmet clinical needs in more challenging treatment settings. The classification as an alternative regimen primarily reflects differentiated clinical positioning and patient selection considerations, rather than a lack of therapeutic effectiveness.

Despite marked improvement in therapeutic options, limitations to therapy still exist, including reliance on daily compliance, long-term toxicity and side-effects of medications, high lifetime cost of treatment and limited options for some patients with multiclass resistance.

The Chinese government has actively strengthened HIV prevention and treatment initiatives, including expanded free ART coverage, improved patient monitoring systems, and increased public awareness campaigns. The introduction and market access of PrEP and PEP have expanded the overall HIV prevention landscape, particularly among high-risk populations. From an industry perspective, these developments do not diminish the demand for effective treatment options; rather, they underscore the importance of antiviral regimens with proven efficacy in high-viral-load or difficult-to-treat patients. Azvudine's guideline inclusion and demonstrated clinical performance position it to address both the therapeutic and public health priorities emphasized by these government initiatives.

Competitive Landscape of HIV Drugs

In recent years, newly approved cART agents with improved efficacy and safety profiles have become the most widely used HIV drugs globally. The following table sets forth the global top ten HIV drugs in terms of sales value in 2025 (among those with publicly disclosed sales figures):

Global Top Ten HIV Drugs by Sales Value

Drug Class (Technology)	Brand Name	Generic Name	Year Approved	Company	Dosing and Administration	2025 Global Sales, Billion USD	Year of Patent Expiration	Availability in China	2025 NRDL Coverage
cART agent (INSTI/NRTI/NRTI)	Biktarvy	BIC/FTC/TAF	2018	Gilead	One tablet per day, oral	14.3	2036	Available	List B
cART agent (INSTI/NRTI)	Dovato	DTG/3TC	2019	GSK	One tablet per day, oral	3.6	2027	Unavailable	——
cART agent (NRTI/NRTI)	Descovy	FTC/TAF	2016	Gilead	One tablet per day, oral	1.9	2031	Available	——
cART agent (INSTI/NNRTI)	Cabenuva	CAB+RPV LA	2021	GSK	Monthly or every 2 months, injection	1.8	2031	Available	——
INSTIs	Tivicay	DTG	2013	GSK	One/two tablets per day, oral	1.7	2027	Available	——
cART agent (INSTI/Enhancer/NRTI/NRTI)	Genvoya	EVG/COBI/FTC/TAF	2015	Gilead	One tablet per day, oral	1.5	2029	Available	List B
cART agent (NRTI/INSTI/NRTI)	Triumeq	ABC/DTG/3TC	2014	GSK	One tablet per day, oral	1.3	2027	Available	——
NNRTIs	Edurant	RPV	2011	Johnson & Johnson	One tablet per day, oral	1.3	Expired	Available	List B
cART agent (NRTI/NNRTI/NRTI)	Odefsey	FTC/RPV/TAF	2016	Gilead	One tablet per day, oral	1.0	2032	Unavailable	——
cART agent (INSTI/NNRTI)	Juluca	DTG/RPV	2017	GSK	One tablet per day, oral	0.9	2027	Available	——

Source: Frost & Sullivan analysis

The majority of HIV drugs in China's market are single-agent antiretroviral drugs instead of composite drugs containing multiple ART agents, which are more accessible in developed markets. Single-agent antiretroviral drugs from a different class, such as NNRTIs or INSTIs, are not considered substitutes or competitors of azvudine, because as an NRTI, a class of antiretroviral drug that is widely used as the backbone drug in first-line cART regimens, azvudine could work in combination with drugs of different mechanisms to form various cART regimens. The following table sets forth a summary of azvudine and other marketed NRTI drugs for treatment of HIV infection in China as of the Latest Practicable Date that could potentially compete, or be used in combination, with azvudine:

Original Brand Name	Generic Name	Original Producing Company	Target	Year Approved	Patent Status	2025 NRDL	Free drug list	Dosing and Administration
Retrovir	Zidovudine (AZT)	GSK	Reverse Transcriptase	1999	Expired	List B	Free	600 mg/day, oral 1 mg per kg infused at a constant rate over 1 hour every 4 hours, IV
Epivir	Lamivudine (3TC)	GSK	Reverse Transcriptase	1999	Expired	List B	Free	300 mg/day, oral
Zerit	Stavudine (d4T)	BMS	Reverse Transcriptase	1999	Expired	——	——	less than 60 kg: 30 mg every 12 hours at least 60 kg: 40 mg every 12 hours, oral
Ziagen	Abacavir (ABC)	GSK	Reverse Transcriptase	2002	Expired	——	Free	600 mg/day, oral
Videx	Didanosine	BMS	Reverse Transcriptase	2003	Expired	——	——	less than 60 kg: 250 mg/day at least 60 kg: 400 mg/day, oral
Viread	Tenofovir Disoproxil Fumarate (TDF)	Gilead	Reverse Transcriptase	2008	Expired	List B	Free	8 mg/kg daily (up to a maximum of 300 mg), oral
Emtriva	Emtricitabine (FTC)	Gilead	Reverse Transcriptase	——*	Expired	List B	Free	200 mg capsule daily or 240 mg solution daily, oral
雙新艾克	Azvudine (FNC)	Genuine Biotech	Reverse Transcriptase +HIV-Vif	2021	Valid	List B	——	3 mg/day, oral

Source: NMPA and Frost & Sullivan analysis

* No original product was approved in China.

The following table sets forth a summary of CL-197 and other drug candidates for treatment of HIV infection in China as of the Latest Practicable Date that could potentially compete with CL-197:

Drug Class	Drug Code	Company	Indication	Clinical stage	First posted date
Integrase strand transfer inhibitor	ACC017	Aidea Pharmaceutical	HIV infection	III	2025-10-10
NRTIs	**CL-197**	**Genuine Biotech**	**HIV infection**	**II**	**2025-10-29**
Fusion Inhibitors	Lipovirtide	Kangbao	HIV infection	II	2023-09-25
	LP-98	Kangbao	HIV infection	I/II	2024-08-19
Immune Checkpoint Inhibitors	Envafolimab (ASC22)	Ascletis Pharma	HIV infection, tumors, hepatitis, etc.	II	2021-11-22
Neutralizing antibody	Teropavimab	Frontier BioPharma	HIV infection	II	2021-06-02
Inhibit HIV replication	HRS5685	Hengrui	HIV infection	I	2022-03-18
CCR5 Antagonist	Thioraviroc	Shanghai Institute of Materia Medica	HIV infection	I	2020-11-23

Note: Drug candidates that have been inactive for 3 to 5 years or terminated are excluded.

Source: Frost & Sullivan analysis

STRs are increasingly preferred in global HIV treatment guidelines due to improved patient adherence, simplified dosing, and reduced pill burden. In China, STR adoption is gradually rising, particularly in urban centers and among patients with stable disease, but MTRs remain widely used in regions where cost, procurement cycles, and formulary availability influence regimen choice. Azvudine, currently available as part of an MTR (TDF + azvudine + EFV), remains clinically relevant for adult patients with high baseline viral load, where rapid viral suppression is critical. Additionally, the growing interest in STR formulations presents a potential pathway for azvudine-based regimens to evolve into STR combinations in the future, enhancing both patient convenience and market competitiveness*. The following table sets forth a summary of marketed anti-HIV STRs in China as of the Latest Practicable Date:

Original Brand Name	Generic Name	Original Producing Company	Target	Year Approved	Patent Status	2025 NRDL	*Price RMB/tablet	Dosing
Complera	FTC+RPV+TDF	J&J, Gilead	Reverse Transcriptase	2015	Valid	——	——	FTC 200mg + RPV 25mg + TDF 245mg
Triumeq	DTG+ABC+3TC	GSK	Reverse Transcriptase	2017	Valid	——	96	DTG 50mg + ABC 600mg + 3TC 300mg
Genvoya	EVG+ c+FTC+TAF	Gilead	Reverse Transcriptase +HIV-1 Integrase+CYP3A	2018	Valid	List B	34	EVG 150mg + c 150mg + FTC 200mg + TAF 10mg
Biktarvy	BIC+FTC+TAF	Gilead	Reverse Transcriptase	2021	Valid	List B	30	BIC 50mg + FTC 200mg + TAF 25mg
Delstrigo	DOR+3TC+TDF	MSD	Reverse Transcriptase	2021	Valid	List B	28	DOR 100mg + 3TC 300mg + TDF 300mg
Dovato	DTG+3TC	GSK	Reverse Transcriptase +HIV-1 Integrase	2021	Valid	List B	25	DTG 50mg + 3TC 300mg
Juluca	DTG+RPV	GSK	Reverse Transcriptase +HIV-1 Integrase	2022	Valid	——	——	DTG 50mg + RPV 25mg
Symfi	EFV+3TC+TDF	Pfizer	Reverse Transcriptase	2022	Valid	——	——	EFV 400mg + 3TC 300mg + TDF 300mg
複邦德	Enovirine+3TC +TDF	Kainos Medicine	Reverse Transcriptase	2023	Valid	List B	24	Enovirine 150mg + 3TC 300mg + TDF 300mg

* Multiple drug components used in the treatment of HIV are interchangeable between single-tablet regimens (STRs) and multi-tablet regimens (MTRs), with the same agent frequently incorporated into both therapeutic approaches. This overlap makes it infeasible, when analyzing sales data, to determine whether the ultimate use of a given product falls within an STR or an MTR.

* The price refers to 2025/2026 listed price.

Source: NMPA, Frost & Sullivan analysis

Regarding patent barriers, since all STRs are still under patent protection, no generic versions are currently available in the Chinese market. However, with the expiration of Complera's key patent in 2025, generic alternatives are expected to enter the market.

In terms of medical insurance coverage, Biktarvy, Genvoya, Delstrigo, Dovato and Fubangde have been included in Category B of NRDL, significantly reducing their prices to approximately 25-40 RMB per tablet.

The following table sets forth a summary of the number of generics available for each of the brand name drugs that have been expired, and the price of the original drugs and the price range of the generic drugs in China as of the Latest Practicable Date:

Generic Name	Number of Generics	Price of Original Drug	Price Range of Generic
Didanosine*	4	/ (Not sold in China)	/ (Not sold in China)
TDF	115	FTC 0.2g+TDF 0.3g: RMB1,905 (30 pills) TDF 0.3g: RMB999.9 (30 pills)	FTC 0.2g+TDF 0.3g: RMB249-652.5 (30 pills) TDF 0.3g: RMB8.55-1,480 (30 pills) Ainuovirine 0.15g+3TC0.3g+TDF0.3g: RMB724.5-1,125 (30 pills) Doravirine 0.1g+3TC0.3g+TDF0.3g: RMB 837-1,390 (30 pills)
ABC	3	ABC 50mg+Dolutegravir Sodium 600mg+ 3TC 300mg: RMB2,880 (30 pills) ABC 0.6g+3TC 0.3g: RMB1,140 (30 pills)	/
AZT	36	AZT 0.3g+3TC 0.15g: RMB1,225 (60 pills)	AZT 0.3g+3TC 0.15g: RMB1,200 (60 pills) AZT 0.3g+NVP 0.2g+3TC 0.15g: RMB726 (60 pills) AZT 0.3g: RMB177 (60 pills) AZT 0.1g: RMB35/injection
3TC	53	ABC 50mg+Dolutegravir Sodium 600mg+ 3TC 300mg: RMB2,880 (30 pills) AZT 0.3g+3TC 0.15g: RMB1,225 (60 pills) ABC 0.6g+3TC 0.3g: RMB1,140 (30 pills) Dolutegravir 50mg+3TC 0.3g: RMB749.4 (30 pills)	AZT 0.3g+3TC 0.15g: RMB1,200 (60 pills) AZT 0.3g+NVP 0.2g+3TC 0.15g: RMB726 (60 pills) Ainuovirine 0.15g+3TC 0.3g+TDF 0.3g: RMB724.5-1,125 (30 pills) Doravirine 0.1g+3TC 0.3g+TDF 0.3g:RMB837-1,390 (30 pills)
d4T	8	d4T 20mg: RMB612 (60 capsules)	/
FTC	25	FTC 0.2g+TDF 0.3g: RMB1,905 (30 pills) FTC 200mg+Tenofovir Acetonide 25mg: RMB2,280 (30 pills) Bictegravir 50mg+FTC 200mg+Tenofovir Acetonide 25mg: RMB933.9 (30 pills) Acyclovir 150mg+Cobicistat 150mg+ FTC 200mg+Tenofovir Acetonide 10mg: RMB1,026 (30 pills)	FTC 0.2g+TDF 0.3g: RMB249-652.5 (30 pills) FTC 0.2g: RMB159.35-207.5 (7 capsules) FTC 200mg+Tenofovir Acetonide 25mg: RMB858-1,980 (30 pills)

**Note:* Didanosine has generic versions registered in China; however, there are currently no products on sale. As a result, no pricing information is available.

Source: Frost & Sullivan analysis

The COVID-19 Drug Market

Overview

The COVID-19 pandemic is an ongoing public health crisis caused by infections and spread of the severe acute respiratory syndrome coronavirus 2, or SARS-CoV-2. Mutated variants of the virus have emerged, some with higher transmissibility. As of February 2, 2025, over 777.4 million confirmed cases and over 7 million deaths have been reported globally. Globally, the number of weekly new cases decreased by 16% during the 28-day period from January 6, 2025 to February 2, 2025 compared to the previous 28-day period (December 9, 2024 to January 5, 2025), with over 147,000 new cases reported. The number of weekly new deaths increased by 28% compared to the previous 28-day period, with over 4,500 new fatalities reported.

Global and China's COVID-19 Market

Globally, the COVID-19 drug market peaked in 2022 at approximately US$45.1 billion, before declining to US$4.4 billion in 2025. This trend largely reflects evolving pandemic dynamics and shifts in government procurement and stockpiling strategies. In China, the market experienced a sharp concentration in 2023, reaching around RMB6.9 billion, and then declined to RMB1.1 billion in 2025. This fluctuation was primarily driven by a short-term surge in demand during a major infection wave, followed by a return to normalization as the situation stabilized.

Treatment Options for COVID-19

Current antiviral treatments of COVID-19 primarily include (i) RdRp inhibitors, such as Azvudine, which target RdRp, a key component in the synthesis of viral ribonucleic acid (RNA), and terminate RNA chain elongation; and (ii) 3CL protease inhibitors, such as Paxlovid by Pfizer, which target a main protease (3CL protease) in the replication of the virus. According to Frost & Sullivan, studies of existing variants show that most of the mutations are located in the spike protein, while RdRp, the target of RdRp inhibitors, remains relatively conserved with a low mutation rate can maintain relatively high activity against new coronavirus variants such as Omicron.

Competitive Landscape of Oral Treatment of COVID-19

As of the Latest Practicable Date, 12 companies globally had brought antiviral drug candidates for the treatment of COVID-19 to marketing stage. The following table sets forth a summary of azvudine and other marketed oral antiviral COVID-19 treatments as of the Latest Practicable Date in countries across the world that could potentially compete with azvudine:

Drug Name	Company	Mechanism of Action	Status	Dosage	Price*
Azvudine	**Henan Genuine**	**RdRP inhibitor**	**NMPA conditional approval**	**5 mg each time, once a day, and the treatment course should not exceed 14 days.**	**RMB$175 per 7-day course**
Paxlovid	Pfizer	3CL protease inhibitor	FDA EUA PMDA; NMPA conditional approval	300 mg nirmatrelvir with 100 mg ritonavir taken twice daily for five days	RMB$1,790 per 5-day course
Molnupiravir	Merck	RdRp inhibitor	FDA EUA PMDA; NMPA conditional approval	800 mg every 12 hours for five days	RMB$1,426 per 5-day course
Leritrelvir	Guangdong Huanan Pharmaceutical Group	3CL protease inhibitor	NMPA conditional approval	0.4g (2 tablets) three times a day for 5 consecutive days	RMB$470 per 5-day course
Ensitrelvir	Shionogi	3CL protease inhibitor	Approved in Japan and Singapore	375 mg on the first day, and 125 mg on days 2 to 5	/
Baricitinib	Eli Lilly	JAK inhibitor	FDA EUA PMDA NMPA	2mg per day	RMB$1,064 per 28-day course
Deuremidevir	Vinnerna Biosciences	RdRp inhibitor	Approved in Uzbekistan; NMPA conditional approval	once every 12 hours for 5 consecutive days. Day 1: 0.6g each time (6 tablets); Days 2 to 5: 0.3g each time (3 tablets).	RMB$475 per 5-day course
Atilotrelvir/Ritonavir	Fujian Cosunter Pharmaceutical Co., Ltd.	3CL protease inhibitor	NMPA conditional approval	150mg Atilotrelvir + 100mg Ritonavir, twice a day for 5 days	RMB$498 per 5-day course
Simnotrelvir/ Ritonavir	Simcere	3CL protease inhibitor	NMPA conditional approval	750mg Simnotrelvir + 100mg Ritonavir, once every 12 hours, oral administration for 5 consecutive days	RMB$479 per 5-day course
Sabizabulin	Veru	Microtubule disruptor	Approved in Australia	/	/
Proxalutamide	Kintor Pharmaceutical	AR Antagonist	EUA in Paraguay	/	/
Olgotrelvir	ACEA Pharmaceutical	3CL protease inhibitor	NMPA conditional approval	/	/

Source: Frost & Sullivan analysis

Notes:

1. For Baricitinib, there is no dosage for COVID-19 in its label.
2. Remdesivir is not administered through oral treatment.

The widespread uptake of COVID-19 vaccines and the observed decrease in viral virulence have altered healthcare utilization patterns, reducing hospitalization pressure and routine infectious disease burden. While these changes may indirectly influence clinical practice and patient prioritization, HIV treatment remains a distinct and essential clinical need. Azvudine's mechanism of action and antiviral profile continue to support its role in achieving durable viral suppression. Moreover, the broader antiviral experience with azvudine in other viral contexts reinforces its value as a robust and adaptable treatment option, even as healthcare systems adjust to a post-COVID environment.

THE ONCOLOGY DRUG MARKET

Overview

As the focus of oncology, cancer is a broad group of diseases characterized by the uncontrolled growth and spread of abnormal cells. It is distinguished by its high mortality rate, dire prognoses, and significant treatment expenses, making it an urgent healthcare challenge that demands constant attention. Particularly, advanced cancer, which refers to cancer that has metastasized from the primary site or relapsed, necessitates immediate medical intervention. As a leading cause of mortality worldwide, the global incidence of cancer has grown to 21.9 million in 2025 from 19.3 million in 2020. Due to aging population, the incidence of cancer is expected to reach 24.1 million in 2030. In China, cancer has been the second largest disease by mortality. In the past five years, the incidence of cancer in China has shown a steady growth, from 4.6 million in 2020 to 5.1 million in 2025 and is expected to reach 5.7 million in 2030.

The growth of the global oncology drug market is supported by aging population, technological advancements, emerging combination therapies, and rising small- and medium-sized pharmaceutical companies. In China, the growth of the oncology drug market is driven by increasing number of cancer patients, significant unmet clinical needs, patients' improving affordability, regulatory reform and favorable government policies, as well as emerging combination therapies and targeted drugs. Both the global and China's oncology drug markets face various challenges, including increasing cancer burden and drug resistance, and complexity and high cost of R&D activities. In the future, combination therapies are expected to emerge as a promising approach to address the drug resistance and complexities of current cancer treatment. In addition, it is anticipated that cancer will be managed as a chronic disease.

Global and China's Oncology Drug Market

From 2019 to 2024, global market of oncology drugs expanded from US$143.5 billion to US$253.3 billion, representing a CAGR of 12.0%, and is expected to reach US$452.5 billion by 2030, with a CAGR of 10.2% from 2024 to 2030.

China's oncology drug market reached US$35.9 billion in 2024 from US$26.4 billion in 2019 at a CAGR of 6.3%, and is expected to reach US$73.4 billion in 2030, representing a CAGR of 12.6% from 2024 to 2030. Meanwhile, due to the introduction of targeted therapy and immunotherapy in China, its oncology drug market structure is gradually changing. Chemotherapy drugs, targeted therapy drugs and immunotherapy drugs accounted for approximately 47.5%, 42.4% and 10.1%, respectively, of China's oncology drug market in 2023. In the coming decade, targeted therapy drugs and immunotherapy drugs are expected to experience much faster increase than chemotherapy drugs and become the largest and second largest sections of China's oncology drug market in terms of market value in 2030.

The NSCLC Drug Market

Overview

Lung cancer has the highest incidence and the highest number of mortalities of all types of cancer globally, accounting for approximately 12.1% of all new cancer cases and 20.0% of the total mortalities of all cancers in the world in 2025. Among all lung cancer patients worldwide, approximately 85% of lung cancers are NSCLC.

The global NSCLC incidence reached 2.3 thousand in 2025 at a CAGR of 2.6% from 2020 to 2025. It is estimated to increase to approximately 2.6 thousand in 2030, representing a CAGR of 2.8% from 2025 to 2030. The NSCLC incidence in China reached 1.0 thousand in 2025 at a CAGR of 2.5% from 2020 to 2025. It is estimated to increase to approximately 1.1 thousand in 2030, representing a CAGR of 2.9% from 2025 to 2030.

Approximately 20% of lung cancer patients are diagnosed with brain metastasis at their initial diagnosis. Among lung cancer patients with epidermal growth factor receptor mutations or anaplastic lymphoma kinase rearrangements, the incidence is higher, with up to 60% of patients developing brain metastasis during the course of their disease. However, the blood-brain barrier

significantly limits the efficacy of existing therapies for patients with brain metastases. Targeted drugs and new chemotherapy drugs are being developed to prolong the survival periods of patients and improve their life quality. As of the Latest Practicable Date, there had been one approved drug for the treatment of lung cancer brain metastasis in China. The primary challenge lies in the limited use of chemotherapy for treating brain metastases, attributed to the blood-brain barrier, a natural filter between the blood and the brain that safeguards the brain from harmful substances.

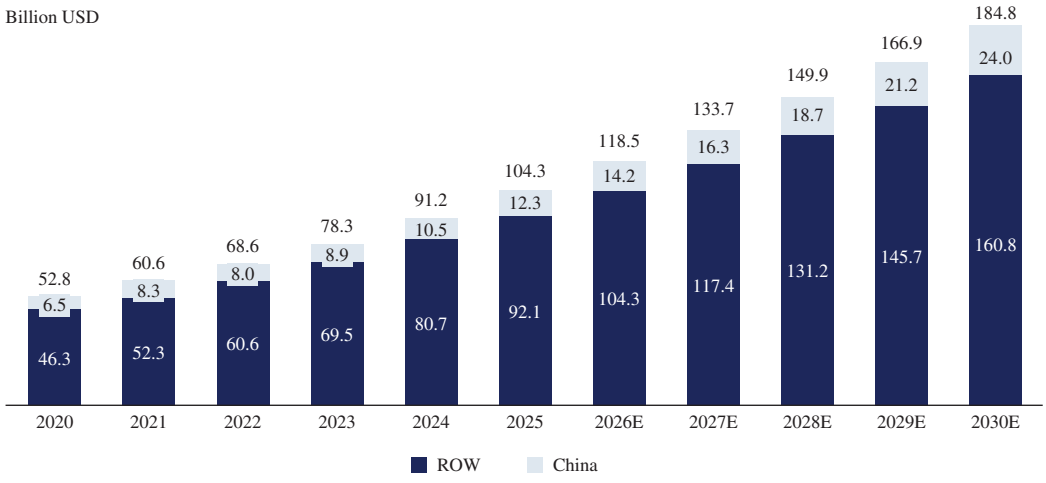
Global and China's NSCLC Drug Market

The global NSCLC drug market size reached US$104.3 billion in 2025 at a CAGR of 14.6% from 2020 to 2025; the market size is expected to reach US$184.8 billion in 2030, with a CAGR of 12.1% from 2025 to 2030.

China's NSCLC drug market reached US$12.3 billion in 2025 at a CAGR of 13.5% from 2020 to 2025, primarily as a result of increases in patient population, access to treatment and innovative treatment options including targeted therapies. It is expected to continue this rapid growth, reaching US$24.0 billion in 2030, representing a CAGR of 14.3% from 2025 to 2030. The following chart shows the historical and estimated market size for NSCLC drugs globally and in China:

China and Global NSCLC Drug Market, 2020-2030E

CAGR	China	ROW	Total
2020-2025	13.5%	14.7%	14.6%
2025-2030E	14.3%	11.8%	12.1%



Source: Frost &Sullivan analysis

Treatment Options for NSCLC

According to Frost & Sullivan, surgery is the first-line treatment option for stage I, stage II, and stage III NSCLC. Radiotherapy and chemotherapy are seen as second-line treatment options for stage I, stage II, and stage III NSCLC. In addition to the aforementioned treatments, according to Frost & Sullivan, combination therapy serves as an additional second-line treat option for Stage III NSCLC.

According to 2021 Chinese Society of Clinical Oncology (CSCO) NSCLC clinical practice guideline, surgical treatment, chemotherapy and radiotherapy play a leading role in the treatment of patients in the early stages. Targeted therapies are recommended for stage IV NSCLC patients.

In the case of NSCLC patients with EGFR mutations, the treatment paradigm is relatively well established compared to other subgroups. Small molecule targeted drugs known as EGFR-tyrosine kinase inhibitors ("**TKIs**"), such as osimertinib, are primarily recommended throughout the treatment process. Nevertheless, there is still room for improvement in the management of EGFR-mutated NSCLC, as drug resistance against EGFR-TKIs inevitably develops over time.

Competitive Landscape

NSCLC remains one of the most difficult cancers to treat effectively. The five-year survival rate for NSCLC is approximately 25% globally, significantly lower than the overall five-year survival rate of 69% for all cancer types. The targeted therapies for NSCLC are usually mutation-specific and could become less effective toward newly emerged mutations.

Currently, EGFR tyrosine kinase inhibitors (EGFR-TKIs), a type of targeted therapy, are the recommended first-line targeted therapy option for patients with advanced EGFR mutation-positive NSCLC. EGFR-TKIs block the activity of the EGFR protein and, in turn, impede cancer cell growth. EGFR-TKIs are categorized into three generations, with the first and second generation targeting typically sensitive and moderately sensitive mutations of EGFR. However, they are not effective against EGFR T790M, a drug resistant mutation that could be effectively suppressed by third-generation EGFR-TKIs.

Competitive Landscape of Marketed EGFR-TKIs for NSCLC in China

	Brand name	Generic name	Company	Drug features/ Targeted Mutations	NMPA Approval	Region*	NRDL Status
1st generation	易瑞沙	Gefitinib*	AstraZeneca	Reversible Del19/L858R	Feb 2005	United States	List B
	特羅凱	Erlotinib*	Roche	Reversible Del19/L858R	Jan 2006	United States	List B
	凱美納	Icotinib*	Betta	Reversible Del19/L858R	Aug 2011	China	List B
	澤瑞尼	Zorifertinib	AstraZeneca	Reversible Del19/L858R	Nov 2024	China	List B
2nd generation	吉泰瑞	Afatinib*	Boehringer Ingelheim	Irreversible Del19/L858R Partial T790M and rare mutations	Feb 2017	United States	List B
	多澤潤	Dacomitinib*	Pfizer	Irreversible Del19/L858R Partial T790M and rare mutations	May 2019	United States	List B
	邁瑞東	Mefatinib	Huadong Medicine	Irreversible HER2	Oct 2025	China	Not included
3rd generation	泰瑞沙	Osimertinib*	AstraZeneca	Irreversible T790M	Mar 2017	United States	List B
	阿美樂	Almonertinib*	Jiangsu Hansoh Pharmaceutical	Irreversible T790M	Mar 2020	China	List B
	艾弗沙	Furmonertinib*	Allist	Irreversible T790M	Mar 2021	China	List B
	賽美納	Befotertinib*	Inventisbio	Irreversible T790M	May 2023	China	List B
	舒沃哲	Sunvozertinib	Dizal	Irreversible Ex20Ins	Aug 2023	China	List B
	瑞必達	Rezivertinib*	Beta Pharma	Irreversible T790M	May 2024	China	List B
	聖瑞沙	Rilertinib*	Nanjing Sanhome Pharmaceutical	Irreversible T790M	Jun 2024	China	List B
	奧意新	Limertinib	Aosaikang Pharmaceutical	Irreversible T790M	Jan 2025	China	List B
	利珂	Lazertinib	Genosco, J&J	Irreversible Del19/L858R/T790M	Jul 2025	Korea	Not included
	安比銳	Andamertinib	Avistone Pharmaceuticals	Irreversible Del19/L858R/T790M/ Ex20Ins	Apr 2026	China	Not included
4th generation	安伯瑞	Brigatinib	Takeda	Reversible C797S/T790M/Del19	Mar 2022	United States	List B
	赫新諾	Sevabertinib	Bayer	Reversible C797S/Ex20Ins	Apr 2026	United States	Not included

Notes:

1. *Region stands for the country / region where the product first gain approval.

2. Gefitinib, Erlotinib, Icotinib, Afatinib, Dacomitinib, Osimertinib, Almonertinib, Furmonertinib, Befotertinib, Rezivertinib and Rilertinib are included as the first-treatment in CSCO for advanced NSCLC EGFR-mutation.

Source: NMPA, FDA, Frost & Sullivan analysis

Competitive Landscape of Main EGFR-TKI Pipelines for NSCLC in China (Phase I/II and later stage)

	Drug Name/Code	Company	Development Stage	Indications	First Posted Date
2nd generation	Pyrotinib	Hengrui Pharmaceuticals	III	NSCLC	2020-06-25
	Sutetinib	Teligene Bio	III	NSCLC	2025-07-16
	Pirotinib	SihuanPharm	II	NSCLC	2018-07-02
	AMX3009	Arromax Pharmatech	I/II	NSCLC	2024-04-10
3rd generation	Asandeutertinib	Runnuo Biotech	NDA	Advanced or metastatic NSCLC	2026-02-06
	Adonertinib	Jiangsu Chia Tai Fenghai Pharmaceutical	NDA	Locally advanced or metastatic NSCLC	2026-02-04
	YK-029A	Yuekang bio	III	Advanced NSCLC	2023-03-14
	Olafertinib	Suzhou NeuPharma	III	Advanced NSCLC	2020-10-16
	JRF103	Jinrui Foundation	II	NSCLC	2024-05-24
	BEBT109	BeBetter Med	II	NSCLC	2021-12-31
	Keynatinib	Jiangsu Maidu Pharma	II	NSCLC	2020-05-12
	Dosimertinib	**Genuine Biotech**	**I/II**	**NSCLC**	**2020-10-22**
	JFAN-1001	Research Pharmaceutical	I/II	Advanced or metastatic NSCLC	2020-12-25
4th generation	Zipalertinib	Otsuka Pharmaceutical, Cullinan Therapeutics	III	NSCLC	2023-08-03
	WSD0922	Weishang Biopharmaceutical	II	NSCLC	2025-03-11
	ANS02	Avistone Pharmaceuticals	I/II	NSCLC	2026-04-20
	DZD6008	Dizal	I/II	Advanced or metastatic NSCLC	2025-07-07
	PFL-241	Pierre Fabres, Antares Therapeutics	I/II	Advanced or metastatic NSCLC	2024-08-22
	PH-009	Suzhou Puhe Biopharma	I/II	Advanced or metastatic NSCLC	2024-08-16
	H002	RedCloud Bio	I/II	Advanced or metastatic NSCLC	2022-08-29
	DAJH-1050766	Diao Jiuhong Pharmaceutical	I/II	Advanced NSCLC	2022-05-07
	HS-10375	Hansoh Pharmaceutical	I/II	Advanced or metastatic NSCLC	2022-01-10

Source: CDE, Frost & Sullivan Analysis

Main Challenges of NSCLC Treatment

According to Frost & Sullivan, NSCLC accounts for approximately 85% of all lung cancer cases and is associated with a high mortality rate. In recent years, targeted therapy and immunotherapy have significantly improved the prognosis of advanced NSCLC, with a five-year overall survival (OS) rate reaching 20%-30%. Following their success in late-stage disease, these treatments have now been extended to the perioperative setting for early-stage and locally advanced NSCLC. However, resistance to targeted therapy remains a major challenge. The emergence of resistance mutations, such as EGFR T790M and MET amplification, limits the long-term efficacy of tyrosine kinase inhibitors (TKIs). Additionally, while pembrolizumab monotherapy achieves a five-year OS rate of 31.9% in NSCLC patients with high PD-L1 expression, the efficacy of immunotherapy is significantly reduced in those with low PD-L1 expression.

Distant metastases are also one of the key prognostic factors for NSCLC patients. Studies have shown that patients with metastases experience significantly shorter survival 6 months for brain metastases brain metastases present one of the most challenging treatment obstacles, not only reducing survival but also significantly impairing neurological function and quality of life.

The Liver Cancer Drug Market

Overview

Liver Cancer is the growth and spread of unhealthy cells in the liver. Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer, accounting for approximately 90.0% of all primary liver cancer incidence globally.

The global liver cancer incidence reached approximately 0.92 million in 2025. It is expected to increase to 1.05 million in 2030, representing a CAGR of 2.4% from 2025 to 2030. The liver cancer incidence in China reached approximately 0.39 million in 2025. It is expected to increase to 0.44 million in 2030, representing a CAGR of 2.3% from 2025 to 2030.

The global liver cancer drug market reached US$6.2 billion in 2025 at a CAGR of 19.0% from 2020 to 2025. It is expected to increase to US$12.6 billion in 2030, representing a CAGR of 15.5% from 2025 to 2030. China's liver cancer drug market reached US$2.7 billion in 2025 at a CAGR of 20.9% from 2020 to 2025. It is expected to increase to US$5.1 billion in 2030, representing a CAGR of 13.7% from 2025 to 2030.

Treatment Options for Liver Cancer

According to Frost & Sullivan, liver resection and liver transplantation are viable treatment options for patients from stage Ia to stage IIb. Transcatheter arterial chemoembolization (TACE) is available for patients from stage Ib to stage IIIb, while radiation therapy and systematic anti-tumor therapy present as treatment options for patients from stage IIIa to stage IIIb.

Competitive Landscape

As of the Latest Practicable Date, there were 21 drugs approved by the NMPA for the indication of liver cancer, and 57 drug candidates in Phase II or later clinical stage in China. The table below sets for the number, advantages and limitations of drugs and drug candidates by category:

Category	Number of Approved Drugs	Number of Drugs in Clinical Phase II and Above	Advantage	Limitation
Chemicals	10	21	• Most are oral formulations, facilitating long-term home-based treatment. • Mature production processes, some drugs are covered by medical insurance, reducing financial burden. • Current research at the forefront includes small nucleic acid drugs such as ASOs. They can directly target the mRNA of pathogenic genes, precisely regulating protein and potentially targeting undruggable targets that are difficult for traditional drugs to reach.	• Significant Toxic Side Effects: e.g., hand-foot skin reaction, hypertension, liver function impairment, myelosuppression. • Long-term use often leads to acquired resistance. • Poor selectivity for tumor cells, often affecting normal tissues. • Limited efficacy of conventional chemotherapy drugs.
Antibodies (Incl. ADCs)	11	32	• Target specific antigens, acting precisely on the tumor microenvironment. • Long-lasting durable responses, some patients could achieve long-term remission or clinical cure. • Effective in combination therapy. • Immune-related adverse events are monitorable and manageable, some are reversible.	• Most are imported or innovative biologics with high treatment costs. • Only a subset of patients respond, requiring biomarker screening. • Inconvenient for mobility, requires regular hospital infusions.
Other Biologics	0	4	e.g., Cell therapies or oncolytic virus • Highly personalized treatment and potential for cure. • Suitable for refractory liver cancer.	• Technology still immature: most are in clinical trials, long-term safety and efficacy need verification. • Requires strict patient selection and currently has narrow indications.
Total	21	57		

Note:

1. Exclude all candidate drugs from inactive pipelines, biosimilar drugs, drugs intended for non-therapeutic purposes and IIT pipelines (e.g.. Chinese medicines, vaccines, diagnostic products, etc.)

Source: CDE, NMPA, Frost & Sullivan Analysis

Main Challenges of Liver Cancer Treatment

For early and intermediate-stage liver cancer, surgical resection and local ablation (such as RFA and MWA) are primary treatment options, but recurrence rates remain high. Studies show that 5-year recurrence rates after liver cancer surgery reach 50%-70%, and even in early-stage cases, recurrence rates within 1 year are 20%. Microvascular invasion (MVI) is a major contributor to recurrence, with 40%-60% of resected tumor specimens showing MVI, significantly increasing postoperative recurrence risk. Although TACE is the standard treatment for intermediate-stage HCC, many patients are TACE-refractory, meaning their tumors continue to progress despite treatment. Additionally, many liver cancer patients have cirrhosis, and some of them are ineligible for surgery or local ablation due to poor liver function.

In recent years, targeted therapies (such as sorafenib and lenvatinib) and immunotherapies (such as PD-1/PD-L1 inhibitors) have significantly improved 5-year survival in advanced liver cancer, but the number still only 11%-15%, and drug resistance remains a major challenge. Some patients develop resistance to targeted drugs within a short period, leading to disease progression, while immunotherapy exhibits primary non-response or acquired resistance in a subset of patients. Furthermore, liver cancer is highly heterogeneous, making it difficult for a single drug or fixed regimen to be effective for all patients. Therefore, identifying more remains a key research focus.

The Colorectal Cancer Drug Market

Overview

CRC, also known as bowel cancer, colon cancer, or rectal cancer, is any cancer that affects the colon and the rectum. Most CRCs develop first as polyps, which are abnormal growths inside the colon or rectum that may later become cancerous if they are not removed. The incidence of CRC ranked the third and the second among all malignant tumors worldwide and in China, respectively, in 2023.

The global new cases of colorectal cancer reached approximately 2,064.4 thousand in 2025. It is expected to increase to 2,361.2 thousand in 2030, representing a CAGR of 2.7% from 2025 to 2030. The new cases of colorectal cancer in China reached approximately 553.5 thousand in 2025. It is expected to increase to approximately 634.8 thousand in 2030, representing a CAGR of 2.8% from 2025 to 2030.

The global colorectal cancer drug market reached US$27.8 billion in 2025 at a CAGR of 9.8% from 2020 to 2025. It is expected to increase to US$42.1 billion in 2030, representing a CAGR of 8.7% from 2025 to 2030. China's colorectal cancer drug market reached US$3.8 billion in 2025 at a CAGR of 11.6% from 2020 to 2025. It is expected to increase to US$6.9 billion in 2030, representing a CAGR of 12.5% from 2025 to 2030.

Treatment Options for Colorectal Cancer

According to Frost & Sullivan, surgery presents as a treatment option for colorectal cancers without metastases and some colorectal cancers with resectable metastases. Chemotherapy is also used in phase II, III, and IV colorectal cancers and is often used in combination with other treatment options, such as surgery and radiotherapy, in later stages of cancer. For phase IV colorectal cancer, which is known for the presence of metastases, immunotherapy also presents as a treatment option.

Competitive Landscape

As of the Latest Practicable Date, there were 21 drugs approved by the NMPA for colorectal cancer, and 86 drug candidates in Phase II or later clinical stage in China. The table below sets for the number, advantages and limitations of drugs and drug candidates by category:

Category	Number of Approved Drugs	Number of Drugs in Clinical Phase II and Above	Advantage	Limitation
Chemicals	13	31	• They are indispensable in standard regimens like "chemo + targeted" or "chemo + immunotherapy" (e.g., FOLFOX, FOLFIRI). • Oral chemotherapies like capecitabine facilitate long-term maintenance therapy, improving quality of life. • For patients with specific mutation (e.g., BRAF V600E), chemotherapy is a key targeted option.	• The neurotoxicity of oxaliplatin and the diarrhea/myelosuppression of irinotecan are dose-limiting toxicities that significantly impact treatment continuity. • Anti-EGFR antibodies benefit only patients with RAS/BRAF wild-type left-sided colon cancer, limiting the eligible population.
Antibodies (Incl. ADCs)	8	52	• For dMMR/MSI-H patients, immune checkpoint inhibitors have become the preferred first-line treatment, significantly improving outcomes and reducing the need for chemotherapy. • Bevacizumab plus chemotherapy is applicable to the entire RAS population and is the most widely used targeted regimen. • Envafolimab offers great convenience and represents a significant advancement in administration.	• Immunotherapy is highly effective only in specific subgroups like dMMR/MSI-H, whereas its use in liver cancer is relatively broader. • The efficacy of cetuximab is limited by both RAS/BRAF status and primary tumor location (clear benefit only in left-sided colon cancer).
Other Biologics	0	3	• Cell therapies are actively targeting CRC-specific antigens like GUCY2C and EGFRvIII. • Microbiome therapies aim to enhance immunotherapy by modulating gut microbiota, directly related to CRC's organ microenvironment. • Aim to Overcome High Heterogeneity and Drug Resistance.	• The clinical development of oncolytic viruses in CRC lags behind other cancers. • The immunosuppressive tumor microenvironment and antigen heterogeneity in CRC hinder cell therapy efficacy.
Total	21	86		

Note:

1. Exclude all candidate drugs from inactive pipelines, biosimilar drugs, drugs intended for non-therapeutic purposes and IIT pipelines (e.g.. Chinese medicines, vaccines, diagnostic products, etc.)

Source: CDE, NMPA, Frost & Sullivan Analysis

Main Challenges of Colorectal Cancer Treatment

The high heterogeneity of colorectal cancer poses challenges for personalized treatment, including genetic mutations (e.g., KRAS and BRAF mutations) and epigenetic alterations. Additionally, drug resistance limits the long-term efficacy of existing therapies. For example, patients with KRAS mutations do not respond to anti-EGFR therapy, while those with BRAF V600E mutations generally have a poor prognosis and limited response to standard chemotherapy. Even if initial treatment is effective, tumors can develop resistance through various mechanisms, such as upregulating drug resistance genes and altering the tumor microenvironment, leading to disease progression and recurrence. Studies indicate that because of this characteristic of colorectal cancer tumors, the average 5-year survival rate of colorectal cancer in China is approximately 56.9% in China.

Future Trends of Colorectal Cancer Treatment

With advancements in gene sequencing and biomarker research, precision medicine is driving personalized colorectal cancer treatment. Based on tumor genetic profiles (e.g., KRAS, NRAS, BRAF mutations, and MSI/MMR status), physicians can select suitable targeted therapies or immunotherapies. For instance, patients with BRAF V600E mutations may benefit from combination BRAF inhibitor therapy, while MSI-H/dMMR patients often respond well to immune checkpoint inhibitors like pembrolizumab. However, most microsatellite-stable (MSS) patients show limited response to immunotherapy, prompting research into new strategies such as CAR-T cell therapy, bispecific antibodies, tumor vaccines, and combination immunotherapies.

The Blood Cancer Drug Market

Overview

Blood cancers include lymphoma, multiple myeloma and leukemia. Leukemia can be further categorized into acute lymphocytic leukemia (ALL), acute myeloid leukemia (AML), chronic lymphocytic leukemia (CLL) and chronic myeloid leukemia (CML). New cases of blood cancer (including lymphoma, multiple myeloma, and leukemia) in China reached 0.21 million in 2025. It is estimated to reach 0.23 million in 2030, with a CAGR of 2.0% from 2025 to 2030.

China's blood cancer drug market has reached US$9.6 billion in 2025, and is expected to reach US$23.3 billion in 2030, representing a CAGR of 19.4%. In particular, China's acute leukemia market reached RMB6.4 billion in 2025 with a CAGR of 13.1% from 2020 to 2025. It is estimated to achieve RMB15.8 billion in 2030, representing a CAGR of 19.9% from 2025 to 2030. China's lymphoma market reached RMB23.0 billion in 2024 with a CAGR of 17.3% from 2019 to 2024. It is projected to achieve RMB59.7 billion in 2030, representing a CAGR of 17.2% from 2024 to 2030. China's multiple myeloma market reached RMB8.0 billion in 2025 with a CAGR of 8.4% from 2020 to 2025. It is estimated to achieve RMB25.9 billion in 2030, representing a CAGR of 26.4% from 2025 to 2030.

Treatment Options for Blood Cancer

According to Frost & Sullivan, chemotherapy is basic treatment for most types of blood cancers, including diffuse large B-cell lymphoma and Acute Myeloid Leukemia, and multiple myeloma. Chemotherapy is a cancer treatment where medicine is used to kill cancer cells. Chemotherapy can be divided into six main types, including alkylating agents, antimetabolites, platinum-based agents, anti-tumor antibiotics, phytogenic agents and corticosteroids. Nucleoside analogues constitute an important class of antimetabolites used in the treatment of various blood cancers. Nucleoside analogues mimic physiological nucleosides in terms of uptake and metabolism and are incorporated into newly synthesized DNA resulting in synthesis inhibition and chain termination. Some of these drugs also inhibit key enzymes involved in the generation of the purine and pyrimidine nucleotides and RNA synthesis, leading to cell death. In addition to chemotherapy, surgery, induced therapy and hematopoietic stem cell transplantation are also available treatment options in some types of blood cancers such as multiple myeloma.

Competitive Landscape

Currently, chemotherapy drugs are the standard treatment for blood cancer patients in China. Nucleoside analogues, which serve as effective chemotherapeutic drugs, suppress the growth and proliferation of cancer cells by penetrating the synthesized nucleic acid chain and causing chain termination. As of the Latest Practicable Date, there had been four NMPA-approved nucleoside analogue ingredients recommended by Chinese Society of Clinical Oncology (CSCO) for treatment of each of lymphoma and acute leukemia. However, as of the Latest Practicable Date, CSCO had not specifically recommended any nucleoside analogue ingredient for treatment of multiple myeloma.

The table below sets forth the approved hematology drugs in China:

Category	Number of Approved Drugs	Number of Drugs in Clinical Phase II and Above	Advantage	Limitation
Chemicals	57	63	• They target well-defined drivers (e.g., BCR-ABL, IDH1/2, BET) with remarkable efficacy. • Oral BTK inhibitors (Ibrutinib, Acalabrutinib), BCL-2 inhibitors (Venetoclax), etc., allow long-term oral administration, transforming diseases like CLL and certain lymphomas into manageable chronic conditions.	• Long-term use of targeted drugs leads to resistance mutations and disease relapse. • Some kinase inhibitors may cause atrial fibrillation, bleeding risks due to off-target effects. Long-term monitoring for liver/kidney toxicity and cytopenias is required. • Severe toxicity of traditional chemotherapy persists.
Antibodies (Incl. ADCs)	25	37	• Bispecific antibodies simultaneously bind tumor antigen and T cells, constructing an artificial immune synapse in vivo to activate endogenous T cells for tumor killing. • ADCs could deliver potent cytotoxic drugs precisely into tumor cells, enabling targeted chemotherapy with a wider therapeutic window. • Some allow for subcutaneous administration.	• Bispecific antibodies frequently cause cytokine release syndrome and neurotoxicity. And ADCs can cause on-target toxicities, plus payload-related myelosuppression, neuropathy, or hepatotoxicity. • Extremely high treatment cost. • Still face resistance challenges.
Other Biologics	8	15	• One-time treatment with potential for cure. • Offers a novel, effective option for patients who have exhausted all available therapies. • Engineered T cells can expand in vivo and establish long-term immunological memory, providing sustained surveillance and killing.	• Prices in China typically exceed RMB1 million, with additional costs for manufacturing, hospitalization, and toxicity management. • Immune effector cell-associated neurotoxicity syndrome is a unique and severe neurological complication. • Personalized manufacturing leads to long production cycles and limited availability to top-tier medical centers only.
Total	86	115		

Note:

1. Exclude all candidate drugs from inactive pipelines, biosimilar drugs, drugs intended for non-therapeutic purposes and IIT pipelines (e.g.Chinese medicines, vaccines, diagnostic products, etc.)

Source: CDE, NMPA, Frost & Sullivan Analysis

Main Challenges of Blood Cancer Treatment

Blood cancers can develop resistance to chemotherapy or targeted therapy, rendering cancer cells insensitive to existing drugs and leading to disease relapse. For instance, in acute myeloid leukemia (AML), patients have a 5-year overall survival (OS) rate of less than 30%, with relapse rates as high as 50%-70%. Even after allogeneic hematopoietic stem cell transplantation (allo-HSCT), 20%-50% of patients may still experience relapse. Additionally, in chronic myeloid leukemia (CML), 20%-30% of patients treated with first-generation tyrosine kinase inhibitors (TKIs) may experience treatment failure and less than 10% of patients may face disease progression within. Refractory and relapsed blood cancers remain major challenges, necessitating novel drug combinations and therapeutic strategies.

Future Trends of Blood Cancer Treatment

The treatment of blood cancers is becoming increasingly refined through genomics, epigenetics, and multi-omics analyses, allowing clinicians to develop highly personalized therapeutic strategies. Beyond conventional risk stratification, future classifications will be more detailed. For example, in acute myeloid leukemia (AML), although TP53 mutations and complex karyotypes are generally considered high-risk, their progression rates and treatment responses vary significantly. Patients with TP53-mutated and complex karyotype subtypes may require distinct therapeutic guidelines separate from other high-risk AML cases. Additionally, factors such as mutational burden, clonal evolution dynamics, and the tumor microenvironment will be integrated into risk assessment models to provide more precise prognostic predictions and tailored interventions. Artificial intelligence and big data analytics will further enhance classification accuracy and optimize treatment decision-making, ultimately improving outcomes in personalized medicine.

TOPO1 Inhibitors

As of the Latest Practicable date, there were only two approved camptothecin-based TOPOI inhibitors in China, being (i) Sanofi's irinotecan was approved in 2000 in China to treat colorectal cancer, and (ii) GSK's Topotecan was approved in 2000 in China to treat ovarian epithelial cancer and small cell lung cancer. Currently, TOPOI inhibitors are often associated with considerable toxicity, side effects and risks for drug resistance, leaving substantial room for improvement. In recent years, camptothecin-based TOPOI inhibitors have emerged as one of the most promising classes of effective payloads for antibody-drug conjugates, as it has promising potentials in addressing many of the key challenges associated with camptothecin small molecules.

Over the past few decades, the most widely used TOPO1 inhibitor has been irinotecan, a camptothecin (a naturally occurring alkaloid found in many plants) derivative, which has become the standard chemotherapeutic agent and the backbone of various anti-tumor combination therapies. Irinotecan's total sales in a representative panel of hospitals in China was approximately RMB338 million in 2023.

Camptothecin and its derivatives have been used as standard chemotherapeutic agents for more than 60 years. However, the improvement of camptothecin-based drugs has mainly focused on modifying the side chains of their parent nucleus without changing the five-ring planar structure of the core. As such, the existing drugs mostly share the same type of molecule. Camptothecin-based drugs face the problems of primary and post-treatment drug resistance, which is a shared challenge faced by the industry.

The success of Daiichi Sankyo's HER2 targeting antibody drug conjugate, trastuzumab deruxtecan (DS-8201), has led to the trend of using DXD/SN-38, the active drug of irinotecan analogues as payloads. AstraZeneca has offered to pay Daiichi Sankyo up to US$6.90 billion in total consideration, including US$1.35 billion upfront payment and up to an additional US$5.55 billion (contingent upon achievement of future regulatory and sales milestones as well as other contingencies).

THE ACUTE ISCHEMIC STROKE DRUG MARKET

Acute ischemic stroke (AIS) is characterized by a sudden loss of blood circulation to an area in the brain, the corresponding lack of blood and oxygen supply resulting in nerve damage and loss of neurologic function. AIS occurs when blood flow through a brain artery is blocked by a clot, *i.e.,* a mass of thickened blood.

Patients with AIS need specific treatments to improve the blood flow in the affected area of the brain. It is crucial to provide proper treatment to AIS patients within 24 hours from symptom onset to avoid brain damage. The best treatment time for AIS is four to six hours since symptom onset. In addition to stroke drugs, invasive surgery may be operated on patients with severe symptoms but comes with a high risk of recurring stroke and disability post surgery.

China's AIS drug market increased from RMB12.2 billion in 2020 to RMB13.7 billion in 2025 at a CAGR of 2.4% from 2020 to 2025. It is expected to increase to RMB32.0 billion in 2030 at a CAGR of 18.5% from 2025 to 2030.

REPORT COMMISSIONED BY FROST & SULLIVAN

In connection with the [**REDACTED**], we commissioned Frost & Sullivan to conduct a detailed analysis and prepare an industry report on the global and China biotech and pharmaceutical markets. Frost & Sullivan is an independent global market research and consulting company which was founded in 1961 and is based in the United States. Services provided by Frost & Sullivan include market assessments, competitive benchmarking and strategic and market planning for a variety of industries. The contract sum to Frost & Sullivan is RMB1,300,000 for the preparation of the industry report. The payment of such amount was not contingent upon our successful [**REDACTED**] or on the results of the report. Except for report, we did not commission any other industry report in connection with the [**REDACTED**]. Frost & Sullivan prepared its report based on its in-house database, independent third-party reports and publicly available data from reputable industry organizations. Where necessary, Frost & Sullivan contacts companies operating in the industry to gather and synthesize information in relation to the market, prices and other relevant information. Frost & Sullivan believes that the basic assumptions used in preparing the report, including those used to make future projections, are factual, correct and not misleading. Frost & Sullivan has independently analyzed the information, but the accuracy of the conclusions of its review largely relies on the accuracy of the information collected. Frost & Sullivan research may be affected by the accuracy of these assumptions and the choice of these primary and secondary sources.