China Metabolic Disease Market

Independent Market Research

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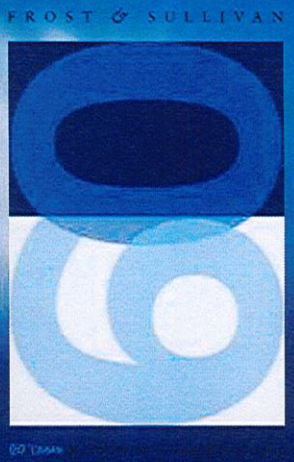
Frost & Sullivan
August. 2025

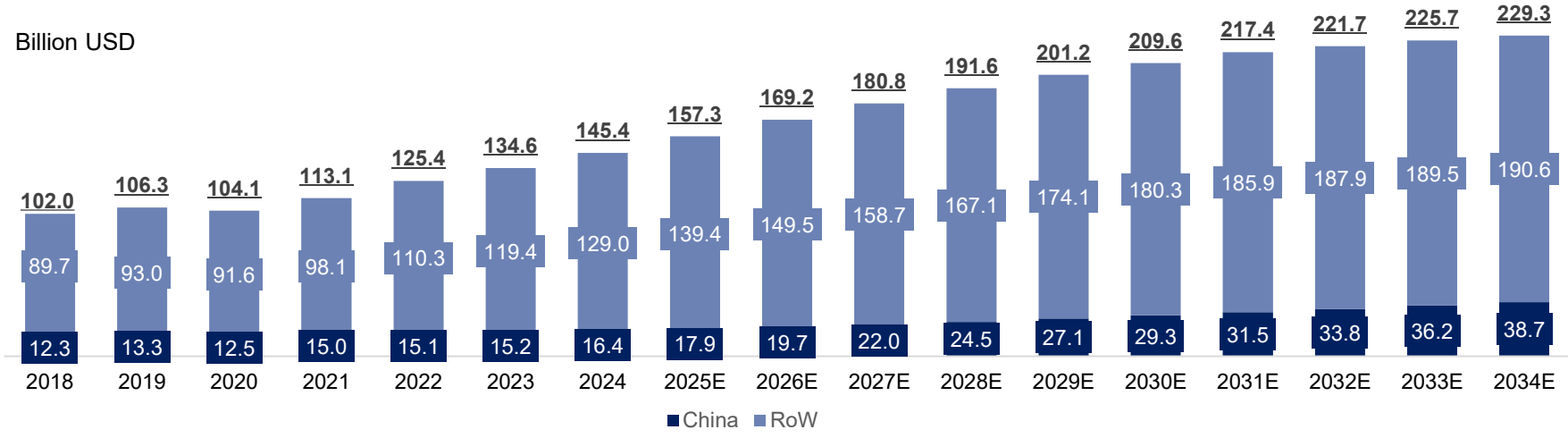


Global Metabolic Diseases Drug Market, 2018-2034E

- The global metabolic diseases drug market has experienced steady growth. From 2018 to 2024, the global metabolic diseases drug market has increased from USD102.0 billion to USD145.4 billion, representing a CAGR of 6.1%. Furthermore, the rapid increase in global metabolic diseases drug market will continue in the near future. The global metabolic diseases drug market is forecasted to reach USD191.6 billion by 2028, representing a CAGR of 7.1% from 2024 to 2028.

Global Metabolic Diseases Drug Market , 2018-2034E

Period	CAGR		
	China	RoW	Global
2018-2024	4.6%	6.2%	6.1%
2024-2028E	10.6%	6.7%	7.1%
2028E-2034E	7.9%	2.2%	3.0%



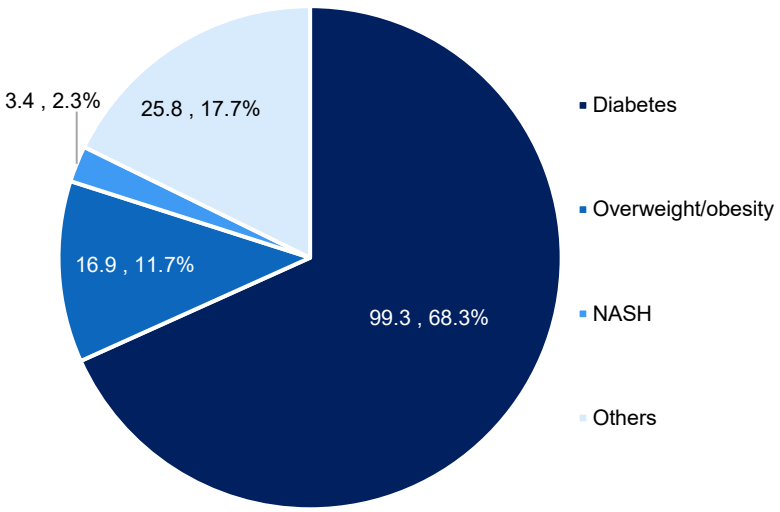
Source: Frost & Sullivan Analysis

Breakdown of Metabolic Diseases Drug Market, 2024

- Diabetes, overweight and obesity and MASH/NASH aggregately accounted for 65.0% and 82.3% market share of the metabolic disease drug market in China and globally in 2024, respectively.

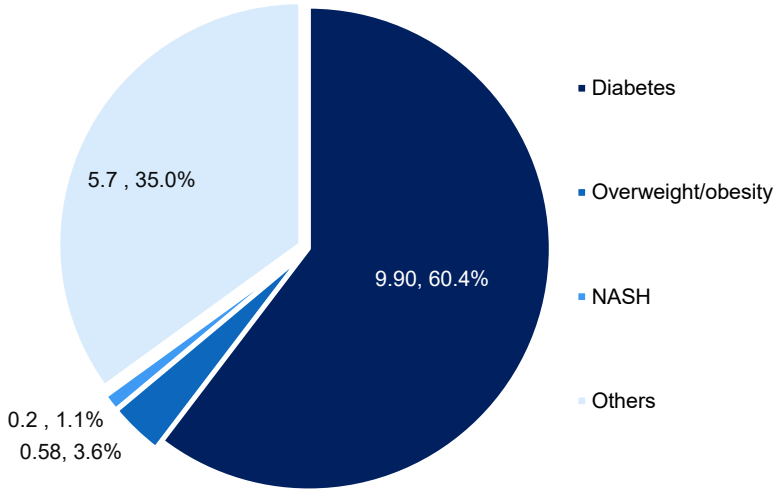
Breakdown of Metabolic Diseases Drug Market, 2024

Billion USD



Global

Billion USD



China

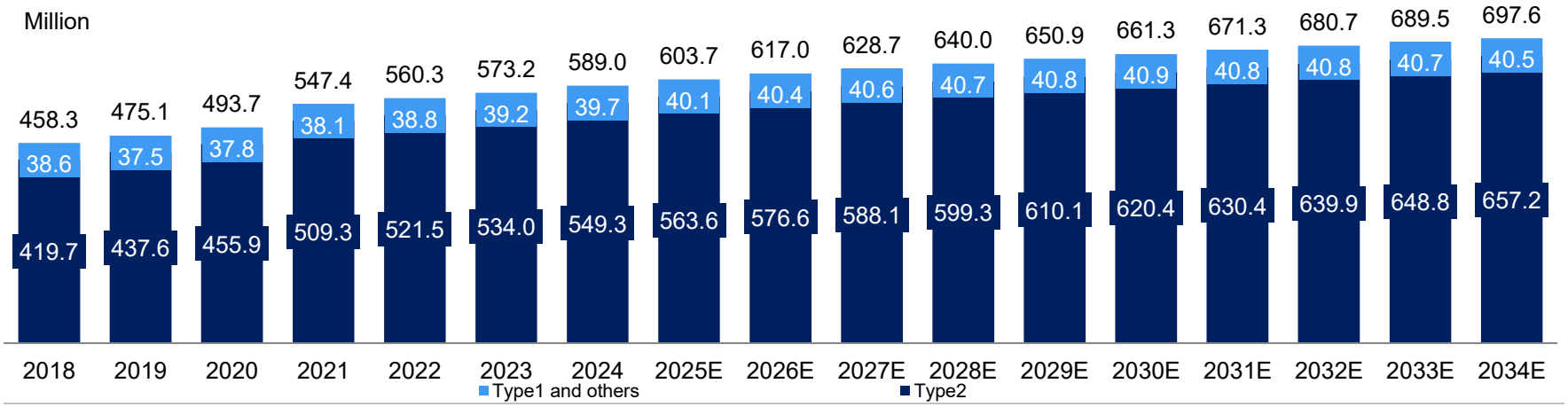
Source: Frost & Sullivan Analysis

Global Prevalence of Diabetes, 2018-2034E

- The number of diabetic patients in the world has been increasing for many years, and most of them are type 2 diabetes patients.
- The number of diabetes patients in the world has increased from 458.3 million in 2018 to 589.0 million in 2024, with a CAGR of 4.6%. As a result of the combined effects of socio-economic, demographic, environmental and genetic factors, it is estimated that the number of diabetes patients in the world will reach about 640.0 million in 2028 and 697.6 million in 2034.

Global Prevalence of Diabetes, 2018-2034E

Period	CAGR		
	Type 2	Type 1 and others	Total
2018-2024	4.6%	0.5%	4.3%
2024-2028E	2.2%	0.6%	2.1%
2028E-2034E	1.5%	-0.1%	1.4%



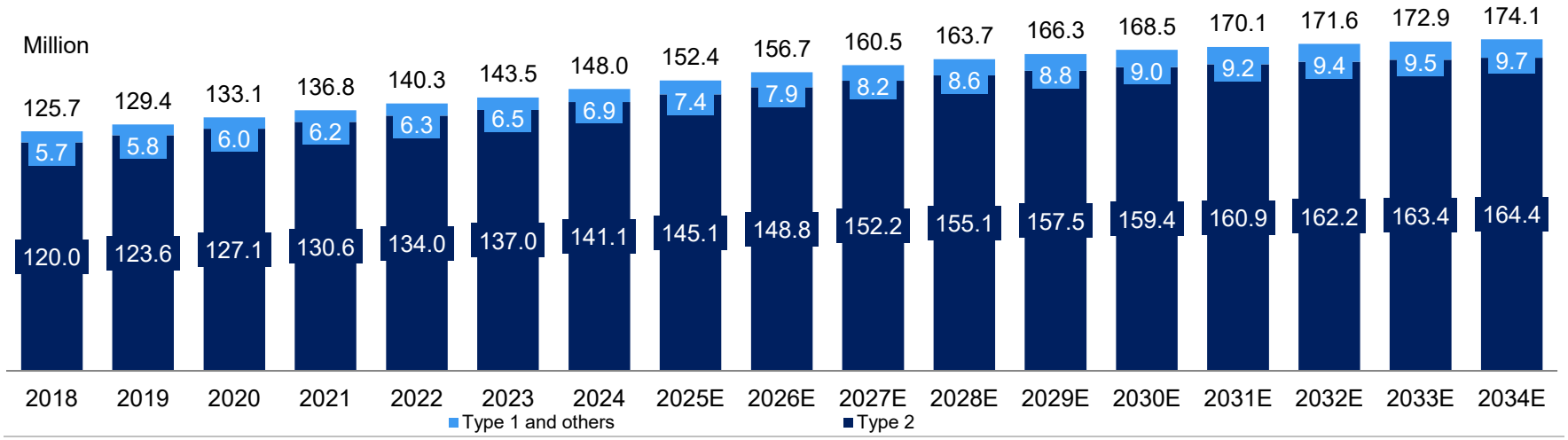
Source: WHO, IDF, ADA, Frost & Sullivan analysis

Prevalence of Diabetes in China, 2018-2034E

- The number of diabetes patients in China has been increasing for many years, and most of them are type 2 diabetes.
- The number of diabetes patients in China has increased from 125.7 million in 2018 to 148.0 million in 2024, with a CAGR of 2.8%. As a result of the combined effects of socio-economic, demographic, environmental and genetic factors, it is estimated that the number of diabetic patients in China will reach about 163.7 million in 2028 and 174.1 million in 2034.
- Despite this large and growing patient population, only 1.9% of diabetes patients in China were treated with GLP-1-based therapies in 2024. This low penetration rate highlights a significant market opportunity for GLP-1 based therapies in China.

Prevalence of Diabetes in China, 2018-2034E

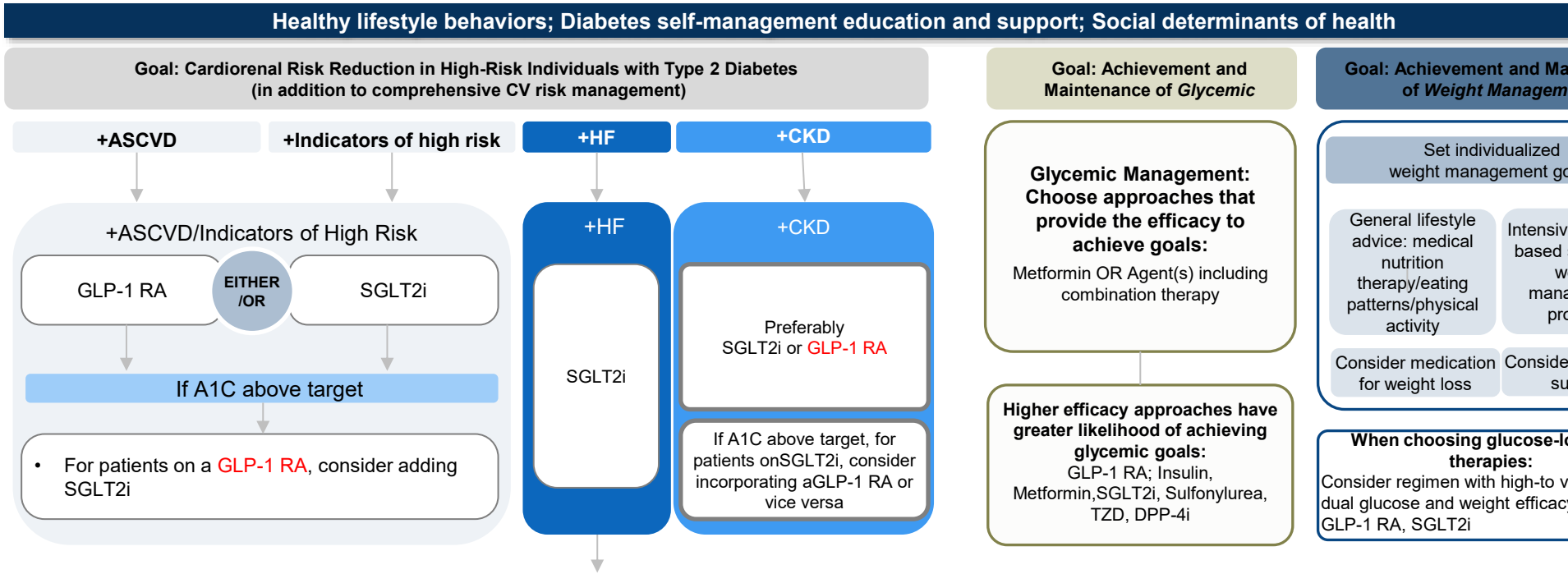
Period	CAGR		
	Type 2	Type 1 and others	Total
2018-2024	2.7%	3.2%	2.8%
2024-2028E	2.4%	5.6%	2.5%
2028E-2034E	1.0%	2.1%	1.0%



Source: WHO, IDF, ADA, Frost & Sullivan analysis

Treatment Paradigm for Type 2 Diabetes in U.S.

- Currently, according to the diabetes guidelines of China, the United States and the European Union, in patients with T2DM who have ASCVD, high risk of ASCVD or chronic kidney disease, GLP-1 RA is recommended to be combined firstly with evidence of benefit from cardiovascular disease and chronic kidney disease, whatever the level of HbA1c. When choosing glucose-lowering therapies in people with diabetes and overweight or obesity, humanized and long-acting GLP-1 RA should be the preferred pharmacotherapy with high-to very-high dual glucose and weight efficacy, especially considering their added weight-independent benefits (e.g.,glycemic and cardiometabolic).

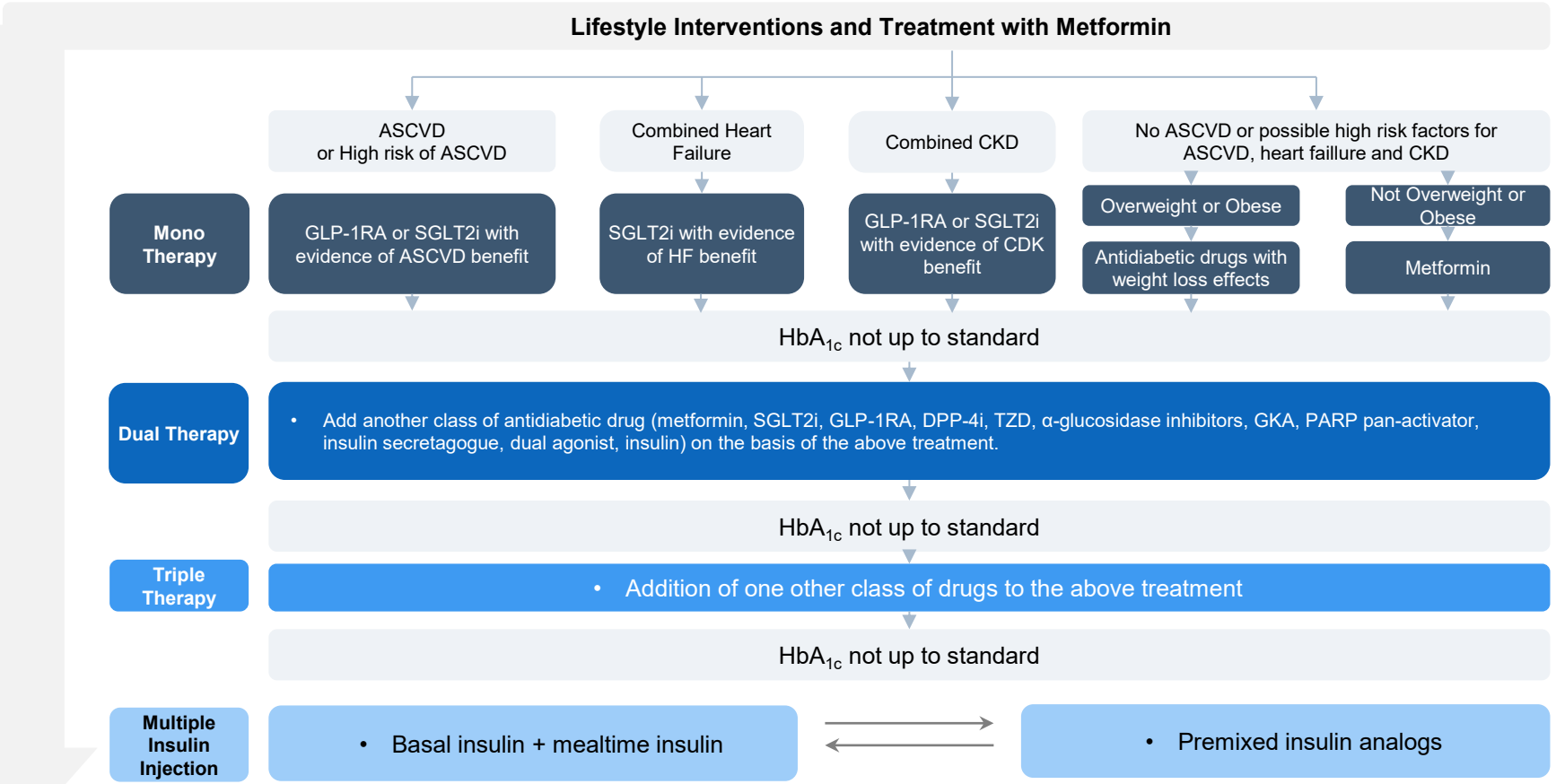


Note:. ACEi, angiotensin-converting enzyme inhibitor; ACR, albumin-to-creatinine ratio; ARB, angiotensin receptor blocker; ASCVD, atherosclerotic cardiovascular disease; CGM, continuous glucose monitoring; CKD, chronic kidney disease; CV, cardiovascular; CVD, cardiovascular disease; CVOT, cardiovascular outcomes trial; DPP-4i, dipeptidyl peptidase 4 inhibitor; eGFR, estimated glomerular filtration rate; GLP-1 RA, glucagon-like peptide 1 receptor agonist; HF, heart failure; HFpEF, heart failure with preserved ejection fraction; HFrEF, heart failure with reduced ejection fraction; HHF, hospitalization for heart failure; MACE, major adverse cardiovascular events; MI, myocardial infarction; SDOH, social determinants of health; SGLT2i, sodium-glucose cotransporter 2 inhibitor; T2D, type 2 diabetes; TZD, thiazolidinedione; DSMES, diabetes self-management education and support; SDOH, social determinants of health; CGM, continuous glucose monitoring.

Source: ADA Standards of Care in Diabetes—2024, Frost & Sullivan Analysis

Treatment Paradigm for Type 2 Diabetes in China

- Lifestyle intervention and metformin are the first-line treatments for hyperglycemia in patients with T2DM. For patients' HbA1c not up to standard with one hypoglycemic drug, two or even three drugs with different MOA should be used in combination, and insulin can also be added. The combination drug can be selected based on factors such as hypoglycemia risk, body weight, economic conditions, and drug accessibility. T2DM patients with ASCVD or high cardiovascular risk should be treated with GLP-1 RA or SGLT2i with evidence of ASCVD benefits in addition to metformin, regardless of whether their HbA1c levels are met, as long as there are no contraindications.



1. *DPP-4i : a dipeptidyl peptidase IV inhibitor; SGLT2i: sodium-dependent glucose transporters 2 inhibitor; TZD: thiazolidinedione; GLP-1RA Glucagon-like peptide -1 receptor agonist; ASCVD: Atherosclerotic cardiovascular disease; CKD: Chronic kidney disease*
2. *If glycemic control is not achieved (HbA1c ≥ 7.0%) , proceed to the next step of treatment*

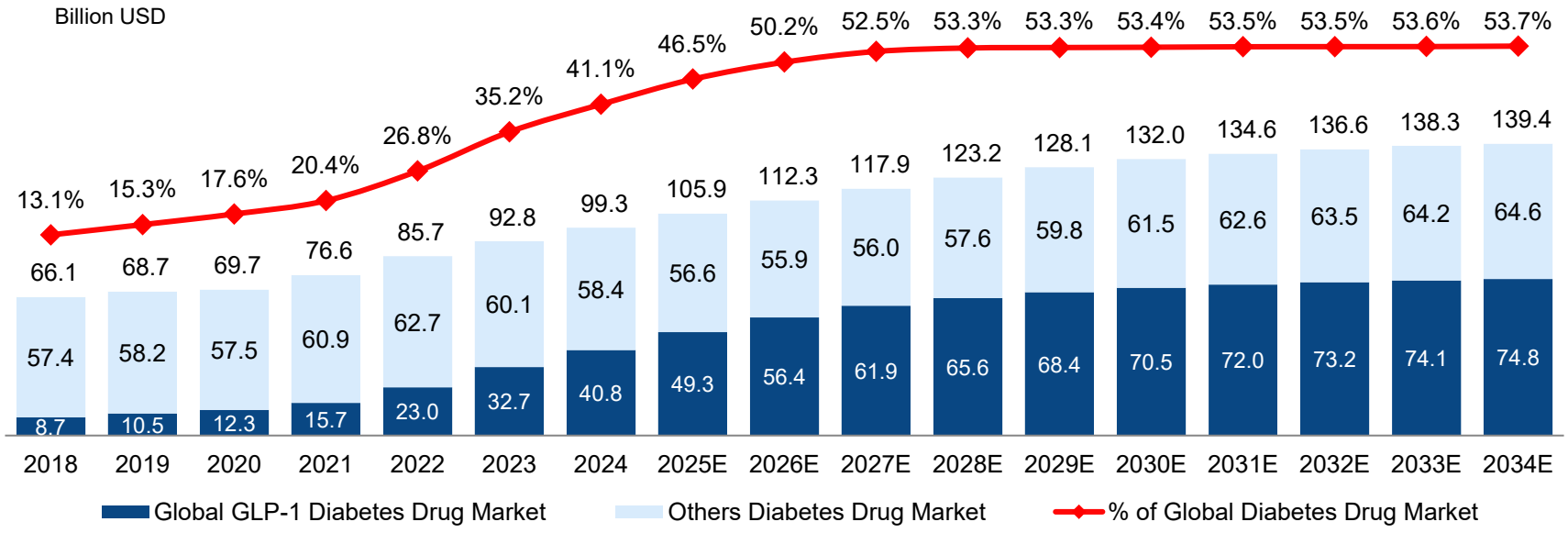
Source: Guidelines for the prevention and treatment of type 2 diabetes in China (2024 edition), Frost & Sullivan Analysis

Global Diabetes Drug Market, 2018-2034E

- In 2024, the global diabetes drug market is USD99.3 billion. It is estimated that the global diabetes drug market will grow to USD123.2 billion in 2028 and USD 139.4 billion in 2034, with a CAGR of 5.6% from 2024 to 2028 and 2.1% from 2028 to 2034 respectively.
- From 2018 to 2024, the market size of global GLP-1 drug for diabetes increased from USD8.7 billion to USD40.8 billion, with a CAGR of 29.5%. In the future, the market size of global GLP-1 drug for diabete will continue to grow steadily, and it is expected to reach USD65.6 billion in 2028, with a CAGR of 12.6%.
- In 2024, GLP-1 drug for diabetes account for 41.1% of total diabetes drug market globally. As clinical applications increase and more GLP-1 products enter the market, the global market share of GLP-1 drug market for diabetes indication will reach 53.3% in 2028.

Global Diabetes Drug Market, 2018-2034E

Period	CAGR	
	GLP-1	Total
2018-2024	29.5%	7.0%
2024-2028E	12.6%	5.6%
2028E-2034E	2.2%	2.1%



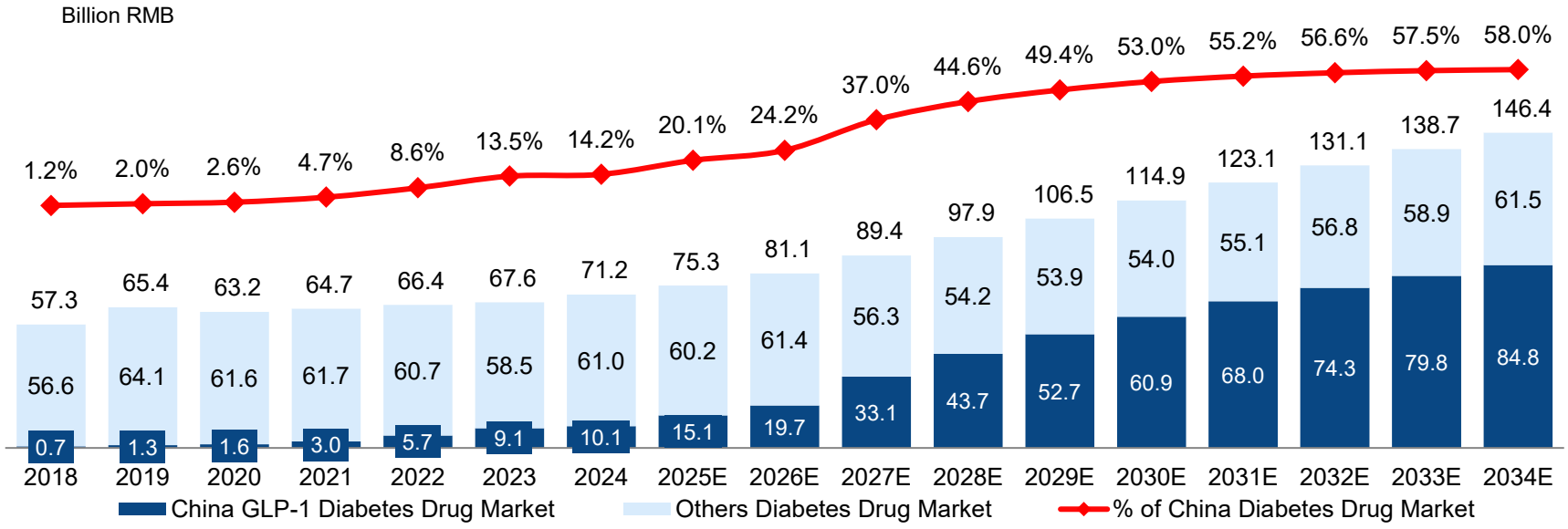
Source: Annual Report, Frost & Sullivan Analysis

Diabetes Drug Market in China, 2018-2034E

- From 2018 to 2024, the market size of diabetes drugs in China increased from RMB57.3 billion to RMB71.2 billion, with a CAGR of 3.7%. In the future, the market size of diabetes drugs in China will continue to grow steadily, and it is expected to reach 97.9 billion RMB in 2028, with a CAGR of 8.3% from 2024 to 2028, 146.4 billion RMB in 2034 with a CAGR of 6.9% from 2028 to 2034.
- From 2018 to 2024, the market size of GLP-1 drug for diabetes in China increased from RMB0.7 billion to RMB10.1billion, with a CAGR of 55.5%. In the future, the market size of GLP-1 drug for diabetes in China will continue to grow steadily, and it is expected to reach 43.7 billion RMB in 2028, with a CAGR of 44.1%.
- In 2024, GLP-1 drug for diabetes indication account for 14.2% of total diabetes drug market in China. As clinical applications increase and more GLP-1 products enter the market, the market share of GLP-1 drug for diabetes indication in China diabetes market will reach 44.6% in 2028.
- Compared to the global market, the GLP-1 diabetes drug market in China is still emerging and underpenetrated, presenting significant growth potential.

Diabetes Drug Market in China, 2018-2034E

Period	CAGR	
	GLP-1	Total
2018-2024	55.5%	3.7%
2024-2028E	44.1%	8.3%
2028E-2034E	11.7%	6.9%



Source: Annual Report, Frost & Sullivan Analysis

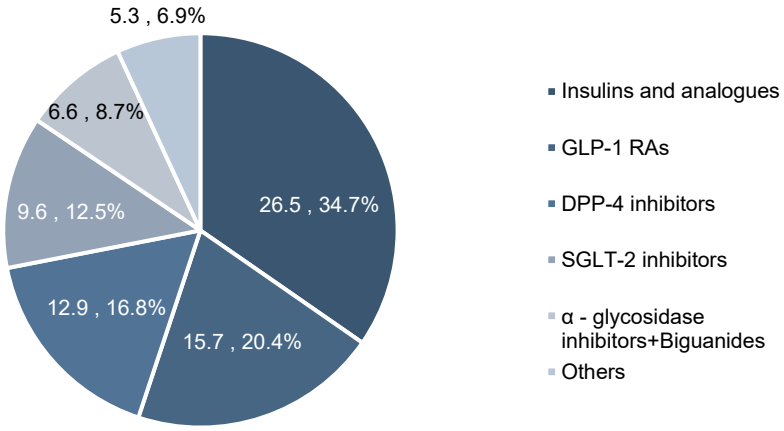
Global Diabetes Drug Market, 2021 VS 2024

Breakdown by Drug Class

- Traditional oral drugs such as biguanides and α -glucosidase inhibitors, which have been on the market for decades, still have a place. The entry of DPP-4 inhibitors (DPP-4i), GLP-1 receptor agonists (GLP-1 RA), and SGLT-2 inhibitors (SGLT-2i) into the global market has led to a rapid rise in their sales revenue. Given the combined clinical benefits of these newer drugs, including cardiovascular and renal protection, there is significant potential for their market share to expand further.
- The market share of GLP-1 RAs in global diabetes drug market has increased from 20.4% in 2021 to 41.1% in 2024

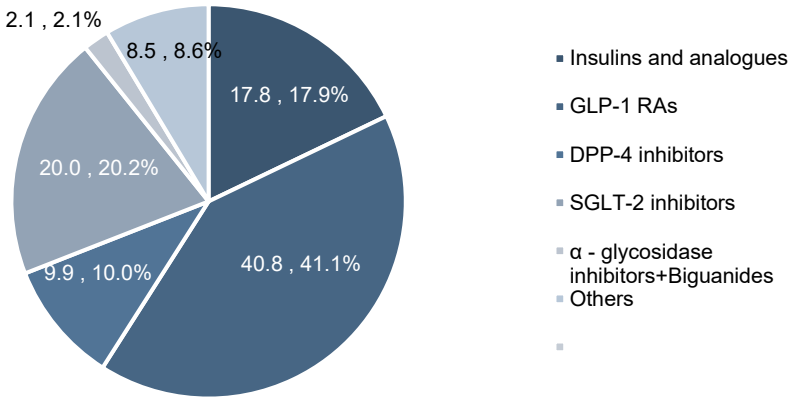
Breakdown of Global Diabetes Drug Market by Drug Class , 2021

Billion USD



Breakdown of Global Diabetes Drug Market by Drug Class , 2024

Billion USD



Source: Annual Report, Frost & Sullivan Analysis

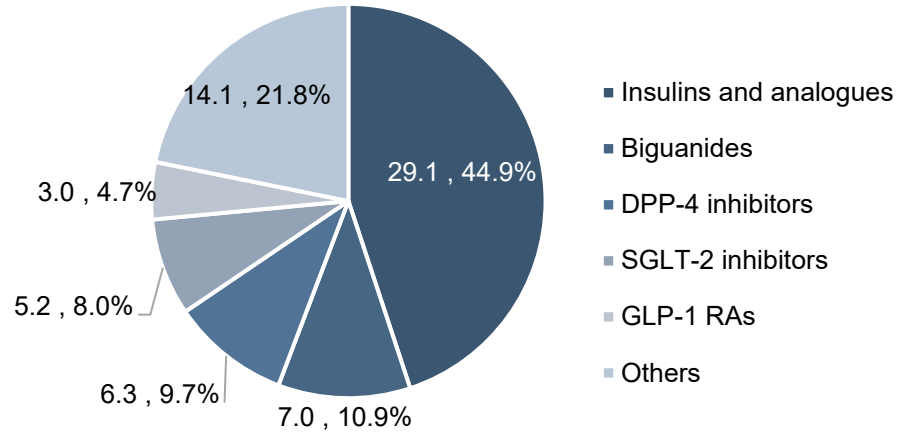
Diabetes Drug Market in China, 2021 VS 2024

Breakdown by Drug Class

- Traditional oral drugs such as biguanides, which have been on the market for decades, still have a place in China. The entry of DPP-4 inhibitors (DPP-4i), GLP-1 receptor agonists (GLP-1 RA), and SGLT-2 inhibitors (SGLT-2i) into the Chinese market has led to a rapid rise in their sales revenue. Given the combined clinical benefits of these newer drugs, including cardiovascular and renal protection, there is significant potential for their market share to expand further.
- The market share of GLP-1 RAs in China diabetes drug market has increased from 4.7% in 2021 to 14.2% in 2024.

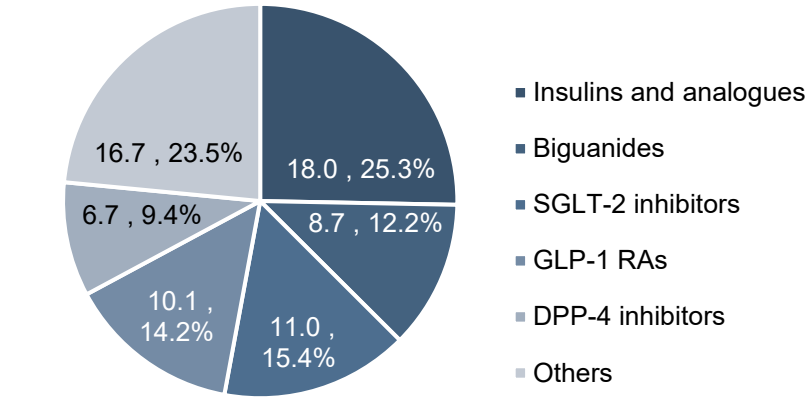
Breakdown of Diabetes Drug Market by Drug Class in China, 2021

Billion RMB



Breakdown of Diabetes Drug Market by Drug Class in China, 2024

Billion RMB



Source: Annual Report, Frost & Sullivan Analysis

Global Approved Innovative GLP-1 Receptor Agonist Drugs for Diabetes

- As of July 2025, there are 11 GLP-1 receptor agonist innovative drugs approved for diabetes in global, of which 8 are approved in the U.S., and 10 are approved in China. In addition, the innovative GLP-1 receptor agonist drugs benaglutide and polyethylene clycol loxenatide are also approved for diabetes in China.

Long-acting/ Short-acting*	Drug Name	Generic Name	Company	Approved Date, year	Core Patent Expiration Date				Dosing period	Humanization Ratio	Global Sales Revenue ,2024, MUSD
					CN	US	EU	JP			
Long-acting	Diabegone	Efsubaglutide Alfa	Innogen	NMPA：2025	2026	2027	NA	NA	Once a week	NA	NA
	Trulicity	Dulaglutide	Eli Lilly	FDA:2014 EMA:2014 NMPA:2019	NA	2027	2029	2029	Once a week	90%	5,253.5
	Ozempic	Semaglutide Injection	Novo Nordisk	FDA:2017 EMA:2018 NMPA:2021	2026	2032	2031	2031	Once a week	94%	17,450.6
	Fulaimei	Polyethylene clycol Loxenatide	Hansoh	NMPA:2019	NA				Once a week	53%	NA
	Bydureon	Exenatide Microspheres	AstraZeneca	FDA:2012 EMA:2011	2028	2028	2028	2028	Once a week	53%	NA
	Mounjaro	Tirzepatide	Eli Lilly	FDA:2022 EMA:2022 NMPA:2024	2036	2036	2037	2040	Once a week	NA	11,540.1
Short-acting	Byetta	Exenatide	AstraZeneca	FDA:2005 EMA:2006 NMPA:2009	expired	expired	expired	expired	Twice a day	53%	NA
	Victoza	Liraglutide	Novo Nordisk	FDA:2010 EMA:2009 NMPA:2011	expired	expired	expired	expired	Once a day	97%	534.5
	Lyxumia	Lixisenatide	Sanofi	FDA:2016 EMA:2013 NMPA:2017	NA				Once a day	50%	NA
	Yishengtai	Benaglutide	Benemae	NMPA:2016	NA				Three times a day	100%	NA
	Rybelsus	Semaglutide Tablets	Novo Nordisk	FDA:2019 EMA:2020 NMPA:2024	2026	2032	2031	2031	Once a day	94%	3,378.8

*: Long-acting GLP-1 Receptor Agonist refer to GLP-1 Receptor Agonist drugs with action duration of at least 24 hours. Short-acting GLP-1 Receptor Agonist refer to drugs with action duration of less than 24 hours.

Note: 1.The industry information is as of 2025/7/28. 2. Patent was subject to invalidation actions and has been held invalid by the Patent Office. This decision has been appealed to the Beijing IP Court. 3. Tirzepatide is a human hormone and is an analogue of GIP. 4. Bydureon®(Exenatide Microspheres for Injection) withdrawed from the Chinese market in 2023.

Source: CDE, EMA, FDA, Company website, Frost & Sullivan analysis

Global Approved Innovative Humanized, Long-acting GLP-1 Receptor Agonists Drugs for Diabetes

Drug Name	Generic Name	Company	Approved Date, year	Core Patent Expiration Date				Dosing period	Humanization Ratio	Global Sales Revenue , 2023, BUSD
				CN	US	EU	JP			
Trulicity	Dulaglutide	Eli Lilly	FDA:2014 EMA:2014 NMPA:2019	NA	2027	2029	2029	qw	90%	7,132.6
Ozempic	Semaglutide Injection	Novo Nordisk	FDA:2017 EMA:2018 NMPA:2021	2026	2032	2031	2031	qw	94%	13,895.1
Mounjaro	Tirzepatide	Eli Lilly	FDA:2022 EMA:2022 NMPA:2024	2036	2036	2037	2040	qw	NA	5,163.1
Diabegone	Efsubaglutide Alfa	Innogen	NMPA:2025	2026	2027	NA	NA	qw	NA	NA

*: Long-acting GLP-1 **Receptor Agonist** refer to GLP-1 **Receptor Agonist** drugs with action duration of at least 24 hours. Short-acting GLP-1 **Receptor Agonist** refer to drugs with action duration of less than 24 hours.

Note: 1.The industry information is as of 2025/7/28. 2. qw: once a week. 3. Patent was subject to invalidation actions and has been held invalid by the Patent Office. This decision has been appealed to the Beijing IP Court. 4. Tirzepatide is a human hormone and is an analogue of GIP.

Source: CDE, EMA, FDA, Company website(Lilly:https://investor.lilly.com/static-files/b5c56281-bc31-48c3-9e63-5e6cd588dff5; Novo Nordisk *: https://www.novonordisk.com/investors/annual-report.html); Guangdong Pharmaceutical Association "Expert Consensus on the Clinical Application of Glucagon-like Peptide-1 Receptor Agonists (GLP-1RA)"; Frost & Sullivan analysis*

Approved GLP-1 Receptor Agonist Drugs for Diabetes in China

Long-acting/ Short-acting	Drug Name	Generic Name	Company	Approved Date	Core Patent Expiration Date				Dosing period	Humanization Ratio	NRDL Inclusion Year	Annual Cost, RMB
					CN	US	EU	JP				
Long-acting	Diabegone	Efsubaglutide Alfa	Innogen	NMPA：2025	2026	2027	NA	NA	Once a week	NA	NA	32,400
	Trulicity	Dulaglutide	Eli Lilly	2019/2/22	NA	2027	2029	2029	qw	0.90	2020	7,450
	Fulaimei	Polyethylene clycol Loxenatide	Hansoh	2019/5/5	NA				qw	0.53	2020	9,350
	Ozempic	Semaglutide Injection	Novo Nordisk	2021/4/27	2026*	2032	2031	2031	qw	0.94	2021	9,768
	Mounjaro	Tirzepatide	Eli Lilly	2024/5/15	2036	2036	2037	2040	qw	NA	None	NA
Short-acting	Byetta	Exenatide	Astra Zeneca	2009/5/8	expired	expired	expired	expired	bid	0.53	2019	4,728
	Victoza	Liraglutide	Novo Nordisk	2011/3/4	expired	expired	expired	expired	qd	0.97	2017	12,204
	Yishengtai	Benaglutide	Benemae	2016/12/13	NA				tid	1.00	2020	9,741
	Lyxumia	Lixisenatide	Sanofi	2017/9/29	NA				qd	0.50	2019	13,715
	-	Exenatide	Qinghai Chenfei	2022/7/29	NA				bid	0.53	2019	4,962 5,838
	Liluping	Liraglutide	Huadong Pharmaceutical	2023/3/28	NA				qd	0.97	2017	10,355
	Tongboli	Liraglutide	Tonghua Dongbao	2023/11/28	NA				qd	0.97	2017	9,417
	Rybelsus	Semaglutide Tablets	Novo Nordisk	2024/4/9	2026*	2032	2031	2031	qd	0.94	None	NA
	Beilelin	Liraglutide	CTTQ	2024/6/18	NA				qd	0.97	2017	NA
	-	Exenatide	Hybio Pharmaceutical	2024/9/10	NA				qd	0.53	2019	NA

Note: 1.The industry information is as of 2025/7/28; 2. Patent was subject to invalidation actions and has been held invalid by the Patent Office. This decision has been appealed to the Beijing IP Court. 3. Bydureon®(Exenatide Microspheres for Injection) withdrawed from the Chinese market in 2023. 4. qw: once a week, bid: three times a day; qd: once a day. 5. Annual Cost is calculated based on regular daily or weekly use of drugs in a year.

Source: CDE, Company website, Frost & Sullivan analysis

Approved Innovative GLP-1 Receptor Agonist Drugs for Diabetes in China

Long-acting/ Short-acting	Drug Name	Generic Name	Company	Approved Date	Core Patent Expiration Date				Dosing period	Humanization Ratio	NRDL Inclusion Year	Annual Cost, RMB
					CN	US	EU	JP				
Long-acting	Diabegone	Efsubaglutide Alfa	Innogen	2025/01/24	2026	2027	NA	NA	Once a week	NA	None	32,400
	Trulicity	Dulaglutide	Eli Lilly	2019/2/22	NA	2027	2029	2029	qw	90%	2020	7,450
	Fulaimei	Polyethylene clycol Loxenatide	Hansoh	2019/5/5	NA				qw	53%	2020	9,350
	Ozempic	Semaglutide Injection	Novo Nordisk	2021/4/27	2026*	2032	2031	2031	qw	94%	2021	9,768
	Mounjaro	Tirzepatide	Eli Lilly	2024/5/15	2036	2036	2037	2040	qw	NA	None	NA
Short-acting	Byetta	Exenatide	Astra Zeneca	2009/5/8	expired	expired	expired	expired	bid	53%	2019	4,728
	Victoza	Liraglutide	Novo Nordisk	2011/3/4	expired	expired	expired	expired	qd	97%	2017	12,204
	Yishengtai	Benaglutide	Benemae	2016/12/13	NA				tid	100%	2020	9,741
	Lyxumia	Lixisenatide	Sanofi	2017/9/29	NA				qd	50%	2019	13,715
	Rybelsus	Semaglutide Tablets	Novo Nordisk	2024/4/9	2026*	2032	2031	2031	qd	94%	None	NA

Note: 1.The industry information is as of 2025/07/28; 2. Patent was subject to invalidation actions and has been held invalid by the Patent Office. This decision has been appealed to the Beijing IP Court. 3. Bydureon®(Exenatide Microspheres for Injection) withdrawed from the Chinese market in 2023. 4. qw: once a week, bid: three times a day; qd: once a day. 5. Annual Cost is calculated based on regular daily or weekly use of drugs in a year.

Source: CDE, Company website, Frost & Sullivan analysis

Approved Humanized, Long-acting GLP-1 Receptor Agonists Drugs for Diabetes in China

Drug Name	Generic Name	Company	Approved Date	Core Patent Expiration Date				Dosing period	Humanization Ratio	NRDL Inclusion Year	Annual Cost, RMB
				CN	US	EU	JP				
Diabegone	Efsubaglutide Alfa	Innogen	2025/01/24	2026	2027	NA	NA	Once a week	NA	None	32,400
Trulicity	Dulaglutide	Eli Lilly	2019/2/22	NA	2027	2029	2029	qw	90%	2020	7,450
Ozempic	Semaglutide Injection	Novo Nordisk	2021/4/27	2026*	2032	2031	2031	qw	94%	2021	9,768
Mounjaro	Tirzepatide	Eli Lilly	2024/5/15	2036	2036	2037	2040	qw	NA	None	NA

Note: 1.The industry information is as of 2025/07/28; 2. Patent was subject to invalidation actions and has been held invalid by the Patent Office. This decision has been appealed to the Beijing IP Court. 3. Bydureon®(Exenatide Microspheres for Injection) withdrawed from the Chinese market in 2023. 4. qw: once a week. 5. Annual Cost is calculated based on regular daily or weekly use of drugs in a year.

Source: CDE, Company website, Frost & Sullivan analysis

Global (Excluding China) Competitive Landscape of GLP-1 Single-target Receptor Agonist Innovative Drug Pipeline for Diabetes Indication

- As of the Latest Practicable Date, there were 24 innovative GLP-1 receptor agonist drug candidates for the treatment of diabetes under clinical evaluation globally (excluding China).

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date	Human/Animal	Dosing Period
GLP-1R	Efpeglenatide	Sanofi	Phase III	2017/11/27	animal	qw
	Orforglipron/LY3502970	Eli Lilly	Phase III	2023/5/15	chemical	qd
	AZD5004	AstraZeneca	Phase II	2024/8/30	chemical	qd
	NAPERIGLIPRON	Eli Lilly	Phase II	2025/6/22	NA	qd
	GSBR-1290	Gasherbrum	Phase I	2022/1/21	NA	qd
	XW003	Sciwind	Phase I	2020/3/24	human	qw
	XW004	Sciwind	Phase I	2022/1/11	chemical	qd
	GZR18	Gan & Lee	Phase I	2022/4/14	human	q2w
	ZT002	Beijing Peptide	Phase I	2022/8/8	NA	q2w
	XW014	Sciwind	Phase I	2022/10/13	chemical	qd
	CT-996	Carmot	Phase I	2023/4/14	chemical	qd
	PF-06954522	Pfizer	Phase I	2024/2/28	chemical	qd

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. .4.qw: once a week; q2w: once every 2 weeks; qd: once a day. 5. Drug information of human or animal derived and dosing period are from pubic data retrieval.

Source: Clinical trial, Frost & Sullivan analysis

Global (Excluding China) Competitive Landscape of GLP-1 Multi-target Receptor Agonist Innovative Drug Pipeline for Diabetes Indication

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Period
GCGR/GLP-1R	Survodutide	Boehringer Ingelheim	Phase II	2019/11/5	qw
	IBI362/LY3305677	Eli Lilly	Phase I	2019/4/26	qw
	DD01	Neuraly	Phase I	2021/3/23	qw
GIPR/GLP-1R	AMG 133	Amgen	Phase III	2025/3/5	qm
	BGM0504	BrightGene Bio-Medical Technology	Phase III	2025/7/14	qw
	CT868	Carmot	Phase II	2021/11/8	qd
	NN9541	Novo Nordisk	Phase II	2024/3/22	qw
	CT-388	Carmot Therapeutics	Phase II	2024/10/8	qw
GLP-1R/AMYR	CagriSema	Novo Nordisk	Phase III	2024/8/2	qw
	NN9487	Novo Nordisk	Phase II	2024/8/7	qd
GLP1R/GIPR/IGF1R /GCGR	NA-931	Biomed Industries	Phase I	2024/9/27	qd
GLP1R/GIPR/GCGR	Retatrutide (LY3437943)	Eli Lilly	Phase III	2024/2/8	qw

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. 4.qw: once a week; q4w: once every 4 weeks; qd: once a day. . 5. Drug information of dosing period are from pubic data retrieval.

Source: Clinical trial, Frost & Sullivan analysis

Global (Excluding China) Competitive Landscape of Humanized, Long-acting GLP-1 Receptor Agonists Innovative Drug Pipeline for Diabetes Indication

- Among these drug candidates, six are in Phase III clinical trials, including three humanized, long-acting GLP-1 receptor agonists, as set forth in the table below.

Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Period
CagriSema	Novo Nordisk	Phase III	2024/8/2	qw
AMG 133	Amgen	Phase III	2025/3/5	qm
BGM0504	BrightGene Bio-Medical Technology	Phase III	2025/7/14	qw
Survodutide	Boehringer Ingelheim	Phase II	2019/11/5	qw
NN9541	Novo Nordisk	Phase II	2024/3/22	qw
CT-388	Carmot Therapeutics	Phase II	2024/10/8	qw
AMG 133	Amgen	Phase II	2024/10/28	qw
IBI362/LY3305677	Eli Lilly	Phase I	2019/4/26	qw
XW003	Sciwind	Phase I	2020/3/24	qw
DD01	Neuraly	Phase I	2021/3/23	qw
GZR18	Gan & Lee	Phase I	2022/4/14	q2w

Note: 1. The industry information is as of 2025/07/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. 4. Drug information of human or animal derived and dosing period are from pubic data retrieval. 5. qw: once a week; q2w: once every 2 weeks.

Source: Clinical trial, Frost & Sullivan analysis

Competitive Landscape of GLP-1 Single-target Receptor Agonist Innovative Drug Pipeline for Diabetes Indication in China (1/2)

- As of the Latest Practicable Date, there were 29 innovative GLP-1 single-target receptor agonist drug candidates under clinical development for the treatment of diabetes in China. As of the Latest Practicable Date, there were 52 innovative GLP-1 receptor agonist drug candidates for the treatment of diabetes under clinical evaluation in China.

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Frequency
GLP-1R	PB-119	PegBio	NDA	2023/9/26	qw
	CJC-1134-PC (Albenatide)	Hebei Changshan,	NDA	2024/4/24	qw
	XW003	Sciwind Biosciences	BLA	2024/11/23	qw
	Glutazumab	Hongyun Huaning	Phase III	2021/7/30	q2w
	Orforglipron	Eli Lilly	Phase III	2023/9/6	qw
	TG103	CSPC	Phase III	2024/2/2	qw
	JY09	Eastern Bio	Phase III	2024/4/17	q2w
	HRS-7535	Shandong Shengdi	Phase III	2024/9/13	qd
	Noiiglutide	Hengrui	Phase III	2024/10/15	qd
	HDM1002 (Conveglipron)	Hangzhou Zhongmei Huadong	Phase III	2025/7/7	qd/bid
	Recombinant exenatide-human serum albumin fusion protein	Zhejiang Huayang Pharmaceutical	Phase II	2020/04/30	qw
	GZR18	Gan&Lee	Phase II	2023/7/10	q2w
	HL08	Hualan	Phase II	2024/5/22	qw
	SAL0112	Shenzhen Salubris Pharmaceuticals	Phase II	2024/08/16	NA
	ZT002	Beijing Peptide Biomedical Technology	Phase II	2024/09/29	q2w
	HB1085	Wuxi Hebang Bio-Tech Co., Ltd.	Phase I	2019/07/31	NA
	Insulin-stimulating secretory peptide fusion protein	Lanzhou Biological Products Research Institute Limited Liability Company.	Phase I	2021/08/06	NA
	VCT220	Vincentage	Phase I	2022/12/14	qd
	NAPERIGLIPRON	Eli Lilly	Phase I	2025/7/18	qd

Note: 1.The industry information is as of 2025/07/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. 4.qw: once a week; q2w: once every 2 weeks; bid: three times a day; qd: once a day. . 5. Drug information of human or animal derived and dosing period are from pubic data retrieval.

Source: CDE, Frost & Sullivan analysis

Competitive Landscape of GLP-1 Single-target Receptor Agonist Innovative Drug Pipeline for Diabetes Indication in China (2/2)

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Frequency
GLP-1R	KN056	Alphamab	Phase I	2023/6/26	NA
	HSK34890	Haisco	Phase I	2023/8/21	qd
	BPYT-01	Baiji Youtang	Phase I	2023/11/1	NA
	THDBH110	Dongbao Zixing (Hangzhou) Biopharmaceutical	Phase I	2023/11/9	NA
	Exd391209	Chengdu Aoda	Phase I	2024/3/12	qw
	HS-10501	Hansoh BioMedical	Phase I	2024/3/12	qd
	DA-302168S	Chengdu Di'Ao Pharmaceutical	Phase I	2024/4/11	qd
	APH01727	Yipinhong	Phase I	2024/7/26	qd
	ZT006	Beijing Peptide Biomedical Technology	Phase I	2024/11/15	NA
	AZD5004	AstraZeneca	Phase I	2025/5/28	NA

Note: 1.The industry information is as of 2025/07/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. 4.qw: once a week; q2w: once every 2 weeks; bid: three times a day; qd: once a day. . 5. Drug information of human or animal derived and dosing period are from pubic data retrieval.

Source: CDE, Frost & Sullivan analysis

Competitive Landscape of GLP-1 Multi-target Receptor Agonist Innovative Drug Pipeline for Diabetes Indication in China

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Frequency
FGF21R/GLP-1R	HEC88473	Dongguan HEC	Phase II	2023/8/17	qw
	AP026	Ampsource	Phase I	2023/3/13	qd
	High expression of human GLP-1 and FGF21 dual factors in adipose stem cells	Beijing Jiyuan Biotechnology	Phase I	2025/6/16	qw
GCG/GIP/GLP-1R	MWN101	Shanghai Minwei Biotechnology	Phase II	2024/3/11	qw
	UBT251	United Laboratoris	Phase II	2025/1/13	qw
	DR10627	Doer Biologics	Phase I	2022/10/31	NA
	ZX2021	Xintrum	Phase I	2024/4/25	qw
	DYX116	Jiangsu Deyuan Pharmaceutical	Phase I	2025/3/14	qw
GCGR/GLP-1R	IBI362 (Mazdutide)	Eli Lilly / Innovent	BLA	2024/8/1	qw
GIP/GLP-1R	HRS9531	Hengrui	Phase III	2024/10/18	qw
	BGM0504	BrightGene Bio-Medical Technology	Phase III	2024/12/10	qw
	HS-20094	Hansoh	Phase II	2023/5/6	qw
	RAY1225	Raynovent	Phase II	2024/2/22	q2w
	Poterepatide (HDM1005)	Hangzhou Zhongmei Huadong Pharmaceutical	Phase II	2025/3/10	qw
	ZX2010	Xintrum	Phase II	2025/6/26	qw
	HZ012	Heze Pharmaceutical	Phase I	2023/10/25	NA
	THDBH120	Tonghua Dongbao	Phase I	2023/12/25	qd
	NN9541	Novo Nordisk	Phase I	2025/4/17	qw
GLP1R/FGF21	HEC88473	Dongguan HEC Biopharmaceutical	Phase II	2023/8/17	qw
	AP026	AMPSOURCE BIOPHARMA	Phase I	2023/3/13	NA
GLP1R/INSR	GZR102	Gan & Lee	Phase II	2025/6/19	q2w
GIPR/GCGR/GLP1R	MWN109 Tablet	Shanghai Minwei Biotechnology	Phase I	2025/6/6	qd

Note: 1. The industry information is as of 2025/07/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. 4.qw: once a week; q2w: once every 2 weeks. . 5. Drug information of dosing period are from pubic data retrieval.

Source: CDE, Frost & Sullivan analysis

Competitive Landscape of Humanized, Long-acting GLP-1 Receptor Agonists Innovative Drug Pipeline for Diabetes Indication in China

Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Frequency
IBI362 (Mazdutide)	Eli Lilly / Innovent	BLA	2024/8/1	qw
XW003	Sciwind Biosciences	BLA	2024/11/23	qw
Glutazumab	Hongyun Huaning	Phase III	2021/7/30	q2w
TG103	CSPC	Phase III	2024/2/2	qw
HRS9531	Hengrui	Phase III	2024/10/18	qw
BGM0504	Borui Xinchuang Biopharmaceutical	Phase III	2024/12/10	qw
Recombinant exenatide-human serum albumin fusion protein	Zhejiang Huayang Pharmaceutical	Phase II	2020/04/30	qw
GZR18	Gan&Lee	Phase II	2023/7/10	q2w
HEC88473	Dongguan HEC	Phase II	2023/8/17	qw
HS-20094	Hansoh	Phase II	2024/5/6	qw
RAY1225	Raynovent	Phase II	2024/2/22	q2w
MWN101	Shanghai Minwei Biotechnology	Phase II	2024/3/11	qw
Poterepatide (HDM1005)	Hangzhou Zhongmei Huadong Pharmaceutical	Phase II	2025/3/10	qw
ZX2010	Xintrum	Phase I	2024/4/16	qw
ZX2021	Xintrum	Phase I	2024/4/25	qw
UBT251	United Laboratoris	Phase I	2023/9/20	qw

Note: 1.The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date .4. Drug information of human or animal derived and dosing period are from pubic data retrieval. 5.qw: once a week; q2w: once every 2 weeks.

Source: CDE, Frost & Sullivan analysis

Growth Drivers of Global Diabetes Drug Market

Growing Number of Diabetes Patients	• Influenced by factors such as population aging, elevated living standards, and shifts in lifestyle habits, the global diabetes prevalence has been on an upward trajectory. In 2023, an estimated 573.2 million individuals worldwide were living with diabetes. Projections indicate this figure could escalate to 636.3 million by 2028 and further climb to 701.2 million by 2034. Concurrently, China grapples with a significant number of undiagnosed diabetics and those with impaired glucose tolerance. In 2021, nearly 72.83 million people with diabetes remained undiagnosed, around 170 million adults had impaired glucose tolerance, and approximately 27 million adults had impaired fasting glycemic levels. Without timely intervention, there is a considerable risk of impaired glucose tolerance progressing to type 2 diabetes, exacerbating the diabetic patient count.
Increasing Awareness of Diabetes	• China has seen a marked improvement in diabetes awareness, with the rate climbing from 39.4% in 2007 to 53.6% in 2017. Data from the International Diabetes Federation (IDF) in 2019 revealed that 50.1% of the 463 million individuals globally affected by diabetes were unaware of their condition. By 2021, this proportion had significantly decreased to 44.7%. This trend indicates a gradual increase in global diabetes awareness, reflecting a positive shift towards earlier detection and knowledge about the disease.
Enhanced Access to Medications	• Major insulin manufacture, including Eli Lilly and Sanofi, have implemented significant price reductions in the United States. In March 2023, Eli Lilly made a substantial reduction in the prices of their insulin products, Humalog and Humulin, by 70% and set a cap on patient out-of-pocket expenses at $35 or less per month. Similarly, Sanofi has announced a price reduction for Lantus and Apidra by 78% and 70% respectively, with the new prices taking effect from January 1, 2024. In China, the strategic approach of volume-based procurement has proven effective in reducing the cost of insulin by 48%, making this essential medication more accessible to a broader patient population.
Innovation in Antidiabetic Medications Continues to Upgrade	• The advent of novel antidiabetic agents, such as GLP-1 receptor agonists, SGLT-2 inhibitors, and DPP-4 inhibitors, has expanded the therapeutic horizon for patients with diabetes. Beyond glycemic control, these innovative medications offer a multifaceted approach to treatment, delivering additional benefits such as weight reduction, enhanced cardiovascular safety, amelioration of insulin resistance, and an array of metabolic advantages.

Source: Frost & Sullivan Analysis

Future Trends of Global Diabetes Drug Market

Antidiabetics with Comprehensive Benefits are Gradually Dominant	• GLP-1 receptor agonists(GLP-1 RA) possess a notable hypoglycemic effect, with a minimal risk of inducing hypoglycemia when administered as monotherapy. Additionally, GLP-1 RA offers the added benefits of weight reduction, blood pressure lowering, and an improved lipid profile. Consequently, *the Chinese Guidelines for the Prevention and Treatment of Type 2 Diabetes (2020 edition)*, along with the consensus recommendations from the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD), all express a preference for GLP-1 RA. This preference is particularly pronounced for patients with T2DM who have atherosclerotic cardiovascular disease or its risk factors, heart failure, and chronic kidney disease, where the evidence supports a positive impact on outcomes
Emergence of New Drugs that Improve Compliance	• Long-acting medications, including extended-release GLP-1 receptor agonists, insulin and SGLT-2 inhibitors, enhance patient convenience by minimizing the daily dosing frequency, which in turn boosts adherence to treatment regimens. • Fixed-dose composite agents (FDCS) can simultaneously meet the efficacy of multi-drug therapy and better medication convenience, thereby improving compliance.
Drug Combo for Stable Hypoglycemia Gains Attention	• The *Expert Consensus on Oral Hypoglycemic Combination Therapy for Chinese Adults with Type 2 Diabetes* and *the Chinese Guidelines for the Prevention and Treatment of Type 2 Diabetes (2020 edition)* recommends starting dual therapy if metformin monotherapy fails to control glycemic. Personalized combination regimens are crucial for efficacy and safety. For T2DM with ASCVD, HF, or CKD, metformin combined with SGLT-2 inhibitors and GLP-1 RA is the preferred treatment. Guidelines from ADA and AACE also endorse considering drug combinations when metformin monotherapy is insufficient for glucose control goals.

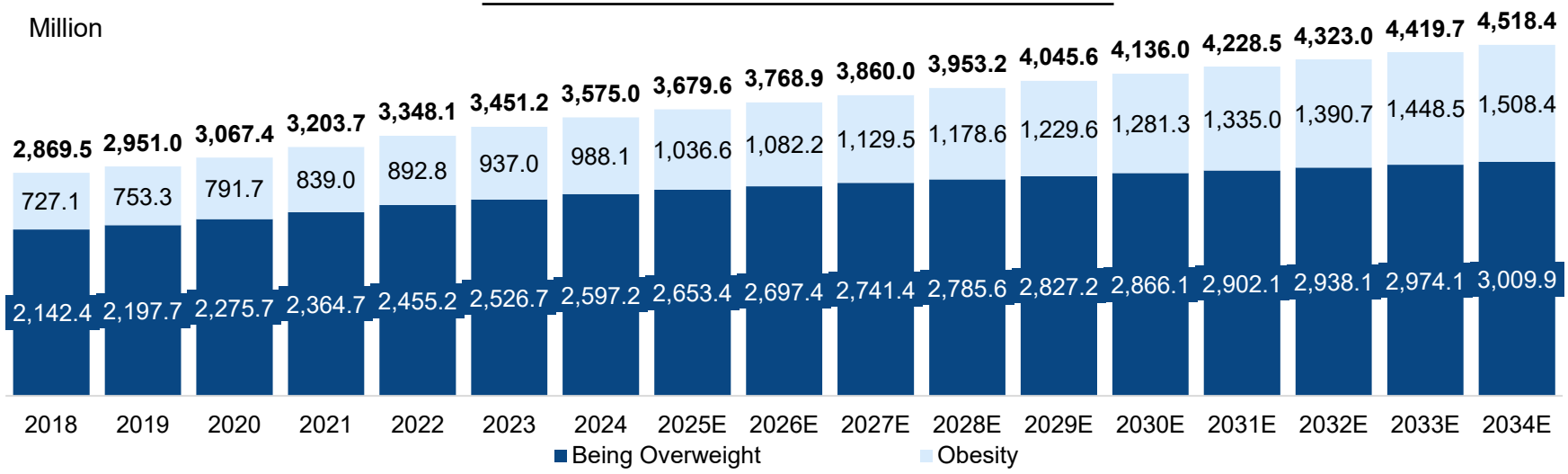
Source: Frost & Sullivan Analysis

Global Prevalence of Obesity and being Overweight, 2018-2034E

- Globally, the burden of overweight and obesity is also substantial. In recent years, the number of patients being overweight in the world has increased rapidly, from 2,142.4 million to 2,597.2 million in 2018 and 2024, with a CAGR of 3.3%, due to factors such as changes in dietary structure and lifestyle. It is predicted that the number of patients being overweight in the world will continue to increase, reaching 2,785.6 million in 2028, with a CAGR of 1.8% from 2024 to 2028 and reach 3,009.9 million in 2034 with a CAGR of 1.3% from 2028 to 2034.
- the number of patients with obesity in the world has increased rapidly, from 727.1 million to 988.1 million in 2018 and 2024, with a CAGR of 5.2%. It is predicted that the number of patients with obesity in the world will continue to increase, reaching 1,178.6 million in 2028, with a CAGR of 4.5% from 2024 to 2028, and reach 1,508.4 million in 2034 with a CAGR of 4.2% from 2028 to 2034.

Global Prevalence of Obesity and being Overweight, 2018-2034E

Period	CAGR		
	Being Overweight	Obesity	Total
2018-2024	3.3%	5.2%	3.7%
2024-2028E	1.8%	4.5%	2.5%
2028E-2034E	1.3%	4.2%	2.3%



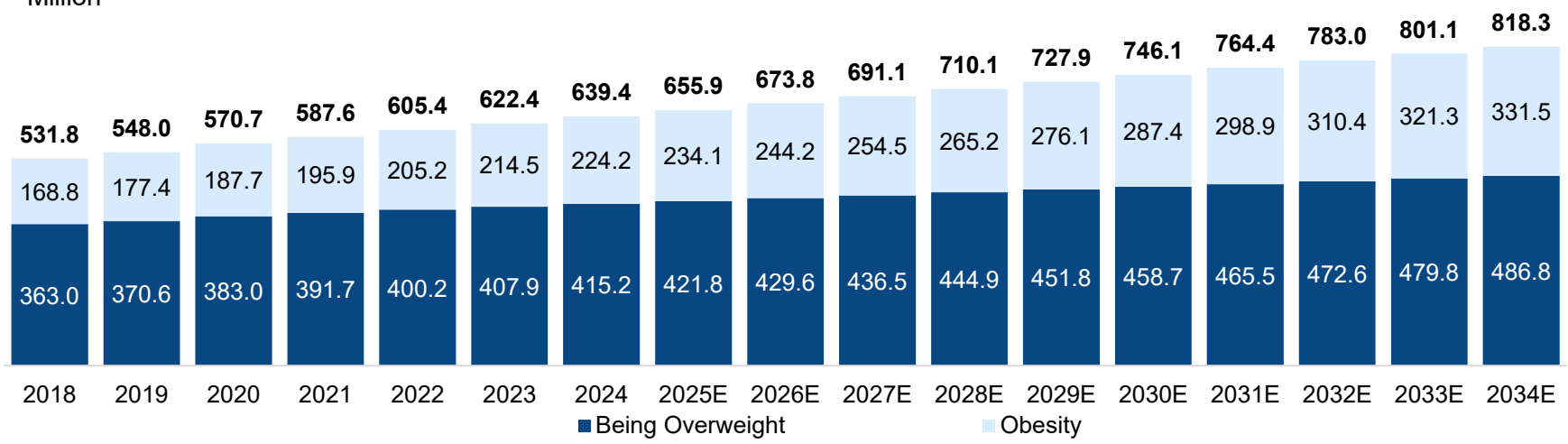
Source: Literature review, Frost & Sullivan analysis

Prevalence of Obesity and being Overweight in China, 2018-2034E

- In recent years, the number of patients with obesity and being overweight in China has increased rapidly, from 531.8 million to 639.4 million in 2018 and 2024, with a CAGR of 3.1%, due to factors such as changes in dietary structure and lifestyle. It is predicted that the number of patients with obesity and being overweight in China will continue to increase, reaching 710.1 million in 2028, with a CAGR of 2.7% from 2024 to 2028, 818.3 million in 2034 with a CAGR of 2.4% from 2028 to 2034.

Prevalence of Obesity and being Overweight in China, 2018-2034E

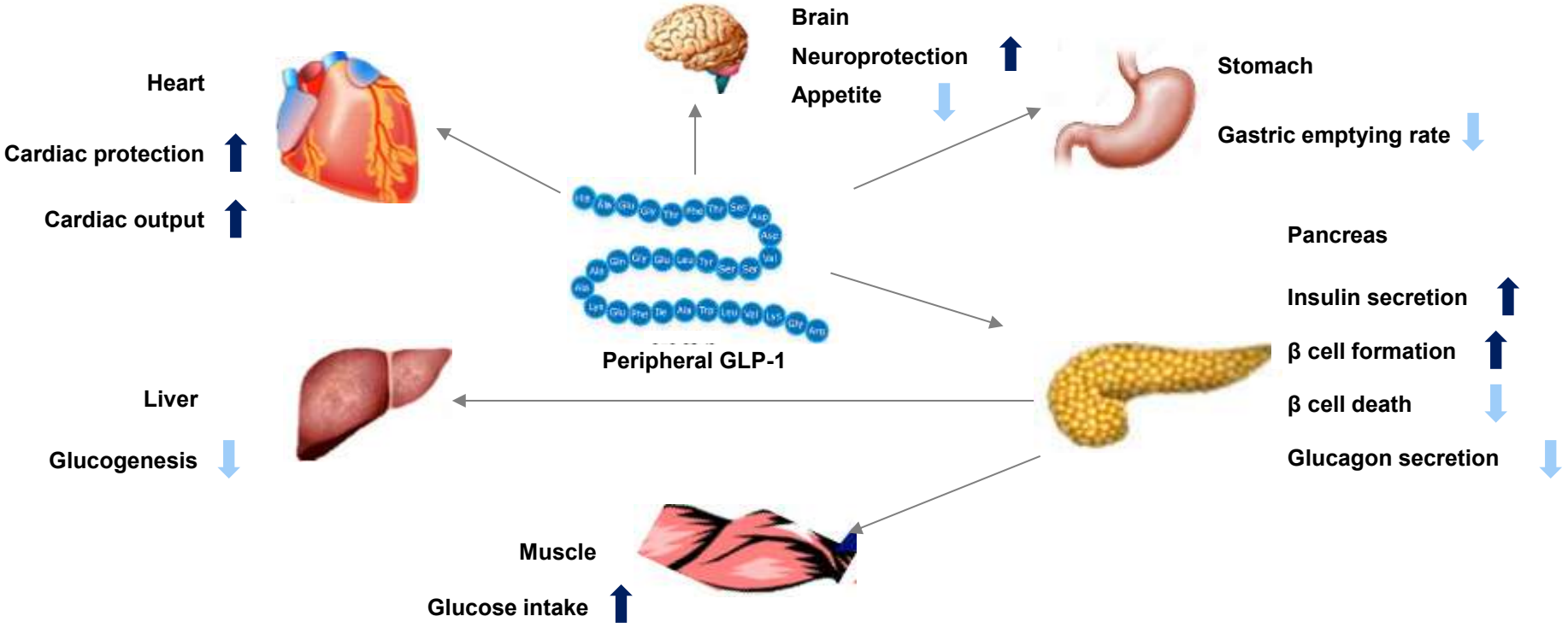
Period	CAGR		
	Being Overweight	Obesity	Total
2018-2024	2.3%	4.8%	3.1%
2024-2028E	1.7%	4.3%	2.7%
2028E-2034E	1.5%	3.8%	2.4%



Source: Literature review, Frost & Sullivan analysis

Mechanism of Action of GLP-1 Receptor Agonists in Treatment of Overweight/Obesity

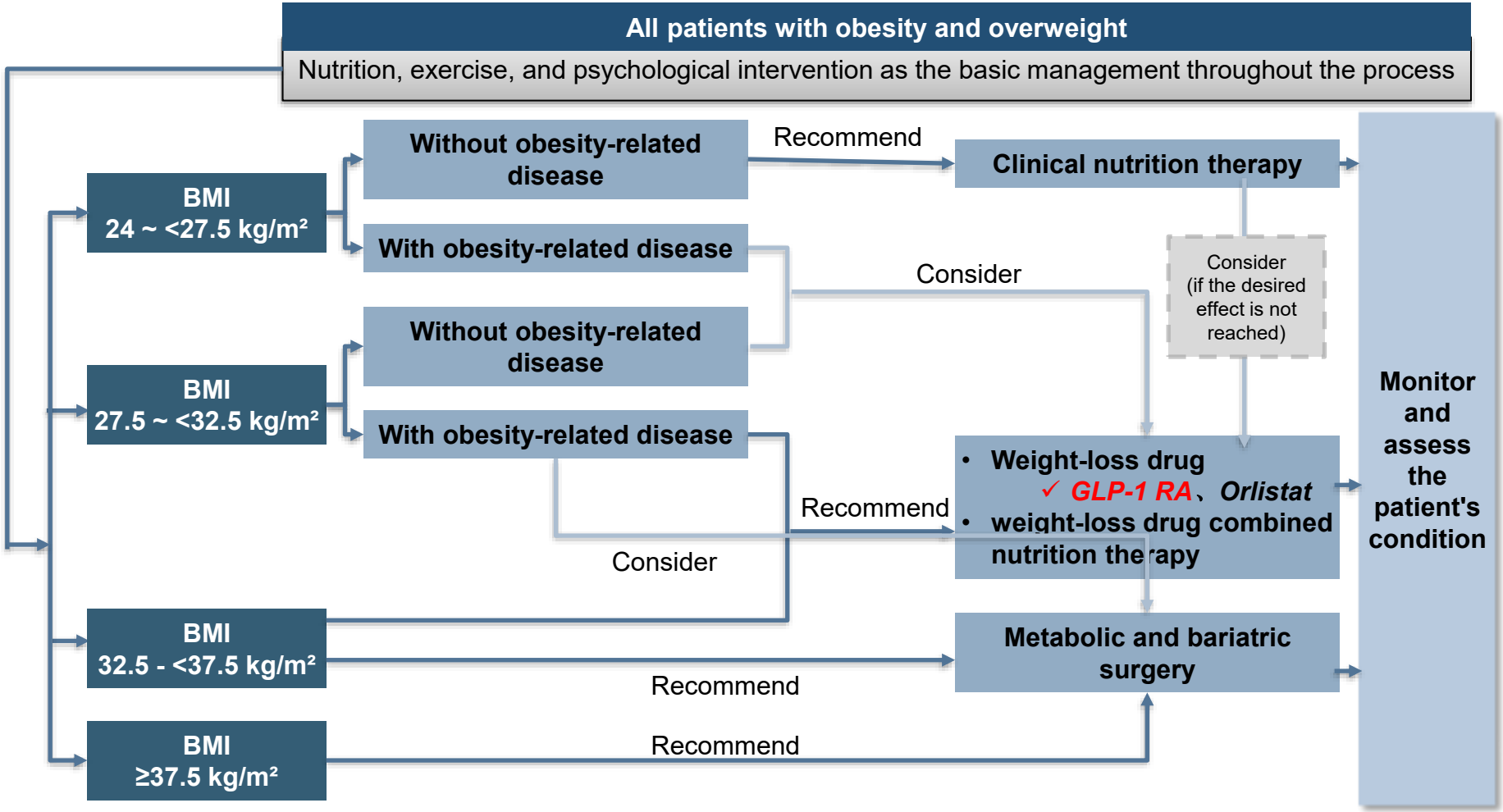
- GLP-1 receptor agonists can stimulate islet beta cells, promote insulin secretion and synthesis, inhibit glucagon secretion, reduce glycemic, reduce energy intake, delay the rate of gastric emptying, increase satiety, suppress appetite, and achieve weight loss.
- Most obese patients are complicated with chronic metabolic diseases such as diabetes and non-alcoholic fatty liver disease, and cardiovascular diseases such as hypertension and hyperlipidemia or related risk factors. GLP-1 receptor agonists have cardioprotective effects, which can reduce the risk of adverse reactions to a certain extent and improve the safety of drug therapy in patients



Source: Literature research, Frost & Sullivan analysis

Treatment Paradigm of Obesity and Overweight

- There are numerous approaches to addressing obesity, encompassing behavioral and psychological interventions, exercise, clinical nutrition therapy, drug treatments, surgery, and traditional Chinese medicine. In recent years, the development of weight-loss drug has seen rapid advancements, particularly with the emergence of novel weight loss drugs based on GLP-1 receptor agonists. These new drugs have demonstrated increasingly effective weight loss outcomes. Human long-acting GLP-1RAs, in particular, have garnered significant attention due to their potent weight loss effects.



Note: Related diseases include but are not limited to: abnormal glycemic, dyslipidemia, hypertension, metabolic-related fatty liver disease, obstructive sleep apnea syndrome, polycystic ovary syndrome, cardiovascular disease, etc.

Source: National Health Commission "Guidelines for the Diagnosis and Treatment of Obesity (2024 Edition)", Frost & Sullivan Analysis

Global Approved Innovative Overweight/Obesity Drugs

- As of July 2025, there are 9 innovative drugs approved for overweight/obesity in global, of which 7 are approved in the U.S., and 5 are also approved in China. In addition, the innovative GLP-1 receptor agonist drugs benaglutide is also approved for overweight/obesity in China.

Generic Name	Brand Name	Manufacturer	MOA	Approved Year	Administration	Global Sales Revenue ,2024 million USD
Orlistat	Xenical®	Roche	Lipase Inhibitor	FDA:1999 EMA:1998 NMPA: 2001	Oral	NA
Phentermine /Topiramate	Qsymia	Vivus	Sympathomimetic amine anorectic agent + antiepileptic drug	FDA: 2012	Oral	NA
Bupropion hydrochloride/Naltrexone hydrochloride	Contrave	Orexigen	Opioid antagonists+aminone antidepressants	FDA: 2014 EMA:2015	Oral	NA
Liraglutide	Saxenda®	Novo Nordisk	GLP-1 therapy	FDA: 2014 EMA:2015	Injection	1006.0
Setmelanotide	Imcivree®	Rhythm Pharmaceuticals	MC4R therapy	FDA:2020 EMA:2021	Injection	NA
Semaglutide	Wegovy®	Novo Nordisk	GLP-1 therapy	FDA:2021 EMA:2022 NMPA: 2024	Injection	8440.4
Tizepatide	Zepbound®	Eli Lilly	GLP-1 therapy	FDA:2023 EMA:2022 NMPA: 2024	Injection	4925.7
Benaglutide	FeiSuMei®	Benemae	GLP-1 therapy	NMPA: 2023	Injection	NA
Mazdutide	Xinermei®	Eli Lilly / Innovent	GLP-1R/GCGR dual agonist	NMPA: 2025	Injection	NA

Note: 1.The industry information is as of 2025/07/28; 2. Only the first weight loss drug among the same generic name launched after 1980 is included

Source: NMP, FDA, EMA, Literature review , Company Website, Frost & Sullivan analysis

China Approved Innovative Overweight/Obesity Drugs

Generic Name	Brand Name	Manufacturer	MOA	Approved Year	Administration
Orlistat	Xenical	Roche	Lipase Inhibitor	2001	Oral
Beinaglutide	Fitus	Benemae	GLP-1 therapy	2023	Injection
Semaglutide	Wegovy	Novo Nordisk	GLP-1 therapy	2024	Injection
Tizepatide	Mounjaro	Eli Lilly	GLP-1 therapy	2024	Injection
Mazdutide	Xinermei®	Eli Lilly / Innovent	GLP-1R/GCGR dual agonist	2025	Injection

Note: 1.The industry information is as of 2025/07/28; 2. Only the first weight loss drug among the same generic name launched after 1980 is included

Source: NMP, FDA, EMA, Literature review , Company Website, Frost & Sullivan analysis

Global (Excluding China) Competitive Landscape of Innovative Overweight/Obesity Drugs Pipeline (1/4)

- As of the Latest Practicable Date, there were 45 innovative GLP-1 receptor agonist drug candidates under clinical development for the treatment of overweight and obesity globally (excluding China), of which 20 are humanized, long-acting GLP-1 receptor agonists.

Target	Drug Name/Code	Company	Dosing period	Administration	Clinical Stage	First Posted Date
GLP-1R	Orforglipron/LY3502970	Eli Lilly	qd	p.o.	Phase III	2023/4/7
GLP-1R/GIPR/GCGR	Retatrutide	Eli Lilly	qw	s.c.	Phase III	2023/5/22
GLP-1R/GCGR	BI 456906/Survodutide	Boehringer Ingelheim	qw	s.c.	Phase III	2023/10/4
GLP-1R	Efpeglenatide	Hanmi	qw	s.c.	Phase III	2023/12/18
TAS2R	ARD-101	Aardvark	bid	p.o.	Phase III	2025/2/13
GLP-1R/GIPR	Maridebart cafraglutide /AMG 133	Amgen	qm	s.c.	Phase III	2025/2/28
MR/GR	Miricorilant	Corcept Therapeutics	qd	p.o	Phase II	2019/1/28
AMYR/CTR	NNC0174-0833	Novo Nordisk A/S	qw	s.c.	Phase II	2019/2/27
DYRK1B	CBL-514	Caliway	-	s.c.	Phase II	2020/8/19
-	SKF7	Medika Natura	-	-	Phase II	2020/9/21
NPYR	NNC0165-1875	Novo Nordisk	qw	s.c.	Phase II	2021/7/21
GLP-1R/GIPR	CT-868	Carmot	qd	s.c.	Phase II	2021/7/22
GLP-1R	XW003	Sciwind	qw	-	Phase II	2021/11/8
PON2	HSG4112	Glaceum	qd	p.o.	Phase II	2022/1/19
ANT	HU6	Rivus Pharmaceuticals	qd	p.o.	Phase II	2022/3/17
GCGR/GLP-1R	ALT-801	Altimmune	qw	-	Phase II	2022/3/25
-	APHD-012	Aphaia	qd		Phase II	2022/5/23
ACVR2	Bimagrumab	Versanis	qw	s.c.	Phase II	2022/11/14
GLP1R/GLP2R	Dapiglutide	Zealand	qw	s.c.	Phase II	2023/3/29
CNR1	INV-202	Inversago		p.o.	Phase II	2023/6/7
MOGAT2	S-309309	Shionogi	qd	p.o.	Phase II	2023/6/29
GPR1R/GPR40	K-757 | K-833	Kallyope		p.o.	Phase II	2023/8/31
MC4R	LR19021	LG Chem	qd	p.o.	Phase II	2023/9/18
AMYR/GLP1R	NNC0487-0111	Novo Nordisk A/S	qd	s.c.	Phase II	2023/10/3
GLP1R/GIPR	VK2735	Viking Therapeutics	qd	p.o.	Phase II	2023/10/5
AMYR	LY3841136	Eli Lilly	-	s.c.	Phase II	2023/11/6
GCGR/GLP-1R	LY3305677	Eli Lilly	qw	s.c.	Phase II	2023/11/9
-	GLY-200	Glyscend	qd	p.o.	Phase II	2024/2/14

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: Clinical trial, Company Website, Literature Review, Frost & Sullivan analysis

Global (Excluding China) Competitive Landscape of Innovative Overweight/Obesity Drugs Pipeline (2/4)

Target	Drug Name/Code	Company	Dosing period	Administration	Clinical Stage	First Posted Date
GLP-1R	RGT001-075	Regor	qd	p.o.	Phase II	2024/2/26
AR	Enobosarm	Veru	qd	p.o.	Phase II	2024/2/28
Activin A/GDF8	Trevogrumab | Garetosmab	Regeneron	-	s.c.	Phase II	2024/3/7
GLP-1R/GIPR	NNC0519-0130	Novo Nordisk	qw	s.c.	Phase II	2024/3/22
GDF8	Apitegromab	Scholar Rock	qm	i.v.	Phase II	2024/6/6
APLNR	Azelaprag	BioAge Labs	qd	p.o.	Phase II	2024/7/23
-	S1B-509	S1 Bio	qd	p.o.	Phase II	2024/7/24
GLP-1R/GIPR	CT-388	Carmot	qw	s.c.	Phase II	2024/7/29
GLP1R/GIPR	CPX101	Gmax Biopharm	q2w/qm	s.c.	Phase II	2024/8/1
GLP1R	AZD5004	AstraZeneca	qd	p.o.	Phase II	2024/8/30
GLP1R/GIPR/IGF1R/GCGR	NA-931	Biomed Industries	qd	p.o.	Phase II	2024/8/21
CNR1	Namacizumab	Skye Bioscience	qw	s.c.	Phase II	2024/8/29
AMYR	AZD6234	AstraZeneca	qw	s.c.	Phase II	2024/9/19
IL22R	CK-0045	Cytoki Pharma	qw	s.c.	Phase II	2024/9/25
GLP1R	LY-307161	Belrose Pharma and Eli Lilly	qd	p.o.	Phase II	2024/10/1
MTTP	RDX-002	Response Pharmaceuticals	qd	p.o.	Phase II	2024/10/15
AMYR	ZP8396	Zealand Pharma	-	s.c.	Phase II	2024/10/29
GLP1R	LY3549492	Eli Lilly	qd	p.o.	Phase II	2024/11/12
GLP1R	GSBR-1290	Gasherbrum	qd	p.o.	Phase II	2024/11/18
GLP-1R/GIPR	NN9541	Novo Nordisk	qw	s.c.	Phase II	2024/11/20
GIPR	PF-07976016	Pfizer	qd	p.o.	Phase II	2024/12/5
GLP1R	GZR18	Gan & Lee	q2w	p.o.	Phase II	2024/12/17
NLRP3	VTX3232	Zomagen Biosciences Ltd.	qd	p.o.	Phase II	2025/1/13
AMYR/CTR	KBP-336	KeyBioscience AG	qw	s.c.	Phase II	2025/2/19
GLP1R	TERN-601	Terns, Inc.	qd	p.o.	Phase II	2025/3/3
GLP1R/GCGR	AZD9550	AstraZeneca	qw	s.c.	Phase II	2025/3/6
GDF8	RG-70240	Hoffmann-La Roche	q4w	s.c.	Phase II	2025/5/11
ROCK2	TDI01	Graviton Bioscience Corporation	qd	p.o.	Phase II	2025/5/20
GLP1R	ASC30	Ascletis Pharma	qd	p.o.	Phase II	2025/6/4
MAO-B	Tisolagiline	NeuroBiogen	qd	p.o.	Phase II	2025/6/6
GLP1R	NAPERIGLIPRON	Eli Lilly	qd	p.o.	Phase II	2025/6/22
NLRP3	NT-0796	NodThera Limited	qd	p.o.	Phase II	2025/7/9
GLP-1R	CT-996	Carmot	qd	p.o.	Phase II	2025/7/24

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: Clinical trial, Company Website, Literature Review, Frost & Sullivan analysis

Global (Excluding China) Competitive Landscape of Innovative Overweight/Obesity Drugs Pipeline (3/4)

Target	Drug Name/Code	Company	Dosing period	Administration	Clinical Stage	First Posted Date
GLP-1R	TE-8105	Immunwork	q2w	s.c.	Phase I/II	2024/6/24
INHBE	ARO-INHBE	Arrowhead Pharmaceuticals	q4w	s.c.	Phase I/II	2024/11/22
GLP1R	MET-097	Metsera	qw	s.c.	Phase I/II	2025/3/4
ALK7	ARO-ALK7	Arrowhead Pharmaceuticals	q4w	s.c.	Phase I/II	2025/4/22
AMYR	MET-233i	Metsera	qw	s.c.	Phase I/II	2025/6/15
GIPR	AMG 598	Amgen	q4w	s.c.	Phase I	2018/11/27
GFRAL	NNC0247-0829	Novo Nordisk	-	s.c.	Phase I	2019/7/8
GCGR	HM15136	Hanmi	-	s.c.	Phase I	2019/11/15
GOAT	BI 1356225	Boehringer Ingelheim	qd	p.o.	Phase I	2020/6/25
-	ERX1000	ERX Pharmaceuticals	-	p.o.	Phase I	2021/5/18
NPY2R	BI 1820237	Boehringer Ingelheim	-	-	Phase I	2021/5/25
GLP1R	XW004	Sciwind	qd	p.o.	Phase I	2022/1/11
NPY2R	GUB002496	Boehringer Ingelheim	-	s.c.	Phase I	2022/5/18
26GLP-1R/GCGR/FGF21	DR10624	Doerbio	qw	s.c.	Phase I	2022/5/18
COX-2/TGFB1	STP705	Sirnaomics	-	s.c.	Phase I	2022/6/16
NPYR	LY3457263	Eli Lilly	-	s.c.	Phase I	2022/10/13
-	XEN-101	Xeno	-	p.o.	Phase I	2022/12/28
GABR	BL-001	Bloom Science	qd	p.o.	Phase I	2023/4/18
-	TLC-6740	OrsoBio	-	p.o.	Phase I	2023/4/20
PTPN1	ENT-03	Enterin	-	s.c.	Phase I	2023/6/29
GLP-1R/FGF21	BI3006337	Boehringer Ingelheim	qw	s.c.	Phase I	2023/8/1
AMYR	GUB014295	Gubra	-	s.c.	Phase I	2023/11/22
NPR1	LY3971297	Eli Lilly	-	s.c.	Phase I	2023/11/28
MC4R	RM-718	Rhythm Pharmaceuticals	-	-	Phase I	2024/2/2
GLP-1R/GCGR	DA-1726	NeuroBo	qw	s.c.	Phase I	2024/2/9

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: Clinical trial, Company Website, Literature Review, Frost & Sullivan analysis

Global (Excluding China) Competitive Landscape of Innovative Overweight/Obesity Drugs Pipeline (4/4)

Target	Drug Name/Code	Company	Dosing period	Administration	Clinical Stage	First Posted Date
GLP1R	PF-06954522	Pfizer	qd	p.o.	Phase I	2024/2/28
-	BI 3034701	Boehringer Ingelheim	-	s.c.	Phase I	2024/4/8
THRB	ASC47	Ascletis Pharma	-	s.c.	Phase I	2024/5/24
GLP-1R/GIPR/GCGR	HM15275	Hanmi	qw	s.c.	Phase I	2024/7/1
GIPR	MACUPATIDE	Eli Lilly	-	s.c.	Phase I	2024/8/1
GLP1R	GS-4571	Gilead Sciences	-	p.o.	Phase I	2024/8/20
ADIPOR1/ADIPOR2	BHD1028	EncuraGen, Inc	qd	s.c.	Phase I	2024/8/20
16GLP-1R	Danuglipron	Pfizer	qd	p.o.	Phase I	2024/8/23
-	NNC0638-0355	Novo Nordisk A/S	-	s.c.	Phase I	2024/8/29
GDF/Activin A	HS135	35Pharma Inc	qw	s.c.	Phase I	2024/9/3
GLP1R/GIPR	LY3537031	Eli Lilly	qw	s.c.	Phase I	2024/9/20
GLP1R	ID110521156	IIDong Pharmaceutical Co Ltd，YUNOVIA CO.,LTD.	qd	p.o.	Phase I	2024/10/10
GLP1R/GIPR	BGM0504	BrightGene Bio-Medical Technology Co., Ltd.	qw	s.c.	Phase I	2024/12/04
Activin/GDF	HS235	35Pharma Inc	-	s.c.	Phase I	2024/12/04
AMYR	NN1213	Novo Nordisk A/S	-	s.c.	Phase I	2024/12/05
GLP1R/GIPR/GCGR	NNC0662-0419	Novo Nordisk A/S	qw	s.c.	Phase I	2024/12/17
PTPN1	MD-18	Cohen Global, Ltd.	Three times a week	p.o.	Phase I	2024/12/18
INHBE	WVE-007	Wave Life Sciences Ltd.	-	s.c.	Phase I	2025/2/24
GRB14	ALN-4324	Alnylam	-	s.c.	Phase I	2025/2/25
GLP1R/GIPR/GCGR	MWN109 Injection	Shanghai Minwei Biotech	qw	s.c.	Phase I	2025/3/5
GLP1R/GLP2R	RT-114	RANI Therapeutics	-	p.o.	Phase I	2025/3/24
GLP1R	VCT220	Vincentage Pharma	qd	p.o.	Phase I	2025/4/22
-	LY4086940	Eli Lilly	qd	p.o.	Phase I	2025/4/25
Activin A	Garetosmab	Regeneron	-	-	Phase I	2025/5/14

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: Clinical trial, Company Website, Literature Review, Frost & Sullivan analysis

Global (Excluding China) Competitive Landscape of Humanized, Long-acting GLP-1 Receptor Agonists Innovative Drug Pipeline for Overweight/Obesity

Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Period
CagriSema	Novo Nordisk	Phase III	2022/10/5	qw
Retatrutide	Eli Lilly	Phase III	2023/5/22	qw
BI 456906/Survodutide	Boehringer Ingelheim	Phase III	2023/10/4	qw
Efpeglenatide	Hanmi	Phase III	2023/12/18	qw
AMG 133	Amgen	Phase III	2025/2/28	qm
XW003	Sciwind	Phase II	2021/11/8	qw
Pemvidutide (ALT-801)	Altimmune	Phase II	2022/5/15	qw
Dapiglutide	Zealand	Phase II	2023/3/29	qw
LY3305677	Eli Lilly	Phase II	2023/11/9	qw
NNC0519-0130	Novo Nordisk	Phase II	2024/3/22	qw
CT-388	Carmot	Phase II	2024/7/29	qw
CPX101	Gmax Biopharm	Phase II	2024/8/1	q2w/qm
NN9541	Novo Nordisk	Phase II	2024/11/20	qw
AZD9550	AstraZeneca	Phase II	2025/3/6	qw
ASC30	Ascletis Pharma	Phase I/II	2024/11/8	qm/qd
DR10624	Doerbio	Phase I	2022/5/18	qw
BI3006337	Boehringer Ingelheim	Phase I	2023/8/1	qw
DA-1726	NeuroBo	Phase I	2024/2/9	qw
TE-8105	Immunwork	Phase I	2024/6/24	q2w
HM15275	Hanmi	Phase I	2024/7/1	qw

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. 4. Only included in the drugs that can be differentiated by 'human/animal derived GLP-1 therapy' through the public information

Source: Clinical trial, Frost & Sullivan analysis

China Competitive Landscape of Innovative Overweight/Obesity Drugs Pipeline (1/2)

- As of the Latest Practicable Date, there were 53 innovative GLP-1 receptor agonist drug candidates under clinical development for the treatment of overweight and obesity in China, of which 21 are humanized, long-acting GLP-1 receptor agonists.

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing period
GLP-1R	Ecnoglutide (XW003)	Scinwind	NDA	2024/12/17	qw
GLP-1R/AMYR	Cagrilintide	Novo Nordisk	Phase III	2023/7/5	qw
GLP-1R	Orforglipron/LY3502970	Eli Lilly	Phase III	2023/8/11	qd
GCG/GLP-1R	BI 456906	Boehringer Ingelheim	Phase III	2023/12/14	qw
GIPR/GLP-1R	HRS9531	Hengrui	Phase III	2024/5/6	qw
GIPR/GLP-1R	HS-20094	Jiangsu Hansoh	Phase III	2024/10/31	qw
GIPR/GLP-1R	BGM0504	BrightGene	Phase III	2024/10/31	qw
GLP-1R	VCT220	Suzhou Wentai	Phase III	2024/11/20	qd
GLP-1R	GZR18	Gan & Lee	Phase III	2024/12/18	qd
GLP-1R	HRS-7535	Hengrui	Phase III	2025/3/31	qd
GLP-1R	HDM1002	Hangzhou Zhongmei Huadong	Phase III	2025/4/14	qd/bid
GLP-1R	TG103	CSPC	Phase III	2025/4/16	qw
GIPR/GLP-1R	RAY1225	Raynovent	Phase III	2025/6/18	qw
GLP-1R	Nonioglycopeptide	Hengrui	Phase II	2021/3/8	qd
GIPR/GCGR/GLP-1R	MWN101	Shanghai Minwei	Phase II	2024/3/7	qw
GLP-1R	Efsubaglutide α	Innogen	Phase II	2024/3/11	qw
GLP-1R	ZT002	Beijing Peptide	Phase II	2024/7/12	qw
GLP-1R	MDR-001	Mindrank	Phase II	2024/8/23	bid
-	ABP2111Na	Shanghai Aibo Pharmaceutical	Phase II	2024/9/20	qd
GIPR/GLP-1R	THDBH120	Tonghua Dongbao	Phase II	2024/12/5	qw
GIPR/GLP-1R	HDM1005	Hangzhou Zhongmei Huadong	Phase II	2025/1/16	qd
GIPR/GCGR/GLP1R	UBT251	United Biotechnology	Phase II	2025/2/17	qw
GLP-1R	DA-302168S	Diao group	Phase II	2025/3/26	qd

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: CDE, Company Website, Literature Review, Frost & Sullivan analysis

China Competitive Landscape of Innovative Overweight/Obesity Drugs Pipeline (2/2)

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing period
GIPR/GCGR/GLP-1R	ZX2021	Xintrum	Phase II	2025/4/11	qw
AMYR	AZD6234	AstraZeneca	Phase II	2025/5/6	qw
GLP-1R	HS-10501	Jiangsu Hansoh	Phase II	2025/5/6	qd
ACVR2	Bimagrumab	Eli Lilly	Phase II	2025/5/30	qw
GLP-1R	GMA105	Gmaxbio	Phase Ib/II	2022/6/27	qw
GLP1R/FGF21	HEC88473	Dongguan HEC	Phase I	2021/5/27	qw
GIPR/GCGR/GLP-1R	Retatrutide	Eli Lilly	Phase I	2022/9/27	qw
GCGR/GLP-1R	PB-718	Pegbio	Phase I	2023/5/31	qw
GLP-1R	JY09	Beijing east biotech Co.,Ltd	Phase I	2023/8/18	qw
GCGR/GLP1R/FGF21	DR10624	Doer Biologics	Phase I	2023/8/31	qw
GIPR/GLP-1R	HZ012	Heze	Phase I	2023/10/25	-
GLP-1R	SAL0112	Shenzhen Salubris Pharmaceuticals	Phase I	2023/12/18	qd
GIPR/GLP-1R	AMG 133	Amgen	Phase I	2024/2/21	qm
GIPR/GLP-1R	ZX2010	Xintrum	Phase I	2024/4/16	qw
GLP-1R	PB-119	Pegbio	Phase I	2024/4/17	qw
ACVR2A	LAE102	Lokna	Phase I	2024/6/3	-
GIPR/GLP-1R	KN069	Alphamab	Phase I	2024/7/25	-
GLP-1R	APH01727	Yipinhong	Phase I	2024/7/26	qd
GLP-1R	BPYT-01	Baiji Youtang	Phase I	2024/8/13	qd
GIPR/GLP-1R	CPX101	Sino Biopharmaceutical	Phase I	2024/8/31	qw
GLP-1R	ZT006	Peptide Biomedical	Phase I	2024/11/15	qd
GIPR/GCGR/GLP-1R	MWN109 Injection	Shanghai Minwei	Phase I	2024/12/12	qw
GCGR/GLP1R/FGF21	MWN105	Shanghai Minwei	Phase I	2024/12/13	qw
GCGR/GLP1R	CMS-D005	Shenzhen CMS Biotechnology	Phase I	2024/12/26	qw
GIPR/GCGR/GLP-1R	HRS-4729	Hengrui	Phase I	2025/1/13	qw
GLP1R/AMYR	NN9487	Novo Nordisk	Phase I	2025/1/20	qd
GLP-1R	SYH2067	CSPC	Phase I	2025/4/8	qd
-	HRS-5817	Hengrui	Phase I	2025/4/16	qw
GIPR/GLP1R	NN9541	Novo Nordisk	Phase I	2025/4/17	qw
GLP1R/INSR	GZR102	Gan&Lee Pharmaceuticals	Phase I	2025/4/23	qw
GLP-1R	XTL6001	Shaanxi Micot Technology	Phase I	2025/5/26	qw
GLP-1R	AZD5004	AstraZeneca	Phase I	2025/5/26	qd
GIPR/GCGR/GLP1R	MWN109 Tablet	Shanghai Minwei Biotechnology	Phase I	2025/6/6	qd
GLP-1R	RGT-274	Shanghai Qilu Ruige	Phase I	2025/6/13	qd
GLP1R,AMYR	Amycretin-NN9490	Novo Nordisk	Phase I	2025/7/17	-

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: CDE, Company Website, Literature Review, Frost & Sullivan analysis

China Competitive Landscape of Humanized, Long-acting GLP-1 Receptor Agonists Innovative Drug Pipeline for Overweight/Obesity

Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Period
Ecnoglutide (XW003)	Scinwind	NDA	2024/12/17	qw
Cagrilintide	Novo Nordisk	Phase III	2023/7/5	qw
BI 456906	Boehringer Ingelheim	Phase III	2023/12/14	qw
HRS9531	Hengrui	Phase III	2024/5/6	qw
HS-20094	Jiangsu Hansoh	Phase III	2024/10/31	qw
BGM0504	BrightGene	Phase III	2024/10/31	qw
GZR18	Gan & Lee	Phase III	2024/12/18	qd
TG103	CSPC	Phase III	2025/4/16	qw
Efsubaglutide α	Innogen	Phase IIb	2025/3/3	qw
RAY1225	Raynovent	Phase III	2025/6/18	qw
MWN101	Shanghai Minwei	Phase II	2024/3/7	qw
THDBH120	Tonghua Dongbao	Phase II	2024/12/5	qw
HDM1005	Hangzhou Zhongmei Huadong	Phase II	2025/1/16	qd
ZX2021	Xintrum	Phase II	2025/4/11	qw
GMA105	Gmaxbio	Phase Ib/II	2022/6/27	qw
HEC88473	Dongguan HEC	Phase I	2021/5/27	qw
PB-718	Pegbio	Phase I	2023/5/31	qw
DR10624	Doerbio	Phase I	2023/8/31	qw
AMG 133	Amgen	Phase I	2024/2/21	qm
ZX2010	Xintrum	Phase I	2024/4/16	qw
CPX101	Sino Biopharmaceutical	Phase I	2024/8/31	qw

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. 4. Only included in the drugs that can be differentiated by 'human/animal derived GLP-1 therapy' through the public information

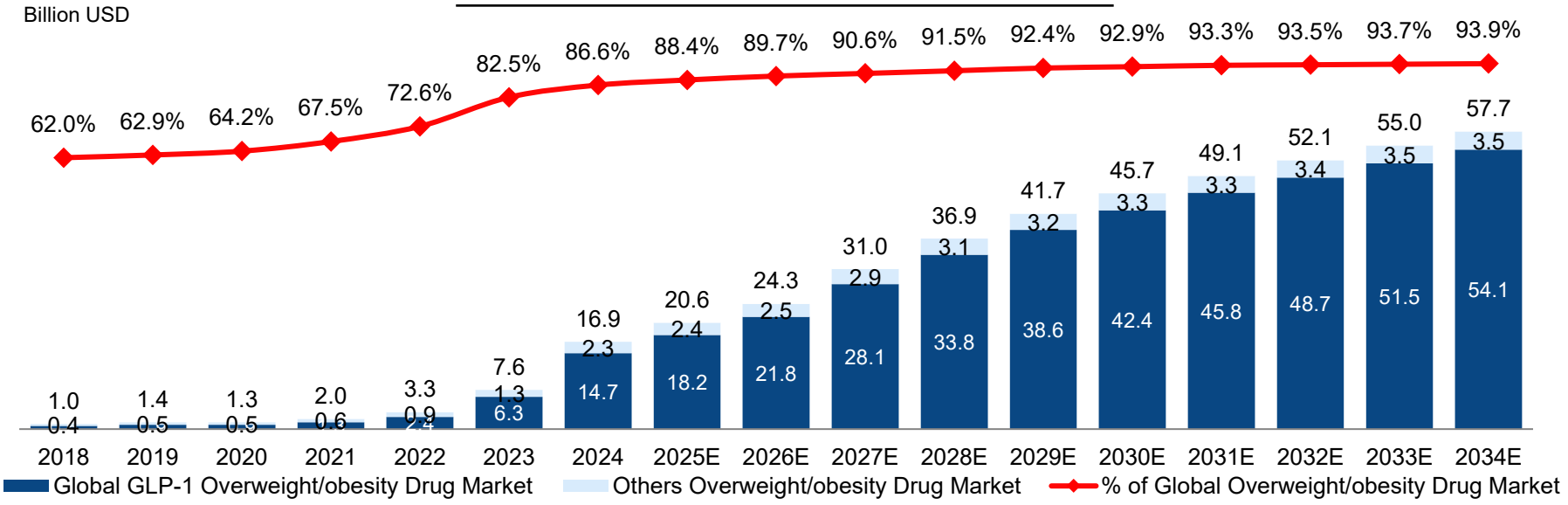
Source: Clinical trial, Frost & Sullivan analysis

Global Obesity/Being Overweight Drug Market, 2018-2034E

- In 2024, the global obesity/overweight drug market is USD16.9 billion. It is estimated that the global obesity/overweight drug market will grow to USD36.9 billion in 2028 and USD57.7 billion in 2034, with a CAGR of 21.5% from 2024 to 2028 and 7.7% from 2028 to 2034 respectively.
- From 2018 to 2024, the market size of global GLP-1 drug for obesity/overweight increased from USD0.6 billion to USD14.7 billion, with a CAGR of 69.8%. In the future, the market size of global GLP-1 drug for obesity/overweight will continue to grow steadily, and it is expected to reach 33.8 billion USD in 2028 at a CAGR of 23.2%, and 51.4 billion USD in 2034 at a CAGR of 8.2% from 2028 to 2034.
- In 2024, GLP-1 drug market for obesity/overweight account for 86.6% of total obesity/overweight drug market globally. As clinical applications increase and more GLP-1 products enter the market, the global market share of GLP-1 drug for obesity/overweigh drug market will reach 91.5% in 2028.

Global Obesity/Being Overweight Drug Market, 2018-2034E

Period	CAGR	
	GLP-1	Total
2018-2024	69.8%	60.6%
2024-2028E	23.2%	21.5%
2028E-2034E	8.2%	7.7%



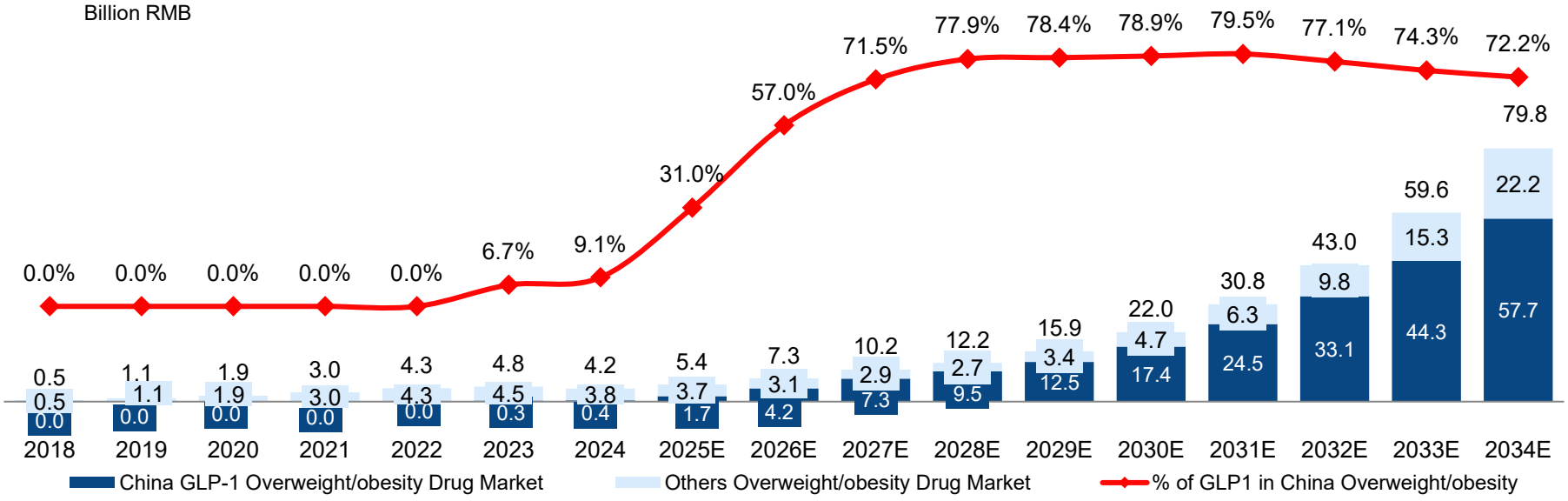
Source: Annual Report, Frost & Sullivan Analysis

Obesity/Being Overweight Drug Market in China, 2018-2034E

- From 2018 to 2024, the market size of obesity/overweight drug in China increased from RMB0.5 billion to RMB 4.2 billion, with a CAGR of 43.5%. In the future, the market size of obesity/overweight drugs in China will continue to grow steadily, and it is expected to reach 12.2 billion RMB in 2028, with a CAGR of 30.6% from 2024 to 2028, 79.8 billion RMB in 2034 with a CAGR of 36.8% from 2028 to 2034.
- The first GLP-1 drug for obesity/overweight was approved in China in 2023. From then, the market size of GLP-1 drug for obesity/overweight in China has been increasing. In the future, the market size of GLP-1 drug for obesity/overweight in China is expected to reach 9.5 billion RMB in 2028, with a CAGR of 123.3%.
- In 2024, GLP-1 drug market for obesity/overweight account for 9.1% of total obesity/overweight drug market in China. As clinical applications increase and more GLP-1 products enter the market, the market share of GLP-1 drug for obesity/overweight in China obesity/overweight market will reach 77.9% in 2028.

Obesity/Being Overweight Drug Market in China, 2018-2034E

Period	CAGR	
	GLP-1	Total
2018-2024	-	43.5%
2024-2028E	123.3%	30.6%
2028E-2034E	35.0%	36.8%



Source: Annual Report, Frost & Sullivan Analysis

Growth Drivers of Global Obesity/Overweight Drug Market

Unmet Clinical Demand	• The prevalence of obesity/weight in the world has been rapidly increasing due to changes in modern lifestyles. From 2018 to 2023, the number of obesity/overweight grew from 2,869.5 million to 3,451.2million, with projections reaching 4,518.5 million by 2034. The onset of obesity/oveeight is occurring at younger ages, affecting more young people. Currently, there are still few drugs approved for treating obesity/overweight globally, highlighting a significant unmet clinical demand in treatment.
Rising Awareness of Obesity and Overweight Management	• With increasing public health consciousness, there is a heightened awareness of the complexities and psychological challenges associated with obesity and overweight. This has led to a surge in consumer demand for effective obesity and overweight management solutions. The focus on long-term health outcomes has steered the market towards treatments that boast enhanced safety profiles. Moreover, obesity's impact on the younger demographic, which is now disproportionately affected, has prompted a greater willingness among this group to engage in obesity management. This shift could lead to a significant rise in the uptake of treatment options
Progression of Obesity Prevention and Control Policies	• The Chinese government has introduced a series of policies to control the rising obesity rates, driving growth in the obesity treatment market. In 2019, the *Blue Book on Obesity Prevention and Control in China* emphasized the need for a government-led, multi-sector approach to address the obesogenic environment. The *Healthy China Action Plan (2019-2030)* proposed specific measures to control the obesity growth rate, including dietary, exercise, and lifestyle guidelines, alongside nationwide fitness initiatives. The plan also set targets to slow the adult obesity growth rate by 2022 and 2030. In 2024, the Department of Medical Emergency Management issued the implementation plan for the "Weight Management Year" activity. The main goal is to strive to achieve the establishment of a supportive environment for weight management and significantly improve the weight management awareness and skills of the whole people within about three years starting from 2024.

Source: Frost & Sullivan Analysis

Future Trends of Global Obesity/Overweight Drug Market

Innovative Drug Development Oriented towards Long-term Treatment	• Obesity/overweight, a chronic metabolic disease with a high relapse rate, requires long-term management to reduce related complications such as diabetes and cardiovascular diseases. Short-term treatments are often limited due to high rebound risks, potential abuse, and common side effects like elevated blood pressure and increased heart rate. GLP-1 drugs, with their favorable safety profile and patient compliance, are well-suited for long-term use. These drugs offer multiple benefits, including weight loss, improved metabolic control, and cardiovascular protection, meeting the comprehensive needs of patients.
Research and Development of Innovative Drugs Based on Safety	• Obesity and overweight conditions are frequently accompanied by comorbidities, including diabetes and cardiovascular diseases. Individuals struggling with obesity are not only more likely to have these health issues but also face an elevated risk of developing them. This reality underscores the critical importance of safety in obesity treatment options. Historically, certain obesity medications, such as amphetamines and sibutramine, have been removed from the market due to their severe side effects, which can include irreversible harm to the cardiovascular and central nervous systems, as well as a high risk of addiction. In contrast, GLP-1 receptor agonists have distinguished themselves with a favorable long-term safety profile, marking a significant advancement in the realm of weight management.

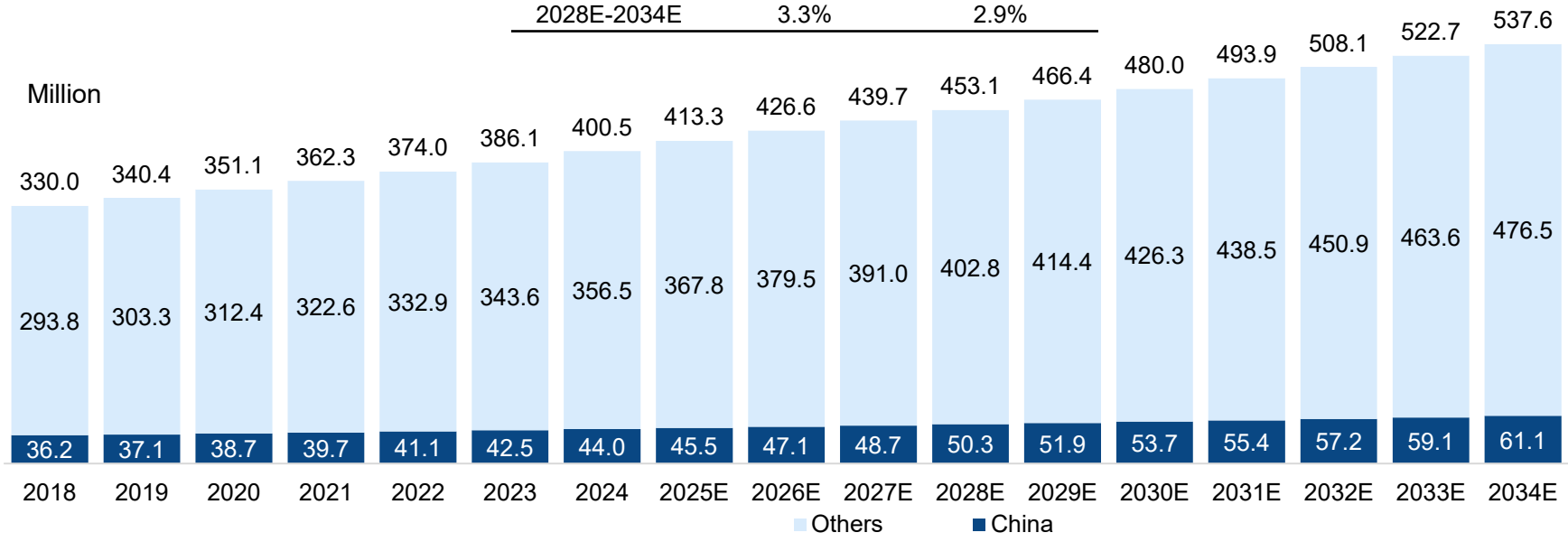
Source: Frost & Sullivan Analysis

Global Prevalence of MASH, 2018-2034E

- In recent years, the number of patients with Metabolic dysfunction-associated steatohepatitisin the world has increased rapidly, from 330.0 million to 400.5 million in 2018 and 2024, with a CAGR of 3.3%, due to factors such as changes in dietary structure, lifestyle changes and rising obesity rate. It is predicted that the number of patients with MASH in the world will continue to increase, reaching 453.1 million in 2028, with a CAGR of 3.1% from 2024 to 2028, 537.6 million in 2034 with a CAGR of 2.9% from 2028 to 2034.
- In recent years, the number of patients with Metabolic dysfunction-associated steatohepatitisin China has increased rapidly, from 36.2 million to 44.0.million in 2018 and 2024, with a CAGR of 3.3%, due to factors such as changes in dietary structure, lifestyle changes and rising obesity rate. It is predicted that the number of patients with MASH in China will continue to increase, reaching 50.3 million in 2028, with a CAGR of 3.4% from 2024 to 2028, 61.1 million in 2034 with a CAGR of 3.3% from 2028 to 2034.

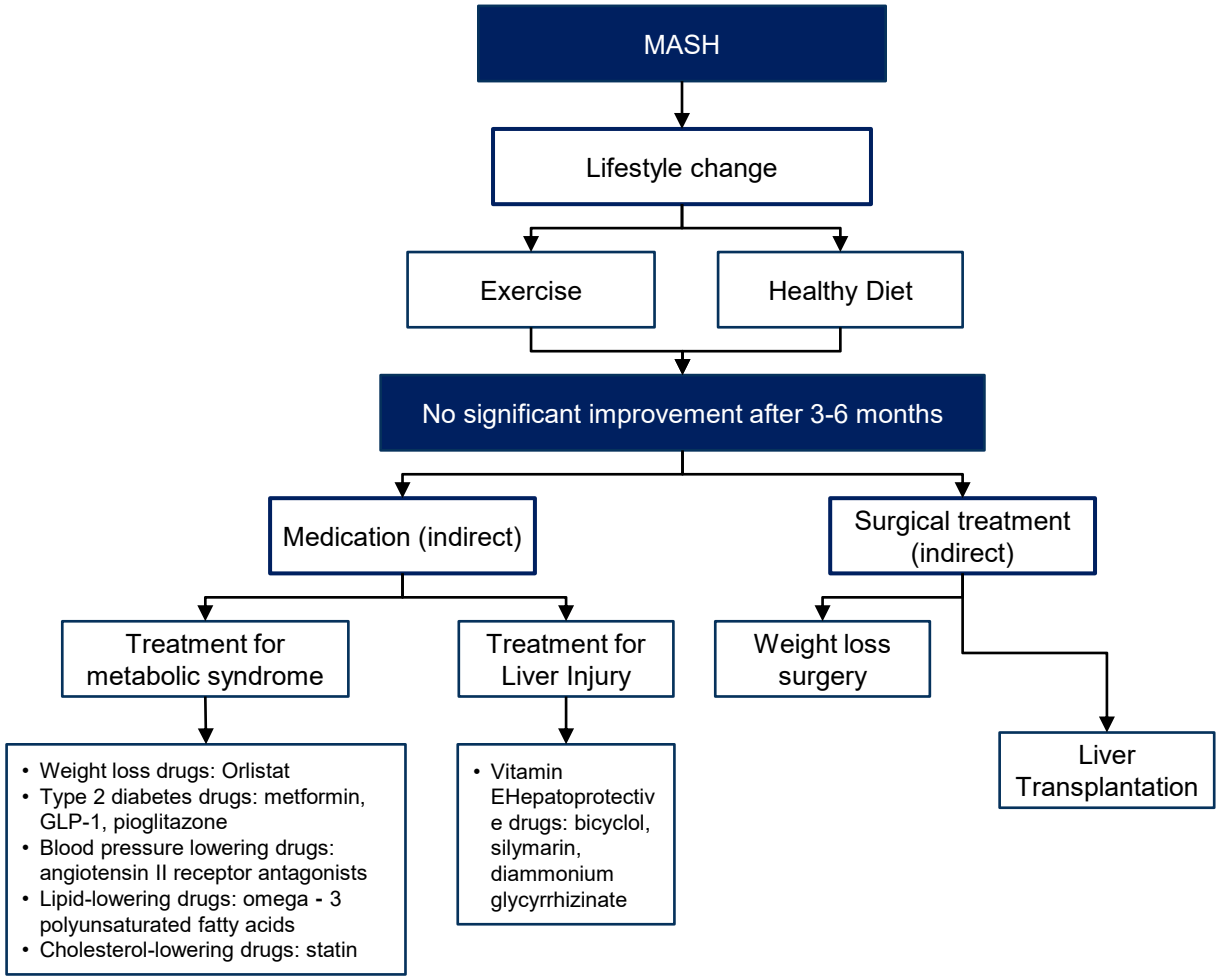
Global Prevalence of MASH, 2018-2034E

Period	CAGR	
	China	Global
2018-2024	3.3%	3.3%
2024-2028E	3.4%	3.1%
2028E-2034E	3.3%	2.9%



Source: Literature review, Frost & Sullivan analysis

Treatment Pathways of MASH



来源：诊疗指南，弗若斯特沙利文分析

Global Approved MASH Drugs

- As of the Latest Practicable Date, there were no drugs approved for MASH in China and only two drugs were approved for the treatment of MASH globally: Lipaglyn in India (approved in 2020) and Rezdiffra in the U.S. (approved in 2024), which presents a significant unmet medical need.

Brand Name	Generic Name	Company	Drug Type	Target	Approved Date	Listed Regions	Core Patent Expiration Date	Annual Cost
Lipaglyn	Saroglitazar Magnesium	Zydus Cadila	Small molecule	PPARα/γ	2020/3/6	DCGI	NA	USD 1,587
Rezdiffra	Resmetirom	Madrigal	Small molecule	THR-β	2024/3/14	FDA	2037	USD 5,0721

Notes: 1. The industry information is as of 2025/7/28.

Source: FDA, Company website, Frost & Sullivan Analysis

Global (Excluding China) Competitive Landscape of Innovative Drug Pipeline for MASH (1/3)

- As of the Latest Practicable Date, there were 15 innovative GLP-1 receptor agonist drug candidates under clinical development for the treatment of MASH globally (excluding China), of which nine are humanized, long-acting GLP-1 receptor agonists.

Target	Drug Name/Code	Company	Clinical Stage	Clinical Stage
GLP-1R	Semaglutide	Novo Nordisk	NDA	2025/4/30
PPAR	IVA337/Lanifibranor	Inventiva	Phase III	2021/4/19
FGF21R	Efruxifermin	Akero	Phase III	2023/12/8
GCGR/GLP-1R	Survodutide/BI 456906	Boehringer Ingelheim	Phase III	2024/3/13
FGF21	Pegozafermin/BIO89-100	89bio	Phase III	2024/3/19
FGF21	Pegbelfermin	Bristol-Myers Squibb	Phase II	2015/4/8
ANGPTL4	MN-001	MediciNova	Phase II	2016/2/12
ACC1/ACC2	Firsocostat	Gilead	Phase II	2016/5/24
FXR	Cilofexor	Gilead	Phase II	2016/5/24
TRβ	VK2809	Viking	Phase II	2016/10/6
ADORA3	Namodenoson	Can-Fite	Phase II	2016/10/7
SGLT2、SGLT1	LIK066	Novartis Pharmaceuticals	Phase II	2017/7/2
FXR	EDP-305	Enanta	Phase II	2018/2/5
FXR/TGR5/PCSK9	HTD1801	HighTide	Phase II	2018/9/4
ACCase，DGAT2	PF-05221304，PF-06865571	Pfizer	Phase II	2018/12/12
FXR	EYP001a	Enyo	Phase II	2019/1/22
CETP/GPR120	Icosabutate	NorthSea	Phase II	2019/8/9
AR	LPCN 1144	Lipocine	Phase II	2019/10/21
GIPR/GLP-1R	Tirzepatide	Eli Lilly	Phase II	2019/11/18
FXR	TERN-101	Terns	Phase II	2020/3/31
VEGFR1/VEGFR2	AL 101	AngioLab, Inc.	Phase II	2020/04/13
Cyclophilin	CRV431	Hepion	Phase II	2020/7/21
GCGR/GIPR/GLP-1R	HM15211	Hanmi	Phase II	2020/8/10
CCR5	Leronlimab	CytoDyn	Phase II	2020/8/20
FXR	MET642	Metacrine	Phase II	2021/2/26

Note: 1. The industry information is as of 2025/7/28 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: Frost & Sullivan Analysis

Global (Excluding China) Competitive Landscape of Innovative Drug Pipeline for MASH (2/3)

Target	Drug Name/Code	Company	Clinical Stage	Clinical Stage
SGLT2	CSG452	Kowa	Phase II	2022/4/14
FXR	HPG1860	Hepagene	Phase II	2022/4/20
ANT	HU6	Rivus Pharmaceuticals, Inc.	Phase II	2021/5/4
FGF21	BOS-580	Boston Pharmaceuticals	Phase II	2021/5/10
FASN	TVB-2640	Sagimet Biosciences Inc.	Phase II	2021/5/28
DGAT2	ION224	Ionis Pharmaceuticals, Inc.	Phase II	2021/6/10
FGF21	NNC0194-0499，Semaglutide	Novo Nordisk A/S	Phase II	2021/8/23
THRB，FXR	TERN-501，TERN-101	Terns, Inc.	Phase II	2022/6/8
HSD17β13	ALN-HSD	Regeneron	Phase II	2022/8/29
HSD17B13	ARO-HSD	GlaxoSmithKline	Phase II	2022/10/17
FXR	CS0159/Linafexor	Cascade	Phase II	2022/10/24
PNPLA3	AZD2693	AstraZeneca	Phase II	2023/4/12
Arginine	ADI-PEG20	Polaris Group	Phase II	2023/5/6
GCGR/GLP-1R	Efinopegdutide	Merck Sharp & Dohme	Phase II	2023/5/26
GCGR/GLP-1R	Pemvidutide	Altimmune	Phase II	2023/8/14
GPR119	DA-1241	NeuroBo	Phase II	2023/9/26
MR/GR	Miricorilant	Corcept Therapeutics	Phase II	2023/10/27
11β-HSD	J2H-1702	J2H Biotech	Phase IIa	2024/3/7
17β-HSD13	VSA006	Visirna	Phase II	2024/3/21
THRB	ALG 055009	Aligos Therapeutics	Phase II	2024/3/26
GLP1R/GCGR	DD01	Neuraly, Inc.	Phase II	2024/5/8
DGAT2	PF- 06865571	Pfizer	Phase I	2018/4/19
ENPP2	BLD-0409	Blade Therapeutics	Phase I	2019/10/31
GLP1R	XW003	Sciwind	Phase I	2020/5/15
FXR	EDP-297	Enanta Pharmaceuticalsc	Phase I	2020/9/22
GLP1R/GCGR	ALT-801	Altimmune	Phase I	2020/9/23
FXR	ASC42	Gannex Pharma Co., Ltd.	Phase I	2020/12/22
CYP2E1	SNP-630	Sinew Pharma Inc.	Phase I	2021/3/22
GLP1R/FGF21	HEC88473	Dongguan HEC	Phase I	2021/4/1
SSAO	TERN-201	Terns	Phase I	2021/5/21
RAR-α	TB-840	Therasid Bioscience	Phase I	2021/9/16
GLP1R/GIPR	VK2735	Viking Therapeutic	Phase I	2022/1/24
17β-HSD13	INI-822	Inipharm	Phase I	2023/7/14
GLP1R/FGF21	BI 3006337	Boehringer Ingelheim	Phase I	2023/8/1

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: Frost & Sullivan Analysis

Global (Excluding China) Competitive Landscape of Innovative Drug Pipeline for MASH (3/3)

Target	Drug Name/Code	Company	Clinical Stage	Clinical Stage
ADCY6	A4368	Autophagy Sciences, Inc.	Phase I	2021/6/17
AOC3	Ecc0509	Eccogene	Phase I	2021/8/12
RAR-α	TB-840	Therasid Bioscience	Phase I	2021/9/16
-	LB-P6，LB-P8	LISCure Biosciences	Phase I	2021/9/21
17β-HSD13	AZD7503	AstraZeneca	Phase I	2021/11/23
GLP1R/GIPR	VK2735	Viking Therapeutic	Phase I	2022/1/24
PPAR	BEBT-503	BeBetter Med Inc	Phase I	2022/5/26
AMPK	PXL770	Poxel SA	Phase I	2022/6/28
-	ENN0403	EnnovaBio	Phase I	2022/8/17
THRB	ECC4703	Eccogene	Phase I	2022/9/20
PNPLA3	ALN-PNP	Regeneron Pharmaceuticals	Phase I	2022/12/5
PAR2	OA-235i	Oasis Pharmaceuticals	Phase I	2023/1/11
GLP1R/GCGR	AZD9550	AstraZeneca，Parexel	Phase I	2023/5/8
17β-HSD13	INI-822	Inipharm	Phase I	2023/7/14
GLP1R/FGF21	BI 3006337	Boehringer Ingelheim	Phase I	2023/8/1
CCL24/CCL24	CM-101	ChemomAb Ltd.	Phase I	2023/9/21
ADORA3	VG290131	Zhejiang Vimgreen Pharmaceuticals	Phase I	2023/10/13
AOC3	NNC0560-0004	Novo Nordisk A/S	Phase I	2023/11/15
CIDEB	ALN-CIDEB	Regeneron Pharmaceuticals	Phase I	2025/2/20
MARC1	NNC0581-0001	Novo Nordisk A/S	Phase I	2025/3/17
TL1A	Afimkibart	Hoffmann-La Roche	Phase I	2025/3/30

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: Frost & Sullivan Analysis

Global (Excluding China) Competitive Landscape of Humanized, Long-acting GLP-1 Receptor Agonists Innovative Drug Pipeline for MASH

Drug Name/Code	Company	Clinical Stage	First Posted Date	Dosing Period
Semaglutide	Novo Nordisk	Phase III	2021/3/30	qw
Survodutide/BI 456906	Boehringer Ingelheim	Phase III	2024/3/13	qw
Tirzepatide	Eli Lilly	Phase II	2019/11/18	qw
HM15211	Hanmi	Phase II	2020/8/10	qw
Efinopegdutide	Merck Sharp & Dohme	Phase II	2023/5/26	qw
Pemvidutide	Altimmune	Phase II	2023/8/14	qw
XW003	Sciwind	Phase I	2020/5/15	qw
ALT-801	Altimmune	Phase I	2020/9/23	qw
VK2735	Viking Therapeutic	Phase I	2022/1/24	qw

Note: 1. The industry information is as of 2025/7/28. 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date. 4. Only included in the drugs that can be differentiated by 'human/animal derived GLP-1 therapy' through the public information

Source: Clinical trial, Frost & Sullivan analysis

Competitive Landscape of Innovative Drug Pipeline for MASH in China

- As of the Latest Practicable Date, there were ten innovative GLP-1 receptor agonist drug candidates under clinical development for the treatment of MASH in China, of which five are humanized, long-acting GLP-1 receptor agonists.

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date
GLP-1R	Semaglutide	Novo Nordisk	Phase III	2021/7/27
PPAR	Lanifibranor	Inventiva/CTTQ	Phase III	2023/9/11
GCGR/GLP-1R	BI 456906	Boehringer Ingelheim	Phase III	2024/12/20
FGFR1/KLB	MK-3655	MSD R&D(China)Co.,Ltd.	Phase II	2021/1/21
DGAT2	PF-06865571	Pfizer	Phase II	2021/3/15
FXR	HEC96719	Dongguan HEC	Phase II	2021/7/27
PPAR	Chiglitazar Sodium	Chipscreen	Phase II	2021/12/7
THRB	ASC41	Ascletis	Phase II	2022/6/21
PDE	ZSP1601	Zhongsheng Pharma	Phase II	2022/12/30
PNPLA3	AZD2693	AstraZeneca	Phase II	2023/7/11
FGF21	Recombinat FGF21-Fc fusion Protein	Ampsource	Phase II	2023/8/11
FGF21R/GLP-1R	HEC88473	Dongguan HEC	Phase II	2023/8/17
17β-HSD13	VSA006	Visirna	Phase II	2023/10/13
GCGR/GLP-1R	MK-6024	Merck	Phase II	2023/10/19
THR-β	HSK31679	Haisco	Phase II	2023/11/9
FXR/TGR5/PCSK9	HTD1801	HighTide	Phase II	2023/12/21
GCGR/GLP1R/FGF21	DR10624	Doer Biologics	Phase II	2025/2/14
GCGR/GLP1R	IBI362 (Mazdutide)	Eli Lilly / Innovent	Phase II	2025/4/8
GLP-1R/GCGR/GIPR	UBT251	Federal Biotechnology	Phase II	2025/7/14
ACLY	BGT-002	Burgeon	Phase Ib/IIa	2023/2/20
NRF2	IMM-H014	Changchun Intellicrown Pharmaceutical	Phase I/II	2025/5/28
CASP	TQA3563	CTTQ	Phase I	2019/11/11
FXR	SYHA1805	CSPC	Phase I	2020/11/27
IKK	HPN-01	Hepanova	Phase I	2021/3/25
FXR	XZP-5610	Xuanzhu Biopharma	Phase I	2021/4/14
GLP1R,FGF21	HEC88473	Dongguan HEC	Phase I	2021/5/27
GLP-1	XW003	Sciwind	Phase I	2021/6/21
FXR	HPG1860	Hepagene	Phase I	2021/11/18
NA	ENN0403	Ennovabio	Phase I	2021/12/20

Note: 1. The industry information is as of 2025/7/28 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

Source: Frost & Sullivan Analysis

Competitive Landscape of Innovative Drug Pipeline for MASH in China

Target	Drug Name/Code	Company	Clinical Stage	First Posted Date
GCGR/GLP1R	Cotadutide	AstraZeneca	Phase I	2022/1/14
MAP3K5	GST-HG151	Cosunter	Phase I	2022/3/3
FGF21	NNC0194-0499	Novo Nordisk	Phase I	2023/1/18
THR	Kylo-0603	kylonova	Phase I	2023/2/22
/	GH509	1Globe Biomedical	Phase I	2023/3/10
THRB	RJ4287	Orimos Therapeutics	Phase I	2023/5/29
-	BC0306	Shandong Danhong Pharmaceutical	Phase I	2024/5/30
THRB	CS060304	Cascade Pharmaceuticals	Phase I	2024/7/23
THR-β	CS060380	Cascadepharm	Phase I	2024/8/20
RXRA	ACT500	Nucmito	Phase I	2024/11/15
THRB	HP515	Hinova Pharmaceuticals	Phase I	2024/12/27
-	KPC000154	KPC Pharmaceuticals,Inc.	Phase I	2025/2/19
-	XLH01	Shandong Runzhong Pharmaceutical	Phase I	2025/7/16

Note: 1. The industry information is as of 2025/7/28 2. First posted date refers to the date on which the study record was first available on Chinadrugtrials.org.cn or Clinicaltrials.gov. 3. The clinical stage refers to the latest clinical trials as well as the first posted date.

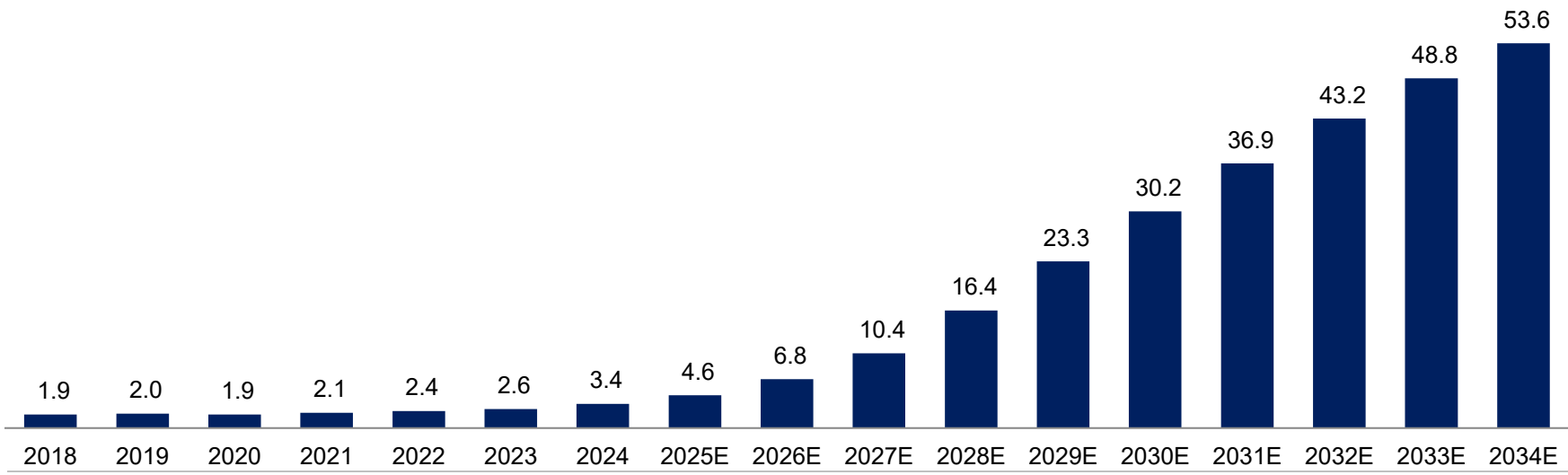
Source: Frost & Sullivan Analysis

Global MASH Drug Market, 2018-2034E

- In 2024, the global MASH drug market is USD3.4 billion. It is estimated that the global MASH drug market will grow to USD16.4 billion in 2028 and USD53.6 billion in 2034, with a CAGR of 48.3% from 2024 to 2028 and 21.9% from 2028 to 2034 respectively.

Global MASH Drug Market, 2018-2034E

Period	CAGR
2018-2024	10.3%
2024-2028E	48.3%
2028E-2034E	21.9%



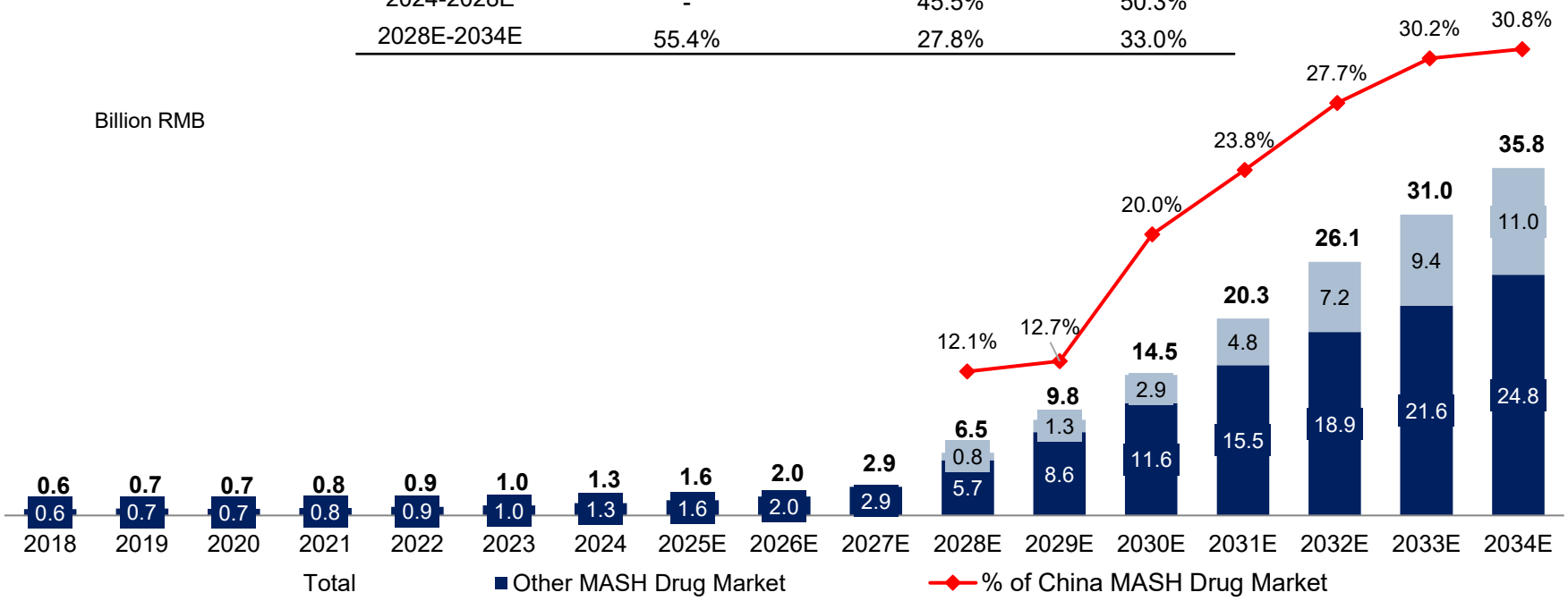
Source: Annual Report, Frost & Sullivan Analysis

MASH Drug Market in China, 2018-2034E

- From 2018 to 2024, the market size of MASH drugs in China increased from RMB0.6 billion to RMB1.3 billion, with a CAGR of 12.0%. In the future, the market size of MASH drugs in China will continue to grow steadily, and it is expected to reach 6.5 billion RMB in 2028, with a CAGR of 50.3% from 2024 to 2028, 35.8 billion RMB in 2034 with a CAGR of 33.0% from 2028 to 2034.

MASH Drug Market in China, 2018-2034E

Period	GLP-1 MASH Drugs	Other MASH Drugs	Total
2018-2024	-	12.0%	12.0%
2024-2028E	-	45.5%	50.3%
2028E-2034E	55.4%	27.8%	33.0%



Source: Annual Report, Frost & Sullivan Analysis

Growth Drivers of Global MASH Drug Market

Unmet Need for Treatment	• MASH is a metabolic disorder that has been increasingly recognized due to changes in modern lifestyles and the concurrent rise in obesity rates. The prevalence of MASH is growing globally, and with it, the demand for effective treatment options is escalating. Currently, only Saroglitazar Magnesium and Resmetirom have been approval for the treatment of MASH worldwide. In China, there are no MASH-specific drugs that have been approved. The therapeutic approaches in clinical practice are symptomatic, focusing on alleviating the disease's manifestations. These include strategies for weight reduction, improving insulin sensitivity, and managing metabolic syndrome, T2DM, and associated complications. Regrettably, there is no cure for MASH itself, indicating a significant unmet clinical need. The search for treatments that address the underlying causes of MASH and provide a definitive cure continues, reflecting a substantial opportunity for medical advancement in this area. Existing treatments such as liver-protective drugs, only address symptoms rather than addressing the root causes of the disease. As of the Latest Practicable Date, there were no drugs approved for MASH in China.
Increased Recognition of MASH	• The pathophysiology of MASH remains unclear. Current research suggests that the onset of MASH may be related to the interaction between genetic susceptibility and multiple metabolic factors. As research progresses, our recognition of the pathogenesis of MASH is gradually becoming clearer, which may lead to the development of more targeted and innovative MASH treatment drugs, driving the growth of the MASH treatment market. Additionally, MASH is more prevalent among patients with T2DM, obesity, hypertension, and hyperlipidemia. Further clarification of the pathogenesis will provide clearer guidance for the prevention and control of MASH, helping to implement effective preventive measures in the aforementioned high-risk populations, and to conduct targeted screening and early intervention treatment.
Policy Support and Active R&D progress	• At present, there are over 80 drugs under development around the world, among which GLP-1 receptor agonists, have shown significant therapeutic potential in clinical studies, and have promoted related drug candidates to enter later clinical trials. Policy support significantly bolsters the rapid advancement of MASH drug research and development. To help define and address the clinical trial challenges, the US Food and Drug Administration (FDA) and the European Medicines Agency (EMA) published draft guidance on drug development for noncirrhotic and cirrhotic MASH, ensuring that the research and development work is directional and scientific. In order to guide and standardize clinical trials of drugs for the treatment of non-alcoholic steatohepatitis, the National Medical Products Administration issued *the Guidelines for Clinical Trials of Drugs for the Treatment of Non-alcoholic Steatohepatitis (Trial)* on December 20, 2019.

Source: Frost & Sullivan Analysis

Future Trends of Global MASH Drug Market

Research and Development of Comprehensive Benefit Drug	• Future treatment of MASH requires comprehensive consideration of the overall metabolic health status of patients. Currently, MASH drugs under development include GLP-1 drugs, ASC40, TERN-501, etc. Taking GLP-1 drug as an example, it can not only improve MASH symptoms, but also reduce blood sugar, weight and protect liver cells.
Research and Development of Long-term Drug	• The natural course of MASH is very long, and its treatment needs to address not only the liver damage itself, but also the metabolic and cardiovascular risk factors associated with the disease, such as obesity, diabetes, and high blood pressure.Accordin to FDA and EMA, ongoing clinical trials of MASH drugs require long-term follow-up to determine the efficacy and safety of the drug, such as the use of long-term composite endpoints including all-cause mortality, diagnosis of histological cirrhosis, liver decompensation events, and model of end-stage liver disease (MELD) score assessments to determine the efficacy of the drug.

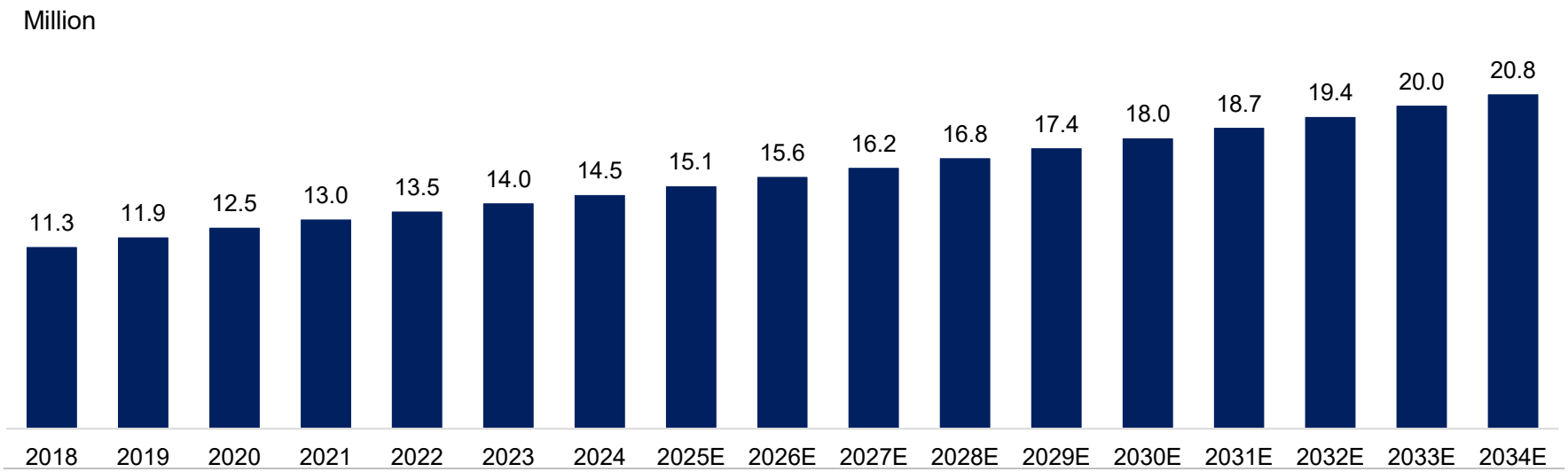
Source: Frost & Sullivan Analysis

Prevalence of Alzheimer's Disease in China, 2018-2034E

- In recent years, the number of patients with Alzheimer's disease in China has increased rapidly, from 11.3 million to 14.5 million in 2018 and 2024, with a CAGR of 4.3%, due to the aging population. It is predicted that the number of patients with Alzheimer's disease in China will continue to increase, reaching 16.8 million in 2028, with a CAGR of 3.7% from 2024 to 2028, 20.8 million in 2034 with a CAGR of 3.6% from 2028 to 2034.

Prevalence of Alzheimer's disease in China, 2018-2034E

Period	CAGR
2018-2024	4.3%
2024-2028E	3.7%
2028E-2034E	3.6%



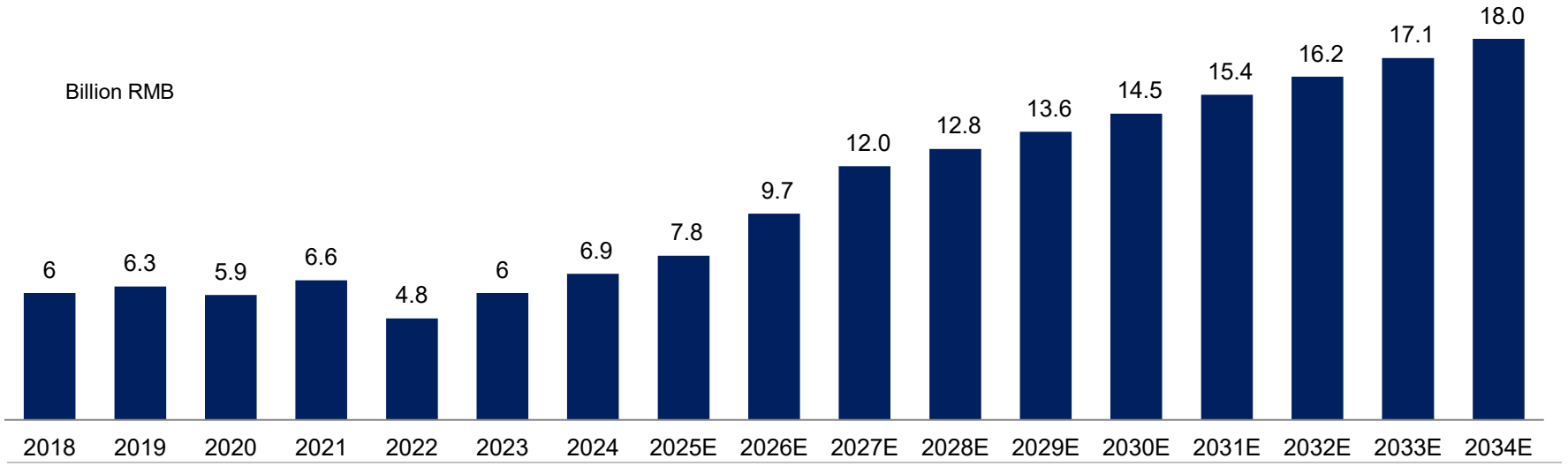
Source: Frost & Sullivan analysis

Alzheimer's Disease Drug Market in China, 2018-2034E

- From 2018 to 2024, the market size of Alzheimer's disease drugs in China increase from 6.0 billion RMB to 6.9 billion RMB, with a CAGR of 2.4%. In the future, the market size of Alzheimer's disease drugs in China will grow steadily, and it is expected to reach 12.8 billion RMB in 2028, with a CAGR of 16.7% from 2024 to 2028, 18.0 billion RMB in 2034 with a CAGR of 5.9% from 2028 to 2034.

Alzheimer's Disease Drug Market in China, 2018-2034E

Period	CAGR
2018-2024	2.4%
2024-2028E	16.7%
2028E-2034E	5.9%

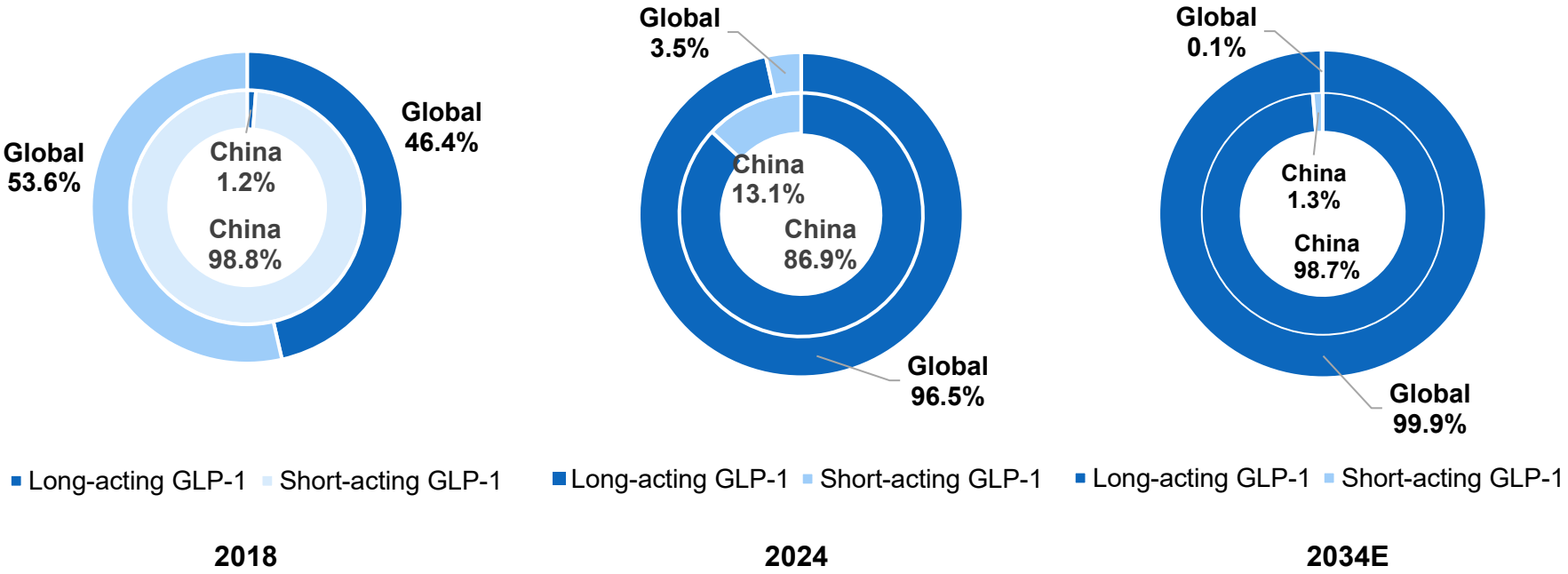


Source: Annual Report, Frost & Sullivan Analysis

GLP-1 Drug Market, 2018 vs 2024 vs 2034E

Breakdown by Long-acting and Short-acting

- China: In 2018, short-acting GLP-1 drugs such as Liraglutide, Exenatide and Lixisenatide, were the mainstream in China. However, with more and more long-acting GLP-1 drug approved in China, the market share of GLP-1 drug is gradually being eroded by long-acting preparations. Long-acting GLP-1 accounts for 86.9% of the GLP-1 drug market share in 2024 and is expected to reach 98.7% in 2034.
- Global: In 2018, The global market witnesses a similar trend. Short-acting GLP-1 drugs such as Liraglutide, Exenatide and Lixisenatide, were the mainstream in global market. However, with more and more long-acting GLP-1 drug approved, the market share of GLP-1 drug is gradually being eroded by long-acting preparations. Long-acting GLP-1 accounts for 96.5% of the global GLP-1 drug market share in 2024 and is expected to reach 99.9% in 2034.

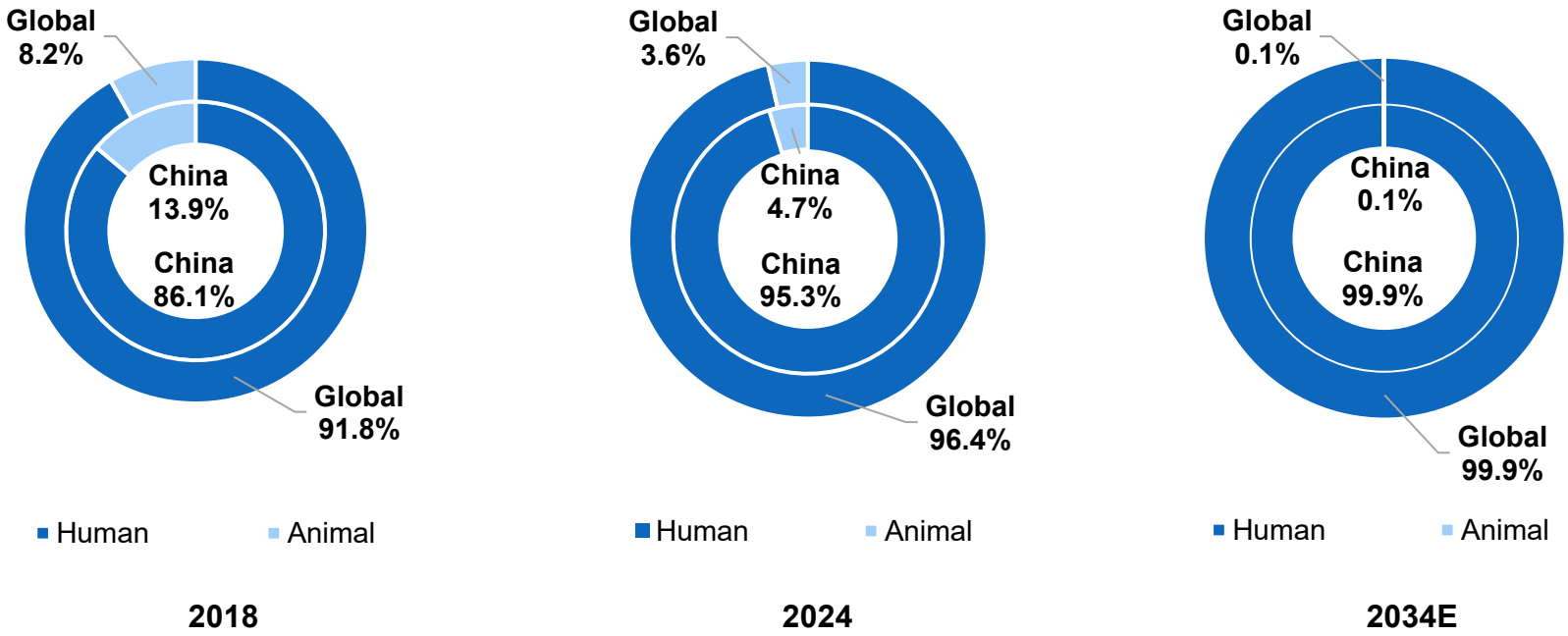


Source: CDE, ClinicalTrials.gov, Frost & Sullivan analysis

GLP-1 Drug Market, 2018 vs 2024 vs 2034E

Breakdown by Human and Animal Derived

- Global: Compared with animal GLP-1 drugs, human GLP-1 drugs have apparent advantages in terms of safety and duration of action, and have become the main trends of drug research and development. The proportion of humanized GLP-1 has gradually increased from 91.8% in 2018 to 96.4% in 2024, and is expected to reach 99.9% by 2034 globally.
- China: Compared with animal GLP-1 drugs, human GLP-1 drugs have apparent advantages in terms of safety and duration of action, and have become the main trends of drug research and development. The proportion of humanized GLP-1 in China has gradually increased from 86.1% in 2018 to 95.3% in 2024, and is expected to reach 99.9% by 2034.



Source: CDE, ClinicalTrials.gov, Frost & Sullivan analysis

Appendix 1

- Orlistat is a lipase inhibitor that works by inhibiting lipase in the gastrointestinal tract, thereby reducing the absorption of dietary triglycerides by the intestinal mucosa and promoting the excretion of fat from the intestine. GLP-1, on the other hand, achieves weight loss by stimulating insulin secretion, delaying gastric emptying, acting on the brain's feeding center, and suppressing appetite. Since the market launch of orlistat, there have been frequent safety incidents, drawing the attention of regulatory authorities. In contrast, human long-acting GLP-1 medications that have been approved for weight-loss indications are known for their effective weight loss, ease of use, and favorable safety profile. They stand out as an excellent option for long-term weight management.

Source: Frost & Sullivan Analysis

Appendix 2

- As a science-driven, innovation-oriented biopharmaceutical company, we are at the forefront of developing novel therapies for diabetes and other metabolic diseases.
- Our Core Product, Efsubaglutide Alfa, is the first domestically developed, long-acting, humanized GLP-1 receptor agonist to submit the BLA to the NMPA. It is a GLP-1 receptor agonist generated by genetically engineered recombinant fusion protein production techniques.
- Compared to natural GLP-1 peptide, Efsubaglutide Alfa has a dual GLP-1 molecular structure with a unique natural hinge connection and IgG2 Fc segment design, resulting in stronger affinity for the GLP-1 receptor and slower degradation by hydrolytic enzymes and renal filtration in the body. Consequently, it exhibits strong efficacy, long duration of action, and favorable tolerability.
- Furthermore, Efsubaglutide Alfa is produced in mammalian cell lines with a high humanization ratio, resulting in strong activity and low immunogenicity.
- As a GLP-1 receptor agonist, Efsubaglutide Alfa binds to the GLP-1 receptors on pancreatic β-cells and initiates a signaling cascade that involves activation of membrane-bound adenyl cyclase (AC) and the consequent production of cyclic adenosine monophosphate (cAMP).
- The elevation in cytosol cAMP leads to downstream activation of protein kinase A (PKA) and exchange protein directly activated by cAMP pathways that stimulates the insulin secretion from pancreatic β-cells in a glucose concentration-dependent manner, thereby reducing blood glucose levels.
- Apart from pancreatic β-cells, GLP-1 receptors are also widely expressed on multiple organ, tissues or cells, including, heart cells, kidney and liver cells and gastrointestinal tract, and brain cells , providing a mechanistic foundation of variety of biological action of GLP-1, such as inhibition of glucagon (a hormone that raises blood glucose levels) secretion, slowing gastric emptying, and reducing food intake, contributing to multiple organ beneficial effects in addition to glucose-concentration dependent blood glucose-lowing effects.
- Efsubaglutide Alfa also exhibits cardioprotective and neuroprotective effects, reducing inflammation and programmed cell death, and impacting learning, memory, reward behavior, and adaptability.

Source: Frost & Sullivan Analysis

Appendix 3

- T2DM is the most common form of diabetes that occurs as a result of insulin resistance and a gradual decline in insulin production. Diabetes and its disease associated complications is a leading cause of death.
- Despite the availability of insulin injection and other anti-diabetic drugs, there still remains significant unmet clinical demands. Insulin and other current diabetes treatments have limited effects on preventing and alleviating diabetic complications. These complications include serious damages to various blood vessels, capillaries and related organs, including heart, kidney, liver, and nervous system and pose a serious threat to the health of patients receiving insulin therapy, the severe complications associated with diabetes are the leading causes of patient death. In contrast, GLP-1-based therapy can prevent and alleviate the life-threatening diabetic complications, offering a more comprehensive solution to diabetes management. In addition to its effective, glucose-dependent control of blood sugar levels, GLP-1-based therapy supports weight management and provides significant beneficial effects for the cardiovascular system, liver, kidneys, and central nervous system.
- Insulin therapy comes with side effects, including the life-threatening hypoglycemia (low blood sugar), weight gain which accelerates the disease progression, and insulin resistance.
- On the contrary, numerous clinical studies have demonstrated that GLP-1-based therapy presents a significantly lower risk of hypoglycemia, promotes weight loss, elevates insulin resistance, and improves insulin sensitivity and responsiveness.
- These advantages have positioned GLP-1-based therapy as an increasingly preferred and superior treatment for patients with T2D, taking over the dominant position of insulin therapy in the treatment of T2D.
- The long-acting effect of Efsubaglutide Alfa potentially enables less frequent administration, i.e. biweekly dosing, and improves patient adherence for long-term disease management.
- The incidence of common adverse events for Efsubaglutide Alfa in its clinical trials, such as nausea and vomiting, were lower than that of other marketed GLP-1 receptor agonists.
- In addition, compared to other GLP-1 receptor agonists, no new risk of adverse events was found in its trials.
- Leveraging its favorable safety profile, Efsubaglutide Alfa allows for single injection of selected dose with disposable auto-injector without dosing titration (i.e., the gradual increase of the dosage), distinguishing it from most of the marketed GLP-1 receptor agonists globally that require dosing titration steps. This eliminates the need for dosage adjustments, offering greater convenience for patients and potentially enhancing treatment adherence.

Source: Frost & Sullivan Analysis

Appendix 4

- Cardiovascular disease is the most common complication for patients with diabetes and it is the leading cause of death in these patients.
- Studies have shown that GLP-1 exerts cardioprotective actions, including preserving cardiomyocyte and endothelial cell viability, reducing infarct size and ameliorating myocardial infarction and heart failure.
- This significant reduction in blood pressure lowers the risk of hypertension in patients with T2DM, which in turn reduces their risk of heart attack, heart failure, and stroke.
- Our findings align with recent reports from other trials of Semaglutide in patients with T2DM, which showed improvements in cardiometabolic risk markers and reductions in cardiovascular risk compared to placebo in pivotal trials with cardiovascular outcomes.
- Collectively, GLP-1 receptor agonists, including Efsubaglutide Alfa, offer additional cardiovascular protective benefits, potentially reducing the risk of major adverse cardiovascular events.
- The most common TEAEs that led to the discontinuation of treatment of GLP-1 receptor agonists are vomiting, nausea and constipation.
- Efsubaglutide Alfa works through the activation of GLP-1 receptors, which decreases the meal ingestion and thereby reduces energy intake.
- This mechanism aligns with the GLP-1 action of slowing gastric emptying and enhancing the feeling of fullness.
- Efsubaglutide Alfa also increases energy expenditure as a consequence of upregulation of uncoupling protein 1 (Ucp1) in inguinal white adipose tissue (WAT, a type of body fat), partially due to its central action in suppressing appetite.
- Obesity and overweight are risk factors for a range of chronic diseases and can also lead to various social and psychological challenges.
- Treatment options for obesity and overweight are limited.
- Until 2023, orlistat was the only drug approved by the NMPA for obesity and overweight treatment, and it is only approved for adults.
- Other weight loss products in the market include health supplements, meal replacements, and weight loss teas, with invasive options like intragastric balloons not yet widely accepted.
- Orlistat is a potent and selective inhibitor for an an enzyme in the digestive system called pancreatic lipase, which is responsible for breaking down the fats into smaller molecules that the body can absorb.
- By inhibiting this enzyme, Orlistat reduces the amount of fat the body takes in from the food, therefore contributing to weight loss.

Source: Frost & Sullivan Analysis

Appendix 5

- However, its effectiveness is not as pronounced in individuals who consume a diet high in carbohydrates or low in fats.
- One of the trade-offs with Orlistat is that it can lead to some gastrointestinal side effects, including increased gastrointestinal gas, fatty stools, and steatorrhea, and the incidence increases with the increase of the amount of fat in the diet.
- They are designed to work over an extended period, making them a standout option for those looking to manage their weight in the long term.
- The global prevalence of obesity and overweight has been increasing rapidly for both young and the seniors as a result of modern lifestyles, such as over diet and lack of physical activity.
- Despite the growing number of people affected, there are still only 4 GLP-1 innovative drug approved globally, creating a significant unmet clinical demand.
- In June 2023, the first GLP-1 receptor agonist was approved in China for the treatment of obesity and overweight.
- GLP-1 receptor agonists are known for their low risk of side effects, good patient adherence, and suitability for long-term use.
- Additionally, GLP-1 receptor agonists provide multiple benefits beyond weight loss, including blood sugar control and cardiovascular protection, making them an ideal option for improving both weight and overall metabolic health.
- Metabolic dysfunction-associated fatty liver disease (MAFLD) is a prevalent metabolic disorder characterized by the accumulation of excessive fat in the liver. MAFLD encompasses a spectrum of liver conditions, ranging from simple fatty liver to MASH, which can progress to cirrhosis, and even hepatocellular carcinoma.
- Efsubaglutide Alfa significantly decreased the hepatic fat accumulation and alleviated histological steatosis without worsening of fibrosis.

Source: Frost & Sullivan Analysis

Appendix 6

- It also exerted beneficial effects on liver metabolism and metabolic parameters, including improvement of lipid profile, i.e., significantly decreased circulating total cholesterol levels, declined serum triglyceride, and free fatty acid levels.
- The treatment also significantly reduced fatty liver, decreased liver triglyceride content, and concomitantly ameliorated liver injury exemplified by declined hepatic alanine aminotransferase (ALT) and aspartic transaminase (AST) content.
- Furthermore, Efsubaglutide Alfa improved glucose tolerance, and insulin sensitivity including hyperglycemia, hyperlipidemia, and hepatic steatosis.
- Moreover, the beneficial effect of Efsubaglutide Alfa on metabolic condition was also associated with suppressed food intake and browning remodeling of white adipose tissue.
- Approximately 4.9% and 3.1% population suffering from MASH globally and in China in 2024, respectively.
- As of the same date, there were no drugs approved for MASH in China, and the available therapies focus on managing symptoms rather than curing the disease, highlighting a significant unmet clinical need.
- Ongoing research indicates that GLP-1 receptor agonists can help reduce liver fat buildup, decrease liver cell damage and inflammation, and prevent the progression of fibrosis in patients with MASH.
- Additionally, these drugs have been linked to improvements in metabolic factors like insulin resistance and abnormal lipid levels, both of which are often present in MASH patients.
- Management of dyslipidemia and dysglycemia is important for the resolution of MASH.
- AD is a progressive neurodegenerative disorder and the leading cause of dementia, accounting for 60-70% of dementia cases worldwide.
- As shown in the following diagram, YN014 showed beneficial effects on cognition and memory in AD mice, as determined and demonstrated in the Y-maze and Morris Water Maze tests, which are standard tests commonly used for assessing spatial memory and learning.

Source: Frost & Sullivan Analysis

Appendix 7

- As shown in the following diagram, YN014 also demonstrated the ability to reduce the death of SH-SY5Y neuron cells, human neuroblastoma cells as a cellular model for neurodegenerative disorders.
- The treatments for T1DM include drug treatments, surgical treatment, lifestyle intervention and blood glucose monitoring.
- Currently, patients with T1DM rely on insulin as the only cornerstone drug treatment. There exists significant unmet medical need for the treatment of T1DM.
- Current evidence demonstrates the importance of focusing on the β cells and strategies to prevent their dysfunction in treating T1DM.
- Consequently, strategies that enhance immune tolerance and preserve, β cell cells, including the use of GLP-1 receptor agonists, are actively being explored.
- Preclinical studies of YN209 on mice shows that it can reduce liver weight, as measured by histological examination, and alleviate hepatic steatosis, commonly known as fatty liver, which can be induced by feeding a diet containing unusually high content of fat in animal models such as rodents or non-human primates.
- Excessively elevated circulation glucagon level is a major contributor to the development of diabetic hypoglycemia.
- Ghrelin is a hormone that stimulates appetite and promotes fat storage.
- GLP-1-based therapy is reshaping the treatment paradigm of metabolic diseases. Furthermore, GLP-1-based therapy can also suppress appetite, delay gastric emptying, regulate blood lipid metabolism and reduce fat deposition.
- Among them, GLP-1-based therapy is the most promising one, and is reshaping the treatment paradigm for diabetes. Native GLP-1 has short half-life (<2 mins).
- The AGA guidelines also recommend Semaglutide (2.4 mg) as the preferred long-term treatment for most obese patients, due to its overall benefits.
- As a result of their superior efficacy and favorable safety profiles, GLP-1 receptor agonists have become the predominant drugs for the treatment of overweight and obesity in the global market.
- For individuals with MAFLD and those at high risk of being diagnosed with MAFLD, assessing the risk of advanced fibrosis is crucial. Among the various scores available for this purpose, the Fibrosis-4 (FIB-4) score is recommended as a first-line assessment indicator for fibrosis in certain chronic liver diseases due to its wide clinical application and good diagnostic efficacy. The FIB-4 score is a non-invasive clinical marker that enables simpler calculation based on the patient's age, levels of alanine aminotransferase (ALT) and aspartate aminotransferase (AST), and platelet count. A higher FIB-4 score suggests a greater likelihood of significant liver fibrosis, while a lower score indicates minimal or no fibrosis.
- Epidemiological studies and modeling studies suggest that deaths related to MASH in China will increase from 25,580 in 2016 to 55,740 by 2030.
- In China, the financial burden of AD is immense, with the average annual cost per patient estimated at RMB130,000 per year
- In China, the available drugs for AD are mainly generic drugs focusing on easing symptoms.
- We are the first company in Asia and third globally to advance an innovative, humanized, long-acting glucagon-like peptide-1 (GLP-1) receptor agonist to the registration stage.

Source: Frost & Sullivan Analysis

Appendix 8

- Metabolic diseases are chronic diseases characterized by high prevalence, life-threatening symptoms and sustained economic burden.
- The ongoing challenges in the treatment and prevention of diabetes and other metabolic diseases present significant unmet clinical needs, creating substantial market opportunities for innovative treatments and solutions.
- For over 100 years, insulin has been the only therapy for patients with type 1 diabetes (T1D) and a major therapy for patients with type 2 diabetes (T2D). However, insulin cannot prevent or alleviate diabetic complications. GLP-1-based therapy also possesses broader therapeutic effects, including cardiovascular and renal benefits, glucose and lipid metabolism control, lipotoxicity reduction, blood pressure regulation, and neuron protection. These effects are interconnected to the physiological and pathological processes of Metabolic Dysfunction-Associated Steatohepatitis (MASH), Alzheimer's disease (AD) and hypertension, among other diseases, making GLP-1 a promising therapeutical target for these diseases.
- Scientists have made tremendous efforts for several decades to develop humanized, long-acting, more effective GLP-1 receptor agonists.
- We are the third company in the world to have advanced an innovative, humanized, long-acting GLP-1 receptor agonist to the registration stage.
- In 2002, he was the first to report the in vitro molecular and cellular mechanisms and in vivo regulatory mechanisms of GLP-1 in the treatment of T2D [Diabetologia. 2002 Sep;45(9):1263-73].
- In 2007, the first reported the strategy of using recombinant fusion protein engineering technology to produce long-acting GLP-1 to treat T2D.
- Efsubaglutide Alfa's clinical studies have demonstrated its fast action and strong efficacy, distinguished longer half-life, and favorable safety profile, making it a potentially standout option among current therapies for T2D.
- GLP-1-based therapy has demonstrated multiple therapeutic benefits, including lowering blood glucose levels, promoting weight loss, reducing food intake, regulating lipid metabolism, and decreasing fat accumulation.
- Therefore, GLP-1-based therapies have substantial potential to address weight management and improve metabolic health.
- The economic burden of AD is growing substantially, covering not only the costs of symptomatic treatments but also substantial expenses for adjunctive medications, management of complications, and specialized care.
- The local production facilities and process in China for Efsubaglutide Alfa provides advantages both in cost efficiency and quality.
- Currently, imported GLP-1 receptor agonists and similar drugs approved in China face global shortages.

Source: Frost & Sullivan Analysis

Appendix 9

- It is a GLP-1 receptor agonist generated by our Recombinant Fusion Protein Platform.
- GLP-1-based therapy has demonstrated its comprehensive clinical benefits.
- In addition to its effective, glucose-dependent control of blood sugar levels, GLP-1-based therapy supports weight management and provides significant beneficial effects for the cardiovascular system, liver, kidneys, and central nervous system.
- The appetite suppressing action of Efsubaglutide Alfa is another mechanism of its weight loss efficacy.
- In China, however, treatment options are more limited.
- Before the first GLP-1 receptor agonist was approved in China for the treatment of overweight and obesity in June 2023, orlistat was the only drug approved by the NMPA for overweight and obesity treatment, and it is only approved for adults.
- In light of the limitations of current treatment regime, GLP-1 receptor agonist has great potential to address the substantial unmet clinical demands.
- Furthermore, by improving glucose tolerance and insulin sensitivity, Efsubaglutide Alfa improved the associated conditions including hyperglycemia, hyperlipidemia, and hepatic steatosis.
- MASH is a serious chronic liver condition caused by inflammation and damage due to the buildup of fat in the liver.
- Furthermore, insulin resistance and abnormal lipid levels, among others, are often found in patients with MASH. GLP-1-based therapies have the potential to address these issues.
- T1D is an autoimmune disease caused by T cell-mediated autoimmune destruction of the islet β cells, resulting in a significant loss of the β cell mass. Excessively elevated plasma glucagon level is a major contributor to the development of diabetic hypoglycemia.
- As of the Latest Practicable Date, there were nine approved innovative drugs for the treatment of overweight and obesity globally (including China). Among these nine approved drugs, two of them are innovative, humanized, long-acting GLP-1 receptor agonists.namely Wegovy and Zepbound.
- In 2024, T2D accounted for approximately 95.3% and 93.3% of all diabetes cases in China and globally, respectively.
- In 2024, T1D and other types of diabetes accounted for approximately 4.7% and 6.7% of all diabetes cases in China and globally, respectively.
- As of the Latest Practicable Date, a total of 11 GLP-1 receptor agonist drugs were approved globally (including China) for the treatment of T2D, of which four are humanized, long-acting GLP-1 receptor agonists.
- In 2024, the market share of these three humanized, long-acting GLP-1 receptor agonists, namely dulaglutide, semaglutide and tirzepatide, accounted for 83% of the global GLP-1 diabetes drug market.
- As of the Latest Practicable Date, there were 52 innovative GLP-1 receptor agonist drug candidates for the treatment of diabetes under clinical evaluation in China.
- As of the Latest Practicable Date, there were 24 GLP-1 receptor agonist drug candidates for the treatment of diabetes under clinical evaluation globally (excluding China).

Source: Frost & Sullivan Analysis

Appendix 10

- With the trend of cost containment in the global healthcare industry, government authorities and third-party payers have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications.
- There are an increasing number of third-party payers requiring companies to provide them with predetermined discounts from list prices and challenging the prices charged for medical products.
- Obtaining and enforcing patents in the biopharmaceutical industry involves technological and legal complexity and is costly, time-consuming and inherently uncertain.
- Major markets in the world all strictly regulate the pharmaceutical industry, and in doing so they employ broadly similar regulatory strategies, including regulation of the development and approval, manufacturing, marketing, sales and distribution of pharmaceutical products.
- The process of obtaining regulatory approvals and maintaining compliance with appropriate laws and regulations requires the expenditure of substantial time and financial resources. Failure to comply with the applicable requirements at any time during the drug development process or approval process, or after approval, may subject an applicant to administrative or judicial sanctions. These sanctions could include a regulator's refusal to approve pending applications, withdrawal of an approval, license revocation, a clinical hold, voluntary or mandatory product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, restitution, disgorgement or civil or criminal penalties.
- Competition for qualified employees in the biopharmaceutical industry is intense and the pool of qualified candidates is limited.
- In addition, it is common in our industry for competitors to attract customers and recruit key employees away from companies during the integration phase of an acquisition.

Source: Frost & Sullivan Analysis

Appendix 11

Drug Name	Generic Name	Company	Approval Year	Global Sales Revenue, 2024 US$ in million	Dosing period
XENICAL	Orlistat	Cheplapharm	FDA: 1999 EMA: 1998 NMPA: 2000	NA	Three times a day
QSYMIA	Phentermine /Topiramate	Vivus	FDA: 2012 EMA: 2024	NA	Once a day
CONTRAVE	Bupropion hydrochloride/Naltrexone hydrochloride	Nalpropion	FDA: 2014 EMA: 2015	NA	Twice a day
Saxenda	Liraglutide	Novo Nordisk	FDA: 2010 EMA: 2009 NMPA: 2011	806.7	Once a day
Fitus	Beinaglutide	Benemae	NMPA: 2016	NA	Three times a day
IMCIVREE	Setmelanotide	Rhythm Pharmaceuticals	FDA: 2020 EMA: 2021	NA	Once a day
Wegovy	Semaglutide	Novo Nordisk	FDA: 2021 EMA: 2022 NMPA: 2024	8440.4	Once a week
ZEPBOUND	Tirzepatide	Eli Lilly	FDA: 2023 EMA: 2022 NMPA: 2024	4925.7	Once a week
Xinermei	Mazdutide	Eli Lilly / Innovent	NMPA: 2025	NA	Once a week

Source: Frost & Sullivan Analysis

Appendix 12

- Despite this large and growing patient population, only 1.9% of diabetes patients in China were treated with GLP-1-based therapies in 2024.
- This low penetration rate highlights a significant market opportunity for GLP-1 based therapies in China.
- Compared to the global market, the GLP-1 diabetes drug market in China is still emerging and underpenetrated, presenting significant growth potential.
- Among different drugs for the treatment of diabetes, GLP-1-based drugs have achieved remarkable market acceptance and grew rapidly.
- In the clinical trials, Efsubaglutide Alfa treatment reported fewer cases of nausea and vomiting, the common adverse events, than that of other marketed, humanized, long-acting GLP-1 receptor agonists.
- For cardiovascular disease risk assessment, low-density lipoprotein cholesterol (LDL-C) and total cholesterol (TC) are key parameters.
- In comparison, Wegovy, a GLP-1 drug developed by Novo Nordisk, resulted in a reduction in LDL-C level of 0.03 mmol/L and TC level of 0.13 mmol/L in its clinical trial with T2D patients. Zepbound, another marketed GLP-1 drug, resulted in decreases in LDL-C level of 0.28 mmol/L and TC level of 0.39 mmol/L at the 5 mg dose in its clinical trial.
- multiregional clinical trial (MRCT) helps streamline regulatory submissions in both jurisdictions, save clinical resources, and reduce R&D costs.
- According to a publication “Long-Acting Glucagon-Like Peptide 1 Receptor Agonists” on American Diabetes Association, long-acting GLP-1-based therapy refers to GLP-1 receptor agonist drugs with action duration of over 24 hours. Notably, current long-acting GLP-1 receptor agonist drugs available on the market mainly refer to weekly formulations, whereas daily formulations are generally categorized as short-acting ones.
- China’s long-acting GLP-1-based therapy market had a relativelylow market share from 2018 to 2024. However, this gap is expected to narrow in the future, demonstrating the robust growth potential of China’s market.
- The current standard of care includes GLP-1RAs, SGLT2i, metformin, DPP-4i, thiazolidinediones, α-glucosidase inhibitors, glucokinase activators, peroxisome proliferator activated receptor (PPAR) pan-agonists, insulin secretagogues, and insulin. Among these, GLP-1 RAs are recognized as first-line treatments for T2D, particularly in patients with cardiorenal risks.
- Among the approved drugs for diabetes in China, insulins and analogues, Biguanides,SGLT-2 inhibitors, GLP-1 receptor agonists, DPP-4 inhibitors and other type of drugs make up 25.3%, 12.2%, 15.4%, 14.2%, 9.4% and 23.5% of the total market for diabetes in China in 2024, respectively.
- The significant forecast increases in the size and penetration rate of the GLP-1 drug market in China for T2D is driven by several factors. Firstly, as more long-acting GLP-1 products become available in the market, patient convenience will improve, which is expected to enhance adherence to treatment regimens. This shift towards more convenient, long-acting formulations will likely result in higher treatment adoption rates, thereby significantly boosting both the market size and the penetration rate of GLP-1 drugs for T2D. This increased accessibility will cater to the large and expanding diabetic population in China, where T2D prevalence is rising due to factors such as urbanization, poor dietary habits, and sedentary lifestyles. Secondly, some GLP-1 drugs have witnessed significant reduction in prices after being included in the National Reimbursement Drug List. This enhanced economic accessibility has made them more accessible to a broader patient population, which in turn has led to higher penetration rates among this patient population. Lastly, the pipeline of GLP-1 receptor agonist drug candidates in China continue to grow. This influx of new drugs is expected to significantly increase the GLP-1 drug market size in China, catering to the growing demand for effective T2D treatments.
- Specifically, the market share of Ozempic, Trulicity, Mounjaro, Rybelsus, Victoza and Bydureon accounted for approximately 42.7%, 12.9%, 28.3%, 8.3%, 1.9%, 1% of the global GLP-1 diabetes drug market. The market share of Ozempic, Trulicity, Mounjaro, Rybelsus, Victoza and Bydureon accounted for approximately 67.4%, 9.7%, 0.01%, 6.0%, 11.4%, 0.0% of the GLP-1 diabetes drug market in China.

Source: Frost & Sullivan Analysis

Appendix 13

- Growing number of diabetes patients. The China and global prevalence of diabetes is rising rapidly, driven by factors such as aging population and lifestyle changes. In addition, there is a large number of diabetes patients remained undiagnosed, and a significant number of people are living with prediabetes conditions such as impaired glucose tolerance (IGT), which can progress to T2D if left untreated. In China, there are approximately 72.8 million cases of undiagnosed diabetes and 170 million adults with IGT, who are at higher risk of developing T2D in 2021.
- The current standard of care includes orlistat and GLP-1-based therapies (e.g., liraglutide,semaglutide, and tirzepatide).
- GLP-1 RAs are established as first-line treatments for obesity oroverweight management due to their dual efficacy in glycemic control and weight reduction.
- The significant forecast increases in the size and penetration rate of the GLP-1 drug market in China for obesity and overweight is driven by several factors. First, the treatment options for obesity have been historically limited in China. The gap between the treatment options and clinical needs highlights the substantial market opportunity for GLP-1 receptor agonists. Second, the development of long-acting GLP-1 drugs, which lowers administration frequency and improves patient compliance, is expected to promote the penetration of GLP-1 drugs. This will result in a wider patient base and greater market penetration for GLP-1 drugs, especially as the number of obese and overweight individuals in China continues to grow. Lastly, there is a robust pipeline of GLP-1 receptor agonist drug candidates under clinical development for the treatment of overweight and obesity in China. Given the limited number of currently available treatment options, the introduction of these new GLP-1 receptor agonists is expected to significantly expand the market.
- In 2024, the market share of Zepbound and Wegovy accounted for approximately 33.6% and 57.5% of the global GLP-1 overweight and obesity drug market, respectively. In 2024, the market share of Zepbound and Wegovy accounted for approximately 0.6% and 60.7% of the GLP-1 overweight and obesity drug market in China, respectively.
- With ten innovative GLP-1 receptor agonist candidates under clinical development for MASH in China, the approval of these therapies will address this gap in treatment options. Once these therapies are approved and commercialized, treatment rates are expected to rise substantially due to their potential for satisfying huge clinical demands. This will contribute to a significant increase in the market size and the GLP-1 drug share in China.
- As of the Latest Practicable Date, there were 53 GLP-1 receptor agonist drug candidates under clinical development for the treatment of overweight and obesity in China, of which 21 are humanized, long-acting GLP-1 receptor agonists.
- As of the Latest Practicable Date, there were 45 GLP-1 receptor agonist drug candidates under clinical development for the treatment of overweight and obesity globally (excluding China), of which 20 are humanized, long-acting GLP-1 receptor agonists.
- The penetration rate of GLP-1 drugs for MASH treatment in 2024, 2028 and 2034 is 0.0%, 12.1% and 30.8%, respectively.
- In China, the GLP-1 diabetes drug market is also dominated by a handful of products. Ozempic holds the largest share at 67.4%, followed by Victoza at 11.4%, Trulicity at 9.7%, Rybelsus at 6.0%, and Fulaimei (孚來美) at 4.8% in 2024.
- Similarly, in China, the GLP-1 overweight and obesity drug market is also dominated by a handful of products. Wegovy holds the largest share at 60.7%, followed by Yishengtai (誼生泰) at 26.2%, and Liluping (利魯平) at 12.6% in 2024.

Source: Frost & Sullivan Analysis