China's Hepatocellular Cancer (HCC) Market Landscape

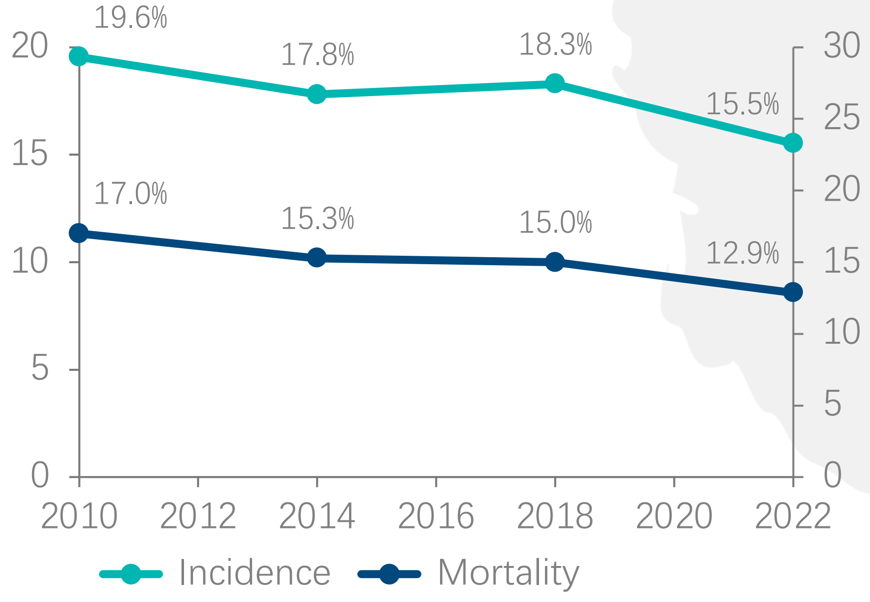
Epidemiological Trends, Treatment Landscape and Innovated Pipelines

October 2020

With high incidence rate, HCC is the second leading cause of cancer deaths in China; Late diagnosis has triggered a low 5-year survival rate of HCC in China

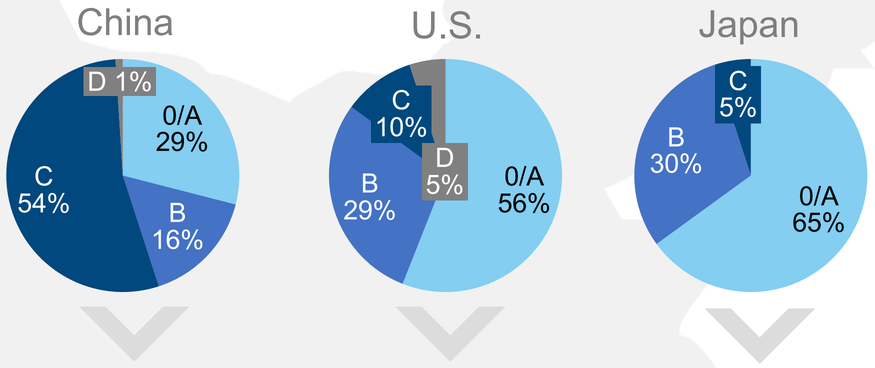
Epidemiological Trends in China

Lasting high incidence and mortality rate of HCC in China:

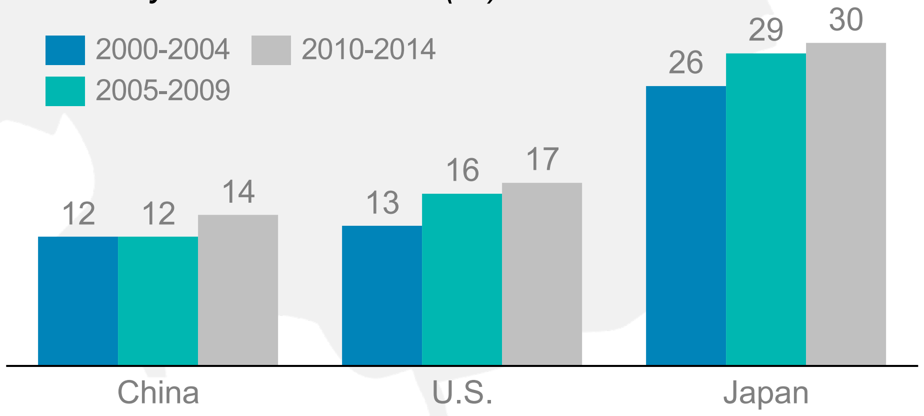


In every 10 minutes, HCC causes 9 new cases and 8 death in China

Liver cancer patients by cancer stage (BLCL system): China vs. US /Japan



HCC 5-year survival rate (%):



Source: R. Zheng et al.,"Liver cancer incidence and mortality in China: Temporal trends and projections to 2030"(2018); NCC, The Goldman Sachs Group, Inc.C

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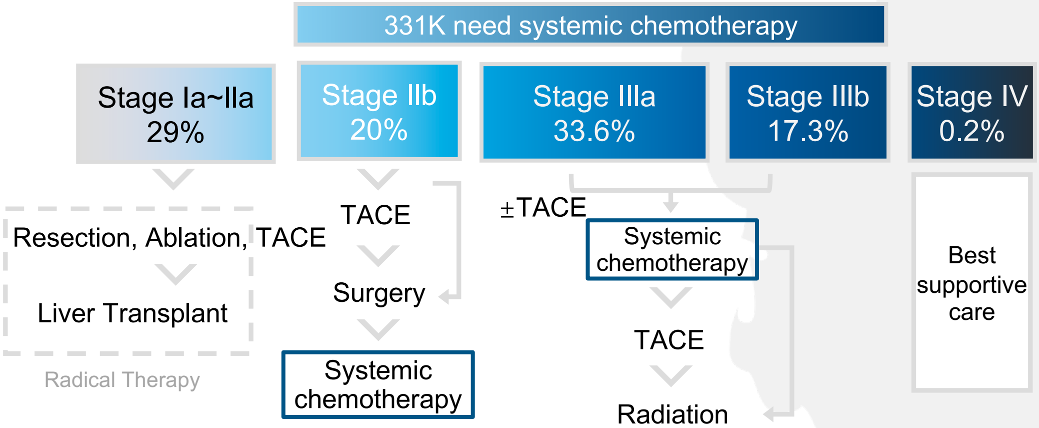
70% HCC patients in China seek palliative therapies: Anti-PD-1 therapy shows growing potential in the market in recent years

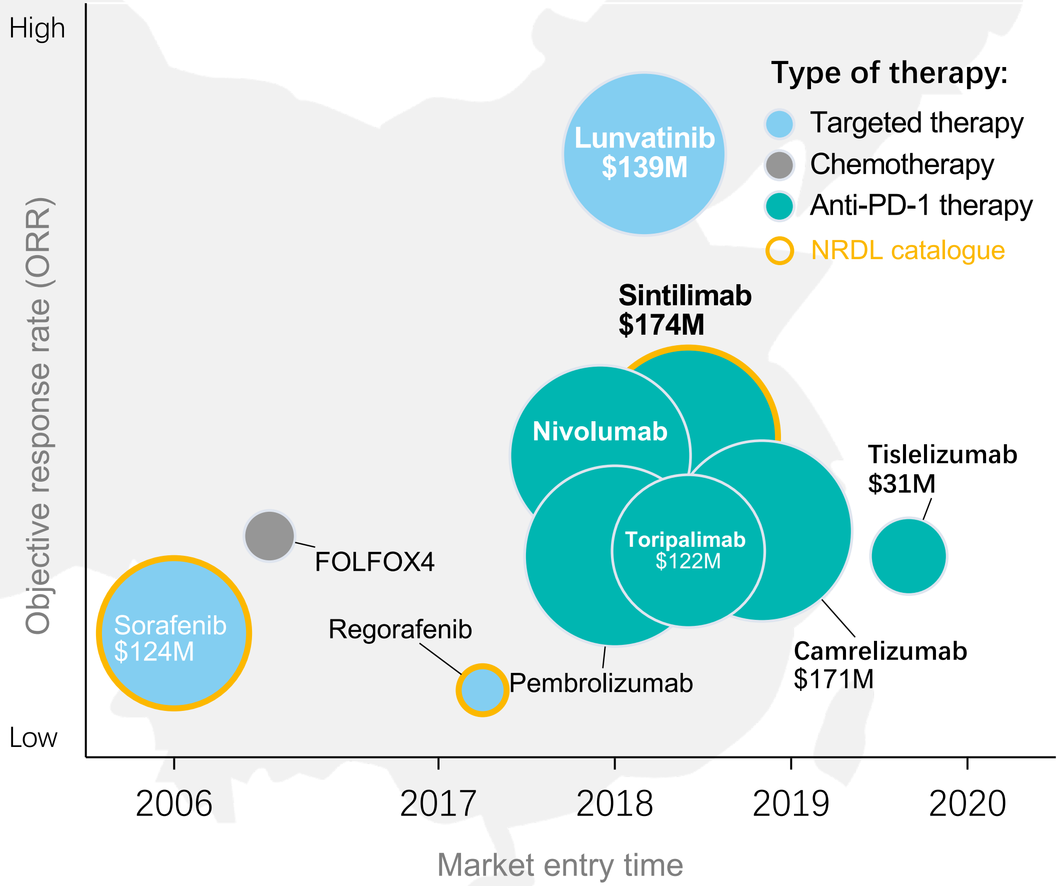
HCC Treatment paradigm and approved drug overview



Note: Systemic therapy includes chemo and targeted therapy

Observations

- In China, about 70% patients are at intermediate & late stage also along with Hepatic dysfunction, they rely heavily on palliative therapy
- 2019 HCC paradigm is not including immunotherapy, yet PD-1 inhibitor therapy shows great potential in the China's market with an expected market size of $9.5B in 2023

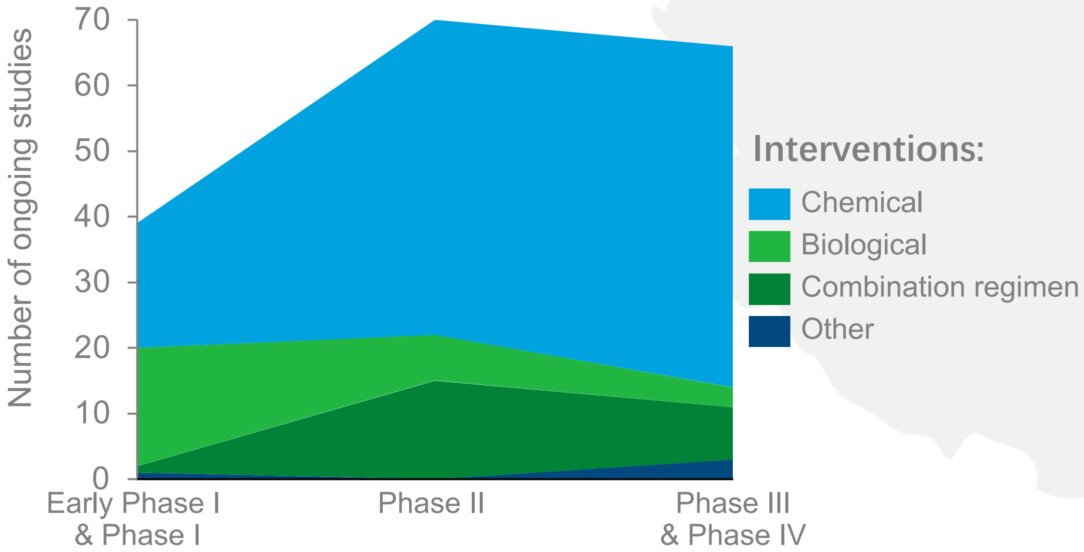


Source: Chinese Society of Clinical Oncology (CSCO)

There is a surge of innovation therapeutics including biological and combination regimen; Immuno & targeted therapies become key development areas in Phase III

Key candidates in the pipeline for HCC

Current innovation pipeline in China



- Domestic companies in China focus on PD-1 development, they are speeding up phase III clinical trials
- Regulatory approval of multiple novel drugs is one of **the key challenges** in augmenting the HCC treatment market in China

Phase III candidates & pre-reg: focus on PD-1 and VEGFR therapies

	Candidates	Company		Target
Targeted therapy	Lenvatinib	Eisai		**VEGFR**
	Axitinib	Pfizer		**VEGFR**
	Ramucirumab	Eli Lilly		**VEGFR2**
	Bevacizumab	Roche		**VEGFR**
	Apatinib	Hengrui	D	**VEGFR**
	Donafenib	Zelgen	D	MEK, ERK, VEGFR etc.
	Cabozantinib	Exelixis		FLT3, VEGFR etc.
Immunotherapy	Pembrolizumab	Merck/MSD		PD-1
	Nivolumab	BMS		PD-1
	SHR-1210	Hengrui	D	PD-1
	Lucentis	BeiGene	D	PD-1
	Toripalimab	Topalliance	D	PD-1
	Sintilimab	Innovent	D	PD-1
	Durvalumab	AstraZeneca		PD-L1
	Atezolizumab	Roche		PD-L1

Source: NIH ClinicalTrials

Summary

Highlights of Chinese HCC market

HCC has been one of the most common cancers and major cause of cancer death in China

- HCC takes away more than 400K lives in China each year
- The trajectory of progress in the reduction of liver cancers was observed, but China still faces a heavy burden of late stage patients with poor health status

Since 70% patients are at their **intermediate & late stage**, China's HCC therapeutic skew towards palliative therapy

- Most HCC patients do not show marked symptoms or signs early on, so they are diagnosed only after the disease has reached an advanced stage. In addition to improving **early-detection rate**, non-surgical treatment is highly expected
- Since 2017, a surge of **immunotherapy** broke the ice of the HCC market, showing great potential in the coming years

The HCC market pipeline in China is **highly innovative and diverse**

- The market offers tremendous opportunities to develop breakthrough first-in-class therapies due to **high unmet needs, combination regimen stimulates the innovation of drug development**
- NMPA regulatory approval of multiple novel drugs in recent years is one of **the key challenges** in augmenting the HCC treatment market in China